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Contributors:

M. E. Bannister, J. Bretagne, J. Fuhr, H. B. Gilbody,
C. C. Havener,T. Kato, P. S. Krstic, Yu. V. Martynenko, F. W. Meyer,
T. J. Morgan, F. M. Ownby, R. A. Phaneuf, M. S. Pindzola,
D. R. Schultz, P. C. Stancil, E. W. Thomas and W. L. Wiese

Editor:

D. Humbert
Atomic and Molecular Data Unit
Nuclear Data Section
IAEA

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FOREWORD

The **International Bulletin on Atomic and Molecular Data for Fusion** is prepared by the Atomic and Molecular Data Unit, **International Atomic Energy Agency**, and published and distributed free of charge by the **IAEA** to assist in the development of fusion research and technology.

The references and indexations included in the Bulletin are provided by atomic data centres at the following institutions:

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National Institute for Standards and Technology, Gaithersburg, USA
Kurchatov Institute, Moscow, Russian Federation
National Institute for Fusion Science, Toki-shi, Japan
Universite de Paris XI, (Paris-Sud), Orsay, France
Nuclear Data Section, IAEA, Vienna, Austria

Information in this Bulletin is presented in four parts. In Part 1, the Atomic and Molecular Data Information System (AMDIS) of the International Atomic Energy Agency is presented. In Part 2, the indexed papers are listed separately for structure and spectra, atomic and molecular collisions, and surface interactions. The structure and spectra indexation lines are grouped by process. The first column gives the process, the second one the reactants and then the character of the data contained (Th for theoretical, Ex for experimental, and E/T for both experimental and theoretical). The number in the last column is the reference number in Part 3 of the Bulletin. The atomic and molecular indexation lines are grouped by one collision partner (photon, electron or heavy particle). The first column gives the reactants, the second column gives the process, the third column gives the energy range with the appropriate units, and the last two columns are the same as in the structure and spectra indexation lines. The particle-surface interactions indexation lines are grouped by process. The first column gives the reactants, the second the energy range with the appropriate units, and the last two columns are the same as in the previous cases.

Part 3 contains all the bibliographic data for both the indexed and non-indexed references. Those references which are indexed in Part 1 are identified by the repeated indexation lines. The Author Index (part 4) refers to the bibliographic references contained in part 3. Contributions are solicited on data generation work in progress and on new data in the course of publication. Contributions should include an explanation of their applicability to fusion research and should be sent to:

Atomic and Molecular Data Unit
Nuclear Data Section
International Atomic Energy Agency
Wagramer Strasse 5
P.O. Box 100
A-1400 Vienna, Austria

e-mail: D.Humbert@iaea.org
WWW access: http://www-amdis.iaea.org/

In addition to the regular publication of the Bulletin, the **IAEA** Atomic and Molecular Data Unit also performs selective retrospective retrievals from the entire (1950-present) bibliographic

data base on request. Retrievals are free of charge and can be made on all of the information indexed in the Bulletin.

Vienna, October 2005 The Editors

News on the Atomic and Molecular Web Site

The Atomic and Molecular (A+M) Data Unit of the International Atomic Energy Agency is dedicated to continuous improvements in the accessibility to quality data for use in nuclear fusion energy research. Thus, the Unit will, from time to time, add new features and capabilities to the Unit web page at URL: http://www-amdis.iaea.org/. New developments are summarized in each issue of the Bulletin. Several new additions are briefly described below.

One of the main process used by the A+M Data Unit to collect and assess numerical data relevant to fusion is the Co-ordinated Research Project (CRP). A CRP is a three to five-year joint project of a group of approximately 12 laboratories, research teams or institutions, performing coordinated research to achieve a certain well defined goal (e.g. establishment of a particular database, data generation, compilation and assessment for specific types of A+M collision processes, or classes of such processes, etc.). Results from the CRPs are published in the IAEA APID Series and produced data are introduced into ALADDIN, the A+M Data Unit numerical database (http://www-amdis.iaea.org/ALADDIN/). This year 2 new CRPs were initiated:

1. CRP on "Atomic and molecular data for plasma modelling"
   The plasmas encountered in nuclear fusion reactors are extremely complex, consisting of a mixture of atoms, ions and molecules from a variety of species. These particles react with electrons and with each other. Examples of the types of reactions are electron and proton impact excitation and ionisation, charge exchange, radiative recombination, di-electronic recombination, as well as molecular formation and disintegration processes. The characteristics of the plasma depend on these interactions. Numerical models of such plasmas require large amounts of data for carrying out the simulation of the plasma. In order to carry out numerical simulations of such plasmas a large and complete database is required. There are still significant areas lacking such databases. This CRP will identify the specific molecular processes that are in the plasma edge and plasma divertor regions and will provide data for some of these processes. Molecular species of high interest are hydrides and molecular hydrogen with all possible isotope distributions, hydrocarbons and at a minor level, CO, CO_2, silicates, nitrogen compounds and H_2O. Major processes investigted are: ionisation, recombination, attachment, detachment, excitation, de-excitation, dissociation, charge transfer, chemical reactions, energy transfer and plasma wall interactions.

2. CRP on "Atomic data for heavy element impurities"
   Plasmas in current and future fusion devices will contain a variety of impurity elements. Some elements will be introduced on purpose for diagnostics purposes, to heat the plasma core region or to cool the plasma edge and divertor region. Some impurities may enter through the erosion of plasma facing components. These elements will have specific spectral signatures and will, in some cases, be very efficient radiators of energy, leading to a cooling of the plasma. Without covering all modelling needs for heavy elements, this CRP will produce benchmark data for important processes such as transition probabilities, excitation and ionization, charge transfer and recombination. Elements with atomic mass higher or equal to 13 (Aluminium) will be considered with a special focus on noble gases (Ar, Kr, Xe), Si, Cl, Cr, Fe, Ni, Cu, Mo and W.

A new CRP on "Data for surface composition dynamics relevant to erosion processes" will be initiated next year. With the CRP on "Tritium inventory" ending the same year, this will keep a number of three to four active CRPs within the A+M Data Unit.

The two CRPs on "Data for molecular processes in edge plasmas" and "Atomic and molecular data for fusion diagnostics " are in their ending phase. The two related APID publications are in preparation, data are introduced into the ALADDIN database as soon as available.

The web search engine for atomic data, GENIE, continues to be updated to face the constant evolution of the different accessed web databases. For Radiative properties, GENIE searches through eight databases including a new one, CAMBD Atomic Spectra in China. For Collisional data, the search is done on three databases including a new one "CAMBD Collisional Processes" in China. It is also proposed to extend GENIE to more processes and to molecular data.

The web-based interfaces to the bibliographic and numerical databases, AMBDAS and ALADDIN respectively, are regularly updated. Considerable amounts of new data are constantly being added. For ALADDIN, new data generated by recent Co-ordinated Research Projects have been added to the database. Additional cross sections and differential cross sections on heavy particles collisions generated by Predrag Krstic at ORNL have been added as well. For AMBDAS, data from this publication are introduced into the database and therefore directly accessible through the web as soon as received.

Additional database enhancements are underway, like the development of an XML model for Atomic and Molecular data and a new-designed web interface for ALADDIN. Notification of new database additions will be announced on the A+M home page as they occur, and will be summarized in future issues of the Bulletin.

Contents

Chapter 1

The Atomic and Molecular Data Information System

AMDIS is the **A**tomic and **M**olecular **D**ata **I**nformation **S**ystem of the International Atomic Energy Agency, established and maintained by the Atomic and Molecular Data Unit, Nuclear Data Section.

AMDIS contains two main parts: a bibliographic database for atomic and molecular data for fusion research: AMBDAS, and a numerical database of recommended and evaluated atomic, molecular and plasma-surface interaction data: ALADDIN.

AMBDAS, **A**tomic and **M**olecular **B**ibliographic **D**ata **S**ystem, is an on-line simple to use bibliographic data retrieval system. It contains more than 40,000 bibliographic entries with atomic, molecular and plasma-surface interaction data of interest to fusion research, dating back to 1950. It contains all references published in the International Bulletin on Atomic and Molecular Data for Fusion, CIAMDA 80, CIAMDA 87, and CIAMDA 98. Entries may be retrieved by author, process, reactants, type of reference, year of publication, energy range and data source (theoretical or experimental). The interface is a web-based application, and only requires a web-browser for use, no registration is required.

ALADDIN, **A L**abelled **A**tomic **D**ata **IN**terface, is a database system developed in order to provide a standard and flexible format and interface for the exchange and management of numerical atomic, molecular and plasma-material interaction data of interest to fusion research. It was originally designed by R. Hulse at the Princeton Plasma Physics Laboratory. It is the system adopted by the IAEA and the Atomic Data Centre Network, an international group of fourteen data centres from several countries, for the exchange of data since 1988. AMDIS now contains a new interface to ALADDIN. ALADDIN has recently been converted to an entirely web-driven system, which can be accessed from the Unit homepage at **http://www-amdis.iaea.org**. It is a simple to use interface that facilitates searching for recommended or evaluated atomic, molecular, plasma-surface interaction and material properties data. Options to plot selected data are also available. An ALADDIN entry consists on searchable (hierarchical) labels that characterize the process, reactants and any other important information; boolean labels which give information about the source, year, laboratory or data centre, and reference; comment lines and the numerical data. The data may be given by a parametrization through an analytic fit or the data itself. With the web interface the user may also obtain a figure with data and labels, text accompanying the data, and the Fortran source of the evaluation function.

Chapter 2

INDEXATION

2.1 Structure and Spectra

Fe^{17+}	Trans. prob., Oscill. Strengths	Th	1
K^{7+}	Trans. prob., Oscill. Strengths	Th	2
Ti^{10+}	Trans. prob., Oscill. Strengths	Th	2
O^{2+}	Trans. prob., Oscill. Strengths	Exp	3
Si^{5+}	Trans. prob., Oscill. Strengths	Th	4
Si^{6+}	Trans. prob., Oscill. Strengths	Th	4
Si^{7+}	Trans. prob., Oscill. Strengths	Th	4
Si^{8+}	Trans. prob., Oscill. Strengths	Th	4
Si^{9+}	Trans. prob., Oscill. Strengths	Th	4
Si^{10+}	Trans. prob., Oscill. Strengths	Th	4
Si^{11+}	Trans. prob., Oscill. Strengths	Th	4
Ne^{4+}	Trans. prob., Oscill. Strengths	Th	5
Ne^{5+}	Trans. prob., Oscill. Strengths	Th	5
Ne^{6+}	Trans. prob., Oscill. Strengths	Th	5
Ne^{7+}	Trans. prob., Oscill. Strengths	Th	5
Zr^{2+}	Trans. prob., Oscill. Strengths	Th	6
Nb^{3+}	Trans. prob., Oscill. Strengths	Th	6
Ar^{10+}	Trans. prob., Oscill. Strengths	Th	7
Ar^{11+}	Trans. prob., Oscill. Strengths	Th	7
Ar^{12+}	Trans. prob., Oscill. Strengths	Th	7
Ar^{13+}	Trans. prob., Oscill. Strengths	Th	7
Ar^{14+}	Trans. prob., Oscill. Strengths	Th	7
Ar^{15+}	Trans. prob., Oscill. Strengths	Th	7
Ar^{16+}	Trans. prob., Oscill. Strengths	Th	7
Fe^{6+}	Trans. prob., Oscill. Strengths	Th	8
Fe^{7+}	Trans. prob., Oscill. Strengths	Th	8
Be Z= 4-12	Trans. prob., Oscill. Strengths	Th	9
B Z= 5-14	Trans. prob., Oscill. Strengths	Th	9
C Z= 6-13	Trans. prob., Oscill. Strengths	Th	9
N Z= 7-12	Trans. prob., Oscill. Strengths	Th	9
O Z= 8-12	Trans. prob., Oscill. Strengths	Th	9
F Z= 9-14	Trans. prob., Oscill. Strengths	Th	9
Ne Z= 10-16	Trans. prob., Oscill. Strengths	Th	9
Pd Z= 54-58	Trans. prob., Oscill. Strengths	Th	10
O Z= 20-30	Trans. prob., Oscill. Strengths	Th	11
Ne	Trans. prob., Oscill. Strengths	Th	12
Al Z= 15-100	Trans. prob., Oscill. Strengths	Th	13
Ag Z= 47-60	Trans. prob., Oscill. Strengths	Th	14
Ag Z= 47-100	Trans. prob., Oscill. Strengths	Th	14
Cl^{5+}	Trans. prob., Oscill. Strengths	Th	15

Ar^{5+}	Trans. prob., Oscill. Strengths	Th	16
B^{+}	Trans. prob., Oscill. Strengths	Th	17
C^{2+}	Trans. prob., Oscill. Strengths	Th	17
Ar	Trans. prob., Oscill. Strengths	Th	18
Ni^{26+}	Trans. prob., Oscill. Strengths	Exp	19
Ni^{24+}	Trans. prob., Oscill. Strengths	Th	20
Fe^{12+}	Trans. prob., Oscill. Strengths	Th	21
Fe^{12+}	Trans. prob., Oscill. Strengths	Th	22
Xe^{10+}	Trans. prob., Oscill. Strengths	Th	23
Si^{+}	Trans. prob., Oscill. Strengths	Th	24
Kr	Trans. prob., Oscill. Strengths	Exp	25
Fe^{16+}	Trans. prob., Oscill. Strengths	Th	26
Fe^{18+}	Trans. prob., Oscill. Strengths	Th	27
Cl^{+}	Trans. prob., Oscill. Strengths	Th	28
Fe^{9+}	Trans. prob., Oscill. Strengths	Th	29
Ar^{12+}	Trans. prob., Oscill. Strengths	Th	30
Li Z= 11-20	Trans. prob., Oscill. Strengths	Th	31
Si Z= 24-30	Trans. prob., Oscill. Strengths	Th	32
Fe^{7+}	Trans. prob., Oscill. Strengths	Th	33
Fe^{8+}	Trans. prob., Oscill. Strengths	Th	33
S^{4+}	Trans. prob., Oscill. Strengths	Th	34
Fe^{14+}	Trans. prob., Oscill. Strengths	Th	34
O^{3+}	Trans. prob., Oscill. Strengths	Th	35
Li Z= 6-26	Trans. prob., Oscill. Strengths	Th	36
Li Z= 6-100	Trans. prob., Oscill. Strengths	Th	36
Ar^{15+}	Trans. prob., Oscill. Strengths	Th	36
Fe^{23+}	Trans. prob., Oscill. Strengths	Th	36
U^{89+}	Trans. prob., Oscill. Strengths	Th	36
H Z= 1-118	Trans. prob., Oscill. Strengths	Th	37
Fe^{9+}	Trans. prob., Oscill. Strengths	Th	38
Fe^{16+}	Trans. prob., Oscill. Strengths	Th	39
Fe^{12+}	Trans. prob., Oscill. Strengths	Th	40
C	Trans. prob., Oscill. Strengths	Th	41
C^{3+}	Trans. prob., Oscill. Strengths	Th	42
O^{5+}	Trans. prob., Oscill. Strengths	Th	43
Ti^{9+}	Trans. prob., Oscill. Strengths	Th	44
Mo^{4+}	Trans. prob., Oscill. Strengths	Th	45
Ni Z= 30-100	Trans. prob., Oscill. Strengths	Th	46
Ni Z= 50-90	Trans. prob., Oscill. Strengths	Th	46
W^{46+}	Trans. prob., Oscill. Strengths	Th	46
Bi^{55+}	Trans. prob., Oscill. Strengths	Th	46
U^{64+}	Trans. prob., Oscill. Strengths	Th	46
Zr^{2+}	Trans. prob., Oscill. Strengths	Exp	47

2.2 Atomic and Molecular Collisions

2.2.1 Photon Collisions

hν + Mg^{+}	Photoionization	59-97 eV	E/T	48
hν + Al^{2+}	Photoionization	59-97 eV	E/T	48
hν + Ne	Photoionization	91.7-92.7 eV	E/T	49
hν + He	Photoionization	60-110 eV	Th	50
hν + He^{*}	Photoionization	60-110 eV	Th	50
hν + Xe	Photoionization	90-225 eV	Exp	51
hν + $H_2{}^{+}$	Photodissociation	400-800 nm	Th	52

hν + D_2^+	Photodissociation	400-800 nm	Th	52
hν + H_2^+	Photoionization	800-1064 nm	Th	53
hν + H_3^{2+}	Photoionization	800-1064 nm	Th	53
hν + H_2^+	Photodissociation	5.71 eV	Th	54
hν + H_2^+	Photoexcitation	5.71 eV	Th	54
hν + H_2^+	Photoionization	5.71 eV	Th	54
hν + H	Photoionization	0-60 eV	Th	55
hν + H_2^+	Photoionization	0-60 eV	Th	55
nhν + H	Photoionization	0-60 eV	Th	55
nhν + H_2^+	Photoionization	0-60 eV	Th	55
hν + Rb	Total Absorption, Scattering	35-61 eV	Exp	56
hν + Sr^{2+}	Total Absorption, Scattering	35-61 eV	Exp	56
hν + Rb	Photoionization	35-61 eV	Exp	56
hν + Sr^{2+}	Photoionization	35-61 eV	Exp	56
hν + Be	Photoionization	25-80 eV	Th	57
hν + Si	Total Absorption, Scattering	5-20 keV	Exp	58
hν + Kr	Photoionization	14.3-14.4 keV	Exp	59
hν + H_2^+	Photodissociation	800 nm	Th	60
nhν + H_2^+	Photodissociation	800 nm	Th	60
hν + H_2^+	Photoionization	800 nm	Th	60
nhν + H_2^+	Photoionization	800 nm	Th	60
hν + Ne	Photoionization	0-1500 eV	E/T	61
hν + Kr	Photoexcitation	3-10 eV	E/T	62
hν + Xe	Photoexcitation	3-10 eV	E/T	62
hν + Kr	Photoionization	3-10 eV	E/T	62
hν + Xe	Photoionization	3-10 eV	E/T	62
hν + H^-	Photodetachment	0.76-0.88 Ry; 14-40 eV	E/T	63
hν + Ga	Photoionization	0-100 eV	E/T	64
hν + H_2^+	Photodissociation	400 nm	E/T	65
hν + D_2^+	Photodissociation	400 nm	E/T	65
hν + Au	Fluorescence	88 keV	E/T	66
hν + Au	Photoionization	88 keV	E/T	66
hν + Li^-	Photodetachment	0.012-0.02 a.u.	Th	67
hν + He	Photoionization	40.7-47 eV	Th	68
nhν + He	Photoionization	40.7-47 eV	Th	68
hν + CO_2	Photoionization	290-340 eV	E/T	69
hν + Sc	Photoionization	397-410 eV	E/T	70
hν + Ne	Photon Collisions	180-880 eV	E/T	71
hν + H_2O	Photon Collisions	180-880 eV	E/T	71
hν + CO_2	Photon Collisions	180-880 eV	E/T	71
hν + BF_3	Photon Collisions	180-880 eV	E/T	71
hν + Ne	Photoionization	100-1100 nm	Th	72
nhν + Ne	Photoionization	100-1100 nm	Th	72
hν + H_2^+	Photodissociation		Th	73
nhν + H_2^+	Photodissociation		Th	73
hν + H	Photoionization		Th	73
hν + H_2^+	Photoionization		Th	73
nhν + H	Photoionization		Th	73
nhν + H_2^+	Photoionization		Th	73
hν + SF_6	Photoionization	168-205 eV	Exp	74
hν + H_2^+	Photoexcitation	0.6 a.u.	Th	75
hν + H_2^+	Photoionization	0.6 a.u.	Th	75
hν + Yb	Fluorescence	59.54 keV	Exp	76
hν + Hf	Fluorescence	59.54 keV	Exp	76
hν + Ta	Fluorescence	59.54 keV	Exp	76
hν + W	Fluorescence	59.54 keV	Exp	76
hν + Pb	Fluorescence	59.54 keV	Exp	76

$h\nu$ + **Yb**	Photoionization	59.54 keV	Exp	76
$h\nu$ + **Hf**	Photoionization	59.54 keV	Exp	76
$h\nu$ + **Ta**	Photoionization	59.54 keV	Exp	76
$h\nu$ + **W**	Photoionization	59.54 keV	Exp	76
$h\nu$ + **Pb**	Photoionization	59.54 keV	Exp	76
$h\nu$ + **H**	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{He}^{+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Li}^{2+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Be}^{3+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{B}^{4+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{C}^{5+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{N}^{6+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{O}^{7+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{F}^{8+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ne}^{9+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Na}^{10+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Mg}^{11+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Al}^{12+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Si}^{13+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{P}^{14+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{S}^{15+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Cl}^{16+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ar}^{17+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ar}^{70+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{K}^{18+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ca}^{19+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Sc}^{20+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ti}^{21+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{V}^{22+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Cr}^{23+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Mn}^{24+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Fe}^{25+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Co}^{26+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ni}^{27+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Cu}^{28+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Zn}^{29+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ga}^{30+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ge}^{31+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{As}^{32+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Se}^{33+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Br}^{34+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Kr}^{35+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Rb}^{36+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Sr}^{37+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Y}^{38+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Zr}^{39+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Nb}^{40+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Mo}^{41+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Tc}^{42+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ru}^{43+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Rh}^{44+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Pd}^{45+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Ag}^{46+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Cd}^{47+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{In}^{48+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Sn}^{49+}$	Photoionization	1.05 threshold	Th	77
$h\nu$ + $\mathbf{Sb}^{50+}$	Photoionization	1.05 threshold	Th	77

$h\nu + Te^{51+}$	Photoionization	1.05 threshold	Th	77
$h\nu + I^{52+}$	Photoionization	1.05 threshold	Th	77
$h\nu + Xe^{53+}$	Photoionization	1.05 threshold	Th	77
$h\nu + Cs^{54+}$	Photoionization	1.05 threshold	Th	77
$h\nu + Ba^{55+}$	Photoionization	1.05 threshold	Th	77
$h\nu + La^{56+}$	Photoionization	1.05 threshold	Th	77
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$h\nu + Ta^{58+}$	Photoionization	1.05 threshold	Th	77
$h\nu + W^{59+}$	Photoionization	1.05 threshold	Th	77
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$h\nu + Au^{64+}$	Photoionization	1.05 threshold	Th	77
$h\nu + Hg^{65+}$	Photoionization	1.05 threshold	Th	77
$h\nu + Tl^{66+}$	Photoionization	1.05 threshold	Th	77
$h\nu + Pb^{67+}$	Photoionization	1.05 threshold	Th	77
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$h\nu + Fe^{9+}$	Photoexcitation		Exp	81
$h\nu + Fe^{12+}$	Photoexcitation		Exp	81
$h\nu + Na$	Photoionization	2.84 eV	Th	82
$h\nu + Na_{93}{}^{+}$	Photoionization	2.84 eV	Th	82
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$h\nu + N_2O^*$	Photodissociation	400-440 eV	Exp	83
$h\nu + N_2O$	Photoionization	400-440 eV	Exp	83
$h\nu + N_2O^*$	Photoionization	400-440 eV	Exp	83
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$h\nu + O_2$	Photoionization	20-24.8 eV	Exp	85
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$h\nu + K^-$	Photodetachment	0.01-0.1 a.u.	Th	87
$h\nu + H$	Photoionization	10-90 nm	Th	88
$2h\nu + H$	Photoionization	10-90 nm	Th	88
$h\nu + Ne$	Photoionization	0.75-1.05 keV	Th	89
$h\nu + Ar$	Photoionization	0.75-1.05 keV	Th	89
$h\nu + Sr^-$	Photodetachment	0-10 eV	Th	90
$h\nu + Ba^-$	Photodetachment	0-10 eV	Th	90
$h\nu + Xe$	Photoionization	4.814-5.055 keV	E/T	91
$h\nu + Co$	Fluorescence	807-969 eV	E/T	92
$h\nu + Ni$	Fluorescence	807-969 eV	E/T	92
$h\nu + Cu$	Fluorescence	807-969 eV	E/T	92
$h\nu + Ne$	Photoexcitation	44-49 eV	E/T	93
$h\nu + Ne$	Photoionization	44-49 eV	E/T	93
$h\nu + N_2$	Photodissociation	24-32 eV	Exp	94
$h\nu + N_2$	Photoionization	24-32 eV	Exp	94
$h\nu + Mo^+$	Total Absorption, Scattering	500-200 $\AA$	Exp	95
$h\nu + H^-$	Photodetachment	0.035 a.u.	Th	96
$h\nu + Cs$	Photoionization	725-760 eV	Th	97
$h\nu + CO_2$	Total Absorption, Scattering	4950-5010 cm^{-1}	Exp	98
$h\nu + He^+$	Photoionization	0-1 a.u.	Th	99

$h\nu$ + Li^+	Photoionization	0-1 a.u.	Th	99
$h\nu$ + Be^{2+}	Photoionization	0-1 a.u.	Th	99
$h\nu$ + C^{4+}	Photoionization	0-1 a.u.	Th	99
$h\nu$ + O^{6+}	Photoionization	0-1 a.u.	Th	99
$h\nu$ + Ne	Photoionization	5000 eV	Exp	100
$h\nu$ + Cr	Photoionization	24-56 eV	Th	101
$h\nu$ + Mn	Photoionization	24-56 eV	Th	101
$h\nu$ + Cs_2D	Photodissociation	10856.5 cm^{-1}	Exp	102
$h\nu$ + Cs_2H	Photodissociation	10856.5 cm^{-1}	Exp	102
$h\nu$ + Cs_2D	Photoexcitation	10856.5 cm^{-1}	Exp	102
$h\nu$ + Cs_2H	Photoexcitation	10856.5 cm^{-1}	Exp	102
$h\nu$ + He	Photoionization		Th	103
$h\nu$ + O^-	Photodetachment	11,781-11,788 cm^{-1}	Exp	104
$h\nu$ + NO	Photoionization	3x10^{10} W/cm^2	Th	105
$h\nu$ + Ar	Photoionization	800 nm	E/T	106
$h\nu$ + He	Photoionization	85 eV	Th	107
$h\nu$ + Fe^{17+}	Photoexcitation		Th	108
$h\nu$ + Fe^{18+}	Photoexcitation		Th	108
$h\nu$ + Fe^{19+}	Photoexcitation		Th	108
$h\nu$ + Fe^{20+}	Photoexcitation		Th	108
$h\nu$ + Fe^{21+}	Photoexcitation		Th	108
$h\nu$ + Fe^{22+}	Photoexcitation		Th	108
$h\nu$ + Fe^{23+}	Photoexcitation		Th	108
$h\nu$ + Fe^{24+}	Photoexcitation		Th	108
$h\nu$ + C	Photoexcitation	15,652-10,003 $\AA$	Exp	109
$h\nu$ + Si	Photoexcitation	15,652-10,003 $\AA$	Exp	109
$h\nu$ + Ca	Photoexcitation	15,652-10,003 $\AA$	Exp	109
$h\nu$ + Ti	Photoexcitation	15,652-10,003 $\AA$	Exp	109
$h\nu$ + Cr	Photoexcitation	15,652-10,003 $\AA$	Exp	109
$h\nu$ + Fe	Photoexcitation	15,652-10,003 $\AA$	Exp	109
$h\nu$ + Sc^{8+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Ti^{9+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + V^{10+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Cr^{11+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Mn^{12+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Fe^{13+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Co^{14+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Co^{16+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Ni^{15+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Zn^{17+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Ga^{18+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Ge^{19+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + As^{20+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Se^{21+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Br^{22+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Kr^{23+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Rb^{24+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Sr^{25+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Y^{26+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Zr^{27+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Nb^{28+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Mo^{29+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Tc^{30+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Ru^{31+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Rh^{32+}	Photoexcitation	17,370-26.4 $\AA$	Th	110
$h\nu$ + Pd^{33+}	Photoexcitation	17,370-26.4 $\AA$	Th	110

hν + Ag^{34+}	Photoexcitation	17,370-26.4 Å	Th	110
hν + Cd^{35+}	Photoexcitation	17,370-26.4 Å	Th	110
hν + In^{36+}	Photoexcitation	17,370-26.4 Å	Th	110
hν + Sn^{37+}	Photoexcitation	17,370-26.4 Å	Th	110
hν + Sb^{38+}	Photoexcitation	17,370-26.4 Å	Th	110
hν + O^{2+}	Photoexcitation	350 nm	Exp	111
hν + O^{3+}	Photoexcitation	350 nm	Exp	111
hν + Fe^{16+}	Photoexcitation	50 Ry	Th	112
hν + Os	Photoexcitation	5000-3000 Å	Exp	113
hν + Ir	Photoexcitation	5000-3000 Å	Exp	113
hν + Fe^{+}	Photoexcitation	6400 eV	Th	114
hν + Fe^{2+}	Photoexcitation	6400 eV	Th	114
hν + Fe^{3+}	Photoexcitation	6400 eV	Th	114
hν + Fe^{4+}	Photoexcitation	6400 eV	Th	114
hν + Fe^{5+}	Photoexcitation	6400 eV	Th	114
hν + Fe^{6+}	Photoexcitation	6400 eV	Th	114
hν + Fe^{7+}	Photoexcitation	6400 eV	Th	114
hν + Fe^{8+}	Photoexcitation	6400 eV	Th	114
hν + Fe^{19+}	Photoexcitation	5000-10 Å	Th	115
hν + Fe^{9+}	Photoexcitation	2 Å	Th	116
hν + Fe^{10+}	Photoexcitation	2 Å	Th	116
hν + Fe^{11+}	Photoexcitation	2 Å	Th	116
hν + Fe^{12+}	Photoexcitation	2 Å	Th	116
hν + Fe^{13+}	Photoexcitation	2 Å	Th	116
hν + Fe^{14+}	Photoexcitation	2 Å	Th	116
hν + Fe^{15+}	Photoexcitation	2 Å	Th	116
hν + Fe^{16+}	Photoexcitation	2 Å	Th	116
hν + Ar^{8+}	Photoexcitation	50-20 Å	E/T	117
hν + Ar^{9+}	Photoexcitation	50-20 Å	E/T	117
hν + Ar^{10+}	Photoexcitation	50-20 Å	E/T	117
hν + Ar^{11+}	Photoexcitation	50-20 Å	E/T	117
hν + Ar^{12+}	Photoexcitation	50-20 Å	E/T	117
hν + Ar^{13+}	Photoexcitation	50-20 Å	E/T	117
hν + Ar^{14+}	Photoexcitation	50-20 Å	E/T	117
hν + Ar^{15+}	Photoexcitation	50-20 Å	E/T	117
hν + Be Z= ?-?	Photoexcitation		Th	118
hν + F Z= ?-?	Photoexcitation		Th	118
hν + Be	Photoexcitation		Th	118
hν + B^{+}	Photoexcitation		Th	118
hν + C^{2+}	Photoexcitation		Th	118
hν + N^{3+}	Photoexcitation		Th	118
hν + O^{4+}	Photoexcitation		Th	118
hν + F	Photoexcitation		Th	118
hν + F^{5+}	Photoexcitation		Th	118
hν + Ne^{+}	Photoexcitation		Th	118
hν + Ne^{6+}	Photoexcitation		Th	118
hν + Na^{2+}	Photoexcitation		Th	118
hν + Na^{7+}	Photoexcitation		Th	118
hν + Mg^{3+}	Photoexcitation		Th	118
hν + Mg^{8+}	Photoexcitation		Th	118
hν + Al^{4+}	Photoexcitation		Th	118
hν + Al^{9+}	Photoexcitation		Th	118
hν + Si^{5+}	Photoexcitation		Th	118
hν + Si^{10+}	Photoexcitation		Th	118
hν + P^{6+}	Photoexcitation		Th	118
hν + P^{11+}	Photoexcitation		Th	118

$\mathbf{h}\nu + \mathbf{S}^{7+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{S}^{12+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Cl}^{8+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Cl}^{13+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ar}^{9+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ar}^{14+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{K}^{10+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{K}^{15+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ca}^{11+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ca}^{16+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Sc}^{12+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Sc}^{17+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ti}^{13+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ti}^{18+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{V}^{14+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{V}^{19+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Cr}^{15+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Cr}^{20+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Mn}^{16+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Mn}^{21+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Fe}^{17+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Fe}^{22+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Co}^{18+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Co}^{23+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ni}^{19+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ni}^{24+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Cu}^{20+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Cu}^{25+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Zn}^{21+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Zn}^{26+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ga}^{22+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ga}^{27+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ge}^{23+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Ge}^{28+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{As}^{24+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{As}^{29+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Se}^{25+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Se}^{30+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Br}^{26+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Kr}^{27+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Rb}^{28+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Sr}^{29+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{Y}^{30+}$	Photoexcitation		Th	118
$\mathbf{h}\nu + \mathbf{FeH}$	Photoexcitation	10,000 cm^{-1}	Th	119
$\mathbf{h}\nu + \mathbf{Sn}^{+}$	Photoexcitation	1500 $\AA$	E/T	120
$\mathbf{h}\nu + \mathbf{Ne}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{Na}^{+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{Mg}^{2+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{Al}^{3+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{Si}^{4+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{P}^{5+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{S}^{6+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{Cl}^{7+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{Ar}^{8+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{K}^{9+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{Ca}^{10+}$	Photoionization	200-21,500 eV	Th	121
$\mathbf{h}\nu + \mathbf{Sc}^{11+}$	Photoionization	200-21,500 eV	Th	121

hν + Ti^{12+}	Photoionization	200-21,500 eV	Th	121
hν + V^{13+}	Photoionization	200-21,500 eV	Th	121
hν + Cr^{14+}	Photoionization	200-21,500 eV	Th	121
hν + Mn^{15+}	Photoionization	200-21,500 eV	Th	121
hν + Fe^{16+}	Photoionization	200-21,500 eV	Th	121
hν + C^{-}	Photodetachment	280-285 eV	E/T	122
hν + N$_2$	Total Absorption, Scattering	410-422 eV	Exp	123
hν + N$_2$	Photoexcitation	410-422 eV	Exp	123
hν + N$_2$	Photoionization	410-422 eV	Exp	123
hν + Ar	Total Absorption, Scattering	978.7-922.7 nm	E/T	124
hν + Xe	Fluorescence	3500-6750 eV	Exp	125
hν + Ba	Fluorescence	3500-6750 eV	Exp	125
hν + La	Fluorescence	3500-6750 eV	Exp	125
hν + Pr	Fluorescence	3500-6750 eV	Exp	125
hν + Nd	Fluorescence	3500-6750 eV	Exp	125
hν + Sm	Fluorescence	3500-6750 eV	Exp	125
hν + Gd	Fluorescence	3500-6750 eV	Exp	125
hν + Tb	Fluorescence	3500-6750 eV	Exp	125
hν + Dy	Fluorescence	3500-6750 eV	Exp	125
hν + Ho	Fluorescence	3500-6750 eV	Exp	125
hν + Yb	Fluorescence	3500-6750 eV	Exp	125
hν + W	Fluorescence	3500-6750 eV	Exp	125
hν + Ir	Fluorescence	3500-6750 eV	Exp	125
hν + Sc^{2+}	Photoionization	23-68 eV	Exp	126
hν + Kr	Total Absorption, Scattering	20-900 eV	Exp	127
hν + Kr	Photoexcitation	20-900 eV	Exp	127
hν + Kr	Photoionization	20-900 eV	Exp	127
hν + HeH^{+}	Total Absorption, Scattering	15-800 eV	Th	128
hν + O$_2$	Photoionization	19-31 eV	Exp	129
hν + N$_2$	Photoionization	19-34 eV	Exp	130
hν + H$_2$O	Total Absorption, Scattering	1216 nm	Exp	131
hν + CH$_4$	Total Absorption, Scattering	1216 nm	Exp	131
hν + H	Free-Free Transition	2x10^{13} - 8x10^{13} W/cm^2	Th	132
hν + H	Photoionization	2x10^{13} - 8x10^{13} W/cm^2	Th	132
hν + Ca	Photoionization	10^{10}-10^{12} W/cm^2	Th	133
2hν + Ca	Photoionization	10^{10}-10^{12} W/cm^2	Th	133
hν + Ne	Photoexcitation	11.4-20.4 eV	Th	134
hν + Ar	Photoexcitation	11.4-20.4 eV	Th	134
hν + Kr	Photoexcitation	11.4-20.4 eV	Th	134
hν + Xe	Photoexcitation	11.4-20.4 eV	Th	134
nhν + Ne	Photoexcitation	11.4-20.4 eV	Th	134
nhν + Ar	Photoexcitation	11.4-20.4 eV	Th	134
nhν + Kr	Photoexcitation	11.4-20.4 eV	Th	134
nhν + Xe	Photoexcitation	11.4-20.4 eV	Th	134
hν + Kr	Photoionization	11-8000 eV	Exp	135
hν + N$_2$	Fluorescence	18-400 eV	E/T	136
hν + N$_2$	Photoexcitation	18-400 eV	E/T	136
hν + Xe	Photoionization	650-730 eV	Th	137
hν + O$_2$	Photodissociation	239-218 nm	Exp	138
hν + He	Photoexcitation	70-1500 eV	Th	139
hν + He	Photoionization	70-1500 eV	Th	139
hν + Cr^{14+}	Photoexcitation		Th	140
hν + Fe^{16+}	Photoexcitation		Th	140
hν + Ni^{18+}	Photoexcitation		Th	140
hν + Zn^{20+}	Photoexcitation		Th	140
hν + Ge^{22+}	Photoexcitation		Th	140
hν + Se^{24+}	Photoexcitation		Th	140

hν + Kr^{26+}	Photoexcitation		Th	140
hν + He^{+}	Photoionization	50-170 eV	Exp	141
hν + Ba^{2+}	Photoionization	50-170 eV	Exp	141
hν + Ba^{3+}	Photoionization	50-170 eV	Exp	141
hν + Ba^{4+}	Photoionization	50-170 eV	Exp	141
hν + Ba^{5+}	Photoionization	50-170 eV	Exp	141
hν + Sm^{2+}	Photoionization	50-170 eV	Exp	141
hν + Sc^{2+}	Photoionization	8-50 eV	Exp	142
hν + C^{2+}	Photoionization	40-56 eV	Exp	143
hν + Ir	Photoexcitation	60 keV	Exp	144
hν + Pt	Photoexcitation	60 keV	Exp	144
hν + Pb	Photoexcitation	60 keV	Exp	144
hν + Bi	Photoexcitation	60 keV	Exp	144
hν + Ir	Photoionization	60 keV	Exp	144
hν + Pt	Photoionization	60 keV	Exp	144
hν + Pb	Photoionization	60 keV	Exp	144
hν + Bi	Photoionization	60 keV	Exp	144
hν + He^{-}	Photodetachment	261-250 μ m	Exp	145
hν + Mg	Photoionization	14-17 eV	E/T	146
nhν + Mg	Photoionization	14-17 eV	E/T	146
hν + Ar	Photoionization	38.7-51 eV	Exp	147
hν + Kr	Photoionization	38.7-51 eV	Exp	147
hν + Xe	Photoionization	38.7-51 eV	Exp	147
hν + He	Photoexcitation	65-65.2 eV	Exp	148
hν + F^{-}	Photodetachment	1.8 μ m	Exp	149
hν + Cl^{9+}	Photoexcitation	Undef	Th	150
hν + Th	Fluorescence	60 keV	Exp	151
hν + U	Fluorescence	60 keV	Exp	151
hν + Th	Photoionization	60 keV	Exp	151
hν + U	Photoionization	60 keV	Exp	151
hν + Re	Fluorescence	60 keV	Exp	152
hν + Au	Fluorescence	60 keV	Exp	152
hν + Tl	Fluorescence	60 keV	Exp	152
hν + Pb	Fluorescence	60 keV	Exp	152
hν + Re	Photoionization	60 keV	Exp	152
hν + Au	Photoionization	60 keV	Exp	152
hν + Tl	Photoionization	60 keV	Exp	152
hν + Pb	Photoionization	60 keV	Exp	152
hν + Ni^{26+}	Photoexcitation		Th	153
hν + He	Photoionization		Th	154
hν + Mg	Photoionization		Th	154
hν + Fe^{+}	Photoexcitation	780-220 nm	Exp	155
hν + Fe^{9+}	Photoexcitation	637-530 nm	Exp	156
hν + Fe^{13+}	Photoexcitation	637-530 nm	Exp	156
hν + CO	Photoionization	3-18 eV	Exp	157
hν + H$_2$O	Photodissociation	10^{16} W/cm^2	Exp	158
hν + C$_6$H$_6$	Photodissociation	10^{16} W/cm^2	Exp	158
hν + H$_3$OH	Photodissociation	10^{16} W/cm^2	Exp	158
hν + H$_2$O	Photoionization	10^{16} W/cm^2	Exp	158
hν + C$_6$H$_6$	Photoionization	10^{16} W/cm^2	Exp	158
hν + CH$_3$OH	Photoionization	10^{16} W/cm^2	Exp	158
hν + He	Photoionization	10^{14} - 2x10^{15} W/cm^2	Th	159
hν + Be^{-}	Photodetachment	0.25-10 eV	Th	160
hν + Be^{-*}	Photodetachment	0.25-10 eV	Th	160
hν + Kr	Photoionization	325-1000 eV	Exp	161
hν + He	Photoionization	25-400 eV	E/T	162
hν + H$_2^{+}$	Photodissociation	1.2-2.6 eV	Th	163

hν + HD$^+$	Photodissociation	1.2-2.6 eV	Th	163
nhν + H$_2^+$	Photodissociation	1.2-2.6 eV	Th	163
nhν + HD$^+$	Photodissociation	1.2-2.6 eV	Th	163
hν + Kr	Photoionization	800 nm	Th	164
hν + He	Photoionization	57 eV	Th	165
hν + NH	Fluorescence	326 nm	Exp	166
hν + Kr	Elastic Scattering	112,868-113,867 cm^{-1}	E/T	167
hν + CH$_4$	Photoionization	280-360 eV	Th	168
hν + CF$_4$	Photoionization	280-360 eV	Th	168
hν + CCl$_4$	Photoionization	280-360 eV	Th	168
hν + HBr	Photoionization	50-1200 eV	Exp	169
hν + Cr	Photoionization	560-595 eV	Exp	170
hν + Mg	Photoionization	33 TW/cm^2	Exp	171
hν + H	Photoionization	scaled field strength	Th	172
hν + S$^-$	Photodetachment	10 V/m	E/T	173
hν + Xe*	Photoionization		Exp	174
hν + Cs	Total Absorption, Scattering	35.94-37.14 keV	Exp	175
hν + Cs	Photoexcitation	35.94-37.14 keV	Exp	175
hν + Cs	Photoionization	35.94-37.14 keV	Exp	175
hν + I$^-$	Photodetachment	0-300 eV	Th	176
hν + CO	Photoionization	0.52-0.549 a.u.	Th	177
nhν + CO	Photoionization	0.52-0.549 a.u.	Th	177
hν + C$_2$H$_2$	Fluorescence	43,550-43,740 cm^{-1}	Exp	178
hν + C$_6$H$_6$	Photoionization	800 nm	Th	179
nhν + C$_6$H$_6$	Photoionization	800 nm	Th	179
hν + H$^-$	Photodetachment	0.0046-0.022 a.u.	Th	180
hν + He	Total Absorption, Scattering	59.6-63.80 eV	Exp	181
hν + He	Fluorescence	59.6-63.80 eV	Exp	181
hν + He	Photoionization	59.6-63.80 eV	Exp	181
hν + Be	Photoionization	8-500 eV	Th	182
hν + He	Photoionization	99 eV	Th	183
hν + He	Photoionization	60-5000 eV	Th	184
hν + He*	Photoionization	60-5000 eV	Th	184
hν + H$_2$O	Total Absorption, Scattering	9-22 eV	Exp	185
hν + H$_2$O	Photoionization	9-22 eV	Exp	185
hν + H$_2^+$	Photodissociation	154 nm	Th	186
hν + H	Elastic Scattering		Th	187
hν + Bi	Fluorescence	46.5 keV	Exp	188
hν + Bi	Photoionization	46.5 keV	Exp	188
hν + Cl$^+$	Photoexcitation		Th	189
hν + Kr$^+$	Photoexcitation	91-93 eV	Th	190
hν + Kr$^+$	Photoionization	91-93 eV	Th	190
hν + Ne	Photoionization	800 nm	Exp	191
hν + Ar	Photoionization	800 nm	Exp	191
hν + Kr	Photoexcitation	90 eV	E/T	192
hν + Kr	Photoionization	90 eV	E/T	192
hν + B$^+$	Photoionization	22.4-31.3 eV	E/T	193
hν + C$^+$	Photoionization	780 nm	Th	194
hν + NH$_3$	Photodissociation	13-40 eV	Exp	195
hν + NH$_3$	Photoexcitation	13-40 eV	Exp	195
hν + NH$_3$	Photoionization	13-40 eV	Exp	195
hν + He	Photoionization	71-79 eV	Exp	196
hν + He*	Photoionization	71-79 eV	Exp	196
hν + Cr$^+$	Photoionization	40-58 eV	Exp	197
hν + Au	Photoionization	13 keV	Exp	198
hν + CsCl	Photoionization	8-22 eV	Exp	199
hν + Xe	Photoionization	110-250 eV	Exp	200

hν + Na	Photoionization	38.7-400 eV	Exp	201
hν + HCl^+	Photodissociation	0.12 eV	Th	202
hν + Li	Photon Collisions	140 eV	E/T	203
hν + Li	Fluorescence	140 eV	E/T	203
hν + Li	Photoexcitation	140 eV	E/T	203
hν + Fe	Fluorescence	7-15 keV	Exp	204
hν + Ni	Fluorescence	7-15 keV	Exp	204
hν + Zn	Fluorescence	7-15 keV	Exp	204
hν + Fe	Photoexcitation	7-15 keV	Exp	204
hν + Ni	Photoexcitation	7-15 keV	Exp	204
hν + Zn	Photoexcitation	7-15 keV	Exp	204
hν + He	Photoionization	0.057 a.u.	Th	205
hν + Sm	Photoionization	542.4-581.6 nm	Exp	206
hν + He	Fluorescence	21.218-24.5874 eV	Th	207
hν + He	Photoexcitation	21.218-24.5874 eV	Th	207
hν + NO	Photoionization	800 nm	Th	208
hν + O_2	Photoionization	800 nm	Th	208
hν + C_7	Photoionization	800 nm	Th	208
hν + CO_2	Photoexcitation	320 eV	Exp	209
hν + CO_2	Photoionization	320 eV	Exp	209
hν + Cr	Total Absorption, Scattering	37-52 eV	Exp	210
hν + Cr	Photoionization	37-52 eV	Exp	210
hν + He	Photoionization	780 nm	Th	211
hν + Ar	Total Absorption, Scattering	28.98-36.6 eV	Th	212
hν + Ar	Photoionization	28.98-36.6 eV	Th	212
hν + CO	Photoexcitation	16.5-19.75 eV	Exp	213
hν + CO	Photoionization	16.5-19.75 eV	Exp	213
hν + O_2	Photodissociation	20.2-25 eV	Exp	214
hν + O_2	Photoionization	20.2-25 eV	Exp	214
hν + He	Fluorescence	64.1-65.4 eV	Exp	215
hν + He	Photoexcitation	64.1-65.4 eV	Exp	215
hν + He	Fluorescence	64.9-65.4 eV	Exp	216
hν + He	Photoexcitation	64.9-65.4 eV	Exp	216
hν + H	Photoexcitation	$10^{3.5}$ - 10^8 K	Th	217
hν + He	Photoexcitation	$10^{3.5}$ - 10^8 K	Th	217
hν + C	Photoexcitation	$10^{3.5}$ - 10^8 K	Th	217
hν + O	Photoexcitation	$10^{3.5}$ - 10^8 K	Th	217
hν + S	Photoexcitation	$10^{3.5}$ - 10^8 K	Th	217
hν + Fe	Photoexcitation	$10^{3.5}$ - 10^8 K	Th	217
hν + Be^-	Photodetachment	4-4.5 a.u.	Th	218
hν + N_2	Fluorescence	50-66.5 eV	E/T	219
hν + N_2	Photoionization	50-66.5 eV	E/T	219
hν + Xe	Photoionization	8-40 eV	Exp	220
hν + Ar	Photoionization	250-254 eV	Th	221
hν + NaH	Photodissociation	395.57 nm	Th	222
hν + NaH	Photoexcitation	395.57 nm	Th	222
hν + H_2	Photodissociation	78 eV	Th	223
hν + He	Photoionization	78 eV	Th	223
hν + H_2	Photoionization	78 eV	Th	223
hν + H_2	Photodissociation	20-32.5 eV	E/T	224
hν + H_2	Photoionization	20-32.5 eV	E/T	224
hν + Li^-	Photodetachment	56.5-63.5 eV	E/T	225
hν + He	Photoionization	near threshold	Th	226
hν + Cr	Photoionization	720-850 eV	E/T	227
hν + Mn	Photoionization	720-850 eV	E/T	227
hν + Be	Photoionization	9-13 eV	E/T	228
hν + Si^{2+}	Photoionization	95-170 eV	E/T	229

hν + Cr	Photoionization	50-230 eV	E/T	230

2.2.2 Electron Collisions

e + He	Angular Scattering	0.6 keV	E/T	231
e + He	Ionization	0.6 keV	E/T	231
e + H	Angular Scattering	17.6 eV	E/T	232
e + H	Ionization	17.6 eV	E/T	232
e + H	Angular Scattering	54.4 eV	Th	233
e + H	Ionization	54.4 eV	Th	233
e + Ar	Fluorescence	10-24 keV	Exp	234
e + Ar	Ionization	10-24 keV	Exp	234
e + Ar^{16+}	Recombination	2160 eV	E/T	235
e + CO_2	Angular Scattering	0-8 eV	Th	236
e + CO_2	Excitation	0-8 eV	Th	236
e + C_2H_6	Elastic Scattering	5-40 eV	Th	237
e + Si_2H_6	Elastic Scattering	5-40 eV	Th	237
e + CH_3SiH_3	Elastic Scattering	5-40 eV	Th	237
e + CH_3GeH_3	Elastic Scattering	5-40 eV	Th	237
e + CH_3SnH_3	Elastic Scattering	5-40 eV	Th	237
e + SiH_3GeH_3	Elastic Scattering	5-40 eV	Th	237
e + SiH_3SnH_3	Elastic Scattering	5-40 eV	Th	237
e + Ge_2H_6	Elastic Scattering	5-40 eV	Th	237
e + GeH_3SnH_3	Elastic Scattering	5-40 eV	Th	237
e + Sn_2H_6	Elastic Scattering	5-40 eV	Th	237
e + C_2H_6	Angular Scattering	5-40 eV	Th	237
e + Si_2H_6	Angular Scattering	5-40 eV	Th	237
e + CH_3SiH_3	Angular Scattering	5-40 eV	Th	237
e + CH_3GeH_3	Angular Scattering	5-40 eV	Th	237
e + CH_3SnH_3	Angular Scattering	5-40 eV	Th	237
e + SiH_3GeH_3	Angular Scattering	5-40 eV	Th	237
e + SiH_3SnH_3	Angular Scattering	5-40 eV	Th	237
e + Ge_2H_6	Angular Scattering	5-40 eV	Th	237
e + GeH_3SnH_3	Angular Scattering	5-40 eV	Th	237
e + Sn_2H_6	Angular Scattering	5-40 eV	Th	237
e + O^+	Ionization	0-1000 eV	E/T	238
e + O^{2+}	Ionization	0-1000 eV	E/T	238
e + O^{3+}	Ionization	0-1000 eV	E/T	238
e + O^{4+}	Ionization	0-1000 eV	E/T	238
e + H	Angular Scattering	15.6-30 eV	Th	239
e + H	Ionization	15.6-30 eV	Th	239
e + Ba^+	Recombination	8 eV	Exp	240
e + U	Angular Scattering	300 keV	Th	241
e + U	Ionization	300 keV	Th	241
e + U^{81+}	Fluorescence	20 keV	E/T	242
e + U^{81+}	Excitation	20 keV	E/T	242
e + Si^{2+}	Excitation	2-10 eV	E/T	243
e + H	Elastic Scattering	0.76-0.88 Ry; 14-40 eV	E/T	244
e + H	Excitation	0.76-0.88 Ry; 14-40 eV	E/T	244
e + Ar	Ionization	500-750 eV	Exp	245
e + Ar	Ionization	2-85 eV	E/T	246
e + Kr	Ionization	2-85 eV	E/T	246
e + Pb^{82+}	Recombination	760-3000 keV	Th	247
e + U^{92+}	Recombination	760-3000 keV	Th	247
e + Mg	Elastic Scattering	0-0.5 eV	Th	248
e + Ca	Elastic Scattering	0-0.5 eV	Th	248

e + Sr	Elastic Scattering	0-0.5 eV	Th	248
e + Ar	Angular Scattering	561.4 eV	E/T	249
e + Ar	Ionization	561.4 eV	E/T	249
e + H	Angular Scattering	13.6-45 eV	Th	250
e + H	Ionization	13.6-45 eV	Th	250
e + SF	Elastic Scattering	0-15 eV	Th	251
e + SF	Excitation	0-15 eV	Th	251
e + He	Angular Scattering	24-60 eV	Th	252
e + He	Excitation	24-60 eV	Th	252
e + Ar	Ionization	0-0.25 Δ E/v	Th	253
e + Ar^{5+}	Ionization	0-0.25 Δ E/v	Th	253
e + Hg	Elastic Scattering	0.01-10 eV	Th	254
e + Hg	Total Scattering	0.01-10 eV	Th	254
e + $CHBr_3$	Attachment	0-10 eV	Exp	255
e + CHI_3	Attachment	0-10 eV	Exp	255
e + $CHBr_3$	Dissociation	0-10 eV	Exp	255
e + CHI_3	Dissociation	0-10 eV	Exp	255
e + Fe^{16+}	Excitation	535-85 eV	Th	256
e + Ar	Ionization	24 keV	Exp	257
e + He	Angular Scattering	240-640 eV	Th	258
e + He	Ionization	240-640 eV	Th	258
e + He	Ionization	30-3000 eV	Th	259
e + Xe	Elastic Scattering	2-150 eV	Th	260
e + Hg	Elastic Scattering	2-150 eV	Th	260
e + Xe	Angular Scattering	2-150 eV	Th	260
e + Hg	Angular Scattering	2-150 eV	Th	260
e + Li	Angular Scattering	500-5000 eV	Th	261
e + Li	Ionization	500-5000 eV	Th	261
e + C^{2+}	Excitation	0-150 eV	Th	262
e + He	Elastic Scattering	4-2000 eV	Exp	263
e + Ne	Elastic Scattering	4-2000 eV	Exp	263
e + Ar	Elastic Scattering	4-2000 eV	Exp	263
e + He	Excitation	4-2000 eV	Exp	263
e + Ne	Excitation	4-2000 eV	Exp	263
e + Ar	Excitation	4-2000 eV	Exp	263
e + He	Ionization	4-2000 eV	Exp	263
e + Ne	Ionization	4-2000 eV	Exp	263
e + Ar	Ionization	4-2000 eV	Exp	263
e + He	Angular Scattering	1099-100,099 eV	Th	264
e + He	Ionization	1099-100,099 eV	Th	264
e + Kr	Ionization	35.5-197.5 eV	E/T	265
e + C_2H_6	Excitation	1-10 eV	Exp	266
e + H_2^+	Dissociation	0-0.2 eV	Th	267
e + H_2^+	Recombination	0-0.2 eV	Th	267
e + CF_3Br	Elastic Scattering	5-30 eV	Th	268
e + CF_3I	Elastic Scattering	5-30 eV	Th	268
e + CF_3Cl	Elastic Scattering	5-30 eV	Th	268
e + CF_3Br	Angular Scattering	5-30 eV	Th	268
e + CF_3I	Angular Scattering	5-30 eV	Th	268
e + CF_3Cl	Angular Scattering	5-30 eV	Th	268
e + B^+	Excitation	1000-1,000,000 K	Th	269
e + B^{+*}	Excitation	1000-1,000,000 K	Th	269
e + Cl	Elastic Scattering	0.8-600 eV	Exp	270
e + Cl	Excitation	0.8-600 eV	Exp	270
e + Cl	Ionization	0.8-600 eV	Exp	270
e + He	Angular Scattering	1099-5599 eV	Th	271
e + He	Ionization	1099-5599 eV	Th	271

e + CF_3Br	Elastic Scattering	1.5-100 eV	E/T	272
e + CF_3Cl	Elastic Scattering	1.5-100 eV	E/T	272
e + CF_3Br	Angular Scattering	1.5-100 eV	E/T	272
e + CF_3Cl	Angular Scattering	1.5-100 eV	E/T	272
e + CF_3Br	Excitation	1.5-100 eV	E/T	272
e + CF_3Cl	Excitation	1.5-100 eV	E/T	272
e + Kr^{10+}	Ionization	0-5,000 eV	Th	273
e + Kr^{11+}	Ionization	0-5,000 eV	Th	273
e + Kr^{12+}	Ionization	0-5,000 eV	Th	273
e + Kr^{13+}	Ionization	0-5,000 eV	Th	273
e + Kr^{14+}	Ionization	0-5,000 eV	Th	273
e + Kr^{15+}	Ionization	0-5,000 eV	Th	273
e + Kr^{16+}	Ionization	0-5,000 eV	Th	273
e + Kr^{17+}	Ionization	0-5,000 eV	Th	273
e + Kr^{18+}	Ionization	0-5,000 eV	Th	273
e + Sr	Elastic Scattering	0-10 eV	Th	274
e + Ba	Elastic Scattering	0-10 eV	Th	274
e + Sr	Excitation	0-10 eV	Th	274
e + Ba	Excitation	0-10 eV	Th	274
e + H Z= ?-?	Excitation	1-10 Z^2 Ry	Th	275
e + C_4H_6	Dissociation	0.5-370 eV	Exp	276
e + C_4F_6	Dissociation	0.5-370 eV	Exp	276
e + C_4H_6	Elastic Scattering	0.5-370 eV	Exp	276
e + C_4F_6	Elastic Scattering	0.5-370 eV	Exp	276
e + C_4H_6	Excitation	0.5-370 eV	Exp	276
e + C_4F_6	Excitation	0.5-370 eV	Exp	276
e + C_4H_6	Ionization	0.5-370 eV	Exp	276
e + C_4F_6	Ionization	0.5-370 eV	Exp	276
e + H_2	Angular Scattering	1-20 eV	E/T	277
e + H_2O	Angular Scattering	1-20 eV	E/T	277
e + H_2	Excitation	1-20 eV	E/T	277
e + H_2O	Excitation	1-20 eV	E/T	277
e + H	Ionization	27.7 eV	E/T	278
e + He	Ionization	28.6-100 eV	E/T	279
e + Al	Bremsstrahlung	225-1706 keV	E/T	280
e + Cu	Bremsstrahlung	225-1706 keV	E/T	280
e + Sn	Bremsstrahlung	225-1706 keV	E/T	280
e + Pb	Bremsstrahlung	225-1706 keV	E/T	280
e + Li^{2+}	Elastic Scattering	0.2-9 Ry	Th	281
e + Be^{3+}	Elastic Scattering	0.2-9 Ry	Th	281
e + B^{4+}	Elastic Scattering	0.2-9 Ry	Th	281
e + Li^{2+}	Angular Scattering	0.2-9 Ry	Th	281
e + Be^{3+}	Angular Scattering	0.2-9 Ry	Th	281
e + B^{4+}	Angular Scattering	0.2-9 Ry	Th	281
e + Li^{2+}	Total Scattering	0.2-9 Ry	Th	281
e + Be^{3+}	Total Scattering	0.2-9 Ry	Th	281
e + B^{4+}	Total Scattering	0.2-9 Ry	Th	281
e + Li^{2+}	Excitation	0.2-9 Ry	Th	281
e + Be^{3+}	Excitation	0.2-9 Ry	Th	281
e + B^{4+}	Excitation	0.2-9 Ry	Th	281
e + Hg	Excitation	8 eV	E/T	282
e + Zn	Excitation	15-60 eV	E/T	283
e + Cd	Excitation	15-60 eV	E/T	283
e + Zn	Ionization	15-60 eV	E/T	283
e + Cd	Ionization	15-60 eV	E/T	283
e + CF	Elastic Scattering	0-10 eV	Th	284
e + CF	Excitation	0-10 eV	Th	284

e + CS_2	Elastic Scattering	0.6-4 eV	Exp	285
e + CS_2	Excitation	0.6-4 eV	Exp	285
e + OHCCHO	Ionization	800-1600 eV	Exp	286
e + $CH_3COCOCH_3$	Ionization	800-1600 eV	Exp	286
e + Ni^{17+}	Recombination	0-6.5 eV	Exp	287
e + He	Excitation	56-80 eV	Exp	288
e + H_2	Excitation	56-80 eV	Exp	288
e + Kr	Excitation	10-1000 eV	Exp	289
e + H	Angular Scattering	15.6 eV	Th	290
e + H	Ionization	15.6 eV	Th	290
e + Kr	Excitation	2500 eV	Exp	291
e + Ar	Excitation	3-200 keV	Th	292
e + Cr	Excitation	3-200 keV	Th	292
e + Mn	Excitation	3-200 keV	Th	292
e + Fe	Excitation	3-200 keV	Th	292
e + Ni	Excitation	3-200 keV	Th	292
e + Cu	Excitation	3-200 keV	Th	292
e + Ag	Excitation	3-200 keV	Th	292
e + Au	Excitation	3-200 keV	Th	292
e + Ni^{24+}	Excitation	6.3-8.3 log T(K)	Th	293
e + Fe^{23+}	Excitation	10^5-10^8 K	Th	294
e + O^{5+}	Recombination	10^3-10^7 K	Exp	295
e + O^{4+}	Recombination	10^2-10^6 K	Th	296
e + O^{5+}	Recombination	10^2-10^6 K	Th	296
e + Ca^{14+}	Excitation	0-300 Ry	Th	297
e + Ni^{17+}	Recombination	0-43 eV	E/T	298
e + Fe^{14+}	Excitation	0-160 Ry	Th	299
e + F^+	Recombination	1-10^5 eV	Th	300
e + Ne^{2+}	Recombination	1-10^5 eV	Th	300
e + Na^{3+}	Recombination	1-10^5 eV	Th	300
e + Mg^{4+}	Recombination	1-10^5 eV	Th	300
e + Al^{5+}	Recombination	1-10^5 eV	Th	300
e + Si^{6+}	Recombination	1-10^5 eV	Th	300
e + P^{7+}	Recombination	1-10^5 eV	Th	300
e + S^{8+}	Recombination	1-10^5 eV	Th	300
e + Cl^{9+}	Recombination	1-10^5 eV	Th	300
e + Ar^{10+}	Recombination	1-10^5 eV	Th	300
e + K^{11+}	Recombination	1-10^5 eV	Th	300
e + Ca^{12+}	Recombination	1-10^5 eV	Th	300
e + Ca^{40+}	Recombination	1-10^5 eV	Th	300
e + Sc^{13+}	Recombination	1-10^5 eV	Th	300
e + Ti^{14+}	Recombination	1-10^5 eV	Th	300
e + V^{15+}	Recombination	1-10^5 eV	Th	300
e + Cr^{16+}	Recombination	1-10^5 eV	Th	300
e + Mn^{17+}	Recombination	1-10^5 eV	Th	300
e + Fe^{18+}	Recombination	1-10^5 eV	Th	300
e + Co^{19+}	Recombination	1-10^5 eV	Th	300
e + Ni^{20+}	Recombination	1-10^5 eV	Th	300
e + Cu^{21+}	Recombination	1-10^5 eV	Th	300
e + Zn^{22+}	Recombination	1-10^5 eV	Th	300
e + Kr^{28+}	Recombination	1-10^5 eV	Th	300
e + Mo^{34+}	Recombination	1-10^5 eV	Th	300
e + Xe^{46+}	Recombination	1-10^5 eV	Th	300
e + B^+	Recombination	10^3-10^8 K	Th	301
e + C^{2+}	Recombination	10^3-10^8 K	Th	301
e + N^{3+}	Recombination	10^3-10^8 K	Th	301
e + O^{4+}	Recombination	10^3-10^8 K	Th	301

e + F^{5+}	Recombination	10^3-10^8 K	Th	301
e + Ne^{6+}	Recombination	10^3-10^8 K	Th	301
e + Na^{7+}	Recombination	10^3-10^8 K	Th	301
e + Mg^{8+}	Recombination	10^3-10^8 K	Th	301
e + Al^{9+}	Recombination	10^3-10^8 K	Th	301
e + Si^{10+}	Recombination	10^3-10^8 K	Th	301
e + P^{11+}	Recombination	10^3-10^8 K	Th	301
e + S^{12+}	Recombination	10^3-10^8 K	Th	301
e + Cl^{13+}	Recombination	10^3-10^8 K	Th	301
e + Ar^{14+}	Recombination	10^3-10^8 K	Th	301
e + K^{15+}	Recombination	10^3-10^8 K	Th	301
e + Ca^{16+}	Recombination	10^3-10^8 K	Th	301
e + Sc^{17+}	Recombination	10^3-10^8 K	Th	301
e + Ti^{18+}	Recombination	10^3-10^8 K	Th	301
e + V^{19+}	Recombination	10^3-10^8 K	Th	301
e + Cr^{20+}	Recombination	10^3-10^8 K	Th	301
e + Mn^{21+}	Recombination	10^3-10^8 K	Th	301
e + Fe^{22+}	Recombination	10^3-10^8 K	Th	301
e + Ni^{24+}	Recombination	10^3-10^8 K	Th	301
e + Zn^{26+}	Recombination	10^3-10^8 K	Th	301
e + Kr^{32+}	Recombination	10^3-10^8 K	Th	301
e + Mo^{38+}	Recombination	10^3-10^8 K	Th	301
e + Xe^{50+}	Recombination	10^3-10^8 K	Th	301
e + Ca^{6+}	Excitation	8-60 Ry	Th	302
e + Mg^{4+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Mg^{5+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Mg^{6+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Mg^{7+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Mg^{8+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Mg^{9+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Mg^{10+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Mg^{11+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Mg^{12+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{6+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{7+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{8+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{9+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{10+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{11+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{12+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{13+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Si^{14+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{8+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{9+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{10+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{11+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{12+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{13+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{14+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{15+}	Recombination	10^{-4}-10^4 eV	Th	303
e + S^{16+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Ar^{10+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Ar^{11+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Ar^{12+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Ar^{13+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Ar^{14+}	Recombination	10^{-4}-10^4 eV	Th	303
e + Ar^{15+}	Recombination	10^{-4}-10^4 eV	Th	303

e + Ar^{16+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ar^{17+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ar^{18+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{12+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{13+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{14+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{15+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{16+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{17+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{18+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{19+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ca^{20+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{18+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{19+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{20+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{21+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{22+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{23+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{24+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{25+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Fe^{26+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{20+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{21+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{22+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{23+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{24+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{25+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{26+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{27+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Ni^{28+}	Recombination	10^{-4}-10^{4} eV	Th	303
e + Mg^{2+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{3+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{4+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{5+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{6+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{7+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{8+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{9+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{10+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Mg^{11+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{4+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{5+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{6+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{7+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{8+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{9+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{10+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{11+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{12+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Si^{13+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{6+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{7+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{8+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{9+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{10+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{11+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{12+}	Recombination	-2 - 5 log(TeV)	Th	304

e + S^{13+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{14+}	Recombination	-2 - 5 log(TeV)	Th	304
e + S^{15+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{8+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{9+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{10+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{11+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{12+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{13+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{14+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{15+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{16+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ar^{17+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{10+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{11+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{12+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{13+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{14+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{15+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{16+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{17+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{18+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ca^{19+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{16+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{17+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{18+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{19+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{20+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{21+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{22+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{23+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{24+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{25+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{18+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{19+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{20+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{21+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{22+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{23+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{24+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{25+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{26+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Ni^{27+}	Recombination	-2 - 5 log(TeV)	Th	304
e + Fe^{16+}	Recombination	1-500 eV	Th	305
e + Fe^{17+}	Recombination	1-500 eV	Th	305
e + Fe^{18+}	Recombination	1-500 eV	Th	305
e + Fe^{19+}	Recombination	1-500 eV	Th	305
e + Fe^{20+}	Recombination	1-500 eV	Th	305
e + Fe^{21+}	Recombination	1-500 eV	Th	305
e + Fe^{22+}	Recombination	1-500 eV	Th	305
e + Fe^{23+}	Recombination	1-500 eV	Th	305
e + O^{5+}	Recombination	1.0-10^3 eV	Exp	306
e + Kr	Fluorescence	10-100 eV	Exp	307
e + Xe	Fluorescence	10-100 eV	Exp	307
e + Kr	Excitation	10-100 eV	Exp	307
e + Xe	Excitation	10-100 eV	Exp	307
e + C_3H_4	Elastic Scattering	0-40 eV	Th	308

e + C_3H_4	Angular Scattering	0-40 eV	Th	308
e + C_3H_4	Total Scattering	0-40 eV	Th	308
e + He^+	Excitation	100-300 eV	Th	309
e + He^+	Ionization	100-300 eV	Th	309
e + He	Angular Scattering	580 eV	Exp	310
e + He	Ionization	580 eV	Exp	310
e + O_2	Elastic Scattering	0.1-10 keV	E/T	311
e + O_2	Angular Scattering	0.1-10 keV	E/T	311
e + H_2	Excitation	0-1800 eV	Exp	312
e + Cd	Excitation	2.6-3.6 eV	Th	313
e + Cd	Ionization	2.6-3.6 eV	Th	313
e + Li^+	Excitation	4.6-9 Ry	Th	314
e + Ar	Ionization	11.5-28 eV	Exp	315
e + CH_4	Ionization	11.5-28 eV	Exp	315
e + H^-	Detachment	500-5000 eV	Th	316
e + H^-	Ionization	500-5000 eV	Th	316
e + Ne^{8+}	Excitation	65-130 Ry	Th	317
e + CO	Excitation	300-800 eV	Th	318
e + CO_2	Excitation	300-800 eV	Th	318
e + CS_2	Excitation	300-800 eV	Th	318
e + OCS	Excitation	300-800 eV	Th	318
e + He	Recombination	10-24 keV	Exp	319
e + Ne	Recombination	10-24 keV	Exp	319
e + C_2H_4	Elastic Scattering	1-100 eV	Exp	320
e + C_2H_4	Excitation	1-100 eV	Exp	320
e + He	Ionization	6-1000 eV	Th	321
e + He	Elastic Scattering	10-10^4 eV	Th	322
e + Ne	Elastic Scattering	10-10^4 eV	Th	322
e + Ar	Elastic Scattering	10-10^4 eV	Th	322
e + Kr	Elastic Scattering	10-10^4 eV	Th	322
e + Xe	Elastic Scattering	10-10^4 eV	Th	322
e + CO	Elastic Scattering	10-10^4 eV	Th	322
e + CO_2	Elastic Scattering	10-10^4 eV	Th	322
e + N_2	Elastic Scattering	10-10^4 eV	Th	322
e + Ne	Excitation	11.4-20.4 eV	Th	323
e + Ar	Excitation	11.4-20.4 eV	Th	323
e + Kr	Excitation	11.4-20.4 eV	Th	323
e + Xe	Excitation	11.4-20.4 eV	Th	323
e + SF_6	Dissociation	10-20 keV	Exp	324
e + SF_6	Ionization	10-20 keV	Exp	324
e + S^-	Detachment	0-60 eV	Exp	325
e + Xe	Excitation	8-20 eV	Exp	326
e + CH	Dissociation	5 - 25x10^3 eV	Th	327
e + CH_2	Dissociation	5 - 25x10^3 eV	Th	327
e + CH_3	Dissociation	5 - 25x10^3 eV	Th	327
e + CH_4	Dissociation	5 - 25x10^3 eV	Th	327
e + C_2H_2	Dissociation	5 - 25x10^3 eV	Th	327
e + C_2H_4	Dissociation	5 - 25x10^3 eV	Th	327
e + C_2H_6	Dissociation	5 - 25x10^3 eV	Th	327
e + C_3H_6	Dissociation	5 - 25x10^3 eV	Th	327
e + C_2H_5	Dissociation	5 - 25x10^3 eV	Th	327
e + C_3H_5	Dissociation	5 - 25x10^3 eV	Th	327
e + C_3H_8	Dissociation	5 - 25x10^3 eV	Th	327
e + C_3H_4	Dissociation	5 - 25x10^3 eV	Th	327
e + C_2H	Dissociation	5 - 25x10^3 eV	Th	327
e + C_3H_2	Dissociation	5 - 25x10^3 eV	Th	327
e + C_2H_3	Dissociation	5 - 25x10^3 eV	Th	327

e + C_3H	Dissociation	5 - 25x10^3 eV	Th	327
e + C_3H_3	Dissociation	5 - 25x10^3 eV	Th	327
e + C_3H_7	Dissociation	5 - 25x10^3 eV	Th	327
e + CH	Excitation	5 - 25x10^3 eV	Th	327
e + CH^+	Excitation	5 - 25x10^3 eV	Th	327
e + CH_2	Excitation	5 - 25x10^3 eV	Th	327
e + CH_2^+	Excitation	5 - 25x10^3 eV	Th	327
e + CH_3	Excitation	5 - 25x10^3 eV	Th	327
e + CH_3^+	Excitation	5 - 25x10^3 eV	Th	327
e + CH_4	Excitation	5 - 25x10^3 eV	Th	327
e + CH_4^+	Excitation	5 - 25x10^3 eV	Th	327
e + C_2H_2	Excitation	5 - 25x10^3 eV	Th	327
e + $C_2H_2^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_2H_4	Excitation	5 - 25x10^3 eV	Th	327
e + $C_2H_4^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_2H_6	Excitation	5 - 25x10^3 eV	Th	327
e + $C_2H_6^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H_6	Excitation	5 - 25x10^3 eV	Th	327
e + $C_3H_6^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_2H_5	Excitation	5 - 25x10^3 eV	Th	327
e + $C_2H_5^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H_5	Excitation	5 - 25x10^3 eV	Th	327
e + $C_3H_5^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H_8	Excitation	5 - 25x10^3 eV	Th	327
e + $C_3H_8^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H_4	Excitation	5 - 25x10^3 eV	Th	327
e + $C_3H_4^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_2H	Excitation	5 - 25x10^3 eV	Th	327
e + C_2H^+	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H_2	Excitation	5 - 25x10^3 eV	Th	327
e + C_2H_3	Excitation	5 - 25x10^3 eV	Th	327
e + $C_2H_3^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H^+	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H_3	Excitation	5 - 25x10^3 eV	Th	327
e + $C_3H_3^+$	Excitation	5 - 25x10^3 eV	Th	327
e + C_3H_7	Excitation	5 - 25x10^3 eV	Th	327
e + $C_3H_7^+$	Excitation	5 - 25x10^3 eV	Th	327
e + CH	Ionization	5 - 25x10^3 eV	Th	327
e + CH^+	Ionization	5 - 25x10^3 eV	Th	327
e + CH_2	Ionization	5 - 25x10^3 eV	Th	327
e + CH_2^+	Ionization	5 - 25x10^3 eV	Th	327
e + CH_3	Ionization	5 - 25x10^3 eV	Th	327
e + CH_3^+	Ionization	5 - 25x10^3 eV	Th	327
e + CH_4	Ionization	5 - 25x10^3 eV	Th	327
e + CH_4^+	Ionization	5 - 25x10^3 eV	Th	327
e + C_2H_2	Ionization	5 - 25x10^3 eV	Th	327
e + $C_2H_2^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_2H_4	Ionization	5 - 25x10^3 eV	Th	327
e + $C_2H_4^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_2H_6	Ionization	5 - 25x10^3 eV	Th	327
e + $C_2H_6^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H_6	Ionization	5 - 25x10^3 eV	Th	327
e + $C_3H_6^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_2H_5	Ionization	5 - 25x10^3 eV	Th	327
e + $C_2H_5^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H_5	Ionization	5 - 25x10^3 eV	Th	327

e + $C_3H_5^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H_8	Ionization	5 - 25x10^3 eV	Th	327
e + $C_3H_8^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H_4	Ionization	5 - 25x10^3 eV	Th	327
e + $C_3H_4^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_2H	Ionization	5 - 25x10^3 eV	Th	327
e + C_2H^+	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H_2	Ionization	5 - 25x10^3 eV	Th	327
e + C_2H_3	Ionization	5 - 25x10^3 eV	Th	327
e + $C_2H_3^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H^+	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H_3	Ionization	5 - 25x10^3 eV	Th	327
e + $C_3H_3^+$	Ionization	5 - 25x10^3 eV	Th	327
e + C_3H_7	Ionization	5 - 25x10^3 eV	Th	327
e + $C_3H_7^+$	Ionization	5 - 25x10^3 eV	Th	327
e + Na^{7+}	Recombination	0-250 eV	Th	328
e + Sc^{3+}	Recombination	8-50 eV	Exp	329
e + F^{5+}	Recombination	0-60 eV	Exp	330
e + Cl^{13+}	Recombination	0-60 eV	Exp	330
e + Fe^{22+}	Recombination	0-60 eV	Exp	330
e + Cu^{25+}	Recombination	0-60 eV	Exp	330
e + N^{4+}	Recombination	0-10 eV	Exp	331
e + Ti^{20+}	Recombination	0-7 keV	Exp	332
e + Fe^{24+}	Recombination	0-7 keV	Exp	332
e + Xe^{27+}	Recombination	0.1-10^4 eV	Th	333
e + U^{91+}	Recombination	6.3x10^4-6.4x10^4 eV	Th	334
e + U^{92+}	Recombination		Th	335
e + N^{7+}	Recombination	10^{-5} - 10^3 eV	Th	336
e + He	Excitation	25-100 ev; 50-200 keV	Th	337
e + He	Ionization	25-100 ev; 50-200 keV	Th	337
e + He	Ionization	10^2-10^4 eV	Th	338
e + Sc^+	Ionization	10-80 eV	Exp	339
e + He	Ionization	24-300 eV	Exp	340
e + Ne	Ionization	24-300 eV	Exp	340
e + Ar	Ionization	24-300 eV	Exp	340
e + Kr	Ionization	24-300 eV	Exp	340
e + Xe	Ionization	24-300 eV	Exp	340
e + Fe^{25+}	Ionization	13.5-120 keV	Exp	341
e + Mo^{41+}	Ionization	13.5-120 keV	Exp	341
e + Al^{2+}	Excitation	6-21 eV	Exp	342
e + Si^{2+}	Excitation	6-21 eV	Exp	342
e + Cl^{5+}	Excitation	6-21 eV	Exp	342
e + Cl^{6+}	Excitation	6-21 eV	Exp	342
e + Ar^{6+}	Excitation	6-21 eV	Exp	342
e + Ar^{7+}	Excitation	6-21 eV	Exp	342
e + Kr^{10+}	Ionization	300-6000 eV	Th	343
e + Kr^{11+}	Ionization	300-6000 eV	Th	343
e + Kr^{12+}	Ionization	300-6000 eV	Th	343
e + Kr^{17+}	Ionization	300-6000 eV	Th	343
e + Kr^{18+}	Ionization	300-6000 eV	Th	343
e + Ba^+	Ionization	700-840 eV	E/T	344
e + Ba^{2+}	Ionization	700-840 eV	E/T	344
e + Ba^{3+}	Ionization	700-840 eV	E/T	344
e + Ba^{4+}	Ionization	700-840 eV	E/T	344
e + Ba^{5+}	Ionization	700-840 eV	E/T	344
e + Ba^{6+}	Ionization	700-840 eV	E/T	344

e + Ba^{7+}	Ionization	700-840 eV	E/T	344
e + Ba^{8+}	Ionization	700-840 eV	E/T	344
e + Ba^{9+}	Ionization	700-840 eV	E/T	344
e + Ba^{10+}	Ionization	700-840 eV	E/T	344
e + Ba^{11+}	Ionization	700-840 eV	E/T	344
e + Ba^{12+}	Ionization	700-840 eV	E/T	344
e + Ba^{13+}	Ionization	700-840 eV	E/T	344
e + Pr^{+}	Ionization	0.01-1 keV	Exp	345
e + Pr^{2+}	Ionization	0.01-1 keV	Exp	345
e + Pr^{3+}	Ionization	0.01-1 keV	Exp	345
e + Pr^{4+}	Ionization	0.01-1 keV	Exp	345
e + Pr^{6+}	Ionization	0.01-1 keV	Exp	345
e + Pr^{7+}	Ionization	0.01-1 keV	Exp	345
e + Pr^{8+}	Ionization	0.01-1 keV	Exp	345
e + Pr^{11+}	Ionization	0.01-1 keV	Exp	345
e + Pt	Excitation	10^2-10^3 keV	Th	346
e + Au	Excitation	10^2-10^3 keV	Th	346
e + Hg^{77+}	Excitation	10^2-10^3 keV	Th	346
e + Th	Excitation	10^2-10^3 keV	Th	346
e + U	Excitation	10^2-10^3 keV	Th	346
e + U^{89+}	Excitation	10^2-10^3 keV	Th	346
e + Pt	Ionization	10^2-10^3 keV	Th	346
e + Au	Ionization	10^2-10^3 keV	Th	346
e + Hg^{77+}	Ionization	10^2-10^3 keV	Th	346
e + Th	Ionization	10^2-10^3 keV	Th	346
e + U	Ionization	10^2-10^3 keV	Th	346
e + U^{89+}	Ionization	10^2-10^3 keV	Th	346
e + B^{3+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T	347
e + B^{4+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T	347
e + C^{4+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T	347
e + N^{5+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T	347
e + O^{6+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T	347
e + Ti	Ionization	6-27 keV	Exp	348
e + Cr	Ionization	6-27 keV	Exp	348
e + Xe	Elastic Scattering	0.1-10^4 eV	Th	349
e + Xe	Excitation	0.1-10^4 eV	Th	349
e + Xe	Ionization	0.1-10^4 eV	Th	349
e + H_2O	Ionization	0-2000 eV	Th	350
e + Sr	Excitation	8-200 eV	Exp	351
e + Sr	Ionization	8-200 eV	Exp	351
e + Ba	Excitation	3-200 eV	Exp	352
e + Cd^{+}	Excitation	4-139 eV	Exp	353
e + H_3^{+}	Recombination	0.2-2000 K	Th	354
e + Li	Ionization	1000 eV	Exp	355
e + He	Ionization	5.6 keV	Th	356
e + C	Ionization	0-60 keV	Th	357
e + N	Ionization	0-60 keV	Th	357
e + O	Ionization	0-60 keV	Th	357
e + Cr	Ionization	0-60 keV	Th	357
e + Mn	Ionization	0-60 keV	Th	357
e + Fe	Ionization	0-60 keV	Th	357
e + Cu	Ionization	0-60 keV	Th	357
e + Ga	Ionization	0-60 keV	Th	357
e + Ge	Ionization	0-60 keV	Th	357
e + Zr	Ionization	0-60 keV	Th	357
e + K	Ionization	10-10^4 keV	Th	358
e + Ca	Ionization	10-10^4 keV	Th	358

e + Sc	Ionization	10-10^4 keV	Th	358
e + Ti	Ionization	10-10^4 keV	Th	358
e + V	Ionization	10-10^4 keV	Th	358
e + Rb	Ionization	10-10^4 keV	Th	358
e + Sr	Ionization	10-10^4 keV	Th	358
e + Sn	Ionization	10-10^4 keV	Th	358
e + Au	Ionization	10-10^4 keV	Th	358
e + $C_2H_2^+$	Dissociation		Th	359
e + $C_2H_2^+$	Recombination		Th	359
e + Be^+	Excitation	2-300 eV	Th	360
e + B^{2+}	Excitation	2-300 eV	Th	360
e + Be^+	Recombination	10^{-5}-4 eV; 2.5-4.5 MeV	Exp	361
e + Pb^{53+}	Recombination	10^{-5}-4 eV; 2.5-4.5 MeV	Exp	361
e + Pb^{54+}	Recombination	10^{-5}-4 eV; 2.5-4.5 MeV	Exp	361
e + H	Ionization	10-10^4 keV	Th	362
e + He^+	Ionization	10-10^4 keV	Th	362
e + Li^{2+}	Ionization	10-10^4 keV	Th	362
e + B^{4+}	Ionization	10-10^4 keV	Th	362
e + C^{5+}	Ionization	10-10^4 keV	Th	362
e + N^{6+}	Ionization	10-10^4 keV	Th	362
e + O^{7+}	Ionization	10-10^4 keV	Th	362
e + Ne^{9+}	Ionization	10-10^4 keV	Th	362
e + Fe^{25+}	Ionization	10-10^4 keV	Th	362
e + Mo^{41+}	Ionization	10-10^4 keV	Th	362
e + Dy^{65+}	Ionization	10-10^4 keV	Th	362
e + Au^{78+}	Ionization	10-10^4 keV	Th	362
e + Bi^{82+}	Ionization	10-10^4 keV	Th	362
e + U^{91+}	Ionization	10-10^4 keV	Th	362
e + H^-	Detachment	0-30 eV	Th	363
e + NF_3	Dissociation	0-5 eV	Exp	364
e + H	Ionization	4 Ry	Th	365
e + CO_2^+	Dissociation	10^{-3} - 10^1 eV	Exp	366
e + CO_2^+	Recombination	10^{-3} - 10^1 eV	Exp	366
e + Li	Excitation	10 eV	Th	367
e + B^{3+}	Elastic Scattering	150-260 eV	E/T	368
e + B^{4+}	Elastic Scattering	150-260 eV	E/T	368
e + B^{3+}	Angular Scattering	150-260 eV	E/T	368
e + B^{4+}	Angular Scattering	150-260 eV	E/T	368
e + CO_2	Excitation	300-800 eV	Th	369
e + CS_2	Excitation	300-800 eV	Th	369
e + OCS	Excitation	300-800 eV	Th	369
e + H_3^+	Recombination	10^{-5}-1 eV; 0.1-3000 K	Th	370
e + CH_4	Elastic Scattering	3-10 eV	Th	371
e + SiH_4	Elastic Scattering	3-10 eV	Th	371
e + GeH−4	Elastic Scattering	3-10 eV	Th	371
e + SnH_4	Elastic Scattering	3-10 eV	Th	371
e + PbH_4	Elastic Scattering	3-10 eV	Th	371
e + CH_4	Angular Scattering	3-10 eV	Th	371
e + SiH_4	Angular Scattering	3-10 eV	Th	371
e + GeH−4	Angular Scattering	3-10 eV	Th	371
e + SnH_4	Angular Scattering	3-10 eV	Th	371
e + PbH_4	Angular Scattering	3-10 eV	Th	371
e + He	Elastic Scattering	100-3000 eV	Th	372
e + Ne	Elastic Scattering	100-3000 eV	Th	372
e + Ar	Elastic Scattering	100-3000 eV	Th	372
e + Kr	Elastic Scattering	100-3000 eV	Th	372
e + Xe	Elastic Scattering	100-3000 eV	Th	372

e + Hg	Elastic Scattering	100-3000 eV	Th	372
e + He	Angular Scattering	100-3000 eV	Th	372
e + Ne	Angular Scattering	100-3000 eV	Th	372
e + Ar	Angular Scattering	100-3000 eV	Th	372
e + Kr	Angular Scattering	100-3000 eV	Th	372
e + Xe	Angular Scattering	100-3000 eV	Th	372
e + Hg	Angular Scattering	100-3000 eV	Th	372
e + Cl^-	Detachment	0-95 eV	Exp	373
e + He	Angular Scattering	500 eV	Exp	374
e + He	Ionization	500 eV	Exp	374
e + Ba^+	Recombination	300 K	Exp	375
e + H^+	Recombination	0.2-2 a.u.	Th	376
e + H	Ionization	0.005-0.2 a.u.	Th	377
e + H	Angular Scattering	15.6-40 eV	E/T	378
e + H	Ionization	15.6-40 eV	E/T	378
e + Au	Fluorescence	25-55 keV	Exp	379
e + Au	Excitation	25-55 keV	Exp	379
e + H_2^+	De-excitation	0-0.1 eV	Th	380
e + H_2^+	Recombination	0-0.1 eV	Th	380
e + C_6H_6	Attachment	0.2-1000 eV	E/T	381
e + C_6F_6	Attachment	0.2-1000 eV	E/T	381
e + C_6H_6	Dissociation	0.2-1000 eV	E/T	381
e + C_6F_6	Dissociation	0.2-1000 eV	E/T	381
e + C_6H_6	Elastic Scattering	0.2-1000 eV	E/T	381
e + C_6F_6	Elastic Scattering	0.2-1000 eV	E/T	381
e + C_6H_6	Excitation	0.2-1000 eV	E/T	381
e + C_6F_6	Excitation	0.2-1000 eV	E/T	381
e + C_6H_6	Ionization	0.2-1000 eV	E/T	381
e + C_6F_6	Ionization	0.2-1000 eV	E/T	381
e + SiH_4	Dissociation	90-3500 eV	Exp	382
e + PH_3	Dissociation	90-3500 eV	Exp	382
e + SiH_4	Elastic Scattering	90-3500 eV	Exp	382
e + PH_3	Elastic Scattering	90-3500 eV	Exp	382
e + SiH_4	Excitation	90-3500 eV	Exp	382
e + PH_3	Excitation	90-3500 eV	Exp	382
e + SiH_4	Ionization	90-3500 eV	Exp	382
e + PH_3	Ionization	90-3500 eV	Exp	382
e + Be	Ionization	0.1-400 eV	Th	383
e + Be^+	Ionization	0.1-400 eV	Th	383
e + Be^{2+}	Ionization	0.1-400 eV	Th	383
e + Be^{3+}	Ionization	0.1-400 eV	Th	383
e + C_2H_4	Dissociation	0.6-370 eV	Exp	384
e + C_2F_4	Dissociation	0.6-370 eV	Exp	384
e + C_2H_4	Elastic Scattering	0.6-370 eV	Exp	384
e + C_2F_4	Elastic Scattering	0.6-370 eV	Exp	384
e + C_2H_4	Excitation	0.6-370 eV	Exp	384
e + C_2F_4	Excitation	0.6-370 eV	Exp	384
e + C_2H_4	Ionization	0.6-370 eV	Exp	384
e + C_2F_4	Ionization	0.6-370 eV	Exp	384
e + Ar	Fluorescence	0-300 eV	Exp	385
e + Ar	Excitation	0-300 eV	Exp	385
e + Li	Excitation	5 keV	Exp	386
e + Li	Ionization	5 keV	Exp	386
e + H_2^+	Dissociation	10^{-4} - $3x10^1$ eV	Exp	387
e + HD^+	Dissociation	10^{-4} - $3x10^1$ eV	Exp	387
e + H_2^+	Recombination	10^{-4} - $3x10^1$ eV	Exp	387
e + HD^+	Recombination	10^{-4} - $3x10^1$ eV	Exp	387

e + H_2	Excitation	1200-2000 eV	Exp	388
e + H_2	Ionization	1200-2000 eV	Exp	388
e + CH^+	Dissociation	3-100 eV	Exp	389
e + HF	Excitation	0.3-3 eV	E/T	390
e + $CH_3CH_2CH_3$	Elastic Scattering	0.5-10 eV	Exp	391
e + propane	Elastic Scattering	0.5-10 eV	Exp	391
e + $CH_3CH_2CH_3$	Angular Scattering	0.5-10 eV	Exp	391
e + propane	Angular Scattering	0.5-10 eV	Exp	391
e + $CH_3CH_2CH_3$	Excitation	0.5-10 eV	Exp	391
e + propane	Excitation	0.5-10 eV	Exp	391
e + H_2	Angular Scattering	250-4168 eV	Th	392
e + H_2	Ionization	250-4168 eV	Th	392
e + Ar	Bremsstrahlung	10-22 keV	Exp	393
e + Ar	Ionization	10-22 keV	Exp	393
e + O	Fluorescence	9-1000 eV	E/T	394
e + O	Excitation	9-1000 eV	E/T	394
e + Au^{24+}	Recombination	27-29.5 a.u.	Th	395
e + He	Ionization	1.4-8.5 a.u.	Exp	396
e + N_2O	Attachment	0-12 eV	Exp	397
e + N_2O	Dissociation	0-12 eV	Exp	397
e + N_2O	Elastic Scattering	0-12 eV	Exp	397
e + N_2O	Excitation	0-12 eV	Exp	397
e + Mg	Excitation	40 eV	Exp	398
e + He	Ionization	50 eV	Th	399
e + C^{4+}	Elastic Scattering	4-20 MeV; 270-300 eV	E/T	400
e + C^{4+}	Excitation	4-20 MeV; 270-300 eV	E/T	400
e + Kr	Elastic Scattering	10-200 eV	Th	401
e + Kr	Angular Scattering	10-200 eV	Th	401
e + H_2	Excitation	77 K	E/T	402
e + C	Ionization	10-10^5 keV	Th	403
e + N	Ionization	10-10^5 keV	Th	403
e + O	Ionization	10-10^5 keV	Th	403
e + F	Ionization	10-10^5 keV	Th	403
e + Ne	Ionization	10-10^5 keV	Th	403
e + Na	Ionization	10-10^5 keV	Th	403
e + Mg	Ionization	10-10^5 keV	Th	403
e + Al	Ionization	10-10^5 keV	Th	403
e + Si	Ionization	10-10^5 keV	Th	403
e + P	Ionization	10-10^5 keV	Th	403
e + S	Ionization	10-10^5 keV	Th	403
e + Cl	Ionization	10-10^5 keV	Th	403
e + Ar	Ionization	10-10^5 keV	Th	403
e + K	Ionization	10-10^5 keV	Th	403
e + Ca	Ionization	10-10^5 keV	Th	403
e + Sc	Ionization	10-10^5 keV	Th	403
e + Ti	Ionization	10-10^5 keV	Th	403
e + V	Ionization	10-10^5 keV	Th	403
e + Cr	Ionization	10-10^5 keV	Th	403
e + Mn	Ionization	10-10^5 keV	Th	403
e + Fe	Ionization	10-10^5 keV	Th	403
e + Co	Ionization	10-10^5 keV	Th	403
e + Ni	Ionization	10-10^5 keV	Th	403
e + Cu	Ionization	10-10^5 keV	Th	403
e + Zn	Ionization	10-10^5 keV	Th	403
e + Ga	Ionization	10-10^5 keV	Th	403
e + Ge	Ionization	10-10^5 keV	Th	403
e + As	Ionization	10-10^5 keV	Th	403

e + Se	Ionization	10-10^5 keV	Th	403
e + Br	Ionization	10-10^5 keV	Th	403
e + Kr	Ionization	10-10^5 keV	Th	403
e + Rb	Ionization	10-10^5 keV	Th	403
e + Sr	Ionization	10-10^5 keV	Th	403
e + Y	Ionization	10-10^5 keV	Th	403
e + Zr	Ionization	10-10^5 keV	Th	403
e + Nb	Ionization	10-10^5 keV	Th	403
e + Mo	Ionization	10-10^5 keV	Th	403
e + Tc	Ionization	10-10^5 keV	Th	403
e + Ru	Ionization	10-10^5 keV	Th	403
e + Rh	Ionization	10-10^5 keV	Th	403
e + Pd	Ionization	10-10^5 keV	Th	403
e + Ag	Ionization	10-10^5 keV	Th	403
e + Cd	Ionization	10-10^5 keV	Th	403
e + In	Ionization	10-10^5 keV	Th	403
e + Sn	Ionization	10-10^5 keV	Th	403
e + Sb	Ionization	10-10^5 keV	Th	403
e + Hg	Elastic Scattering	4-500 eV	Th	404
e + Hg	Angular Scattering	4-500 eV	Th	404
e + Hg	Excitation	4-500 eV	Th	404
e + O	Angular Scattering	15-30 eV	E/T	405
e + O	Excitation	15-30 eV	E/T	405
e + H_2	Angular Scattering	4087 eV	Th	406
e + H_2	Ionization	4087 eV	Th	406
e + Ca	Ionization	10-101 eV	E/T	407
e + H Z= ?-?	Angular Scattering	4 I.P.	Th	408
e + Li Z= ?-?	Angular Scattering	4 I.P.	Th	408
e + Na Z= ?-?	Angular Scattering	4 I.P.	Th	408
e + K Z= ?-?	Angular Scattering	4 I.P.	Th	408
e + H Z= ?-?	Ionization	4 I.P.	Th	408
e + Li Z= ?-?	Ionization	4 I.P.	Th	408
e + Na Z= ?-?	Ionization	4 I.P.	Th	408
e + K Z= ?-?	Ionization	4 I.P.	Th	408
e + Ar	Ionization	10-100 eV	E/T	409
e + Kr	Ionization	10-100 eV	E/T	409
e + Xe	Ionization	10-100 eV	E/T	409
e + Rn	Ionization	10-100 eV	E/T	409
e + CH_4	Dissociation	0.5-3.5 MeV; 0-1000 eV	E/T	410
e + CH_4	Ionization	0.5-3.5 MeV; 0-1000 eV	E/T	410

2.2.3 Heavy Particles Collisions

H^+ + He	Charge Transfer	10-20 keV	E/T	411
H^+ + H_2	Charge Transfer	10-20 keV	E/T	411
H^+ + He	Total Scattering	10-20 keV	E/T	411
H^+ + H_2	Total Scattering	10-20 keV	E/T	411
H^+ + He	Ionization	10-20 keV	E/T	411
H^+ + H_2	Ionization	10-20 keV	E/T	411
B^- + N_2	Dissociation	0.2-1 a.u.	Exp	412
Al^- + N_2	Dissociation	0.2-1 a.u.	Exp	412
$B_2{}^-$ + N_2	Dissociation	0.2-1 a.u.	Exp	412
$Al_2{}^-$ + N_2	Dissociation	0.2-1 a.u.	Exp	412
$Al_3{}^-$ + N_2	Dissociation	0.2-1 a.u.	Exp	412
$Al_4{}^-$ + N_2	Dissociation	0.2-1 a.u.	Exp	412
B^- + N_2	Detachment	0.2-1 a.u.	Exp	412

$\mathbf{Al^- + N_2}$	Detachment	0.2-1 a.u.	Exp	412
$\mathbf{B_2{}^- + N_2}$	Detachment	0.2-1 a.u.	Exp	412
$\mathbf{Al_2{}^- + N_2}$	Detachment	0.2-1 a.u.	Exp	412
$\mathbf{Al_3{}^- + N_2}$	Detachment	0.2-1 a.u.	Exp	412
$\mathbf{Al_4{}^- + N_2}$	Detachment	0.2-1 a.u.	Exp	412
$\mathbf{He^* + H_2}$	De-excitation	300 K	Exp	413
$\mathbf{Ne^* + H_2}$	De-excitation	300 K	Exp	413
$\mathbf{Ar^* + H_2}$	De-excitation	300 K	Exp	413
$\mathbf{Kr^* + H_2}$	De-excitation	300 K	Exp	413
$\mathbf{H_2{}^* + H_2}$	De-excitation	300 K	Exp	413
$\mathbf{He + H_2}$	Excitation	300 K	Exp	413
$\mathbf{He^* + H_2}$	Excitation	300 K	Exp	413
$\mathbf{Ne + H_2}$	Excitation	300 K	Exp	413
$\mathbf{Ne^* + H_2}$	Excitation	300 K	Exp	413
$\mathbf{Ar + H_2}$	Excitation	300 K	Exp	413
$\mathbf{Ar^* + H_2}$	Excitation	300 K	Exp	413
$\mathbf{Kr + H_2}$	Excitation	300 K	Exp	413
$\mathbf{Kr^* + H_2}$	Excitation	300 K	Exp	413
$\mathbf{H_2 + H_2}$	Excitation	300 K	Exp	413
$\mathbf{H_2{}^* + H_2}$	Excitation	300 K	Exp	413
$\mathbf{O^{3+} + H}$	Charge Transfer	0.1-1000 eV/u; 100-1,000,000 K	Th	414
$\mathbf{H^+ + He}$	Charge Transfer	20-120 MeV	Th	415
$\mathbf{He^{2+} + He}$	Charge Transfer	20-120 MeV	Th	415
$\mathbf{He^{2+} + Li}$	Charge Transfer	20-120 MeV	Th	415
$\mathbf{S^{7+} + C}$	Charge Transfer	20-120 MeV	Th	415
$\mathbf{S^{9+} + C}$	Charge Transfer	20-120 MeV	Th	415
$\mathbf{S^{11+} + C}$	Charge Transfer	20-120 MeV	Th	415
$\mathbf{S^{13+} + C}$	Charge Transfer	20-120 MeV	Th	415
$\mathbf{S^{14+} + C}$	Charge Transfer	20-120 MeV	Th	415
$\mathbf{H^+ + He}$	Excitation	20-120 MeV	Th	415
$\mathbf{He^{2+} + He}$	Excitation	20-120 MeV	Th	415
$\mathbf{He^{2+} + Li}$	Excitation	20-120 MeV	Th	415
$\mathbf{S^{7+} + C}$	Excitation	20-120 MeV	Th	415
$\mathbf{S^{9+} + C}$	Excitation	20-120 MeV	Th	415
$\mathbf{S^{11+} + C}$	Excitation	20-120 MeV	Th	415
$\mathbf{S^{13+} + C}$	Excitation	20-120 MeV	Th	415
$\mathbf{S^{14+} + C}$	Excitation	20-120 MeV	Th	415
$\mathbf{H^+ + He}$	Ionization	20-120 MeV	Th	415
$\mathbf{He^{2+} + He}$	Ionization	20-120 MeV	Th	415
$\mathbf{He^{2+} + Li}$	Ionization	20-120 MeV	Th	415
$\mathbf{S^{7+} + C}$	Ionization	20-120 MeV	Th	415
$\mathbf{S^{9+} + C}$	Ionization	20-120 MeV	Th	415
$\mathbf{S^{11+} + C}$	Ionization	20-120 MeV	Th	415
$\mathbf{S^{13+} + C}$	Ionization	20-120 MeV	Th	415
$\mathbf{S^{14+} + C}$	Ionization	20-120 MeV	Th	415
Na + He	Elastic Scattering	10-40,000 m/s	Th	416
Na + Ne	Elastic Scattering	10-40,000 m/s	Th	416
Na + Ar	Elastic Scattering	10-40,000 m/s	Th	416
$\mathbf{H^* + H^*}$	Elastic Scattering	$2x10^{-10}$ - 10^{-4} eV	Th	417
$\mathbf{h\nu + H}$	Elastic Scattering	$2x10^{-10}$ - 10^{-4} eV	Th	417
$\mathbf{H^* + H^*}$	Excitation	$2x10^{-10}$ - 10^{-4} eV	Th	417
$\mathbf{h\nu + H}$	Excitation	$2x10^{-10}$ - 10^{-4} eV	Th	417
$\mathbf{H^* + H^*}$	Ionization	$2x10^{-10}$ - 10^{-4} eV	Th	417
$\mathbf{h\nu + H}$	Ionization	$2x10^{-10}$ - 10^{-4} eV	Th	417
Kr + Xe	Interaction Potentials		Th	418
$\mathbf{H^+ + He}$	Total Scattering	100-1500 keV	Th	419
$\mathbf{H^+ + He^+}$	Total Scattering	100-1500 keV	Th	419

H^+ + He	Excitation	100-1500 keV	Th	419
H^+ + He^+	Excitation	100-1500 keV	Th	419
H^+ + He	Ionization	100-1500 keV	Th	419
H^+ + He^+	Ionization	100-1500 keV	Th	419
Na^+ + Ca	Elastic Scattering	$2x10^{-16}$ - 10^{-3} eV	Th	420
Ca^+ + Na	Elastic Scattering	$2x10^{-16}$ - 10^{-3} eV	Th	420
Na^+ + Ca	Charge Transfer	$2x10^{-16}$ - 10^{-3} eV	Th	420
Ca^+ + Na	Charge Transfer	$2x10^{-16}$ - 10^{-3} eV	Th	420
Na^+ + Ca	Energy Transfer	$2x10^{-16}$ - 10^{-3} eV	Th	420
Ca^+ + Na	Energy Transfer	$2x10^{-16}$ - 10^{-3} eV	Th	420
Na^+ + Ca	Total Scattering	$2x10^{-16}$ - 10^{-3} eV	Th	420
Ca^+ + Na	Total Scattering	$2x10^{-16}$ - 10^{-3} eV	Th	420
H + H	Line Broadening	0.010-1000 K	Th	421
H + H	Elastic Scattering	0.010-1000 K	Th	421
H + H	Interaction Potentials	0.010-1000 K	Th	421
He^{2+} + H	Charge Transfer	10-5000 eV/u	Th	422
C + Zr	Ionization	8.3-30 MeV/u	E/T	423
C + Ag	Ionization	8.3-30 MeV/u	E/T	423
C + Sn	Ionization	8.3-30 MeV/u	E/T	423
C + Sm	Ionization	8.3-30 MeV/u	E/T	423
C + Au	Ionization	8.3-30 MeV/u	E/T	423
C + Pb	Ionization	8.3-30 MeV/u	E/T	423
C + Th	Ionization	8.3-30 MeV/u	E/T	423
Ne + Sn	Ionization	8.3-30 MeV/u	E/T	423
Ne + Tb	Ionization	8.3-30 MeV/u	E/T	423
Ne + Pb	Ionization	8.3-30 MeV/u	E/T	423
Ne + Th	Ionization	8.3-30 MeV/u	E/T	423
Ca^+ + H_2O	Charge Transfer	3100 K	Exp	424
Ca^{+*} + H_2O	Charge Transfer	3100 K	Exp	424
O^{6+} + He	Charge Transfer	60-80 keV	Exp	425
O^{6+} + H_2	Charge Transfer	60-80 keV	Exp	425
Ne^{8+} + He	Charge Transfer	60-80 keV	Exp	425
He^{2+} + He	Charge Transfer	100-10,000 keV	Th	426
C^{2+} + He	Total Scattering	3.6 MeV/amu	Th	427
C^{2+} + He	Ionization	3.6 MeV/amu	Th	427
H_2^+ + Ar	Dissociation	20 keV	Exp	428
H_2^+ + Ar	Charge Transfer	20 keV	Exp	428
H_2^+ + Ar	Total Scattering	20 keV	Exp	428
H_2^+ + Ar	Ionization	20 keV	Exp	428
Cs + Rb	Elastic Scattering		Th	429
Cs + Rb	Interaction Potentials		Th	429
CO + CO	Energy Transfer	100-1000 K	Th	430
CO + CO^*	Energy Transfer	100-1000 K	Th	430
CO^* + CO^*	Energy Transfer	100-1000 K	Th	430
He^{2+} + H_2	Dissociation	0.5-25 keV/u	Th	431
He^{2+} + H_2	Charge Transfer	0.5-25 keV/u	Th	431
O^{5+} + He	Charge Transfer	100-2500 eV	E/T	432
O^{5+} + He	Total Scattering	100-2500 eV	E/T	432
H^+ + Cu	Fluorescence	2 MeV	E/T	433
Na + H	Line Broadening	300-6000 K	Th	434
Na^* + H	Line Broadening	300-6000 K	Th	434
H_2O + H_2	Energy Transfer	0.001 a.u.	Th	435
H_2O + H_2	Excitation	0.001 a.u.	Th	435
H_2 + Ar	Energy Transfer	0-5000 m/s	Th	436
HF + Ar	Energy Transfer	0-5000 m/s	Th	436
Li_2 + Xe	Energy Transfer	0-5000 m/s	Th	436
OH + Ar	Energy Transfer	0-5000 m/s	Th	436

LiH + He	Energy Transfer	0-5000 m/s	Th	436
H_2 + Ar	Excitation	0-5000 m/s	Th	436
HF + Ar	Excitation	0-5000 m/s	Th	436
Li_2 + Xe	Excitation	0-5000 m/s	Th	436
OH + Ar	Excitation	0-5000 m/s	Th	436
LiH + He	Excitation	0-5000 m/s	Th	436
Ar^{3+} + CF_4	Dissociation	8 keV	Exp	437
Ar^{8+} + CF_4	Dissociation	8 keV	Exp	437
Ar^{9+} + CF_4	Dissociation	8 keV	Exp	437
Ar^{11+} + CF_4	Dissociation	8 keV	Exp	437
Ar^{12+} + CF_4	Dissociation	8 keV	Exp	437
Ar^{3+} + CF_4	Charge Transfer	8 keV	Exp	437
Ar^{8+} + CF_4	Charge Transfer	8 keV	Exp	437
Ar^{9+} + CF_4	Charge Transfer	8 keV	Exp	437
Ar^{11+} + CF_4	Charge Transfer	8 keV	Exp	437
Ar^{12+} + CF_4	Charge Transfer	8 keV	Exp	437
Ne + Ne	De-excitation	77 K	Exp	438
Ne + He	De-excitation	15-77 K	Exp	439
Kr^{36+} + H	Charge Transfer	20-400 MeV/amu	Th	440
U^{92+} + H	Charge Transfer	20-400 MeV/amu	Th	440
U^{92+} + N	Charge Transfer	20-400 MeV/amu	Th	440
Kr^{36+} + H	Total Scattering	20-400 MeV/amu	Th	440
U^{92+} + H	Total Scattering	20-400 MeV/amu	Th	440
U^{92+} + N	Total Scattering	20-400 MeV/amu	Th	440
Kr^{36+} + H	Ionization	20-400 MeV/amu	Th	440
U^{92+} + H	Ionization	20-400 MeV/amu	Th	440
U^{92+} + N	Ionization	20-400 MeV/amu	Th	440
H^+ + CF_2Cl_2	Dissociation	10-1,000 keV	Exp	441
H^+ + CF_2Cl_2	Ionization	10-1,000 keV	Exp	441
Li + Ne	Line Broadening	680 deg C	Exp	442
Li + Ar	Line Broadening	680 deg C	Exp	442
Na + Na	Interaction Potentials		Th	443
Na^+ + Li	Charge Transfer	1-4 keV	E/T	444
Na^+ + Li^*	Charge Transfer	1-4 keV	E/T	444
Kr^{33+} + H_2	Ionization	68 MeV/u	E/T	445
U^{92+} + He	Ionization	1 GeV	E/T	446
H^+ + H	Charge Transfer	0.1-10 MeV	E/T	447
H^+ + H	Ionization	2.5-100 MeV/u	Th	448
C^{6+} + H	Ionization	2.5-100 MeV/u	Th	448
CaH + He	Excitation	10^{-6}-1 cm^{-1}	Th	449
H^+ + O	Ionization	10-2000 keV	Th	450
H^+ + Ne	Ionization	10-2000 keV	Th	450
H^+ + Ar	Ionization	10-2000 keV	Th	450
He^+ + He	Ionization	10-2000 keV	Th	450
He^+ + Ne	Ionization	10-2000 keV	Th	450
He^+ + Ar	Ionization	10-2000 keV	Th	450
H^+ + H	Total Scattering	3-6 a.u.	Th	451
H^+ + H	Ionization	3-6 a.u.	Th	451
H_2^+ + He^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp	452
H_2^+ + N^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp	452
H_2^+ + Ar^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp	452
D_2^+ + He^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp	452
D_2^+ + N^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp	452
D_2^+ + Ar^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp	452
H_2 + H_2O	Energy Transfer	5-20 K	Th	453
H + Li	Interchange reaction	2000-8000 K	Th	454
Li^+ + H^-	Interchange reaction	2000-8000 K	Th	454

Ar + Ar	Interaction Potentials	9-60 keV/u	Exp	455
Ar^{12+} + Ar	Excitation	9-60 keV/u	Exp	455
Ar^{16+} + Ar	Excitation	9-60 keV/u	Exp	455
Kr^{33+} + H_2	Ionization	68 MeV/u	Exp	456
O^{7+} + Cl	Charge Transfer	1.5-6 MeV/u	Exp	457
O^{7+} + K	Charge Transfer	1.5-6 MeV/u	Exp	457
O^{7+} + Ti	Charge Transfer	1.5-6 MeV/u	Exp	457
O^{7+} + Fe	Charge Transfer	1.5-6 MeV/u	Exp	457
O^{7+} + Cu	Charge Transfer	1.5-6 MeV/u	Exp	457
O^{7+} + Cl	Fluorescence	1.5-6 MeV/u	Exp	457
O^{7+} + K	Fluorescence	1.5-6 MeV/u	Exp	457
O^{7+} + Ti	Fluorescence	1.5-6 MeV/u	Exp	457
O^{7+} + Fe	Fluorescence	1.5-6 MeV/u	Exp	457
O^{7+} + Cu	Fluorescence	1.5-6 MeV/u	Exp	457
O^{7+} + Cl	Ionization	1.5-6 MeV/u	Exp	457
O^{7+} + K	Ionization	1.5-6 MeV/u	Exp	457
O^{7+} + Ti	Ionization	1.5-6 MeV/u	Exp	457
O^{7+} + Fe	Ionization	1.5-6 MeV/u	Exp	457
O^{7+} + Cu	Ionization	1.5-6 MeV/u	Exp	457
H^+ + H	Elastic Scattering	0-0.00125 a.u.	Exp	458
H^+ + D	Elastic Scattering	0-0.00125 a.u.	Exp	458
H^+ + H	Charge Transfer	0-0.00125 a.u.	Exp	458
H^+ + D	Charge Transfer	0-0.00125 a.u.	Exp	458
H^+ + He	Excitation	100-1600 keV/u	Th	459
H^+ + He	Ionization	100-1600 keV/u	Th	459
O^{2+} + H	Charge Transfer	125-3400 eV/u	Th	460
H + $H_2{}^+$	Elastic Scattering	0.1-6 eV	Th	461
H^+ + H_2	Elastic Scattering	0.1-6 eV	Th	461
NO^+ + He	Elastic Scattering	4.3-77 K	Exp	462
NO^+ + He	Interaction Potentials	4.3-77 K	Exp	462
NO^+ + He	Total Scattering	4.3-77 K	Exp	462
H^+ + C_{60}	Dissociation	2-130 keV	Exp	463
He^+ + C_{60}	Dissociation	2-130 keV	Exp	463
$H_2{}^+$ + C_{60}	Dissociation	2-130 keV	Exp	463
$H_3{}^+$ + C_{60}	Dissociation	2-130 keV	Exp	463
H^+ + O	Charge Transfer	100-7000 cm^{-1}	Th	464
O^+ + H	Charge Transfer	100-7000 cm^{-1}	Th	464
Li + H	Interaction Potentials	Undef	Th	465
Fe^{3+} + H_2	Charge Transfer	1 eV	Exp	466
Fe^{3+} + N_2	Charge Transfer	1 eV	Exp	466
Au^{78+} + H	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + He	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + Li	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + Be	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + B	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + C	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + N	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + O	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + F	Excitation	0.1-10^3 GeV/u	Th	467
Au^{78+} + Ne	Excitation	0.1-10^3 GeV/u	Th	467
Xe^{18+} + He	Charge Transfer	6 MeV/u	Exp	468
Xe^{18+} + Ne	Charge Transfer	6 MeV/u	Exp	468
Xe^{18+} + Kr	Charge Transfer	6 MeV/u	Exp	468
Xe^{18+} + Xe	Charge Transfer	6 MeV/u	Exp	468
Xe^{18+} + He	Ionization	6 MeV/u	Exp	468
Xe^{18+} + Ne	Ionization	6 MeV/u	Exp	468
Xe^{18+} + Kr	Ionization	6 MeV/u	Exp	468

Xe^{18+} + Xe	Ionization	6 MeV/u	Exp	468
H^+ + H_2	Association	4.5-9.5 eV	E/T	469
H_2^+ + H	Association	4.5-9.5 eV	E/T	469
H^+ + H_2	Dissociation	4.5-9.5 eV	E/T	469
H_2^+ + H	Dissociation	4.5-9.5 eV	E/T	469
Na + Na	Interaction Potentials		E/T	470
O^+ + He	Charge Transfer	1-5 keV	Exp	471
I + C	Elastic Scattering	470-530 MeV	Exp	472
I + C	Total Scattering	470-530 MeV	Exp	472
H + CH_4	Interchange reaction		Th	473
H + H_2	Interchange reaction	0.4-2.32 eV	Th	474
D + H_2	Interchange reaction	0.4-2.32 eV	Th	474
He + H_2^+	Association	2-100 K	Th	475
O + H_2	Interchange reaction	200-1000 K	Th	476
H + H_2	Interchange reaction	1.39-1.85 eV	Exp	477
H + D_2	Interchange reaction	1.39-1.85 eV	Exp	477
LiH + H	Interchange reaction	0.001-1.00 eV	Th	478
H_3^+ + H_2	Interchange reaction	30-80 K	Th	479
H_3^+ + HD	Interchange reaction	30-80 K	Th	479
H_2^+ + Ne	Interchange reaction	0.0-5.0 eV	Exp	480
He^+ + He	Interchange reaction	0-400 K	Th	481
He^+ + He + He	Interchange reaction	0-400 K	Th	481
He^+ + He_2	Interchange reaction	0-400 K	Th	481
C + H_2	Interchange reaction	0-1.0 eV	Th	482
H_2 + C_2H	Interchange reaction	0-1 eV	Th	483
H + CH_4	Interchange reaction	0.0-1.0 eV	Th	484
H^+ + CH	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + CH_2	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + CH_3	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + CH_4	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_2H_2	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_2H_4	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_2H_6	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_3H_6	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_2H_5	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_3H_5	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_3H_8	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_3H_4	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_2H	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_3H_2	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_2H_3	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_3H	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_3H_3	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + C_3H_7	Charge Transfer	5 - 25x10^3 eV	Th	485
H^+ + Mg	Elastic Scattering	775-2500 keV	Exp	486
H^+ + Mg	Total Scattering	775-2500 keV	Exp	486
Al + Ar	Interaction Potentials		Th	487
Ar + Ar	Interaction Potentials		Th	487
Cu + Ar	Interaction Potentials		Th	487
C^{5+} + Mo	Excitation	250 MeV	Exp	488
C^{5+} + Mo	Ionization	250 MeV	Exp	488
O^{7+} + Mo	Excitation	178-376 MeV	Exp	489
O^{7+} + Pd	Excitation	178-376 MeV	Exp	489
Ne^{6+} + Mo	Excitation	178-376 MeV	Exp	489
Ne^{6+} + Pd	Excitation	178-376 MeV	Exp	489
H^+ + He	Excitation	25-100 ev; 50-200 keV	Th	490
H^+ + He	Ionization	25-100 ev; 50-200 keV	Th	490

H^+ + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
He^{2+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
Li^{3+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
F^{9+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
Ne^{10+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
Kr^{34+} + H_2	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
Mo^{40+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
I^{7+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
I^{7+} + H_2	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
I^{23+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
I^{23+} + H_2	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
Au^{53+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
Au^{53+} + Ar	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
$H_2{}^+$ + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th	491
H^+ + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
He^{2+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
Li^{3+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
F^{9+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
Ne^{10+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
Kr^{34+} + H_2	Ionization	0.1 - 2.5x10^3 MeV	Th	491
Mo^{40+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
I^{7+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
I^{7+} + H_2	Ionization	0.1 - 2.5x10^3 MeV	Th	491
I^{23+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
I^{23+} + H_2	Ionization	0.1 - 2.5x10^3 MeV	Th	491
Au^{53+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
Au^{53+} + Ar	Ionization	0.1 - 2.5x10^3 MeV	Th	491
$H_2{}^+$ + He	Ionization	0.1 - 2.5x10^3 MeV	Th	491
O^{5+} + He	Excitation	5-40 MeV	Th	492
O^{5+} + He	Ionization	5-40 MeV	Th	492
Au^{78+} + C	Ionization	0.1-10 GeV/u	Th	493
Au^{53+} + H	Ionization	3.6 MeV/u	Th	494
Au^{53+} + He	Ionization	3.6 MeV/u	Th	494
Au^{53+} + He	Total Scattering	3.6 MeV/u	E/T	495
Au^{53+} + He	Ionization	3.6 MeV/u	E/T	495
H^+ + H_2	Ionization	3-5 MeV	Exp	496
Be^+ + CH_4	Excitation	300-500 keV	Exp	497
K^+ + He	Excitation	1-10 keV	Th	498
K^+ + Kr	Excitation	1-10 keV	Th	498
K^+ + He	Ionization	1-10 keV	Th	498
K^+ + Kr	Ionization	1-10 keV	Th	498
C^{6+} + He	Total Scattering	100 MeV/u	Th	499
Au^{53+} + He	Total Scattering	100 MeV/u	Th	499
C^{6+} + He	Ionization	100 MeV/u	Th	499
Au^{53+} + He	Ionization	100 MeV/u	Th	499
S^{14+} + Kr	Ionization		Th	500
S^{14+} + Xe	Ionization		Th	500
S^{14+} + Au	Ionization		Th	500
Kr^{34+} + Kr	Ionization		Th	500
Kr^{34+} + Xe	Ionization		Th	500
Kr^{34+} + Au	Ionization		Th	500
Xe^{52+} + Kr	Ionization		Th	500
Xe^{52+} + Xe	Ionization		Th	500
Xe^{52+} + Au	Ionization		Th	500
Pb^{80+} + Kr	Ionization		Th	500
Pb^{80+} + Xe	Ionization		Th	500
Pb^{80+} + Au	Ionization		Th	500

$\mathbf{B^{3+}}$ + $\mathbf{H_2}$	Ionization	3.9-15 MeV; 150-520 eV	E/T	501
$\mathbf{B^{4+}}$ + $\mathbf{H_2}$	Ionization	3.9-15 MeV; 150-520 eV	E/T	501
$\mathbf{C^{4+}}$ + $\mathbf{H_2}$	Ionization	3.9-15 MeV; 150-520 eV	E/T	501
$\mathbf{N^{5+}}$ + $\mathbf{H_2}$	Ionization	3.9-15 MeV; 150-520 eV	E/T	501
$\mathbf{O^{6+}}$ + $\mathbf{H_2}$	Ionization	3.9-15 MeV; 150-520 eV	E/T	501
$\mathbf{B^{3+}}$ + **He**	Charge Transfer	4 MeV	Exp	502
$\mathbf{B^{3+}}$ + $\mathbf{H_2}$	Charge Transfer	4 MeV	Exp	502
$\mathbf{B^{3+}}$ + **He**	Excitation	4 MeV	Exp	502
$\mathbf{B^{3+}}$ + $\mathbf{H_2}$	Excitation	4 MeV	Exp	502
$\mathbf{B^{3+}}$ + **He**	Ionization	4 MeV	Exp	502
$\mathbf{B^{3+}}$ + $\mathbf{H_2}$	Ionization	4 MeV	Exp	502
$\mathbf{C^{6+}}$ + **Ar**	Charge Transfer	0.5-1.1 MeV/u	E/T	503
$\mathbf{O^{3+}}$ + **He**	Excitation	32 MeV	Exp	504
$\mathbf{O^{4+}}$ + **He**	Excitation	32 MeV	Exp	504
$\mathbf{O^{3+}}$ + **He**	Ionization	32 MeV	Exp	504
$\mathbf{O^{4+}}$ + **He**	Ionization	32 MeV	Exp	504
$\mathbf{O^{8+}}$ + **Ar**	Charge Transfer	0.3-3.2 MeV/u	Th	505
$\mathbf{O^{8+}}$ + **Ar**	Total Scattering	0.3-3.2 MeV/u	Th	505
$\mathbf{O^{8+}}$ + **Ar**	Ionization	0.3-3.2 MeV/u	Th	505
$\mathbf{O^{6+}}$ + **He**	Charge Transfer	138 keV	Exp	506
$\mathbf{U^{91+}}$ + $\mathbf{H_2}$	Charge Transfer	102-133 MeV/u	Exp	507
$\mathbf{U^{91+}}$ + $\mathbf{H_2}$	Excitation	102-133 MeV/u	Exp	507
$\mathbf{Ar^{3+}}$ + $\mathbf{Ar^{3+}}$	Charge Transfer	15-65 keV	Exp	508
$\mathbf{Kr^{3+}}$ + $\mathbf{Kr^{3+}}$	Charge Transfer	15-65 keV	Exp	508
$\mathbf{Ar^{3+}}$ + $\mathbf{Ar^{3+}}$	Ionization	15-65 keV	Exp	508
$\mathbf{Kr^{3+}}$ + $\mathbf{Kr^{3+}}$	Ionization	15-65 keV	Exp	508
$\mathbf{He^{2+}}$ + **Na**	Charge Transfer	6 keV/amu	Exp	509
$\mathbf{He^{2+}}$ + **Na**	Ionization	6 keV/amu	Exp	509
$\mathbf{C^{4+}}$ + **He**	Charge Transfer	400-480 eV	Exp	510
$\mathbf{N^{4+}}$ + **He**	Charge Transfer	400-480 eV	Exp	510
$\mathbf{C^{4+}}$ + **He**	Total Scattering	400-480 eV	Exp	510
$\mathbf{N^{4+}}$ + **He**	Total Scattering	400-480 eV	Exp	510
$\mathbf{U^{92+}}$ + **Ar**	Charge Transfer	297 MeV/u	Exp	511
$\mathbf{U^{92+}}$ + **Ar**	Excitation	297 MeV/u	Exp	511
$\mathbf{Ne^{4+}}$ + **He**	Charge Transfer	8 keV	Exp	512
$\mathbf{Ne^{4+}}$ + **He**	Excitation	8 keV	Exp	512
$\mathbf{C^{4+}}$ + **H**	Charge Transfer	214-900 eV/amu	Exp	513
$\mathbf{C^{4+}}$ + $\mathbf{H_2}$	Charge Transfer	214-900 eV/amu	Exp	513
$\mathbf{N^{5+}}$ + **H**	Charge Transfer	214-900 eV/amu	Exp	513
$\mathbf{N^{5+}}$ + $\mathbf{H_2}$	Charge Transfer	214-900 eV/amu	Exp	513
$\mathbf{O^{6+}}$ + **H**	Charge Transfer	214-900 eV/amu	Exp	513
$\mathbf{O^{6+}}$ + $\mathbf{H_2}$	Charge Transfer	214-900 eV/amu	Exp	513
$\mathbf{C^{4+}}$ + **H**	Excitation	214-900 eV/amu	Exp	513
$\mathbf{C^{4+}}$ + $\mathbf{H_2}$	Excitation	214-900 eV/amu	Exp	513
$\mathbf{N^{5+}}$ + **H**	Excitation	214-900 eV/amu	Exp	513
$\mathbf{N^{5+}}$ + $\mathbf{H_2}$	Excitation	214-900 eV/amu	Exp	513
$\mathbf{O^{6+}}$ + **H**	Excitation	214-900 eV/amu	Exp	513
$\mathbf{O^{6+}}$ + $\mathbf{H_2}$	Excitation	214-900 eV/amu	Exp	513
$\mathbf{C^{4+}}$ + $\mathbf{H_2}$	Charge Transfer	30-80 keV	Exp	514
$\mathbf{C^{4+}}$ + $\mathbf{H_2}$	Excitation	30-80 keV	Exp	514
$\mathbf{O^{8+}}$ + **H**	Charge Transfer	0-10 keV/amu	Th	515
$\mathbf{O^{8+}}$ + **He**	Charge Transfer	0-10 keV/amu	Th	515
$\mathbf{O^{8+}}$ + **H**	Excitation	0-10 keV/amu	Th	515
$\mathbf{O^{8+}}$ + **He**	Excitation	0-10 keV/amu	Th	515
$\mathbf{Be^{3+}}$ + **He**	Charge Transfer	0.04-10 keV/amu	Th	516
$\mathbf{Be^{4+}}$ + **He**	Charge Transfer	0.04-10 keV/amu	Th	516
$\mathbf{Be^{3+}}$ + **He**	Excitation	0.04-10 keV/amu	Th	516

$\mathbf{Be^{4+}}$ + **He**	Excitation	0.04-10 keV/amu	Th	516
$\mathbf{Ne^{2+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{2+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{2+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{2+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{2+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{3+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{3+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{3+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{3+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{3+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{4+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{4+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{4+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{4+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{4+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{5+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{5+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{5+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{5+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{5+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{6+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{6+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{6+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{6+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ne^{6+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{2+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{2+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{2+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{2+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{2+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{3+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{3+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{3+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{3+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{3+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{4+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{4+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{4+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{4+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{4+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{5+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{5+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{5+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{5+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{5+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{6+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{6+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{6+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{6+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{6+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{7+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{7+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{7+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{7+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{7+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp	517
$\mathbf{Ar^{8+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp	517

$Ar^{8+} + C_2H_2$	Charge Transfer	4-18 keV	Exp	517
$Ar^{8+} + C_2H_4$	Charge Transfer	4-18 keV	Exp	517
$Ar^{8+} + C_2H_6$	Charge Transfer	4-18 keV	Exp	517
$Ar^{8+} + C_3H_4$	Charge Transfer	4-18 keV	Exp	517
$Ar^{9+} + CH_4$	Charge Transfer	4-18 keV	Exp	517
$Ar^{9+} + C_2H_2$	Charge Transfer	4-18 keV	Exp	517
$Ar^{9+} + C_2H_4$	Charge Transfer	4-18 keV	Exp	517
$Ar^{9+} + C_2H_6$	Charge Transfer	4-18 keV	Exp	517
$Ar^{9+} + C_3H_4$	Charge Transfer	4-18 keV	Exp	517
$Kr^{27+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{28+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{29+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{30+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{31+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{32+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{33+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{34+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{35+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{36+} + Ar$	Charge Transfer	216-288 keV	Exp	518
$Kr^{27+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{28+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{29+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{30+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{31+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{32+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{33+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{34+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{35+} + Ar$	Excitation	216-288 keV	Exp	518
$Kr^{36+} + Ar$	Excitation	216-288 keV	Exp	518
$Ar^{5+} + Ar$	Charge Transfer		Th	519
$Ar^{6+} + Ar$	Charge Transfer		Th	519
$Ar^{7+} + Ar$	Charge Transfer		Th	519
$Ar^{8+} + Ar$	Charge Transfer		Th	519
$Ar^{9+} + Ar$	Charge Transfer		Th	519
$Ar^{10+} + Ar$	Charge Transfer		Th	519
$Ar^{5+} + Ar$	Ionization		Th	519
$Ar^{6+} + Ar$	Ionization		Th	519
$Ar^{7+} + Ar$	Ionization		Th	519
$Ar^{8+} + Ar$	Ionization		Th	519
$Ar^{9+} + Ar$	Ionization		Th	519
$Ar^{10+} + Ar$	Ionization		Th	519
$H_2^+ + He^{2+}$	Charge Transfer	10-30 keV	Exp	520
$H_2^+ + N^{2+}$	Charge Transfer	10-30 keV	Exp	520
$H_2^+ + Ar^{2+}$	Charge Transfer	10-30 keV	Exp	520
$D_2^+ + He^{2+}$	Charge Transfer	10-30 keV	Exp	520
$D_2^+ + N^{2+}$	Charge Transfer	10-30 keV	Exp	520
$D_2^+ + Ar^{2+}$	Charge Transfer	10-30 keV	Exp	520
$Ar^{8+} + Ne_2$	Charge Transfer		Th	521
$Kr^{8+} + N_2$	Dissociation	19 eV/u	Exp	522
$Kr^{8+} + N_2$	Charge Transfer	19 eV/u	Exp	522
$Kr^{8+} + N_2$	Total Scattering	19 eV/u	Exp	522
$Kr^{8+} + N_2$	Ionization	19 eV/u	Exp	522
$Xe^{14+} + N_2$	Dissociation	5.9 MeV/u	Exp	523
$Xe^{14+} + O_2$	Dissociation	5.9 MeV/u	Exp	523
$Xe^{18+} + N_2$	Dissociation	5.9 MeV/u	Exp	523
$Xe^{18+} + O_2$	Dissociation	5.9 MeV/u	Exp	523
$Xe^{28+} + N_2$	Dissociation	5.9 MeV/u	Exp	523

$\mathbf{Xe^{28+} + O_2}$	Dissociation	5.9 MeV/u	Exp	523
$\mathbf{Xe^{43+} + N_2}$	Dissociation	5.9 MeV/u	Exp	523
$\mathbf{Xe^{43+} + O_2}$	Dissociation	5.9 MeV/u	Exp	523
$\mathbf{Xe^{14+} + N_2}$	Charge Transfer	5.9 MeV/u	Exp	523
$\mathbf{Xe^{14+} + O_2}$	Charge Transfer	5.9 MeV/u	Exp	523
$\mathbf{Xe^{18+} + N_2}$	Charge Transfer	5.9 MeV/u	Exp	523
$\mathbf{Xe^{18+} + O_2}$	Charge Transfer	5.9 MeV/u	Exp	523
$\mathbf{Xe^{28+} + N_2}$	Charge Transfer	5.9 MeV/u	Exp	523
$\mathbf{Xe^{28+} + O_2}$	Charge Transfer	5.9 MeV/u	Exp	523
$\mathbf{Xe^{43+} + N_2}$	Charge Transfer	5.9 MeV/u	Exp	523
$\mathbf{Xe^{43+} + O_2}$	Charge Transfer	5.9 MeV/u	Exp	523
$\mathbf{Xe^{14+} + N_2}$	Total Scattering	5.9 MeV/u	Exp	523
$\mathbf{Xe^{14+} + O_2}$	Total Scattering	5.9 MeV/u	Exp	523
$\mathbf{Xe^{18+} + N_2}$	Total Scattering	5.9 MeV/u	Exp	523
$\mathbf{Xe^{18+} + O_2}$	Total Scattering	5.9 MeV/u	Exp	523
$\mathbf{Xe^{28+} + N_2}$	Total Scattering	5.9 MeV/u	Exp	523
$\mathbf{Xe^{28+} + O_2}$	Total Scattering	5.9 MeV/u	Exp	523
$\mathbf{Xe^{43+} + N_2}$	Total Scattering	5.9 MeV/u	Exp	523
$\mathbf{Xe^{43+} + O_2}$	Total Scattering	5.9 MeV/u	Exp	523
$\mathbf{Xe^{14+} + N_2}$	Ionization	5.9 MeV/u	Exp	523
$\mathbf{Xe^{14+} + O_2}$	Ionization	5.9 MeV/u	Exp	523
$\mathbf{Xe^{18+} + N_2}$	Ionization	5.9 MeV/u	Exp	523
$\mathbf{Xe^{18+} + O_2}$	Ionization	5.9 MeV/u	Exp	523
$\mathbf{Xe^{28+} + N_2}$	Ionization	5.9 MeV/u	Exp	523
$\mathbf{Xe^{28+} + O_2}$	Ionization	5.9 MeV/u	Exp	523
$\mathbf{Xe^{43+} + N_2}$	Ionization	5.9 MeV/u	Exp	523
$\mathbf{Xe^{43+} + O_2}$	Ionization	5.9 MeV/u	Exp	523
$\mathbf{He^{2+} + H_2O}$	Dissociation	0.1-1.0 keV	Exp	524
$\mathbf{He^{2+} + CO_2}$	Dissociation	0.1-1.0 keV	Exp	524
$\mathbf{He^{2+} + H_2O}$	Charge Transfer	0.1-1.0 keV	Exp	524
$\mathbf{He^{2+} + CO_2}$	Charge Transfer	0.1-1.0 keV	Exp	524
$\mathbf{He^{2+} + H_2O}$	Ionization	0.1-1.0 keV	Exp	524
$\mathbf{He^{2+} + CO_2}$	Ionization	0.1-1.0 keV	Exp	524
$\mathbf{Xe^{14+} + CH_4}$	Dissociation	280-560 keV	Exp	525
$\mathbf{Xe^{18+} + CH_4}$	Dissociation	280-560 keV	Exp	525
$\mathbf{Xe^{28+} + CH_4}$	Dissociation	280-560 keV	Exp	525
$\mathbf{Xe^{14+} + CH_4}$	Ionization	280-560 keV	Exp	525
$\mathbf{Xe^{18+} + CH_4}$	Ionization	280-560 keV	Exp	525
$\mathbf{Xe^{28+} + CH_4}$	Ionization	280-560 keV	Exp	525
$\mathbf{Xe^{44+} + H_2O}$	Ionization	0.2-6.7 MeV/u	Th	526
$\mathbf{Mn^{+} + Au}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Mn^{+} + Bi}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Fe^{+} + Au}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Fe^{+} + Bi}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Co^{+} + Au}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Co^{+} + Bi}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Ni^{+} + Au}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Ni^{+} + Bi}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Cu^{+} + Au}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{Cu^{+} + Bi}$	Ionization	0.1-1.75 MeV/u	Exp	527
$\mathbf{F^{4+} + Bi}$	Ionization	20-102 MeV	Exp	528
$\mathbf{F^{5+} + Bi}$	Ionization	20-102 MeV	Exp	528
$\mathbf{F^{6+} + Bi}$	Ionization	20-102 MeV	Exp	528
$\mathbf{F^{7+} + Bi}$	Ionization	20-102 MeV	Exp	528
$\mathbf{F^{8+} + Bi}$	Ionization	20-102 MeV	Exp	528
$\mathbf{F^{9+} + Bi}$	Ionization	20-102 MeV	Exp	528
$\mathbf{U^{91+} + C}$	Charge Transfer	46 MeV/u	Exp	529

U^{91+} + C	Ionization	46 MeV/u	Exp	529
Li^{+} + H	Charge Transfer	30-200 keV/amu	Th	530
Li^{2+} + H	Charge Transfer	30-200 keV/amu	Th	530
Li^{3+} + H	Charge Transfer	30-200 keV/amu	Th	530
Li^{+} + H	Ionization	30-200 keV/amu	Th	530
Li^{2+} + H	Ionization	30-200 keV/amu	Th	530
Li^{3+} + H	Ionization	30-200 keV/amu	Th	530
Li^{+} + O	Elastic Scattering	1-5 MeV	Exp	531
H^{+} + H_2O	Ionization	0.3-10 MeV	E/T	532
Xe^{12+} + N_2	Charge Transfer	2 MeV/u	Exp	533
Xe^{17+} + N_2	Charge Transfer	2 MeV/u	Exp	533
Xe^{18+} + N_2	Charge Transfer	2 MeV/u	Exp	533
Xe^{22+} + N_2	Charge Transfer	2 MeV/u	Exp	533
Xe^{24+} + N_2	Charge Transfer	2 MeV/u	Exp	533
Xe^{27+} + N_2	Charge Transfer	2 MeV/u	Exp	533
Xe^{30+} + N_2	Charge Transfer	2 MeV/u	Exp	533
Xe^{35+} + N_2	Charge Transfer	2 MeV/u	Exp	533
Xe^{12+} + N_2	Ionization	2 MeV/u	Exp	533
Xe^{17+} + N_2	Ionization	2 MeV/u	Exp	533
Xe^{18+} + N_2	Ionization	2 MeV/u	Exp	533
Xe^{22+} + N_2	Ionization	2 MeV/u	Exp	533
Xe^{24+} + N_2	Ionization	2 MeV/u	Exp	533
Xe^{27+} + N_2	Ionization	2 MeV/u	Exp	533
Xe^{30+} + N_2	Ionization	2 MeV/u	Exp	533
Xe^{35+} + N_2	Ionization	2 MeV/u	Exp	533
C^{+} + Xe	Ionization	150 keV/u	Th	534
Si^{+} + Au	Ionization	110 MeV	E/T	535
Si^{+} + Bi	Ionization	110 MeV	E/T	535
H^{+} + He	Ionization	1-10 MeV	Th	536
LiH	Heavy Particle Collisions		E/T	537
H^{+} + He	Ionization	6 MeV	Exp	538
H + H_2	Interchange reaction	167-2112 K	Exp	539
H^{+} + He	Charge Transfer	10^{-5}-4 eV; 2.5-4.5 MeV	Exp	540
H^{+} + He	Ionization	10^{-5}-4 eV; 2.5-4.5 MeV	Exp	540
Na + Na	Association		Exp	541
Ar^{8+} + He	Charge Transfer	4.5 keV/u	Exp	542
Ar^{8+} + Ne	Charge Transfer	4.5 keV/u	Exp	542
Ar^{8+} + Ar	Charge Transfer	4.5 keV/u	Exp	542
Ar^{9+} + He	Charge Transfer	4.5 keV/u	Exp	542
Ar^{9+} + Ne	Charge Transfer	4.5 keV/u	Exp	542
Ar^{9+} + Ar	Charge Transfer	4.5 keV/u	Exp	542
Ar^{11+} + He	Charge Transfer	4.5 keV/u	Exp	542
Ar^{11+} + Ne	Charge Transfer	4.5 keV/u	Exp	542
Ar^{11+} + Ar	Charge Transfer	4.5 keV/u	Exp	542
Ar^{12+} + He	Charge Transfer	4.5 keV/u	Exp	542
Ar^{12+} + Ne	Charge Transfer	4.5 keV/u	Exp	542
Ar^{12+} + Ar	Charge Transfer	4.5 keV/u	Exp	542
Ar^{13+} + He	Charge Transfer	4.5 keV/u	Exp	542
Ar^{13+} + Ne	Charge Transfer	4.5 keV/u	Exp	542
Ar^{13+} + Ar	Charge Transfer	4.5 keV/u	Exp	542
Ar^{14+} + He	Charge Transfer	4.5 keV/u	Exp	542
Ar^{14+} + Ne	Charge Transfer	4.5 keV/u	Exp	542
Ar^{14+} + Ar	Charge Transfer	4.5 keV/u	Exp	542
Ar^{8+} + He	Ionization	4.5 keV/u	Exp	542
Ar^{8+} + Ne	Ionization	4.5 keV/u	Exp	542
Ar^{8+} + Ar	Ionization	4.5 keV/u	Exp	542
Ar^{9+} + He	Ionization	4.5 keV/u	Exp	542

Ar^{9+} + Ne	Ionization	4.5 keV/u	Exp	542
Ar^{9+} + Ar	Ionization	4.5 keV/u	Exp	542
Ar^{11+} + He	Ionization	4.5 keV/u	Exp	542
Ar^{11+} + Ne	Ionization	4.5 keV/u	Exp	542
Ar^{11+} + Ar	Ionization	4.5 keV/u	Exp	542
Ar^{12+} + He	Ionization	4.5 keV/u	Exp	542
Ar^{12+} + Ne	Ionization	4.5 keV/u	Exp	542
Ar^{12+} + Ar	Ionization	4.5 keV/u	Exp	542
Ar^{13+} + He	Ionization	4.5 keV/u	Exp	542
Ar^{13+} + Ne	Ionization	4.5 keV/u	Exp	542
Ar^{13+} + Ar	Ionization	4.5 keV/u	Exp	542
Ar^{14+} + He	Ionization	4.5 keV/u	Exp	542
Ar^{14+} + Ne	Ionization	4.5 keV/u	Exp	542
Ar^{14+} + Ar	Ionization	4.5 keV/u	Exp	542
K + Rb	Interaction Potentials		Th	543
O^{2+} + V	Ionization	6.4-70 MeV	Exp	544
O^{2+} + Au	Ionization	6.4-70 MeV	Exp	544
O^{2+} + Bi	Ionization	6.4-70 MeV	Exp	544
O^{2+} + Th	Ionization	6.4-70 MeV	Exp	544
O^{3+} + V	Ionization	6.4-70 MeV	Exp	544
O^{3+} + Au	Ionization	6.4-70 MeV	Exp	544
O^{3+} + Bi	Ionization	6.4-70 MeV	Exp	544
O^{3+} + Th	Ionization	6.4-70 MeV	Exp	544
O^{4+} + V	Ionization	6.4-70 MeV	Exp	544
O^{4+} + Au	Ionization	6.4-70 MeV	Exp	544
O^{4+} + Bi	Ionization	6.4-70 MeV	Exp	544
O^{4+} + Th	Ionization	6.4-70 MeV	Exp	544
O^{5+} + V	Ionization	6.4-70 MeV	Exp	544
O^{5+} + Au	Ionization	6.4-70 MeV	Exp	544
O^{5+} + Bi	Ionization	6.4-70 MeV	Exp	544
O^{5+} + Th	Ionization	6.4-70 MeV	Exp	544
O^{6+} + V	Ionization	6.4-70 MeV	Exp	544
O^{6+} + Au	Ionization	6.4-70 MeV	Exp	544
O^{6+} + Bi	Ionization	6.4-70 MeV	Exp	544
O^{6+} + Th	Ionization	6.4-70 MeV	Exp	544
He + He	Interaction Potentials		Th	545
I^{-} + N	Ionization	3.2 GeV	Th	546
Cs^{+} + N	Ionization	3.2 GeV	Th	546
H^{+} + Si	Ionization	1-3 MeV	Exp	547
Rb + Rb	Elastic Scattering	10^{-6} K	Exp	548
B^{2+} + H	Charge Transfer	0.1-10,000 eV; 100-10^{7} K	Th	549
H^{+} + Na	Charge Transfer	3-40 eV	Th	550
Ne^{2+} + He	Charge Transfer	10-10,000 eV	Th	551
Xe + Xe	Association	300 K	E/T	552
Xe^{*} + Xe	Association	300 K	E/T	552
Xe + Xe	Ionization	300 K	E/T	552
Xe^{*} + Xe	Ionization	300 K	E/T	552
He^{+} + Ni	Elastic Scattering	90-130 keV	E/T	553
He^{+} + Sb	Elastic Scattering	90-130 keV	E/T	553
He^{+} + Hf	Elastic Scattering	90-130 keV	E/T	553
Ne^{+} + Ni	Elastic Scattering	90-130 keV	E/T	553
Ne^{+} + Sb	Elastic Scattering	90-130 keV	E/T	553
Ne^{+} + Hf	Elastic Scattering	90-130 keV	E/T	553
He^{+} + Ni	Total Scattering	90-130 keV	E/T	553
He^{+} + Sb	Total Scattering	90-130 keV	E/T	553
He^{+} + Hf	Total Scattering	90-130 keV	E/T	553
Ne^{+} + Ni	Total Scattering	90-130 keV	E/T	553

Ne^+ + Sb	Total Scattering	90-130 keV	E/T	553
Ne^+ + Hf	Total Scattering	90-130 keV	E/T	553
Rb + He	Line Broadening	1-100 K	E/T	554
Rb + He_2	Line Broadening	1-100 K	E/T	554
Rb + He	Interaction Potentials	1-100 K	E/T	554
Rb + He_2	Interaction Potentials	1-100 K	E/T	554
Rb + He	Fluorescence	1-100 K	E/T	554
Rb + He_2	Fluorescence	1-100 K	E/T	554
H^+ + Li	Charge Transfer	5-15 keV	Th	555
C + He	Excitation	10^{-10} - 10^{-4} eV; 0.5-1 K	Th	556
O + He	Excitation	10^{-10} - 10^{-4} eV; 0.5-1 K	Th	556
C^{6+} + He	Total Scattering	2 MeV/u	E/T	557
C^{6+} + He	Ionization	2 MeV/u	E/T	557
C^{5+} + Zr	Fluorescence	20 MeV/u	E/T	558
C^{5+} + Nb	Fluorescence	20 MeV/u	E/T	558
C^{5+} + Mo	Fluorescence	20 MeV/u	E/T	558
C^{5+} + Pd	Fluorescence	20 MeV/u	E/T	558
C^{5+} + Zr	Ionization	20 MeV/u	E/T	558
C^{5+} + Nb	Ionization	20 MeV/u	E/T	558
C^{5+} + Mo	Ionization	20 MeV/u	E/T	558
C^{5+} + Pd	Ionization	20 MeV/u	E/T	558
He + F_2	De-excitation	10^{-6}-2000 cm^{-1}	Th	559
He + F_2	Excitation	10^{-6}-2000 cm^{-1}	Th	559
Ca + Ca	Association	Ultracold	Th	560
Ca + Ca	Interaction Potentials	Ultracold	Th	560
Ne^{2+} + H	Charge Transfer	139-1490 eV/u	E/T	561
Ne^{2+} + H	Interaction Potentials	139-1490 eV/u	E/T	561
Hg + N_2	Line Broadening	400 torr	Exp	562
H^+ + LiF	Charge Transfer	slow	Th	563
C^+ + LiF	Charge Transfer	slow	Th	563
Na^+ + LiF	Charge Transfer	slow	Th	563
S^+ + LiF	Charge Transfer	slow	Th	563
Na + Na	Association	ultracold	Th	564
Rb + Rb	Association	ultracold	Th	564
Na + Na	Elastic Scattering	ultracold	Th	564
Rb + Rb	Elastic Scattering	ultracold	Th	564
Cd + Cd	Interaction Potentials	2500-2700 $\AA$	E/T	565
Cd + Cd	Fluorescence	2500-2700 $\AA$	E/T	565
Ar^+ + Ne	Ionization	0.74-1.4 MeV/u	E/T	566
Ar^+ + Ar	Ionization	0.74-1.4 MeV/u	E/T	566
Ar^+ + N_2	Ionization	0.74-1.4 MeV/u	E/T	566
Ar^{2+} + Ne	Ionization	0.74-1.4 MeV/u	E/T	566
Ar^{2+} + Ar	Ionization	0.74-1.4 MeV/u	E/T	566
Ar^{2+} + N_2	Ionization	0.74-1.4 MeV/u	E/T	566
Xe^{3+} + Ne	Ionization	0.74-1.4 MeV/u	E/T	566
Xe^{3+} + Ar	Ionization	0.74-1.4 MeV/u	E/T	566
Xe^{3+} + N_2	Ionization	0.74-1.4 MeV/u	E/T	566
H + H^-	Interaction Potentials		Th	567
H^* + H^-	Interaction Potentials		Th	567
Rb + Rb	Interaction Potentials		Th	567
H^+ + Ne	Dissociation	1 MeV/u	Exp	568
$H_2{}^+$ + Ne	Dissociation	1 MeV/u	Exp	568
$H_2{}^+$ + Ne	Ionization	1 MeV/u	Exp	568
Na + Rb	Elastic Scattering		Th	569
Na + Rb	Interaction Potentials		Th	569
Na + Rb	Excitation		Th	569
Li^+ + Na	Charge Transfer	298-1191 eV	Exp	570

Li^+ + Na^*	Charge Transfer	298-1191 eV	Exp	570
U^{91+} + H_2	Charge Transfer	116.6-133.1 MeV/u	Th	571
U^{91+} + H_2	Excitation	116.6-133.1 MeV/u	Th	571
U^{91+} + H_2	Charge Transfer	100-135 MeV/u	Exp	572
U^{91+} + H_2	Excitation	100-135 MeV/u	Exp	572
H + H	Elastic Scattering		Th	573
H + H	Interaction Potentials		Th	573
H^+ + He	Charge Transfer	0.04-15 MeV	Th	574
H^+ + He	Total Scattering	0.04-15 MeV	Th	574
C^{4+} + Cl	Ionization	1.5-6 MeV	Exp	575
C^{4+} + K	Ionization	1.5-6 MeV	Exp	575
C^{4+} + Ti	Ionization	1.5-6 MeV	Exp	575
C^{4+} + Fe	Ionization	1.5-6 MeV	Exp	575
C^{4+} + Cu	Ionization	1.5-6 MeV	Exp	575
C^{5+} + Cl	Ionization	1.5-6 MeV	Exp	575
C^{5+} + K	Ionization	1.5-6 MeV	Exp	575
C^{5+} + Ti	Ionization	1.5-6 MeV	Exp	575
C^{5+} + Fe	Ionization	1.5-6 MeV	Exp	575
C^{5+} + Cu	Ionization	1.5-6 MeV	Exp	575
C^{6+} + Cl	Ionization	1.5-6 MeV	Exp	575
C^{6+} + K	Ionization	1.5-6 MeV	Exp	575
C^{6+} + Ti	Ionization	1.5-6 MeV	Exp	575
C^{6+} + Fe	Ionization	1.5-6 MeV	Exp	575
C^{6+} + Cu	Ionization	1.5-6 MeV	Exp	575
H^+ + He	Ionization	0.75-3.5 MeV	Exp	576
H^+ + Ar	Ionization	0.75-3.5 MeV	Exp	576
H^+ + Kr	Ionization	0.75-3.5 MeV	Exp	576
H^+ + Xe	Ionization	0.75-3.5 MeV	Exp	576
Mg + He	Interaction Potentials		Th	577
Ca + He	Interaction Potentials		Th	577
Be^{4+} + H	Charge Transfer	10^-3 - 10^3 eV/u	Th	578
Si^{4+} + H	Charge Transfer	10^-3 - 10^3 eV/u	Th	578
Si^{4+} + D	Charge Transfer	10^-3 - 10^3 eV/u	Th	578
Fe^{5+} + He	Charge Transfer	7xq keV	Exp	579
Fe^{6+} + He	Charge Transfer	7xq keV	Exp	579
Fe^{7+} + He	Charge Transfer	7xq keV	Exp	579
Fe^{8+} + He	Charge Transfer	7xq keV	Exp	579
Fe^{9+} + He	Charge Transfer	7xq keV	Exp	579
Fe^{10+} + He	Charge Transfer	7xq keV	Exp	579
Fe^{11+} + He	Charge Transfer	7xq keV	Exp	579
Fe^{12+} + He	Charge Transfer	7xq keV	Exp	579
Fe^{13+} + He	Charge Transfer	7xq keV	Exp	579
H^+ + He	Excitation	1.4-8.5 a.u.	Exp	580
H_2^+ + He	Excitation	1.4-8.5 a.u.	Exp	580
H_3^+ + He	Excitation	1.4-8.5 a.u.	Exp	580
H^+ + He	Ionization	1.4-8.5 a.u.	Exp	580
H_2^+ + He	Ionization	1.4-8.5 a.u.	Exp	580
H_3^+ + He	Ionization	1.4-8.5 a.u.	Exp	580
H^+ + Ca	Charge Transfer	1-100 keV	Th	581
Cl^- + H	Association	0.2-8.0 eV	Exp	582
Cl^- + D	Association	0.2-8.0 eV	Exp	582
Br^- + H	Association	0.2-8.0 eV	Exp	582
Br^- + D	Association	0.2-8.0 eV	Exp	582
Cl^- + H	Detachment	0.2-8.0 eV	Exp	582
Cl^- + D	Detachment	0.2-8.0 eV	Exp	582
Br^- + H	Detachment	0.2-8.0 eV	Exp	582
Br^- + D	Detachment	0.2-8.0 eV	Exp	582

$\mathbf{U^{92+} + He}$	Ionization	1 GeV/u	Th	583
$\mathbf{C^{6+} + He}$	Total Scattering	3.6-100 MeV/u	Exp	584
$\mathbf{Au^{53+} + He}$	Total Scattering	3.6-100 MeV/u	Exp	584
$\mathbf{C^{6+} + He}$	Ionization	3.6-100 MeV/u	Exp	584
$\mathbf{Au^{53+} + He}$	Ionization	3.6-100 MeV/u	Exp	584
$\mathbf{B^{3+} + H_2}$	Charge Transfer	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{C^{4+} + H_2}$	Charge Transfer	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{N^{5+} + H_2}$	Charge Transfer	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{O^{6+} + H_2}$	Charge Transfer	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{F^{7+} + H_2}$	Charge Transfer	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{B^{3+} + H_2}$	Ionization	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{C^{4+} + H_2}$	Ionization	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{N^{5+} + H_2}$	Ionization	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{O^{6+} + H_2}$	Ionization	4-20 MeV; 270-300 eV	E/T	585
$\mathbf{F^{7+} + H_2}$	Ionization	4-20 MeV; 270-300 eV	E/T	585
Cd + Xe	Line Broadening	724 K	E/T	586
$\mathbf{H^- + He}$	Excitation	2-7 keV	Exp	587
$\mathbf{H^- + Ne}$	Excitation	2-7 keV	Exp	587
$\mathbf{H^- + Ar}$	Excitation	2-7 keV	Exp	587
$\mathbf{C^{6+} + He}$	Ionization	100 MeV/u	Th	588
$\mathbf{H^+ + H}$	Charge Transfer	20-2000 eV	Th	589
$\mathbf{H^+ + D}$	Charge Transfer	20-2000 eV	Th	589
$\mathbf{H^+ + H}$	Excitation	20-2000 eV	Th	589
$\mathbf{H^+ + D}$	Excitation	20-2000 eV	Th	589
$\mathbf{C^{6+} + He}$	Ionization	2-3.6 MeV/u	E/T	590
$\mathbf{Au^{24+} + He}$	Ionization	2-3.6 MeV/u	E/T	590
$\mathbf{Au^{53+} + He}$	Ionization	2-3.6 MeV/u	E/T	590
$\mathbf{C^{4+} + H_2}$	Dissociation	250-900 eV/amu	Exp	591
$\mathbf{C^{5+} + H_2}$	Dissociation	250-900 eV/amu	Exp	591
$\mathbf{N^{5+} + H_2}$	Dissociation	250-900 eV/amu	Exp	591
$\mathbf{N^{6+} + H_2}$	Dissociation	250-900 eV/amu	Exp	591
$\mathbf{O^{6+} + H_2}$	Dissociation	250-900 eV/amu	Exp	591
$\mathbf{O^{7+} + H_2}$	Dissociation	250-900 eV/amu	Exp	591
$\mathbf{C^{4+} + H}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{C^{4+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{C^{5+} + H}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{C^{5+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{N^{5+} + H}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{N^{5+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{N^{6+} + H}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{N^{6+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{O^{6+} + H}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{O^{6+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{O^{7+} + H}$	Charge Transfer	250-900 eV/amu	Exp	591
$\mathbf{O^{7+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp	591
H + H	Interaction Potentials		Th	592
H + D	Interaction Potentials		Th	592
N + O	Interaction Potentials		Th	593
$\mathbf{H^+ + CH_4}$	Dissociation	0.5-3.5 MeV; 0-1000 eV	E/T	594
$\mathbf{H^+ + CH_4}$	Ionization	0.5-3.5 MeV; 0-1000 eV	E/T	594
$\mathbf{H^+ + H_2}$	Charge Transfer	0.18-1.5 keV/u	E/T	595
Li + Li	Association	24 GHz	E/T	596
$\mathbf{H^+ + Ar}$	Ionization	10-300 keV	E/T	597
$\mathbf{S^{2+} + H_2}$	Charge Transfer	1077-6462 K	Exp	598
$\mathbf{S^{2+} + CO}$	Charge Transfer	1077-6462 K	Exp	598
$\mathbf{S^{2+} + N_2}$	Charge Transfer	1077-6462 K	Exp	598
$\mathbf{C^{2+} + He}$	Charge Transfer	2630-11,700 K	Exp	599

$\mathbf{C^{2+} + H_2}$	Charge Transfer	2630-11,700 K	Exp	599
$\mathbf{C^{2+} + CO}$	Charge Transfer	2630-11,700 K	Exp	599
$\mathbf{C^{2+} + N_2}$	Charge Transfer	2630-11,700 K	Exp	599

2.3 Surface Interactions

$\mathbf{O^{8+} + LiF}$	Reflection	27-250 eV	Th	600
$\mathbf{Ne^{10+} + LiF}$	Reflection	27-250 eV	Th	600
$\mathbf{O^{8+} + LiF}$	Neutraliz., Ioniz., Dissoc.	27-250 eV	Th	600
$\mathbf{Ne^{10+} + LiF}$	Neutraliz., Ioniz., Dissoc.	27-250 eV	Th	600
$\mathbf{H^+ + Al}$	Secondary Electron Emission	100 keV	Th	601
$\mathbf{H^+ + LiF}$	Secondary Electron Emission	100 keV	Th	601
$\mathbf{N^{5+} + Pt}$	Reflection	60-75 keV	Exp	602
$\mathbf{N^{6+} + Pt}$	Reflection	60-75 keV	Exp	602
$\mathbf{H + LiF}$	Reflection	0-25 keV	Th	603
$\mathbf{H^+ + Cu}$	Reflection	0.25-2 v(a.u.)	Th	604
$\mathbf{Kr^{35+} + C}$	Surface Interactions	55 MeV/u	Th	605
$\mathbf{Kr^{35+} + C}$	Neutraliz., Ioniz., Dissoc.	55 MeV/u	Th	605
$\mathbf{H_2 + C_{62}H_{20}}$	Adsorption, Desorption		Th	606
$\mathbf{Xe^+ + Be}$	Sputtering	10-200 eV	Exp	607
$\mathbf{Xe^+ + C}$	Sputtering	10-200 eV	Exp	607
$\mathbf{Xe^+ + Ti}$	Sputtering	10-200 eV	Exp	607
$\mathbf{Xe^+ + Mo}$	Sputtering	10-200 eV	Exp	607
$\mathbf{H^+ + Be}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{H^+ + V}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{H^+ + Fe}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{H^+ + W}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{H^+ + SiC}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{D^+ + Be}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{D^+ + V}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{D^+ + Fe}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{D^+ + W}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{D^+ + SiC}$	Sputtering	$10\text{-}10^3$ eV	E/T	608
$\mathbf{H^+ + Be}$	Trapping, Detrapping		E/T	609
$\mathbf{H^+ + C}$	Trapping, Detrapping		E/T	609
$\mathbf{H^+ + W}$	Trapping, Detrapping		E/T	609
$\mathbf{T^+ + Be}$	Trapping, Detrapping		E/T	609
$\mathbf{T^+ + C}$	Trapping, Detrapping		E/T	609
$\mathbf{T^+ + W}$	Trapping, Detrapping		E/T	609
$\mathbf{CH_3 + C}$	Adsorption, Desorption		Th	610
$\mathbf{H^+ + C}$	Sputtering	1-4 keV	Exp	611
$\mathbf{D^+ + C}$	Sputtering	1-4 keV	Exp	611
$\mathbf{O^+ + W}$	Sputtering	20 eV	Th	612
$\mathbf{He^+ + W}$	Trapping, Detrapping	100 eV	Exp	613
$\mathbf{H^+ + Pd}$	Neutraliz., Ioniz., Dissoc.		E/T	614
$\mathbf{D^+ + Pd}$	Neutraliz., Ioniz., Dissoc.		E/T	614
$\mathbf{H^+ + Pd}$	Trapping, Detrapping		E/T	614
$\mathbf{D^+ + Pd}$	Trapping, Detrapping		E/T	614
$\mathbf{H^+ + Be}$	Chemical Reactions	100 eV	Exp	615
$\mathbf{H^+ + BeO}$	Chemical Reactions	100 eV	Exp	615
$\mathbf{D^+ + Be}$	Chemical Reactions	100 eV	Exp	615
$\mathbf{D^+ + BeO}$	Chemical Reactions	100 eV	Exp	615
$\mathbf{H_2{}^+ + Be}$	Chemical Reactions	1 keV	Exp	616
$\mathbf{D_2{}^+ + Be}$	Chemical Reactions	1 keV	Exp	616
$\mathbf{H_2{}^+ + Be}$	Trapping, Detrapping	1 keV	Exp	616

$\mathbf{D_2^+ + Be}$	Trapping, Detrapping	1 keV	Exp	616
$\mathbf{H_2^+ + C}$	Sputtering	50-200 eV	Exp	617
$\mathbf{D_2^+ + C}$	Sputtering	50-200 eV	Exp	617
$\mathbf{H + TiO_2}$	Adsorption, Desorption	300 K	Exp	618
$\mathbf{D + TiO_2}$	Adsorption, Desorption	300 K	Exp	618
C + C	Reflection	0-10 eV	Exp	619
CH + C	Reflection	0-10 eV	Exp	619
$\mathbf{CH_2 + C}$	Reflection	0-10 eV	Exp	619
$\mathbf{CH_3 + C}$	Reflection	0-10 eV	Exp	619
$\mathbf{CH_4 + C}$	Reflection	0-10 eV	Exp	619
$\mathbf{H^+ + W}$	Trapping, Detrapping	500 eV	Exp	620
$\mathbf{D^+ + W}$	Trapping, Detrapping	500 eV	Exp	620
$\mathbf{H^+ + C}$	Reflection	10-1000 eV	Th	621
$\mathbf{H^+ + W}$	Reflection	10-1000 eV	Th	621
$\mathbf{D^+ + C}$	Reflection	10-1000 eV	Th	621
$\mathbf{D^+ + W}$	Reflection	10-1000 eV	Th	621
$\mathbf{T^+ + C}$	Reflection	10-1000 eV	Th	621
$\mathbf{T^+ + W}$	Reflection	10-1000 eV	Th	621
$\mathbf{H^+ + C}$	Trapping, Detrapping	10-1000 eV	Th	621
$\mathbf{H^+ + W}$	Trapping, Detrapping	10-1000 eV	Th	621
$\mathbf{D^+ + C}$	Trapping, Detrapping	10-1000 eV	Th	621
$\mathbf{D^+ + W}$	Trapping, Detrapping	10-1000 eV	Th	621
$\mathbf{T^+ + C}$	Trapping, Detrapping	10-1000 eV	Th	621
$\mathbf{T^+ + W}$	Trapping, Detrapping	10-1000 eV	Th	621
$\mathbf{H_2^+ + C}$	Trapping, Detrapping	5 keV	Exp	622
$\mathbf{H_2 + Mo}$	Adsorption, Desorption	300 K	Exp	623
$\mathbf{H_2 + W}$	Adsorption, Desorption	300 K	Exp	623
$\mathbf{D_2 + Mo}$	Adsorption, Desorption	300 K	Exp	623
$\mathbf{D_2 + W}$	Adsorption, Desorption	300 K	Exp	623
$\mathbf{H_2^+ + Li}$	Sputtering	50-400 eV	Exp	624
$\mathbf{H_2^+ + C}$	Sputtering	50-400 eV	Exp	624
$\mathbf{H_2O + Li}$	Adsorption, Desorption	1 keV; 300 K	Exp	625
$\mathbf{H^+ + Li}$	Trapping, Detrapping	1 keV; 300 K	Exp	625
$\mathbf{H^+ + C}$	Trapping, Detrapping	1 keV; 300 K	Exp	625
$\mathbf{D^+ + Li}$	Trapping, Detrapping	1 keV; 300 K	Exp	625
$\mathbf{D^+ + C}$	Trapping, Detrapping	1 keV; 300 K	Exp	625
$\mathbf{H^+ + C}$	Sputtering	0.2-2.4 keV	E/T	626
$\mathbf{H^+ + W}$	Sputtering	0.2-2.4 keV	E/T	626
$\mathbf{C^+ + C}$	Sputtering	0.2-2.4 keV	E/T	626
$\mathbf{C^+ + W}$	Sputtering	0.2-2.4 keV	E/T	626
$\mathbf{D^+ + C}$	Sputtering	0.2-2.4 keV	E/T	626
$\mathbf{D^+ + W}$	Sputtering	0.2-2.4 keV	E/T	626
$\mathbf{CH_3^+ + W}$	Sputtering	0.2-2.4 keV	E/T	626
$\mathbf{H^+ + CH}$	Sputtering	30 eV	Exp	627
$\mathbf{D^+ + CH}$	Sputtering	30 eV	Exp	627
$\mathbf{H_3^+ + C}$	Sputtering	200 eV	Exp	628
$\mathbf{H_3^+ + W}$	Sputtering	200 eV	Exp	628
$\mathbf{D_3^+ + C}$	Sputtering	200 eV	Exp	628
$\mathbf{D_3^+ + W}$	Sputtering	200 eV	Exp	628
$\mathbf{H^+ + C}$	Sputtering	5-300 eV	Th	629
$\mathbf{H^+ + Si}$	Sputtering	5-300 eV	Th	629
$\mathbf{W^+ + W}$	Sputtering	5-300 eV	Th	629
$\mathbf{D^+ + C}$	Sputtering	5-300 eV	Th	629
$\mathbf{D^+ + Si}$	Sputtering	5-300 eV	Th	629
$\mathbf{H^+ + C}$	Sputtering	200 eV	Exp	630
$\mathbf{He^+ + C}$	Sputtering	200 eV	Exp	630
$\mathbf{H_2^+ + C}$	Sputtering	200 eV	Exp	630

H_3^+ + C	Sputtering	200 eV	Exp	630
D^+ + C	Sputtering	200 eV	Exp	630
D_2^+ + C	Sputtering	200 eV	Exp	630
D_3^+ + C	Sputtering	200 eV	Exp	630
C^+ + C	Reflection		Th	631
C^+ + CH	Reflection		Th	631
CH_4 + C	Reflection		Th	631
CH_4 + CH	Reflection		Th	631
H_3^+ + W	Trapping, Detrapping	600 eV	E/T	632
H_3^+ + WO_3	Trapping, Detrapping	600 eV	E/T	632
D_3^+ + W	Trapping, Detrapping	600 eV	E/T	632
D_3^+ + WO_3	Trapping, Detrapping	600 eV	E/T	632
H_2 + C	Adsorption, Desorption	300 K	Exp	633
H_2 + C	Trapping, Detrapping	300 K	Exp	633
H_2^+ + C	Trapping, Detrapping	1 keV	Exp	634
D_2^+ + C	Trapping, Detrapping	1 keV	Exp	634
H + C	Trapping, Detrapping		Exp	635
D + C	Trapping, Detrapping		Exp	635
H_2^+ + W	Trapping, Detrapping	15 keV	Th	636
D_2^+ + W	Trapping, Detrapping	15 keV	Th	636
H^+ + Li	Sputtering	10^{-3} - 10^{0} keV	Th	637
Li^+ + Li	Sputtering	10^{-3} - 10^{0} keV	Th	637
D^+ + Li	Sputtering	10^{-3} - 10^{0} keV	Th	637
T^+ + Li	Sputtering	10^{-3} - 10^{0} keV	Th	637
H^+ + Sn	Sputtering	300-1000 eV	Exp	638
He^+ + Sn	Sputtering	300-1000 eV	Exp	638
D^+ + Sn	Sputtering	300-1000 eV	Exp	638
He^+ + Li	Sputtering	700 eV	Th	639
H + Li	Trapping, Detrapping	5 keV	Exp	640
He + Li	Trapping, Detrapping	5 keV	Exp	640
D + Li	Trapping, Detrapping	5 keV	Exp	640
H^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp	641
H_2^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp	641
H_3^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp	641
D^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp	641
D_2^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp	641
D_3^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp	641
D_3^+ + C	Neutraliz., Ioniz., Dissoc.	0.1-5.0 keV	Exp	641
H^+ + Ni	Trapping, Detrapping	1 keV	Exp	642
H^+ + W	Trapping, Detrapping	1 keV	Exp	642
D^+ + Ni	Trapping, Detrapping	1 keV	Exp	642
D^+ + W	Trapping, Detrapping	1 keV	Exp	642
T^+ + Ni	Trapping, Detrapping	1 keV	Exp	642
T^+ + W	Trapping, Detrapping	1 keV	Exp	642
H^+ + W	Sputtering	10^{-1} - 10^{5} eV	Th	643
He^+ + W	Sputtering	10^{-1} - 10^{5} eV	Th	643
C^+ + C	Sputtering	10^{-1} - 10^{5} eV	Th	643
N^+ + W	Sputtering	10^{-1} - 10^{5} eV	Th	643
Ne^+ + C	Sputtering	10^{-1} - 10^{5} eV	Th	643
Ne^+ + W	Sputtering	10^{-1} - 10^{5} eV	Th	643
Ar^+ + W	Sputtering	10^{-1} - 10^{5} eV	Th	643
Xe^+ + C	Sputtering	10^{-1} - 10^{5} eV	Th	643
Xe^+ + Ni	Sputtering	10^{-1} - 10^{5} eV	Th	643
W^+ + W	Sputtering	10^{-1} - 10^{5} eV	Th	643
T^+ + W	Sputtering	10^{-1} - 10^{5} eV	Th	643
He^+ + Ag	Reflection	1-4 keV	E/T	644
He^+ + Ag	Neutraliz., Ioniz., Dissoc.	1-4 keV	E/T	644

Li^+ + Ni	Reflection	3.0 keV	Exp	645
Li^+ + H + Ni	Reflection	3.0 keV	Exp	645
Li^+ + N + Ni	Reflection	3.0 keV	Exp	645
e + Al	Secondary Electron Emission	0-800 eV	Exp	646
e + Cu	Secondary Electron Emission	0-800 eV	Exp	646
H + Cu	Reflection	25-200 eV	Exp	647
H^+ + Cu	Reflection	25-200 eV	Exp	647
Ar + Si	Sputtering	50-500 eV	Th	648
Na^+ + NaCl	Sputtering	1 keV	Th	649
H + C	Sputtering	10-1000 eV	Th	650
Al^+ + Al	Sputtering	500 eV	Th	651
Al^+ + Ni	Sputtering	500 eV	Th	651
Ni^+ + Al	Sputtering	500 eV	Th	651
Ni^+ + Ni	Sputtering	500 eV	Th	651
H^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
C^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
N^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
O^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
H_2^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
H_3^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
D^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
D_2^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
D_3^+ + C	Secondary Electron Emission	0.05-10 keV	Exp	652
He^+ + Metal	Reflection		Th	653
He^+ + Metal	Neutraliz., Ioniz., Dissoc.		Th	653
He^+ + Al	Reflection		Th	654
He^+ + Al	Neutraliz., Ioniz., Dissoc.		Th	654
H + LiF	Reflection	350-800 eV	Exp	655
H + LiF	Secondary Electron Emission	350-800 eV	Exp	655
H + LiF	Neutraliz., Ioniz., Dissoc.	350-800 eV	Exp	655
He + Mg	Secondary Electron Emission	300 K	Exp	656
He^* + Mg	Secondary Electron Emission	300 K	Exp	656
He + Mg	Neutraliz., Ioniz., Dissoc.	300 K	Exp	656
He^* + Mg	Neutraliz., Ioniz., Dissoc.	300 K	Exp	656
H^+ + Al	Reflection	3-20 keV	Th	657
H^+ + Al	Secondary Electron Emission	3-20 keV	Th	657
H^+ + Al	Neutraliz., Ioniz., Dissoc.	3-20 keV	Th	657
H^+ + Al	Secondary Electron Emission	60 keV	Exp	658
H^+ + AlF_3	Secondary Electron Emission	60 keV	Exp	658
H^- + Li	Neutraliz., Ioniz., Dissoc.		Th	659
H^- + Cs	Neutraliz., Ioniz., Dissoc.		Th	659
He + Ag	Reflection	0.1-120 keV	Exp	660
He^+ + Ag	Reflection	0.1-120 keV	Exp	660
He + Ag	Neutraliz., Ioniz., Dissoc.	0.1-120 keV	Exp	660
He^+ + Ag	Neutraliz., Ioniz., Dissoc.	0.1-120 keV	Exp	660
H^+ + LiF	Secondary Electron Emission	300 keV	Th	661
Xe + Au	Neutraliz., Ioniz., Dissoc.	300 K	E/T	662
Xe^* + Au	Neutraliz., Ioniz., Dissoc.	300 K	E/T	662
H^+ + Ar	Reflection	500 eV	E/T	663
H^+ + Kr	Reflection	500 eV	E/T	663
H^+ + Xe	Reflection	500 eV	E/T	663
H^+ + Ar	Neutraliz., Ioniz., Dissoc.	500 eV	E/T	663
H^+ + Kr	Neutraliz., Ioniz., Dissoc.	500 eV	E/T	663
H^+ + Xe	Neutraliz., Ioniz., Dissoc.	500 eV	E/T	663
Ar^{9+} + Au	Surface Interactions	4 keV	E/T	664
H^+ + Al	Surface Interactions	120-500 keV	Th	665
H^+ + LiF	Surface Interactions	120-500 keV	Th	665

Au^- + Si	Sputtering	4-18 keV	Exp	666
Au_2^- + Si	Sputtering	4-18 keV	Exp	666
Au_3^- + Si	Sputtering	4-18 keV	Exp	666
Au_4^- + Si	Sputtering	4-18 keV	Exp	666
Au_5^- + Si	Sputtering	4-18 keV	Exp	666
Si^{5+} + Si	Sputtering	35-66 MeV	Exp	667
Si^{5+} + Si_3N_4	Sputtering	35-66 MeV	Exp	667
Si^{5+} + SiO_2	Sputtering	35-66 MeV	Exp	667
Cl^{5+} + Si	Sputtering	35-66 MeV	Exp	667
Cl^{5+} + Si_3N_4	Sputtering	35-66 MeV	Exp	667
Cl^{5+} + SiO_2	Sputtering	35-66 MeV	Exp	667
Cu^{8+} + Si	Sputtering	35-66 MeV	Exp	667
Cu^{8+} + Si_3N_4	Sputtering	35-66 MeV	Exp	667
Cu^{8+} + SiO_2	Sputtering	35-66 MeV	Exp	667
Cu^{9+} + Si	Sputtering	35-66 MeV	Exp	667
Cu^{9+} + Si_3N_4	Sputtering	35-66 MeV	Exp	667
Cu^{9+} + SiO_2	Sputtering	35-66 MeV	Exp	667
Cu^{16+} + Si	Sputtering	35-66 MeV	Exp	667
Cu^{16+} + Si_3N_4	Sputtering	35-66 MeV	Exp	667
Cu^{16+} + SiO_2	Sputtering	35-66 MeV	Exp	667
Ag^{10+} + Si	Sputtering	35-66 MeV	Exp	667
Ag^{10+} + Si_3N_4	Sputtering	35-66 MeV	Exp	667
Ag^{10+} + SiO_2	Sputtering	35-66 MeV	Exp	667
Ar^+ + Nb	Sputtering	5-18 keV	Th	668
Ar^+ + Ta	Sputtering	5-18 keV	Th	668
Au^- + Nb	Sputtering	5-18 keV	Th	668
Au^- + Ta	Sputtering	5-18 keV	Th	668
Au_2^- + Nb	Sputtering	5-18 keV	Th	668
Au_2^- + Ta	Sputtering	5-18 keV	Th	668
Au_3^- + Nb	Sputtering	5-18 keV	Th	668
Au_3^- + Ta	Sputtering	5-18 keV	Th	668
Ar^+ + Cu	Sputtering	1 keV	Th	669
Ar^{3+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{4+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{5+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{6+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{7+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{8+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{9+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{10+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{11+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{12+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{13+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{14+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{15+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{16+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{17+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Ar^{18+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Xe^{4+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Xe^{5+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Xe^{6+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Xe^{7+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Xe^{8+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Xe^{9+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Xe^{10+} + SiH	Sputtering	0.5-5.0 keV	E/T	670
Au^- + Ta	Sputtering	6-21 keV	Exp	671
Au_2^- + Ta	Sputtering	6-21 keV	Exp	671

Au_3^- + Ta	Sputtering	6-21 keV	Exp	671
Au_4^- + Ta	Sputtering	6-21 keV	Exp	671
Au_5^- + Ta	Sputtering	6-21 keV	Exp	671
Au_6^- + Ta	Sputtering	6-21 keV	Exp	671
Au_7^- + Ta	Sputtering	6-21 keV	Exp	671
Au_8^- + Ta	Sputtering	6-21 keV	Exp	671
Au_9^- + Ta	Sputtering	6-21 keV	Exp	671
Ne^+ + GaAs	Sputtering	4 keV	E/T	672
Ne^+ + InP	Sputtering	4 keV	E/T	672
Ne^+ + InSb	Sputtering	4 keV	E/T	672
Ne^+ + GaP	Sputtering	4 keV	E/T	672
Ne^+ + InAs	Sputtering	4 keV	E/T	672
Ne^+ + CaSb	Sputtering	4 keV	E/T	672
Ar^+ + GaAs	Sputtering	4 keV	E/T	672
Ar^+ + InP	Sputtering	4 keV	E/T	672
Ar^+ + InSb	Sputtering	4 keV	E/T	672
Ar^+ + GaP	Sputtering	4 keV	E/T	672
Ar^+ + InAs	Sputtering	4 keV	E/T	672
Ar^+ + CaSb	Sputtering	4 keV	E/T	672
Kr^+ + GaAs	Sputtering	4 keV	E/T	672
Kr^+ + InP	Sputtering	4 keV	E/T	672
Kr^+ + InSb	Sputtering	4 keV	E/T	672
Kr^+ + GaP	Sputtering	4 keV	E/T	672
Kr^+ + InAs	Sputtering	4 keV	E/T	672
Kr^+ + CaSb	Sputtering	4 keV	E/T	672
H^+ + Ag	Reflection	4 keV	E/T	673
D^+ + Ag	Reflection	4 keV	E/T	673
He^+ + Cu	Reflection	1-9 keV	E/T	674
Br^+ + Pt	Reflection	11-104 eV	E/T	675
Br^+ + Pt	Neutraliz., Ioniz., Dissoc.	11-104 eV	E/T	675
F^+ + RbI	Reflection	4.4-8.0 keV	Exp	676
Ne^{8+} + RbI	Reflection	4.4-8.0 keV	Exp	676
He^+ + NaCl	Reflection	1.5-3.0 keV	Exp	677
F^+ + RbI	Reflection	2-10 keV	Exp	678
F^{2+} + RbI	Reflection	2-10 keV	Exp	678
F^{6+} + RbI	Reflection	2-10 keV	Exp	678
F^{7+} + RbI	Reflection	2-10 keV	Exp	678
Ne^{8+} + RbI	Reflection	2-10 keV	Exp	678
Ne^{9+} + RbI	Reflection	2-10 keV	Exp	678
Ar^{9+} + RbI	Reflection	2-10 keV	Exp	678
Ar^{11+} + RbI	Reflection	2-10 keV	Exp	678
Ar^+ + KCl	Reflection	15 keV	Exp	679
Ar^{2+} + KCl	Reflection	15 keV	Exp	679
Ar^{3+} + KCl	Reflection	15 keV	Exp	679
Ar^+ + KCl	Neutraliz., Ioniz., Dissoc.	15 keV	Exp	679
Ar^{2+} + KCl	Neutraliz., Ioniz., Dissoc.	15 keV	Exp	679
Ar^{3+} + KCl	Neutraliz., Ioniz., Dissoc.	15 keV	Exp	679
He^+ + Al	Reflection	1 keV	Th	680
He^+ + Al	Neutraliz., Ioniz., Dissoc.	1 keV	Th	680
N^{5+} + Pt	Reflection	75 keV	Exp	681
N^{5+} + Pt	Neutraliz., Ioniz., Dissoc.	75 keV	Exp	681
e + F + Si	Desorption	1.6-3.2 keV; 450 eV	Exp	682
e + H_2O + Si	Desorption	1.6-3.2 keV; 450 eV	Exp	682
Ar^{4+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{4+} + Si	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{4+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{5+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp	682

Ar^{5+} + Si	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{5+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{6+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{6+} + Si	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{6+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{7+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{7+} + S	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{7+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{8+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{8+} + Si	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ar^{8+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp	682
Ne^{9+} + Al	Secondary Electron Emission	0.13-22.5 keV	Th	683
U^{91+} + Si	Neutraliz., Ioniz., Dissoc.	20 MeV/u	Exp	684
Ar^{17+} + C	Secondary Electron Emission	390 MeV/u	Th	685
H^{+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
He^{2+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
C^{6+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
Ne^{10+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
S^{16+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
Ar^{18+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
Ca^{20+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
Ni^{20+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
Mo^{39+} + C	Secondary Electron Emission	9.2 MeV/u	E/T	686
Ni^{19+} + C	Secondary Electron Emission	45 MeV	Exp	687
Ni^{19+} + Al	Secondary Electron Emission	45 MeV	Exp	687
Ni^{19+} + Ni	Secondary Electron Emission	45 MeV	Exp	687
Ni^{19+} + Ag	Secondary Electron Emission	45 MeV	Exp	687
Ni^{19+} + Au	Secondary Electron Emission	45 MeV	Exp	687
Ni^{19+} + Bi	Secondary Electron Emission	45 MeV	Exp	687
Pt^{+} + Pt	Sputtering	0.1-200 eV	Th	688
He^{+} + Be	Secondary Electron Emission	50 keV	Th	689
He^{+} + Al	Secondary Electron Emission	50 keV	Th	689
He^{+} + Si	Secondary Electron Emission	50 keV	Th	689
He^{+} + V	Secondary Electron Emission	50 keV	Th	689
He^{+} + Cr	Secondary Electron Emission	50 keV	Th	689
He^{+} + Fe	Secondary Electron Emission	50 keV	Th	689
He^{+} + Co	Secondary Electron Emission	50 keV	Th	689
He^{+} + Ni	Secondary Electron Emission	50 keV	Th	689
He^{+} + Cu	Secondary Electron Emission	50 keV	Th	689
He^{+} + Nb	Secondary Electron Emission	50 keV	Th	689
He^{+} + Mo	Secondary Electron Emission	50 keV	Th	689
He^{+} + Pd	Secondary Electron Emission	50 keV	Th	689
He^{+} + Ag	Secondary Electron Emission	50 keV	Th	689
He^{+} + Ta	Secondary Electron Emission	50 keV	Th	689
He^{+} + W	Secondary Electron Emission	50 keV	Th	689
He^{+} + Pt	Secondary Electron Emission	50 keV	Th	689
He^{+} + Au	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Be	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Al	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Si	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + V	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Cr	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Fe	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Co	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Ni	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Cu	Secondary Electron Emission	50 keV	Th	689
Ne^{+} + Nb	Secondary Electron Emission	50 keV	Th	689

Ne^+ + Mo	Secondary Electron Emission	50 keV	Th	689
Ne^+ + Pd	Secondary Electron Emission	50 keV	Th	689
Ne^+ + Ag	Secondary Electron Emission	50 keV	Th	689
Ne^+ + Ta	Secondary Electron Emission	50 keV	Th	689
Ne^+ + W	Secondary Electron Emission	50 keV	Th	689
Ne^+ + Pt	Secondary Electron Emission	50 keV	Th	689
Ne^+ + Au	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Be	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Al	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Si	Secondary Electron Emission	50 keV	Th	689
Kr^+ + V	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Cr	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Fe	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Co	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Ni	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Cu	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Nb	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Mo	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Pd	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Ag	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Ta	Secondary Electron Emission	50 keV	Th	689
Kr^+ + W	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Pt	Secondary Electron Emission	50 keV	Th	689
Kr^+ + Au	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Be	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Al	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Si	Secondary Electron Emission	50 keV	Th	689
Xe^+ + V	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Cr	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Fe	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Co	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Ni	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Cu	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Nb	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Mo	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Pd	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Ag	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Ta	Secondary Electron Emission	50 keV	Th	689
Xe^+ + W	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Pt	Secondary Electron Emission	50 keV	Th	689
Xe^+ + Au	Secondary Electron Emission	50 keV	Th	689
Au^+ + Fe	Chemical Reactions	3 MeV	Exp	690
Au^+ + SS	Chemical Reactions	3 MeV	Exp	690
K^+ + C	Chemical Reactions	50-150 keV	Exp	691
H_2 + Pd	Trapping, Detrapping	300 K	Exp	692
Ag^+ + Ag	Sputtering	7-21 keV	Exp	693
$Ag_2{}^+$ + Ag	Sputtering	7-21 keV	Exp	693
$Ag_3{}^+$ + Ag	Sputtering	7-21 keV	Exp	693
C^{4+} + Si	Secondary Electron Emission	2.5-3.5 MeV/u	Exp	694
C^{4+} + Ge	Secondary Electron Emission	2.5-3.5 MeV/u	Exp	694
C^{5+} + Si	Secondary Electron Emission	2.5-3.5 MeV/u	Exp	694
C^{5+} + Ge	Secondary Electron Emission	2.5-3.5 MeV/u	Exp	694
C^{6+} + Si	Secondary Electron Emission	2.5-3.5 MeV/u	Exp	694
C^{6+} + Ge	Secondary Electron Emission	2.5-3.5 MeV/u	Exp	694
C^{8+} + Si	Secondary Electron Emission	2.5-3.5 MeV/u	Exp	694
C^{8+} + Ge	Secondary Electron Emission	2.5-3.5 MeV/u	Exp	694
Ne^{9+} + Si	Secondary Electron Emission	1.8-5.0 MeV/u	Exp	695

Ar^{16+} + Si	Secondary Electron Emission	1.8-5.0 MeV/u	Exp	695
Xe^{15+} + Si	Secondary Electron Emission	1.8-5.0 MeV/u	Exp	695
Xe^{31+} + Si	Secondary Electron Emission	1.8-5.0 MeV/u	Exp	695
C^{+} + C	Sputtering	1.4 MeV/u	Exp	696
C^{+} + LiF	Sputtering	1.4 MeV/u	Exp	696
N^{+} + C	Sputtering	1.4 MeV/u	Exp	696
N^{+} + LiF	Sputtering	1.4 MeV/u	Exp	696
Ar^{+} + C	Sputtering	1.4 MeV/u	Exp	696
Ar^{+} + LiF	Sputtering	1.4 MeV/u	Exp	696
Kr^{+} + C	Sputtering	1.4 MeV/u	Exp	696
Kr^{+} + LiF	Sputtering	1.4 MeV/u	Exp	696
Sn^{+} + C	Sputtering	1.4 MeV/u	Exp	696
Sn^{+} + LiF	Sputtering	1.4 MeV/u	Exp	696
He^{+} + Mg	Secondary Electron Emission	0.16-4.0 keV	Exp	697
He^{+} + Al	Secondary Electron Emission	0.16-4.0 keV	Exp	697
C^{3+} + C	Secondary Electron Emission	23 MeV/u	Exp	698
Ni^{14+} + C	Secondary Electron Emission	23 MeV/u	Exp	698
Au^{36+} + C	Secondary Electron Emission	23 MeV/u	Exp	698
Si^{+} + GaAs	Sputtering	0.5-5.0 MeV	Exp	699
Si^{+} + InSb	Sputtering	0.5-5.0 MeV	Exp	699
Si^{+} + GaP	Sputtering	0.5-5.0 MeV	Exp	699
Si^{+} + GaSb	Sputtering	0.5-5.0 MeV	Exp	699
H^{+} + H_2O	Secondary Electron Emission	0.3-10 MeV	E/T	700
N^{+} + Pt	Reflection	0.7-1.4 MeV/u	Exp	701
N^{2+} + Pt	Reflection	0.7-1.4 MeV/u	Exp	701
S^{+} + Al_2O_3	Sputtering	60-200 MeV	Exp	702
S^{+} + TiO_2	Sputtering	60-200 MeV	Exp	702
S^{+} + SiO_2	Sputtering	60-200 MeV	Exp	702
S^{+} + $SrTiO_3$	Sputtering	60-200 MeV	Exp	702
S^{+} + MgO	Sputtering	60-200 MeV	Exp	702
S^{+} + $SrCeO_3$	Sputtering	60-200 MeV	Exp	702
S^{+} + CeO_2	Sputtering	60-200 MeV	Exp	702
S^{+} + ZnO	Sputtering	60-200 MeV	Exp	702
Ar^{+} + Al_2O_3	Sputtering	60-200 MeV	Exp	702
Ar^{+} + TiO_2	Sputtering	60-200 MeV	Exp	702
Ar^{+} + SiO_2	Sputtering	60-200 MeV	Exp	702
Ar^{+} + $SrTiO_3$	Sputtering	60-200 MeV	Exp	702
Ar^{+} + MgO	Sputtering	60-200 MeV	Exp	702
Ar^{+} + $SrCeO_3$	Sputtering	60-200 MeV	Exp	702
Ar^{+} + CeO_2	Sputtering	60-200 MeV	Exp	702
Ar^{+} + ZnO	Sputtering	60-200 MeV	Exp	702
Ni^{+} + Al_2O_3	Sputtering	60-200 MeV	Exp	702
Ni^{+} + TiO_2	Sputtering	60-200 MeV	Exp	702
Ni^{+} + SiO_2	Sputtering	60-200 MeV	Exp	702
Ni^{+} + $SrTiO_3$	Sputtering	60-200 MeV	Exp	702
Ni^{+} + MgO	Sputtering	60-200 MeV	Exp	702
Ni^{+} + $SrCeO_3$	Sputtering	60-200 MeV	Exp	702
Ni^{+} + CeO_2	Sputtering	60-200 MeV	Exp	702
Ni^{+} + ZnO	Sputtering	60-200 MeV	Exp	702
I^{+} + Al_2O_3	Sputtering	60-200 MeV	Exp	702
I^{+} + TiO_2	Sputtering	60-200 MeV	Exp	702
I^{+} + SiO_2	Sputtering	60-200 MeV	Exp	702
I^{+} + $SrTiO_3$	Sputtering	60-200 MeV	Exp	702
I^{+} + MgO	Sputtering	60-200 MeV	Exp	702
I^{+} + $SrCeO_3$	Sputtering	60-200 MeV	Exp	702
I^{+} + CeO_2	Sputtering	60-200 MeV	Exp	702
I^{+} + ZnO	Sputtering	60-200 MeV	Exp	702

Xe^+ + Al_2O_3	Sputtering	60-200 MeV	Exp	702
Xe^+ + TiO_2	Sputtering	60-200 MeV	Exp	702
Xe^+ + SiO_2	Sputtering	60-200 MeV	Exp	702
Xe^+ + $SrTiO_3$	Sputtering	60-200 MeV	Exp	702
Xe^+ + MgO	Sputtering	60-200 MeV	Exp	702
Xe^+ + $SrCeO_3$	Sputtering	60-200 MeV	Exp	702
Xe^+ + CeO_2	Sputtering	60-200 MeV	Exp	702
Xe^+ + ZnO	Sputtering	60-200 MeV	Exp	702
H^+ + H_2O	Sputtering	30 keV	Exp	703
He^+ + H_2O	Sputtering	30 keV	Exp	703
O^+ + H_2O	Sputtering	30 keV	Exp	703
Ar^+ + H_2O	Sputtering	30 keV	Exp	703
Ar^+ + Cu	Sputtering	3 keV	Th	704
Ar^+ + Cu	Sputtering	3 keV	Th	705
O^+ + C	Secondary Electron Emission	0.1-10 keV/u	Exp	706
Ar^+ + C	Secondary Electron Emission	0.1-10 keV/u	Exp	706
Fe^+ + C	Secondary Electron Emission	0.1-10 keV/u	Exp	706
H^+ + Ag	Reflection	1-6 keV	Exp	707
F^+ + Ag	Reflection	1-6 keV	Exp	707
H + LiF	Secondary Electron Emission	0.1-10 keV	Exp	708
H^+ + Fe	Reflection	300-500 keV	Th	709
H^+ + SS	Reflection	300-500 keV	Th	709
N_2^+ + C	Secondary Electron Emission	30 keV	Exp	710
Ar^+ + Si	Sputtering	50 keV	Exp	711
Ar^+ + Au	Sputtering	50 keV	Exp	711
Kr^+ + Si	Sputtering	50 keV	Exp	711
Kr^+ + Au	Sputtering	50 keV	Exp	711
H^+ + Si	Reflection	20-30 keV	E/T	712
H^+ + Cu	Reflection	20-30 keV	E/T	712
H^+ + Au	Reflection	20-30 keV	E/T	712
D^+ + Si	Reflection	20-30 keV	E/T	712
D^+ + Cu	Reflection	20-30 keV	E/T	712
D^+ + Au	Reflection	20-30 keV	E/T	712
O_2^+ + LiF	Reflection	880-3000 eV	Exp	713
H + Cu	Reflection	0.1-3.0 keV	Exp	714
He^+ + Cu	Reflection	0.1-3.0 keV	Exp	714
Ne^+ + Au	Sputtering	400-500 keV	Exp	715
Ar^+ + Au	Sputtering	400-500 keV	Exp	715
Kr^+ + Au	Sputtering	400-500 keV	Exp	715
Au^+ + Au	Sputtering	400-500 keV	Exp	715
He^+ + Mg	Secondary Electron Emission	160-460 eV	Exp	716
S^+ + Ti	Sputtering	1.1-1.4 MeV/u	Exp	717
S^+ + Zr	Sputtering	1.1-1.4 MeV/u	Exp	717
S^+ + Au	Sputtering	1.1-1.4 MeV/u	Exp	717
S^+ + SiO_2	Sputtering	1.1-1.4 MeV/u	Exp	717
S^+ + LiF	Sputtering	1.1-1.4 MeV/u	Exp	717
Ni^+ + Ti	Sputtering	1.1-1.4 MeV/u	Exp	717
Ni^+ + Zr	Sputtering	1.1-1.4 MeV/u	Exp	717
Ni^+ + Au	Sputtering	1.1-1.4 MeV/u	Exp	717
Ni^+ + SiO_2	Sputtering	1.1-1.4 MeV/u	Exp	717
Ni^+ + LiF	Sputtering	1.1-1.4 MeV/u	Exp	717
I^+ + Ti	Sputtering	1.1-1.4 MeV/u	Exp	717
I^+ + Zr	Sputtering	1.1-1.4 MeV/u	Exp	717
I^+ + Au	Sputtering	1.1-1.4 MeV/u	Exp	717
I^+ + SiO_2	Sputtering	1.1-1.4 MeV/u	Exp	717
I^+ + LiF	Sputtering	1.1-1.4 MeV/u	Exp	717
Au^+ + Ti	Sputtering	1.1-1.4 MeV/u	Exp	717

Au^+ + Zr	Sputtering	1.1-1.4 MeV/u	Exp	717
Au^+ + Au	Sputtering	1.1-1.4 MeV/u	Exp	717
Au^+ + SiO_2	Sputtering	1.1-1.4 MeV/u	Exp	717
Au^+ + LiF	Sputtering	1.1-1.4 MeV/u	Exp	717
He^+ + Mg	Sputtering	3-56 keV	Exp	718
N^+ + Mg	Sputtering	3-56 keV	Exp	718
O^+ + Mg	Sputtering	3-56 keV	Exp	718
Ne^+ + Mg	Sputtering	3-56 keV	Exp	718
Ar^+ + Mg	Sputtering	3-56 keV	Exp	718
Kr^+ + Mg	Sputtering	3-56 keV	Exp	718
N_2^+ + Mg	Sputtering	3-56 keV	Exp	718
O_2^+ + Mg	Sputtering	3-56 keV	Exp	718
Cs^+ + Ni	Sputtering	1-5 keV	Exp	719
Cs^+ + Cu	Sputtering	1-5 keV	Exp	719
Cs^+ + Au	Sputtering	1-5 keV	Exp	719
H + Al	Secondary Electron Emission	25-100 keV	Th	720
H^+ + Al	Secondary Electron Emission	25-100 keV	Th	720
H^+ + Al	Secondary Electron Emission	25-100 keV	Th	721
Ar^{17+} + Si	Secondary Electron Emission	390 MeV/u	Exp	722
Ag^+ + C	Secondary Electron Emission	130 MeV	Exp	723
Cs^+ + C	Sputtering	14.5 keV	Th	724
Cs^+ + TiC	Sputtering	14.5 keV	Th	724
Cs^+ + BNi	Sputtering	14.5 keV	Th	724
Ar^{3+} + Pt	Sputtering	20 keV	Exp	725
Ar^{4+} + Pt	Sputtering	20 keV	Exp	725
Ar^{5+} + Pt	Sputtering	20 keV	Exp	725
Ar^{6+} + Pt	Sputtering	20 keV	Exp	725
Ar^{7+} + Pt	Sputtering	20 keV	Exp	725
Ar^{8+} + Pt	Sputtering	20 keV	Exp	725
O^+ + C	Trapping, Detrapping	2-4.8 MeV	Exp	726
O^+ + H + C	Trapping, Detrapping	2-4.8 MeV	Exp	726
O^+ + D + C	Trapping, Detrapping	2-4.8 MeV	Exp	726
Xe^{22+} + Si	Sputtering		Th	727
Xe^{33+} + Si	Sputtering		Th	727
Xe^{49+} + Si	Sputtering		Th	727
He^+ + Cu	Neutraliz., Ioniz., Dissoc.	10-500 eV	Exp	728
I^{7+} + Ti	Sputtering	55-275 MeV	E/T	729
I^{7+} + Zr	Sputtering	55-275 MeV	E/T	729
I^{7+} + Au	Sputtering	55-275 MeV	E/T	729
I^{8+} + Ti	Sputtering	55-275 MeV	E/T	729
I^{8+} + Zr	Sputtering	55-275 MeV	E/T	729
I^{8+} + Au	Sputtering	55-275 MeV	E/T	729
I^{15+} + Ti	Sputtering	55-275 MeV	E/T	729
I^{15+} + Zr	Sputtering	55-275 MeV	E/T	729
I^{15+} + Au	Sputtering	55-275 MeV	E/T	729
I^{20+} + Ti	Sputtering	55-275 MeV	E/T	729
I^{20+} + Zr	Sputtering	55-275 MeV	E/T	729
I^{20+} + Au	Sputtering	55-275 MeV	E/T	729
I^{21+} + Ti	Sputtering	55-275 MeV	E/T	729
I^{21+} + Zr	Sputtering	55-275 MeV	E/T	729
I^{21+} + Au	Sputtering	55-275 MeV	E/T	729
I^{29+} + Ti	Sputtering	55-275 MeV	E/T	729
I^{29+} + Zr	Sputtering	55-275 MeV	E/T	729
I^{29+} + Au	Sputtering	55-275 MeV	E/T	729
Au^{11+} + Ti	Sputtering	55-275 MeV	E/T	729
Au^{11+} + Zr	Sputtering	55-275 MeV	E/T	729
Au^{11+} + Au	Sputtering	55-275 MeV	E/T	729

Au^{16+} + Ti	Sputtering	55-275 MeV	E/T	729
Au^{16+} + Zr	Sputtering	55-275 MeV	E/T	729
Au^{16+} + Au	Sputtering	55-275 MeV	E/T	729
Au^{18+} + Ti	Sputtering	55-275 MeV	E/T	729
Au^{18+} + Zr	Sputtering	55-275 MeV	E/T	729
Au^{18+} + Au	Sputtering	55-275 MeV	E/T	729
Au^{29+} + Ti	Sputtering	55-275 MeV	E/T	729
Au^{29+} + Zr	Sputtering	55-275 MeV	E/T	729
Au^{29+} + Au	Sputtering	55-275 MeV	E/T	729
He^+ + C	Desorption	2-30 eV	Exp	730
He^+ + N + C	Desorption	2-30 eV	Exp	730
Ne^+ + C	Desorption	2-30 eV	Exp	730
Ne^+ + N + C	Desorption	2-30 eV	Exp	730
Ar^+ + C	Desorption	2-30 eV	Exp	730
Ar^+ + N + C	Desorption	2-30 eV	Exp	730
H + GaAs	Trapping, Detrapping	300 K	Th	731
H_2 + GaAs	Trapping, Detrapping	300 K	Th	731
Ar^+ + Cu	Sputtering	12 keV	Exp	732
H^+ + Al	Reflection	1-4 keV	Th	733
H^+ + Al	Neutraliz., Ioniz., Dissoc.	1-4 keV	Th	733
Ar^+ + Ag	Sputtering	3 keV	E/T	734
Au^+ + Au	Sputtering	150 keV	Exp	735
H^+ + Fe	Secondary Electron Emission	150 keV	Exp	736
He^+ + Fe	Secondary Electron Emission	150 keV	Exp	736
Ne^+ + Fe	Secondary Electron Emission	150 keV	Exp	736
Ar^+ + Fe	Secondary Electron Emission	150 keV	Exp	736
H^+ + Si	Sputtering	0.05-540 keV	Th	737
He^+ + Si	Sputtering	0.05-540 keV	Th	737
Ne^+ + Si	Sputtering	0.05-540 keV	Th	737
Ar^+ + Si	Sputtering	0.05-540 keV	Th	737
Xe^+ + Si	Sputtering	0.05-540 keV	Th	737
D^+ + Si	Sputtering	0.05-540 keV	Th	737
H^+ + C	Trapping, Detrapping	1 keV	Exp	738
D^+ + C	Trapping, Detrapping	1 keV	Exp	738
H + C	Trapping, Detrapping		Exp	739
H^+ + W	Trapping, Detrapping	6 keV	Exp	740
D^+ + W	Trapping, Detrapping	6 keV	Exp	740
H^+ + WO_3	Trapping, Detrapping	10 keV	Exp	741
D^+ + WO_3	Trapping, Detrapping	10 keV	Exp	741
H + C	Trapping, Detrapping		Th	742
D + C	Trapping, Detrapping		Th	742
H_2^+ + SiC	Trapping, Detrapping	4-5 keV	Exp	743
D_2^+ + SiC	Trapping, Detrapping	4-5 keV	Exp	743
H^+ + Fe	Reflection	100-1500 eV	Th	744
H^+ + W	Reflection	100-1500 eV	Th	744
H^+ + SS	Reflection	100-1500 eV	Th	744
D^+ + Fe	Reflection	100-1500 eV	Th	744
D^+ + W	Reflection	100-1500 eV	Th	744
D^+ + SS	Reflection	100-1500 eV	Th	744
O_2 + Al	Adsorption, Desorption	3 keV; 300 K	Exp	745
e + Al	Secondary Electron Emission	3 keV; 300 K	Exp	745
e + O + Al	Secondary Electron Emission	3 keV; 300 K	Exp	745
hν + Na	Desorption	10-30 eV	Exp	746
hν + K	Desorption	10-30 eV	Exp	746
e + Ru	Desorption		Th	747
e + CO + Ru	Desorption		Th	747
e + Si	Desorption	300 eV	Exp	748

e + LiF + Si	Desorption	300 eV	Exp	748
e + $TiSi_2$	Desorption	50-500 eV	Exp	749
e + O + $TiSi_2$	Desorption	50-500 eV	Exp	749
e + OH + $TiSi_2$	Desorption	50-500 eV	Exp	749
e + W	Desorption	34-84 eV	Exp	750
e + Sm + W	Desorption	34-84 eV	Exp	750
e + SiO_2	Desorption	0-40 eV	Exp	751
e + Na + SiO_2	Desorption	0-40 eV	Exp	751
e + K + SiO_2	Desorption	0-40 eV	Exp	751
hν + Kr	Desorption	70-320 eV	Exp	752
e + Kr	Desorption	70-320 eV	Exp	752
e + NF_3	Desorption	0-5 eV	Exp	753
F + LiF	Reflection	2-14 eV	Th	754
F + LiF	Neutraliz., Ioniz., Dissoc.	2-14 eV	Th	754
He + Si	Desorption	300 K	Exp	755
He^* + Si	Desorption	300 K	Exp	755
He^* + H + Si	Desorption	300 K	Exp	755
He + Si	Secondary Electron Emission	300 K	Exp	755
He^* + Si	Secondary Electron Emission	300 K	Exp	755
He^* + H + Si	Secondary Electron Emission	300 K	Exp	755
Ar^{17+} + C	Desorption	6-13 MeV/u; 5 keV	Exp	756
Ar^{17+} + N_2 + C	Desorption	6-13 MeV/u; 5 keV	Exp	756
e + C	Desorption	6-13 MeV/u; 5 keV	Exp	756
Ar^{17+} + C	Secondary Electron Emission	6-13 MeV/u; 5 keV	Exp	756
Ar^{17+} + N_2 + C	Secondary Electron Emission	6-13 MeV/u; 5 keV	Exp	756
e + C	Secondary Electron Emission	6-13 MeV/u; 5 keV	Exp	756
e + N_2 + C	Secondary Electron Emission	6-13 MeV/u; 5 keV	Exp	756
hν + Si	Desorption	108 eV	Exp	757
hν + O_2 + Si	Desorption	108 eV	Exp	757
hν + KI	Desorption	4.9-5.8 eV	Exp	758
hν + K + KI	Desorption	4.9-5.8 eV	Exp	758
Ar^+ + Cu	Sputtering	1-2 keV	Th	759
Ne^+ + Ga	Reflection	0.4-2.2 keV	Exp	760
Ne^+ + In	Reflection	0.4-2.2 keV	Exp	760
Ne^+ + Ga	Neutraliz., Ioniz., Dissoc.	0.4-2.2 keV	Exp	760
Ne^+ + In	Neutraliz., Ioniz., Dissoc.	0.4-2.2 keV	Exp	760
N_2^+ + C	Chemical Reactions	3-6 keV	Exp	761
O_2 + Al	Adsorption, Desorption	0-1.2 eV	Th	762
He^+ + Fe_3O_4	Reflection	4-8 keV	Exp	763
Ne^+ + Fe_3O_4	Reflection	4-8 keV	Exp	763
Ar^+ + Fe_3O_4	Reflection	4-8 keV	Exp	763
He^+ + Fe_3O_4	Sputtering	4-8 keV	Exp	763
Ne^+ + Fe_3O_4	Sputtering	4-8 keV	Exp	763
Ar^+ + Fe_3O_4	Sputtering	4-8 keV	Exp	763
Cs^+ + Pt	Reflection	5-100 eV	Exp	764
He^+ + Mg	Secondary Electron Emission	250 eV	Exp	765
He^+ + MgO	Secondary Electron Emission	250 eV	Exp	765
O^- + Mg	Secondary Electron Emission	250 eV	Exp	765
O^- + MgO	Secondary Electron Emission	250 eV	Exp	765
Ne^+ + Mg	Secondary Electron Emission	250 eV	Exp	765
Ne^+ + MgO	Secondary Electron Emission	250 eV	Exp	765
Ar^+ + Mg	Secondary Electron Emission	250 eV	Exp	765
Ar^+ + MgO	Secondary Electron Emission	250 eV	Exp	765
N_2^+ + Mg	Secondary Electron Emission	250 eV	Exp	765
N_2^+ + MgO	Secondary Electron Emission	250 eV	Exp	765
He^+ + Mg	Sputtering	250 eV	Exp	765
He^+ + MgO	Sputtering	250 eV	Exp	765

O^- + Mg	Sputtering	250 eV	Exp	765
O^- + MgO	Sputtering	250 eV	Exp	765
Ne^+ + Mg	Sputtering	250 eV	Exp	765
Ne^+ + MgO	Sputtering	250 eV	Exp	765
Ar^+ + Mg	Sputtering	250 eV	Exp	765
Ar^+ + MgO	Sputtering	250 eV	Exp	765
N_2^+ + Mg	Sputtering	250 eV	Exp	765
N_2^+ + MgO	Sputtering	250 eV	Exp	765
O_2 + Cu	Adsorption, Desorption	300 K	Exp	766
O_2 + Ag	Adsorption, Desorption	300 K	Exp	766
O_2 + Cu	Neutraliz., Ioniz., Dissoc.	300 K	Exp	766
O_2 + Ag	Neutraliz., Ioniz., Dissoc.	300 K	Exp	766
Li + MgO	Adsorption, Desorption	300 K	Th	767
Na + MgO	Adsorption, Desorption	300 K	Th	767
K + MgO	Adsorption, Desorption	300 K	Th	767
H_2 + Pd	Adsorption, Desorption		Th	768
H_2 + Pd	Adsorption, Desorption	300 K	Exp	769
CO + Rh	Adsorption, Desorption		Th	770
CO + Pd	Adsorption, Desorption		Th	770
CO + Ag	Adsorption, Desorption		Th	770
CO + MgO	Adsorption, Desorption		Th	770
H_2 + Rh	Adsorption, Desorption	0-400 MeV	Exp	771
CO + Rh	Adsorption, Desorption	0-400 MeV	Exp	771
Ne^+ + GaAs	Reflection	6 keV	Exp	772
O^+ + Al	Reflection	0.2-10 keV	Th	773
O^+ + Al	Neutraliz., Ioniz., Dissoc.	0.2-10 keV	Th	773
hν + KI	Desorption	5.2-5.7 eV	Exp	774
N + W	Adsorption, Desorption	0.01-1.0 eV	Th	775
N + W	Reflection	0.01-1.0 eV	Th	775
N^+ + LiF	Reflection	200-1000 eV	Th	776
Xe^+ + Pt	Sputtering	5 keV	Th	777
e + LiF	Secondary Electron Emission	20-50 eV	Exp	778
Cs^+ + Be	Sputtering	2.4-10 keV	E/T	779
Cs^+ + C	Sputtering	2.4-10 keV	E/T	779
Cs^+ + BeO	Sputtering	2.4-10 keV	E/T	779
W^+ + Be	Sputtering	2.4-10 keV	E/T	779
N + Ni	Surface Interactions		Th	780
N + Pd	Surface Interactions		Th	780
O + Ni	Surface Interactions		Th	780
O + Pd	Surface Interactions		Th	780
H^+ + Cu	Reflection	1-9 keV	Exp	781
He^+ + Cu	Reflection	1-9 keV	Exp	781
Ne^+ + Cu	Reflection	1-9 keV	Exp	781
H^+ + Cu	Neutraliz., Ioniz., Dissoc.	1-9 keV	Exp	781
He^+ + Cu	Neutraliz., Ioniz., Dissoc.	1-9 keV	Exp	781
Ne^+ + Cu	Neutraliz., Ioniz., Dissoc.	1-9 keV	Exp	781
H^+ + Al	Secondary Electron Emission	100-400 keV	Th	782
H^+ + Al	Secondary Electron Emission	5-625 keV/u	Th	783
C^+ + Al	Secondary Electron Emission	5-625 keV/u	Th	783
C^{2+} + Al	Secondary Electron Emission	5-625 keV/u	Th	783
C^{3+} + Al	Secondary Electron Emission	5-625 keV/u	Th	783
C^{4+} + Al	Secondary Electron Emission	5-625 keV/u	Th	783
C^{5+} + Al	Secondary Electron Emission	5-625 keV/u	Th	783
N^+ + Al	Secondary Electron Emission	5-625 keV/u	Th	783
Ar^{18+} + C	Secondary Electron Emission	95 MeV/u	Exp	784
+ S	Reflection	1.4-2.5 a.u.	Th	785
+ Cl	Reflection	1.4-2.5 a.u.	Th	785

+ Ar	Reflection	1.4-2.5 a.u.	Th	785
+ S	Neutraliz., Ioniz., Dissoc.	1.4-2.5 a.u.	Th	785
+ Cl	Neutraliz., Ioniz., Dissoc.	1.4-2.5 a.u.	Th	785
+ Ar	Neutraliz., Ioniz., Dissoc.	1.4-2.5 a.u.	Th	785
Cs^{2+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{3+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{4+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{5+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{6+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{8+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{9+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{11+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{12+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{13+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{15+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
Cs^{17+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T	786
N^{+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th	787
N^{2+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th	787
N^{3+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th	787
N^{4+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th	787
N^{5+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th	787
He^{+} + Al	Reflection	0-0.85 a.u.	Th	788
He^{+} + Al	Neutraliz., Ioniz., Dissoc.	0-0.85 a.u.	Th	788
hν + Li	Sputtering	1 J/cm^2	Exp	789
hν + Na	Sputtering	1 J/cm^2	Exp	789
hν + K	Sputtering	1 J/cm^2	Exp	789
hν + LiNa	Sputtering	1 J/cm^2	Exp	789
H^{+} + LiF	Reflection	slow	Th	790
C^{+} + LiF	Reflection	slow	Th	790
Na^{+} + LiF	Reflection	slow	Th	790
S^{+} + LiF	Reflection	slow	Th	790
Ar^{17+} + C	Secondary Electron Emission	390-460 MeV/u	E/T	791
Fe^{23+} + C	Secondary Electron Emission	390-460 MeV/u	E/T	791
Fe^{25+} + C	Secondary Electron Emission	390-460 MeV/u	E/T	791
e + C	Surface Interactions	150-180 GeV	Th	792
e + Si	Surface Interactions	150-180 GeV	Th	792
hν + Xe	Secondary Electron Emission	110-250 eV	Exp	793
H^{+} + C	Secondary Electron Emission	2.5 MeV	E/T	794

2.4 Particle Beam-Matter Interactions

He^{+} + Al + C	Part. Beam-Matter Interaction	2-4 a.u.	Th	795
H^{+} + Al + C	Part. Beam-Matter Interaction	100-1500 keV	Th	796
H^{+} + LiF + C	Part. Beam-Matter Interaction	100-1500 keV	Th	796
H^{+} + SnTe + C	Part. Beam-Matter Interaction	100-1500 keV	Th	796
H + LiF + C	Part. Beam-Matter Interaction	50-600 keV	Th	797
H^{+} + Al + C	Part. Beam-Matter Interaction	1-7 v(a.u.)	Th	798
H^{+} + Cu + C	Part. Beam-Matter Interaction	0.25-2 v(a.u.)	Th	799
H^{+} + $C_{16}H_{14}O_3$ + C	Part. Beam-Matter Interaction	2.0-24.0 MeV	Exp	800
C^{2+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp	801
Ne^{4+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp	801
Si^{5+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp	801
Ar^{8+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp	801
Fe^{9+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp	801
Cu^{10+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp	801

B^+ + Si + C	Part.	Beam-Matter Interaction	10-80 keV	Th	802
P^+ + Si + C	Part.	Beam-Matter Interaction	10-80 keV	Th	802
Ge^+ + Si + C	Part.	Beam-Matter Interaction	10-80 keV	Th	802
H + A + C	Part.	Beam-Matter Interaction		Th	803
H^+ + Ar + C	Part.	Beam-Matter Interaction	500 eV	E/T	804
H^+ + Kr + C	Part.	Beam-Matter Interaction	500 eV	E/T	804
H^+ + Xe + C	Part.	Beam-Matter Interaction	500 eV	E/T	804
Ar^{9+} + Au + C	Part.	Beam-Matter Interaction	4 keV	E/T	805
H^+ + Al + C	Part.	Beam-Matter Interaction	120-500 keV	Th	806
H^+ + LiF + C	Part.	Beam-Matter Interaction	120-500 keV	Th	806
He^+ + Cu + C	Part.	Beam-Matter Interaction	1-9 keV	E/T	807
He^{2+} + H_2O + C	Part.	Beam-Matter Interaction	0.2-6.7 MeV/u	Th	808
U^{28+} + H_2O + C	Part.	Beam-Matter Interaction	0.2-6.7 MeV/u	Th	808
U^{91+} + Si + C	Part.	Beam-Matter Interaction	20 MeV/u	Exp	809
Mn^+ + Au + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Mn^+ + Bi + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Fe^+ + Au + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Fe^+ + Bi + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Co^+ + Au + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Co^+ + Bi + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Ni^+ + Au + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Ni^+ + Bi + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Cu^+ + Au + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
Cu^+ + Bi + C	Part.	Beam-Matter Interaction	0.1-1.75 MeV/u	Exp	810
S^{4+} + C + C	Part.	Beam-Matter Interaction	9.6-122 MeV	Exp	811
S^{6+} + C + C	Part.	Beam-Matter Interaction	9.6-122 MeV	Exp	811
Au + H Z= ?-? + C	Part.	Beam-Matter Interaction	0.5-10 MeV	Th	812
Au + He Z= ?-? + C	Part.	Beam-Matter Interaction	0.5-10 MeV	Th	812
Au + Li Z= ?-? + C	Part.	Beam-Matter Interaction	0.5-10 MeV	Th	812
Au + Be Z= ?-? + C	Part.	Beam-Matter Interaction	0.5-10 MeV	Th	812
O^{4+} + C + C	Part.	Beam-Matter Interaction	10-13.2 MeV	Th	813
O^{5+} + C + C	Part.	Beam-Matter Interaction	10-13.2 MeV	Th	813
O^{6+} + C + C	Part.	Beam-Matter Interaction	10-13.2 MeV	Th	813
O^{7+} + C + C	Part.	Beam-Matter Interaction	10-13.2 MeV	Th	813
O^{8+} + C + C	Part.	Beam-Matter Interaction	10-13.2 MeV	Th	813
U^{91+} + C + C	Part.	Beam-Matter Interaction	46 MeV/u	Exp	814
Ar^{17+} + C + C	Part.	Beam-Matter Interaction	390 MeV/u	Th	815
H^+ + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
He^{2+} + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
C^{6+} + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
Ne^{10+} + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
S^{16+} + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
Ar^{18+} + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
Ca^{20+} + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
Ni^{20+} + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
Mo^{39+} + C + C	Part.	Beam-Matter Interaction	9.2 MeV/u	E/T	816
Ni^{19+} + C + C	Part.	Beam-Matter Interaction	45 MeV	Exp	817
Ni^{19+} + Al + C	Part.	Beam-Matter Interaction	45 MeV	Exp	817
Ni^{19+} + Ni + C	Part.	Beam-Matter Interaction	45 MeV	Exp	817
Ni^{19+} + Ag + C	Part.	Beam-Matter Interaction	45 MeV	Exp	817
Ni^{19+} + Au + C	Part.	Beam-Matter Interaction	45 MeV	Exp	817
Ni^{19+} + Bi + C	Part.	Beam-Matter Interaction	45 MeV	Exp	817
Au^+ + Cu + C	Part.	Beam-Matter Interaction	1-10 keV	Th	818
Au_2^+ + Cu + C	Part.	Beam-Matter Interaction	1-10 keV	Th	818
Au^+ + Fe + C	Part.	Beam-Matter Interaction	3 MeV	Exp	819
Au^+ + SS + C	Part.	Beam-Matter Interaction	3 MeV	Exp	819
Li^+ + C + C	Part.	Beam-Matter Interaction	20-1500 keV	Th	820

C^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th	820
C^+ + Ar + C	Part. Beam-Matter Interaction	20-1500 keV	Th	820
C^+ + N_2 + C	Part. Beam-Matter Interaction	20-1500 keV	Th	820
Ne^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th	820
Ne^+ + Ar + C	Part. Beam-Matter Interaction	20-1500 keV	Th	820
Ne^+ + N_2 + C	Part. Beam-Matter Interaction	20-1500 keV	Th	820
Ar^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th	820
Kr^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th	820
H^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	821
He^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	821
N^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	821
O^+ + Li + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	821
O^+ + F + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	821
O^+ + LiF + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	821
Ar^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	821
Pb^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	821
A + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th	822
As^+ + Si + C	Part. Beam-Matter Interaction	3-6 keV	Exp	823
$As_2{}^+$ + Si + C	Part. Beam-Matter Interaction	3-6 keV	Exp	823
Ag^+ + Au + C	Part. Beam-Matter Interaction	8-52 MeV	Exp	824
Xe^{12+} + N_2 + C	Part. Beam-Matter Interaction	2 MeV/u	Exp	825
Xe^{17+} + N_2 + C	Part. Beam-Matter Interaction	2 MeV/u	Exp	825
Xe^{18+} + N_2 + C	Part. Beam-Matter Interaction	2 MeV/u	Exp	825
Xe^{22+} + N_2 + C	Part. Beam-Matter Interaction	2 MeV/u	Exp	825
Xe^{24+} + N_2 + C	Part. Beam-Matter Interaction	2 MeV/u	Exp	825
Xe^{27+} + N_2 + C	Part. Beam-Matter Interaction	2 MeV/u	Exp	825
Xe^{30+} + N_2 + C	Part. Beam-Matter Interaction	2 MeV/u	Exp	825
Xe^{35+} + N_2 + C	Part. Beam-Matter Interaction	2 MeV/u	Exp	825
C^{4+} + C + C	Part. Beam-Matter Interaction	10 MeV/u	Exp	826
C^{5+} + C + C	Part. Beam-Matter Interaction	10 MeV/u	Exp	826
Au^+ + Al + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
Au^+ + Si + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
Au^+ + Cu + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_2{}^+$ + Al + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_2{}^+$ + Si + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_2{}^+$ + Cu + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_3{}^+$ + Al + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_3{}^+$ + Si + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_3{}^+$ + Cu + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_7{}^+$ + Al + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_7{}^+$ + Si + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
$Au_7{}^+$ + Cu + C	Part. Beam-Matter Interaction	10-700 keV	Exp	827
H^+ + H_2O + C	Part. Beam-Matter Interaction	0.3-10 MeV	Th	828
Si^+ + GaAs + C	Part. Beam-Matter Interaction	150-300 keV	Th	829
S^+ + GaAs + C	Part. Beam-Matter Interaction	150-300 keV	Th	829
Se^+ + GaAs + C	Part. Beam-Matter Interaction	150-300 keV	Th	829
O^+ + SiC + C	Part. Beam-Matter Interaction	80-600 keV/u	Exp	830
Al^+ + SiC + C	Part. Beam-Matter Interaction	80-600 keV/u	Exp	830
Cr^+ + SiC + C	Part. Beam-Matter Interaction	80-600 keV/u	Exp	830
Mn^+ + SiC + C	Part. Beam-Matter Interaction	80-600 keV/u	Exp	830
Co^+ + SiC + C	Part. Beam-Matter Interaction	80-600 keV/u	Exp	830
Cu^+ + SiC + C	Part. Beam-Matter Interaction	80-600 keV/u	Exp	830
Al + A + C	Part. Beam-Matter Interaction	0-1 C	Th	831
Ag + A + C	Part. Beam-Matter Interaction	0-1 C	Th	831
Pb + A + C	Part. Beam-Matter Interaction	0-1 C	Th	831
U + A + C	Part. Beam-Matter Interaction	0-1 C	Th	831
e + H^+ + C	Part. Beam-Matter Interaction	0.2-2 a.u.	Th	832

Ar^{17+} + C + C	Part. Beam-Matter Interaction	390-460 MeV/u	E/T	833
Fe^{23+} + C + C	Part. Beam-Matter Interaction	390-460 MeV/u	E/T	833
Fe^{25+} + C + C	Part. Beam-Matter Interaction	390-460 MeV/u	E/T	833
H + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
H + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
He + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
He + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
Li + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
Li + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
Be + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
Be + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
B + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
B + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
C + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
C + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th	834
H^+ + SiO_2 + C	Part. Beam-Matter Interaction	30-1500 keV	Exp	835
$H_2{}^+$ + C + C	Part. Beam-Matter Interaction	0.4-9.6 MeV	E/T	836

2.5 Interactions of Atomic Particles with Fields

H + C	Atom Field Interaction	0-60 eV	Th	837
$H_2{}^+$ + C	Atom Field Interaction	0-60 eV	Th	837
$H_2{}^+$ + C	Atom Field Interaction	800 nm	Th	838
e + Ba^+ + C	Atom Field Interaction	8 eV	Exp	839
Li + C	Atom Field Interaction	0-800 V/cm	Th	840
Ne + C	Atom Field Interaction	100-1100 nm	Th	841
H + C	Atom Field Interaction		Th	842
$H_2{}^+$ + C	Atom Field Interaction		Th	842
Rb + C	Atom Field Interaction	0.004-3.3 W/cm^2	Exp	843
H + C	Atom Field Interaction		Th	844
hν + H + C	Atom Field Interaction	20.4 keV	Th	845
H + C	Atom Field Interaction	10-90 nm	Th	846
Li + Ne + C	Atom Field Interaction	680 deg C	Exp	847
Li + Ar + C	Atom Field Interaction	680 deg C	Exp	847
Be + C	Atom Field Interaction	0-1 a.u.	Th	848
hν + O^- + C	Atom Field Interaction	11,781-11,788 cm^{-1}	Exp	849
H + C	Atom Field Interaction		Th	850
H^* + C	Atom Field Interaction		Th	850
Li^- + C	Atom Field Interaction	0.011-0.021 a.u.	Th	851
H_2 + C	Atom Field Interaction	2x10^{15} W/cm^2	Exp	852
D_2 + C	Atom Field Interaction	2x10^{15} W/cm^2	Exp	852
$H_2{}^+$ + C	Atom Field Interaction	0.3-1.0 PW/cm^2	Th	853
$D_2{}^+$ + C	Atom Field Interaction	0.3-1.0 PW/cm^2	Th	853
H + C	Atom Field Interaction		Th	854
H + C	Atom Field Interaction		Th	855
He + C	Atom Field Interaction	1.7-2.4 eV	Exp	856
Ge + C	Atom Field Interaction	2500-50,000 K	Th	857
e + He + C	Atom Field Interaction	5-200 eV	Th	858
He + C	Atom Field Interaction	100-10,000 a.u.	Th	859
e + N^{4+} + C	Atom Field Interaction	0-10 eV	Exp	860
He + C	Atom Field Interaction	65-65.2 eV	Exp	861
He + C	Atom Field Interaction		Th	862
Mg + C	Atom Field Interaction		Th	862
Na + Na + C	Atom Field Interaction		Exp	863
H_2O + C	Atom Field Interaction	10^{16} W/cm^2	Exp	864

C_6H_6 + C	Atom Field Interaction	10^{16} W/cm^2	Exp	864
CH_3OH + C	Atom Field Interaction	10^{16} W/cm^2	Exp	864
Rb + Rb + C	Atom Field Interaction	10^{-6} K	Exp	865
e + Ba^+ + C	Atom Field Interaction	300 K	Exp	866
H^+ + Li + C	Atom Field Interaction	5-15 keV	Th	867
C + He + C	Atom Field Interaction	10^{-10} - 10^{-4} eV; 0.5-1 K	Th	868
O + He + C	Atom Field Interaction	10^{-10} - 10^{-4} eV; 0.5-1 K	Th	868
Ca + Ca + C	Atom Field Interaction	Ultracold	Th	869
H + C	Atom Field Interaction	scaled field strength	Th	870
He + C	Atom Field Interaction	0-1.8 Ry	Th	871
He^* + C	Atom Field Interaction	0-1.8 Ry	Th	871
Xe^* + C	Atom Field Interaction		Exp	872
C_2H_2 + C	Atom Field Interaction	43,550-43,740 cm^{-1}	Exp	873
H^- + C	Atom Field Interaction	0.0046-0.022 a.u.	Th	874
H + C	Atom Field Interaction		Th	875
HCl^+ + C	Atom Field Interaction	0.12 eV	Th	876
Li + C	Atom Field Interaction	140 eV	E/T	877
Li + C	Atom Field Interaction	4.7 T	Th	878
$H_2{}^+$ + C	Atom Field Interaction	0 - 2.4x10^6 T	Th	879
Li + Li + C	Atom Field Interaction	24 GHz	E/T	880
B + C	Atom Field Interaction	2-20 T	Th	881
He + C	Atom Field Interaction	100-10,000 a.u.	Th	882
B + C	Atom Field Interaction	100-10,000 a.u.	Th	882

Chapter 3

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3.1 Structure and Spectra

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Si^{6+}	Trans. prob., Oscill. Strengths	Th
Si^{7+}	Trans. prob., Oscill. Strengths	Th
Si^{8+}	Trans. prob., Oscill. Strengths	Th
Si^{9+}	Trans. prob., Oscill. Strengths	Th
Si^{10+}	Trans. prob., Oscill. Strengths	Th
Si^{11+}	Trans. prob., Oscill. Strengths	Th

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Ne^{5+}	Trans. prob., Oscill. Strengths	Th
Ne^{6+}	Trans. prob., Oscill. Strengths	Th
Ne^{7+}	Trans. prob., Oscill. Strengths	Th

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Ar^{11+}	Trans. prob., Oscill. Strengths	Th
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Ar^{13+}	Trans. prob., Oscill. Strengths	Th
Ar^{14+}	Trans. prob., Oscill. Strengths	Th
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B Z= 5-14	Trans. prob., Oscill. Strengths	Th
C Z= 6-13	Trans. prob., Oscill. Strengths	Th
N Z= 7-12	Trans. prob., Oscill. Strengths	Th
O Z= 8-12	Trans. prob., Oscill. Strengths	Th
F Z= 9-14	Trans. prob., Oscill. Strengths	Th
Ne Z= 10-16	Trans. prob., Oscill. Strengths	Th

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Palladium-like Xe IX–Ce XIII spectra: Effective interaction and radiative constants
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Relativistic transition energies and radiative transition rates for forbidden transitions in the $1s^2 2s^2 2p^4$ atomic configuration for $20 \leq Z \leq 30$
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Relativistic energy, fine structure, and hyperfine structure of the high-lying core-excited states ^{5}P(n) (n=1-7) and ^{5}S°(m) (m=1-5) for Be-like boron and carbon
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C^{2+}	Trans. prob., Oscill. Strengths	Th

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Radiative data for allowed transitions in Ni XXV
J. Phys. B 37, 689-701 (2004)

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Experimental lifetimes of some levels of Kr I
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Radiative rates for transitions in Fe XVII
Astron. Astrophys. 420, 783-788 (2004)

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Fe^{14+}	Trans. prob., Oscill. Strengths	Th

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Li Z= 6-26	Trans. prob., Oscill. Strengths	Th
Li Z= 6-100	Trans. prob., Oscill. Strengths	Th
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Ti^{9+}	Trans. prob., Oscill. Strengths	Th

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Can. J. Phys. 82, 331-356 (2004)

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W^{46+}	Trans. prob., Oscill. Strengths	Th
Bi^{55+}	Trans. prob., Oscill. Strengths	Th
U^{64+}	Trans. prob., Oscill. Strengths	Th

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Zr^{2+}	Trans. prob., Oscill. Strengths	Exp

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3.2.1 Photon Collisions

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Photoionization of isoelectronic ions: Mg^+ and Al^{2+}.
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hν + Al^{2+}	Photoionization	59-97 eV	E/T

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Phys. Rev. A 67, 012711 (2003)

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hν + He^*	Photoionization	60-110 eV	Th

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Phys. Rev. A 67, 013405 (2003)

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hν + D_2^+	Photodissociation	400-800 nm	Th

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Molecular above-threshold-ionization spectra: The effect of moving nuclei.
Phys. Rev. A 67, 013407 (2003)

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hν + H_3^{2+}	Photoionization	800-1064 nm	Th

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Mixed classical-quantum approach to excitation, ionization, and fragmentation of H_2^+ in intense laser fields.
Phys. Rev. A 67, 013413 (2003)

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hν + H_2^+	Photoexcitation	5.71 eV	Th
hν + H_2^+	Photoionization	5.71 eV	Th

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Spheroidal close-coupling scheme to describe ionization processes in one-electron diatomic systems.
Phys. Rev. A 67, 040702 (2003)

hν + H	Photoionization	0-60 eV	Th
hν + H_2^+	Photoionization	0-60 eV	Th
nhν + H	Photoionization	0-60 eV	Th
nhν + H_2^+	Photoionization	0-60 eV	Th

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Trends in autoionization of Rydberg states converging to the 4s threshold in the Kr-Rb^+ -Sr^{2+} isoelectronic sequence: Theory and experiment.
Phys. Rev. A 67, 042707 (2003)

hν + Rb	Total Absorption, Scattering	35-61 eV	Exp
hν + Sr^{2+}	Total Absorption, Scattering	35-61 eV	Exp
hν + Rb	Photoionization	35-61 eV	Exp
hν + Sr^{2+}	Photoionization	35-61 eV	Exp

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Phys. Rev. A 67, 042716 (2003)

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Phys. Rev. A 67, 042718 (2003)

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Fragmentation of H_2^+ in strong 800-nm laser pulses: Initial-vibrational-state dependence.
Phys. Rev. A 67, 043405 (2003)

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nhν + H_2^+	Photodissociation	800 nm	Th
hν + H_2^+	Photoionization	800 nm	Th
nhν + H_2^+	Photoionization	800 nm	Th

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Interchannel-coupling effects in the spin polarization of energetic photoelectrons.
Phys. Rev. A 67, 052701 (2003)

hν + Ne	Photoionization	0-1500 eV	E/T

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Experimental and theoretical study of the cascade Auger transitions in Kr and Xe.
Phys. Rev. A 67, 052703 (2003)

hν + Kr	Photoexcitation	3-10 eV	E/T
hν + Xe	Photoexcitation	3-10 eV	E/T
hν + Kr	Photoionization	3-10 eV	E/T
hν + Xe	Photoionization	3-10 eV	E/T

63. T. Li, B. Piraux, R. Shakeshaft
Representation of a complex Green function on a real basis: Generalization to a three-body system.
Phys. Rev. A 67, 052704 (2003)

hν + H^-	Photodetachment	0.76-0.88 Ry; 14-40 eV	E/T

64. R. F. da Costa, M. A. Lima, L. G. Ferreira
Photoionization of pseudopotentials.
Phys. Rev. A 67, 052706 (2003)

hν + Ga	Photoionization	0-100 eV	E/T

65. S. Sen, B. Dutta, S. S. Bhattacharyya, S. Saha
Role of high-lying electronic states on the angular distribution of photofragments in multiphoton dissociation of D_2^+ by intense laser fields.
Phys. Rev. A 67, 053403 (2003)

hν + H_2^+	Photodissociation	400 nm	E/T
hν + D_2^+	Photodissociation	400 nm	E/T

66. R. W. Dunford, E. P. Kanter, B. Krassig, S. H. Southworth, L. Young, P. H. Mokler, T. Stohlker
Two-photon decay in gold atoms following photoionization with synchrotron radiation.
Phys. Rev. A 67, 054501 (2003)

hν + Au	Fluorescence	88 keV	E/T
hν + Au	Photoionization	88 keV	E/T

67. D. A. Telnov, S.-I. Chu
Erratum: Multiphoton above-threshold detachment of Li^-: Exterior-complex-scaling–generalized-pseudospectral method for calculations of complex-quasienergy resonances in Floquet formulation of time-dependent density-functional theory [Phys. Rev. A 66, 043417 (2002)].
Phys. Rev. A 67, 059903 (2003)

hν + Li^-	Photodetachment	0.012-0.02 a.u.	Th

68. L. Feng, H. W. van der Hart
Two-photon double ionization of He.
J. Phys. B 67, L1 (2003)

hν + He	Photoionization	40.7-47 eV	Th
nhν + He	Photoionization	40.7-47 eV	Th

69. N. Saito, A. De Fanis, K. Kubozuka, M. Machida, M. Takashi, H. Yoshida, I. H. Suzuki, A. Cassimi, A. Czasch, L. Schmidt, R. Dorner, K. Wang, B. Zimmermann, V. McKoy, I. Koyano, K. Ueda
Carbon K-shell photoelectron angular distribution from fixed-in-space CO_2 molecules.
J. Phys. B 36, L25 (2003)

hν + CO_2	Photoionization	290-340 eV	E/T

70. T. Richter, B. Obst, M. Martins, P. Zimmermann
The decay of the 2p resonances of atomic scandium studied by photoelectron spectroscopy.
J. Phys. B 36, 155 (2003)

hν + Sc	Photoionization	397-410 eV	E/T

71. K. Ueda
High-resolution inner-shell spectroscopies of free atoms and molecules using soft-x-ray beamlines at the third-generation synchrotron radiation sources.
J. Phys. B 36, R1 (2003)

hν + Ne	Photon Collisions	180-880 eV	E/T
hν + H_2O	Photon Collisions	180-880 eV	E/T
hν + CO_2	Photon Collisions	180-880 eV	E/T
hν + BF_3	Photon Collisions	180-880 eV	E/T

72. J. Chen, J. H. Kim, C. H. Nam
Frequency dependence of non-sequential double ionization.
J. Phys. B 36, 691 (2003)

hν + Ne	Photoionization	100-1100 nm	Th
nhν + Ne	Photoionization	100-1100 nm	Th

73. B. Feuerstein, U. Thumm
On the computation of momentum distributions within wavepacket propagation calculations.
J. Phys. B 36, 707 (2003)

hν + H_2^+	Photodissociation		Th
nhν + H_2^+	Photodissociation		Th
hν + H	Photoionization		Th
hν + H_2^+	Photoionization		Th
nhν + H	Photoionization		Th
nhν + H_2^+	Photoionization		Th

74. A. Kivimaki, J. Alvarez Ruiz, P. Erman, P. Hatherly, E. Melero Garcia, E. Rachlew, J. Rius i Riu, M. Stankiewicz
An energy resolved electron-ion coincidence study near the S 2p thresholds of the SF_6 molecule.
J. Phys. B 36, 781 (2003)

$h\nu + SF_6$	Photoionization	168-205 eV	Exp

75. S. Barmaki, S. Laulan, H. Bachau, M. Ghalim
The ionization of one-electron diatomic molecules in strong and short laser fields.
J. Phys. B 36, 817 (2003)

$h\nu + H_2^+$	Photoexcitation	0.6 a.u.	Th
$h\nu + H_2^+$	Photoionization	0.6 a.u.	Th

76. A. Tartari, C. Baraldi, E. Casnati, A. Da Re, J. E. Fernandez, S. Taioli
On the angular dependence of L x-ray production cross sections following photoionization at an energy of 59.54 keV.
J. Phys. B 36, 843 (2003)

$h\nu + Yb$	Fluorescence	59.54 keV	Exp
$h\nu + Hf$	Fluorescence	59.54 keV	Exp
$h\nu + Ta$	Fluorescence	59.54 keV	Exp
$h\nu + W$	Fluorescence	59.54 keV	Exp
$h\nu + Pb$	Fluorescence	59.54 keV	Exp
$h\nu + Yb$	Photoionization	59.54 keV	Exp
$h\nu + Hf$	Photoionization	59.54 keV	Exp
$h\nu + Ta$	Photoionization	59.54 keV	Exp
$h\nu + W$	Photoionization	59.54 keV	Exp
$h\nu + Pb$	Photoionization	59.54 keV	Exp

77. P. Koval, S. Fritzsche, A. Surzhykov
Relativistic and retardation effects in the two-photon ionization of hydrogen-like ions.
J. Phys. B 36, 873 (2003)

$h\nu + H$	Photoionization	1.05 threshold	Th
$h\nu + He^+$	Photoionization	1.05 threshold	Th
$h\nu + Li^{2+}$	Photoionization	1.05 threshold	Th
$h\nu + Be^{3+}$	Photoionization	1.05 threshold	Th
$h\nu + B^{4+}$	Photoionization	1.05 threshold	Th
$h\nu + C^{5+}$	Photoionization	1.05 threshold	Th
$h\nu + N^{6+}$	Photoionization	1.05 threshold	Th
$h\nu + O^{7+}$	Photoionization	1.05 threshold	Th
$h\nu + F^{8+}$	Photoionization	1.05 threshold	Th
$h\nu + Ne^{9+}$	Photoionization	1.05 threshold	Th
$h\nu + Na^{10+}$	Photoionization	1.05 threshold	Th
$h\nu + Mg^{11+}$	Photoionization	1.05 threshold	Th
$h\nu + Al^{12+}$	Photoionization	1.05 threshold	Th
$h\nu + Si^{13+}$	Photoionization	1.05 threshold	Th
$h\nu + P^{14+}$	Photoionization	1.05 threshold	Th
$h\nu + S^{15+}$	Photoionization	1.05 threshold	Th
$h\nu + Cl^{16+}$	Photoionization	1.05 threshold	Th
$h\nu + Ar^{17+}$	Photoionization	1.05 threshold	Th
$h\nu + Ar^{70+}$	Photoionization	1.05 threshold	Th
$h\nu + K^{18+}$	Photoionization	1.05 threshold	Th
$h\nu + Ca^{19+}$	Photoionization	1.05 threshold	Th

$h\nu + Sc^{20+}$	Photoionization	1.05 threshold	Th
$h\nu + Ti^{21+}$	Photoionization	1.05 threshold	Th
$h\nu + V^{22+}$	Photoionization	1.05 threshold	Th
$h\nu + Cr^{23+}$	Photoionization	1.05 threshold	Th
$h\nu + Mn^{24+}$	Photoionization	1.05 threshold	Th
$h\nu + Fe^{25+}$	Photoionization	1.05 threshold	Th
$h\nu + Co^{26+}$	Photoionization	1.05 threshold	Th
$h\nu + Ni^{27+}$	Photoionization	1.05 threshold	Th
$h\nu + Cu^{28+}$	Photoionization	1.05 threshold	Th
$h\nu + Zn^{29+}$	Photoionization	1.05 threshold	Th
$h\nu + Ga^{30+}$	Photoionization	1.05 threshold	Th
$h\nu + Ge^{31+}$	Photoionization	1.05 threshold	Th
$h\nu + As^{32+}$	Photoionization	1.05 threshold	Th
$h\nu + Se^{33+}$	Photoionization	1.05 threshold	Th
$h\nu + Br^{34+}$	Photoionization	1.05 threshold	Th
$h\nu + Kr^{35+}$	Photoionization	1.05 threshold	Th
$h\nu + Rb^{36+}$	Photoionization	1.05 threshold	Th
$h\nu + Sr^{37+}$	Photoionization	1.05 threshold	Th
$h\nu + Y^{38+}$	Photoionization	1.05 threshold	Th
$h\nu + Zr^{39+}$	Photoionization	1.05 threshold	Th
$h\nu + Nb^{40+}$	Photoionization	1.05 threshold	Th
$h\nu + Mo^{41+}$	Photoionization	1.05 threshold	Th
$h\nu + Tc^{42+}$	Photoionization	1.05 threshold	Th
$h\nu + Ru^{43+}$	Photoionization	1.05 threshold	Th
$h\nu + Rh^{44+}$	Photoionization	1.05 threshold	Th
$h\nu + Pd^{45+}$	Photoionization	1.05 threshold	Th
$h\nu + Ag^{46+}$	Photoionization	1.05 threshold	Th
$h\nu + Cd^{47+}$	Photoionization	1.05 threshold	Th
$h\nu + In^{48+}$	Photoionization	1.05 threshold	Th
$h\nu + Sn^{49+}$	Photoionization	1.05 threshold	Th
$h\nu + Sb^{50+}$	Photoionization	1.05 threshold	Th
$h\nu + Te^{51+}$	Photoionization	1.05 threshold	Th
$h\nu + I^{52+}$	Photoionization	1.05 threshold	Th
$h\nu + Xe^{53+}$	Photoionization	1.05 threshold	Th
$h\nu + Cs^{54+}$	Photoionization	1.05 threshold	Th
$h\nu + Ba^{55+}$	Photoionization	1.05 threshold	Th
$h\nu + La^{56+}$	Photoionization	1.05 threshold	Th
$h\nu + Hf^{57+}$	Photoionization	1.05 threshold	Th
$h\nu + Ta^{58+}$	Photoionization	1.05 threshold	Th
$h\nu + W^{59+}$	Photoionization	1.05 threshold	Th
$h\nu + Re^{60+}$	Photoionization	1.05 threshold	Th
$h\nu + Os^{61+}$	Photoionization	1.05 threshold	Th
$h\nu + Ir^{62+}$	Photoionization	1.05 threshold	Th
$h\nu + Pt^{63+}$	Photoionization	1.05 threshold	Th
$h\nu + Au^{64+}$	Photoionization	1.05 threshold	Th
$h\nu + Hg^{65+}$	Photoionization	1.05 threshold	Th
$h\nu + Tl^{66+}$	Photoionization	1.05 threshold	Th
$h\nu + Pb^{67+}$	Photoionization	1.05 threshold	Th
$h\nu + Bi^{68+}$	Photoionization	1.05 threshold	Th
$h\nu + Po^{69+}$	Photoionization	1.05 threshold	Th
$h\nu + Rn^{71+}$	Photoionization	1.05 threshold	Th
$h\nu + A$	Photoionization	1.05 threshold	Th

78. U. Hollenstein, R. Seiler, F. Merkt
Determination of the ionization energy of krypton by Rydberg-state-resolved threshold-ionization spectroscopy.
J. Phys. B 36, 893 (2003)

$\mathbf{h\nu + Kr}$	Photoionization	112,914 cm^{-1}	Exp

79. R. Moshammer, J. Ullrich, B. Feuerstein, D. Fischer, A. Dorn, C. D. Schroeter, J. R. Crespo Lopez-Urrutia, C. Hohr, H. Rottke, C. Trump, M. Wittmann, G. Korn, K. Hoffmann, W. Sandner
Strongly directed electron emission in non-sequential double ionization of Ne by intense laser pulses.
J. Phys. B 36, L113 (2003)

$\mathbf{h\nu + Ne}$	Photoionization	800 nm	Exp

80. X. M. Tong, Z. X. Zhao, C. D. Lin
Abnormal pulse duration dependence of the ionization probability of Na atoms in intense laser fields.
J. Phys. B 36, 1121 (2003)

$\mathbf{h\nu + Na}$	Photoionization	800 nm	Th

81. E. Trabert, A. G. Calamai, G. Gwinner, E. J. Knystautas, E. H. Pinnington, A. Wolf
M1/E2/M2 decay rates in Fe VII, Fe IX, Fe X and Fe XIII measured using a heavy-ion storage ring.
J. Phys. B 36, 1129 (2003)

$\mathbf{h\nu + Fe^{6+}}$	Photoexcitation		Exp
$\mathbf{h\nu + Fe^{8+}}$	Photoexcitation		Exp
$\mathbf{h\nu + Fe^{9+}}$	Photoexcitation		Exp
$\mathbf{h\nu + Fe^{12+}}$	Photoexcitation		Exp

82. L. Gerchikov, A. Ipatov
Ionization of metallic clusters via multi-plasmon excitation.
J. Phys. B 36, 1193 (2003)

$\mathbf{h\nu + Na}$	Photoionization	2.84 eV	Th
$\mathbf{h\nu + Na_{93}^{+}}$	Photoionization	2.84 eV	Th

83. S.-W. Yu, W. C. Stolte, G. Oehrwall, R. Guillemin, M. N. Piancastelli, D. W. Lindle
Anionic and cationic photofragmentation of core-excited N_2O.
J. Phys. B 36, 1255 (2003)

$\mathbf{h\nu + N_2O}$	Photodissociation	400-440 eV	Exp
$\mathbf{h\nu + N_2O^*}$	Photodissociation	400-440 eV	Exp
$\mathbf{h\nu + N_2O}$	Photoionization	400-440 eV	Exp
$\mathbf{h\nu + N_2O^*}$	Photoionization	400-440 eV	Exp

84. S. K. Semenov, N. A. Cherepkov
Photoionization of the H_2 molecule in the random phase approximation.
J. Phys. B 36, 1409 (2003)

$\mathbf{h\nu + H_2}$	Photoionization	13.6-200 eV	Th

85. Y. Hikosaka, T. Aoto, R. I. Hall, K. Ito
Fragment emission anisotropy in the dissociative photoionization of O_2 investigated by two-dimensional photoion spectroscopy.
J. Phys. B 36, 1423 (2003)

$\mathbf{h\nu + O_2}$	Photoionization	20-24.8 eV	Exp

86. N. L. Manakov, M. V. Frolov, B. Borca, A. F. Starace
Multiphoton detachment of a negative ion by an elliptically polarized, monochromatic laser field.
J. Phys. B 36, R49 (2003)

hν + H$^-$	Photodetachment	0-100 scaled	Th

87. N. Vinci, D. H. Glass, H. W. van der Hart, K. T. Taylor, P. G. Burke
Single- and multiphoton detachment of K$^-$.
J. Phys. B 36, 1795 (2003)

hν + K$^-$	Photodetachment	0.01-0.1 a.u.	Th

88. E. Karule, B. Moine
The general expression for the transition amplitude of two-photon ionization of atomic hydrogen.
J. Phys. B 36, 1963 (2003)

hν + H	Photoionization	10-90 nm	Th
2hν + H	Photoionization	10-90 nm	Th

89. E. G. Drukarev, N. B. Avdonina
High energy photoionization beyond the independent particle approximation.
J. Phys. B 36, 2033 (2003)

hν + Ne	Photoionization	0.75-1.05 keV	Th
hν + Ar	Photoionization	0.75-1.05 keV	Th

90. J.-M. Yuan
The resonance structures of electron interaction with Sr and Ba atoms: Low-energy electron scattering and photodetachment of the negative ions.
J. Phys. B 36, 2053 (2003)

hν + Sr$^-$	Photodetachment	0-10 eV	Th
hν + Ba$^-$	Photodetachment	0-10 eV	Th

91. H. Kuest, U. Kleiman, W. Mehlhorn
Alignment after Xe L$_3$ photoionization by synchrotron radiation.
J. Phys. B 36, 2073 (2003)

hν + Xe	Photoionization	4.814-5.055 keV	E/T

92. J. Jimenez-Mier, D. L. Ederer, T. Schuler, T. A. Callcott
Direct evidence for 3p -¿ 2p non-dipole x-ray emission in transition metals.
J. Phys. B 36, L173 (2003)

hν + Co	Fluorescence	807-969 eV	E/T
hν + Ni	Fluorescence	807-969 eV	E/T
hν + Cu	Fluorescence	807-969 eV	E/T

93. S. E. Canton, A. A. Wills, T. W. Gorczyca, E. Sokell, J. D. Bozek, G. Turri, M. Wiedenhoeft, X. Feng, N. Berrah
New low-lying mirroring singly and doubly excited resonances in neon.
J. Phys. B 36, L181 (2003)

hν + Ne	Photoexcitation	44-49 eV	E/T
hν + Ne	Photoionization	44-49 eV	E/T

94. C. Nicolas, C. Alcaraz, R. Thissen, M. Vervloet, O. Dutuit
Dissociative photoionization of N_2 in the 24-32 eV photon energy range.
J. Phys. B 36, 2239 (2003)

$\mathbf{h\nu + N_2}$	Photodissociation	24-32 eV	Exp
$\mathbf{h\nu + N_2}$	Photoionization	24-32 eV	Exp

95. M.W.D. Mansfield, J. T. Costello, E. T. Kennedy, J.-P. Mosnier
The 4p-subshell photoabsorption spectrum of singly ionized molybdenum.
J. Phys. B 36, 2611 (2003)

$\mathbf{h\nu + Mo^+}$	Total Absorption, Scattering	500-200 $\mathring{A}$	Exp

96. V. N. Ostrovsky
Multiphoton detachment with atom excitation: Explicit three-step quantum theory.
J. Phys. B 36, 2647 (2003)

$\mathbf{h\nu + H^-}$	Photodetachment	0.035 a.u.	Th

97. M. Ya. Amusia, A. S. Baltenkov, L. V. Chernysheva, Z. Felfli, S. T. Manson, A. Z. Msezane
Correlation structure in nondipole photoionization.
Phys. Rev. A 67, 060702 (2003)

$\mathbf{h\nu + Cs}$	Photoionization	725-760 eV	Th

98. A. Castrillo, G. Gagliardi, G. Casa, L. Gianfrani
Combined interferometric and absorption-spectroscopic technique for determining molecular line strengths: Applications to CO_2.
Phys. Rev. A 67, 062503 (2003)

$\mathbf{h\nu + CO_2}$	Total Absorption, Scattering	4950-5010 cm^{-1}	Exp

99. T. Schneider, J.-M. Rost
Double photoionization of two-electron atoms based on the explicit separation of dominant ionization mechanisms.
Phys. Rev. A 67, 062704 (2003)

$\mathbf{h\nu + He^+}$	Photoionization	0-1 a.u.	Th
$\mathbf{h\nu + Li^+}$	Photoionization	0-1 a.u.	Th
$\mathbf{h\nu + Be^{2+}}$	Photoionization	0-1 a.u.	Th
$\mathbf{h\nu + C^{4+}}$	Photoionization	0-1 a.u.	Th
$\mathbf{h\nu + O^{6+}}$	Photoionization	0-1 a.u.	Th

100. S. H. Southworth, E. P. Kanter, B. Krassig, L. Young, G. B. Armen, J. C. Levin, D. L. Ederer, M.-H. Chen
Double K-shell photoionization of neon.
Phys. Rev. A 67, 062712 (2003)

$\mathbf{h\nu + Ne}$	Photoionization	5000 eV	Exp

101. V. K. Dolmatov, A. S. Baltenkov, S. T. Manson
Enhanced nondipole effects in photoelectron angular distributions near giant dipole autoionizing resonances in atoms.
Phys. Rev. A 67, 062714 (2003)

$\mathbf{h\nu + Cr}$	Photoionization	24-56 eV	Th
$\mathbf{h\nu + Mn}$	Photoionization	24-56 eV	Th

102. Y. Kimura, S. Kasahara, H. Kato, M. Baba
Orientation observed by Zeeman spectra of dissociated atoms and the interference in photoexcitations.
Phys. Rev. A 67, 062717 (2003)

hν + Cs_2D	Photodissociation	10856.5 cm^{-1}	Exp
hν + Cs_2H	Photodissociation	10856.5 cm^{-1}	Exp
hν + Cs_2D	Photoexcitation	10856.5 cm^{-1}	Exp
hν + Cs_2H	Photoexcitation	10856.5 cm^{-1}	Exp

103. R. Krivec, M. Ya. Amusia, V. B. Mandelzweig
High-frequency two-electron photoionization cross section of triplet states.
Phys. Rev. A 67, 062720 (2003)

hν + He	Photoionization		Th

104. D. M. Pendergrast, J. N. Yukich
Observed Landau structure in photodetachment from trapped O^-.
Phys. Rev. A 67, 062721 (2003)

hν + O^-	Photodetachment	11,781-11,788 cm^{-1}	Exp

105. Q.-T. Meng, G.-H. Yang, H.-L. Sun, K.-L. Han, N.-Q. Lou
Theoretical study of the femtosecond-resolved photoelectron spectrum of the NO molecule.
Phys. Rev. A 67, 063202 (2003)

hν + NO	Photoionization	3x10^{10} W/cm^2	Th

106. R. Wiehle, B. Witzel, H. Helm, E. Cormier
Dynamics of strong-field above-threshold ionization of argon: Comparison between experiment and theory.
Phys. Rev. A 67, 063405 (2003)

hν + Ar	Photoionization	800 nm	E/T

107. S. Otranto, C. R. Garibotti
Kinetic correlation in the final-state wave function in photo-double-ionization of He.
Phys. Rev. A 67, 064701 (2003)

hν + He	Photoionization	85 eV	Th

108. P. Palmeri, C. Mendoza, T. R. Kallman, M. A. Bautista
A complete set of radiative and Auger rates for K-vacancy states in Fe XVIII-Fe XXV.
Astron. Astrophys. 403, 1175 (2003)

hν + Fe^{17+}	Photoexcitation	Th
hν + Fe^{18+}	Photoexcitation	Th
hν + Fe^{19+}	Photoexcitation	Th
hν + Fe^{20+}	Photoexcitation	Th
hν + Fe^{21+}	Photoexcitation	Th
hν + Fe^{22+}	Photoexcitation	Th
hν + Fe^{23+}	Photoexcitation	Th
hν + Fe^{24+}	Photoexcitation	Th

109. J. M. Borrero, L. R. Bellot Rubio, P. S. Barklem, J. C. del Toro Iniesta
Accurate atomic parameters for near-infrared spectral lines.
Astron. Astrophys. 404, 749 (2003)

$\mathbf{h\nu + C}$	Photoexcitation	15,652-10,003 Å	Exp
$\mathbf{h\nu + Si}$	Photoexcitation	15,652-10,003 Å	Exp
$\mathbf{h\nu + Ca}$	Photoexcitation	15,652-10,003 Å	Exp
$\mathbf{h\nu + Ti}$	Photoexcitation	15,652-10,003 Å	Exp
$\mathbf{h\nu + Cr}$	Photoexcitation	15,652-10,003 Å	Exp
$\mathbf{h\nu + Fe}$	Photoexcitation	15,652-10,003 Å	Exp

110. E. Charro, S. Lopez-Ferrero, I. Martin
Trends in E2 and M1 transition rates between $3p_{3/2}$ and $3p_{1/2}$ levels in $3s^2$ $3p^k$ systems.
Astron. Astrophys. 406, 741 (2003)

$\mathbf{h\nu + Sc^{8+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Ti^{9+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + V^{10+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Cr^{11+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Mn^{12+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Fe^{13+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Co^{14+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Co^{16+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Ni^{15+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Zn^{17+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Ga^{18+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Ge^{19+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + As^{20+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Se^{21+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Br^{22+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Kr^{23+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Rb^{24+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Sr^{25+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Y^{26+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Zr^{27+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Nb^{28+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Mo^{29+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Tc^{30+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Ru^{31+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Rh^{32+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Pd^{33+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Ag^{34+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Cd^{35+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + In^{36+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Sn^{37+}}$	Photoexcitation	17,370-26.4 Å	Th
$\mathbf{h\nu + Sb^{38+}}$	Photoexcitation	17,370-26.4 Å	Th

111. S. Djenize, S. Bukvic, A. Sreckovic, S. Kalezic
Experimental transition probabilities and Stark shifts in O III and O IV spectra.
Astron. Astrophys. 406, 759 (2003)

$\mathbf{h\nu + O^{2+}}$	Photoexcitation	350 nm	Exp
$\mathbf{h\nu + O^{3+}}$	Photoexcitation	350 nm	Exp

112. S. N. Nahar, W. Eissner, G.-X. Chen, A. K. Pradhan
Atomic data from the Iron Project. LIII. Relativistic allowed and forbidden

transition probabilities for Fe XVII.
Astron. Astrophys. 408, 789 (2003)

$\mathbf{h\nu + Fe^{16+}}$	Photoexcitation	50 Ry	Th

113. S. Ivarsson, J. Andersen, B. Nordstroem, X. Dai, S. Johansson, H. Lundberg, H. Nilsson, V. Hill, M. Lundqvist, J. F. Wyart
Improved oscillator strengths and wavelengths for Os I and Ir I, and new results on early r-process nucleosynthesis.
Astron. Astrophys. 409, 1141 (2003)

$\mathbf{h\nu}$ **+ Os**	Photoexcitation	5000-3000 $\AA$	Exp
$\mathbf{h\nu}$ **+ Ir**	Photoexcitation	5000-3000 $\AA$	Exp

114. P. Palmeri, C. Mendoza, T. R. Kallman, M. A. Bautista, M. Melendez
Modeling of iron K lines: Radiative and Auger decay data for Fe II - Fe IX.
Astron. Astrophys. 410, 359 (2003)

$\mathbf{h\nu + Fe^{+}}$	Photoexcitation	6400 eV	Th
$\mathbf{h\nu + Fe^{2+}}$	Photoexcitation	6400 eV	Th
$\mathbf{h\nu + Fe^{3+}}$	Photoexcitation	6400 eV	Th
$\mathbf{h\nu + Fe^{4+}}$	Photoexcitation	6400 eV	Th
$\mathbf{h\nu + Fe^{5+}}$	Photoexcitation	6400 eV	Th
$\mathbf{h\nu + Fe^{6+}}$	Photoexcitation	6400 eV	Th
$\mathbf{h\nu + Fe^{7+}}$	Photoexcitation	6400 eV	Th
$\mathbf{h\nu + Fe^{8+}}$	Photoexcitation	6400 eV	Th

115. S. N. Nahar
Atomic data from the Iron Project. LIV. Relativistic calculations for allowed and forbidden fine structure transitions in Fe XX.
Astron. Astrophys. 413, 779 (2003)

$\mathbf{h\nu + Fe^{19+}}$	Photoexcitation	5000-10 $\AA$	Th

116. C. Mendoza, T. R. Kallman, M. A. Bautista, P. Palmeri
Decay properties of K-vacancy states in Fe X - Fe XVII.
Astron. Astrophys. 414, 377 (2003)

$\mathbf{h\nu + Fe^{9+}}$	Photoexcitation	2 $\AA$	Th
$\mathbf{h\nu + Fe^{10+}}$	Photoexcitation	2 $\AA$	Th
$\mathbf{h\nu + Fe^{11+}}$	Photoexcitation	2 $\AA$	Th
$\mathbf{h\nu + Fe^{12+}}$	Photoexcitation	2 $\AA$	Th
$\mathbf{h\nu + Fe^{13+}}$	Photoexcitation	2 $\AA$	Th
$\mathbf{h\nu + Fe^{14+}}$	Photoexcitation	2 $\AA$	Th
$\mathbf{h\nu + Fe^{15+}}$	Photoexcitation	2 $\AA$	Th
$\mathbf{h\nu + Fe^{16+}}$	Photoexcitation	2 $\AA$	Th

117. J. K. Lepson, P. Beiersdorfer, E. Behar, S. M. Kahn
Emission-line spectra of Ar IX-Ar XVI in the soft x-ray region 20-50 $\AA$.
Astrophys. J., Part 1 590, 604 (2003)

$\mathbf{h\nu + Ar^{8+}}$	Photoexcitation	50-20 $\AA$	E/T
$\mathbf{h\nu + Ar^{9+}}$	Photoexcitation	50-20 $\AA$	E/T
$\mathbf{h\nu + Ar^{10+}}$	Photoexcitation	50-20 $\AA$	E/T
$\mathbf{h\nu + Ar^{11+}}$	Photoexcitation	50-20 $\AA$	E/T
$\mathbf{h\nu + Ar^{12+}}$	Photoexcitation	50-20 $\AA$	E/T
$\mathbf{h\nu + Ar^{13+}}$	Photoexcitation	50-20 $\AA$	E/T
$\mathbf{h\nu + Ar^{14+}}$	Photoexcitation	50-20 $\AA$	E/T
$\mathbf{h\nu + Ar^{15+}}$	Photoexcitation	50-20 $\AA$	E/T

118. T. W. Gorczyca, C. N. Kodituwakku, K. T. Korista, O. Zatsarinny, N. R. Badnell, E. Behar, M. H. Chen, D. W. Savin
Assessment of the fluorescence and Auger database used in plasma modeling.
Astrophys. J., Part 1 592, 636 (2003)

hν + Be Z= ?-?	Photoexcitation	Th
hν + F Z= ?-?	Photoexcitation	Th
hν + Be	Photoexcitation	Th
hν + B^{+}	Photoexcitation	Th
hν + C^{2+}	Photoexcitation	Th
hν + N^{3+}	Photoexcitation	Th
hν + O^{4+}	Photoexcitation	Th
hν + F	Photoexcitation	Th
hν + F^{5+}	Photoexcitation	Th
hν + Ne^{+}	Photoexcitation	Th
hν + Ne^{6+}	Photoexcitation	Th
hν + Na^{2+}	Photoexcitation	Th
hν + Na^{7+}	Photoexcitation	Th
hν + Mg^{3+}	Photoexcitation	Th
hν + Mg^{8+}	Photoexcitation	Th
hν + Al^{4+}	Photoexcitation	Th
hν + Al^{9+}	Photoexcitation	Th
hν + Si^{5+}	Photoexcitation	Th
hν + Si^{10+}	Photoexcitation	Th
hν + P^{6+}	Photoexcitation	Th
hν + P^{11+}	Photoexcitation	Th
hν + S^{7+}	Photoexcitation	Th
hν + S^{12+}	Photoexcitation	Th
hν + Cl^{8+}	Photoexcitation	Th
hν + Cl^{13+}	Photoexcitation	Th
hν + Ar^{9+}	Photoexcitation	Th
hν + Ar^{14+}	Photoexcitation	Th
hν + K^{10+}	Photoexcitation	Th
hν + K^{15+}	Photoexcitation	Th
hν + Ca^{11+}	Photoexcitation	Th
hν + Ca^{16+}	Photoexcitation	Th
hν + Sc^{12+}	Photoexcitation	Th
hν + Sc^{17+}	Photoexcitation	Th
hν + Ti^{13+}	Photoexcitation	Th
hν + Ti^{18+}	Photoexcitation	Th
hν + V^{14+}	Photoexcitation	Th
hν + V^{19+}	Photoexcitation	Th
hν + Cr^{15+}	Photoexcitation	Th
hν + Cr^{20+}	Photoexcitation	Th
hν + Mn^{16+}	Photoexcitation	Th
hν + Mn^{21+}	Photoexcitation	Th
hν + Fe^{17+}	Photoexcitation	Th
hν + Fe^{22+}	Photoexcitation	Th
hν + Co^{18+}	Photoexcitation	Th
hν + Co^{23+}	Photoexcitation	Th
hν + Ni^{19+}	Photoexcitation	Th
hν + Ni^{24+}	Photoexcitation	Th
hν + Cu^{20+}	Photoexcitation	Th
hν + Cu^{25+}	Photoexcitation	Th
hν + Zn^{21+}	Photoexcitation	Th
hν + Zn^{26+}	Photoexcitation	Th
hν + Ga^{22+}	Photoexcitation	Th

$h\nu$ + **Ga**$^{27+}$	Photoexcitation		Th
$h\nu$ + **Ge**$^{23+}$	Photoexcitation		Th
$h\nu$ + **Ge**$^{28+}$	Photoexcitation		Th
$h\nu$ + **As**$^{24+}$	Photoexcitation		Th
$h\nu$ + **As**$^{29+}$	Photoexcitation		Th
$h\nu$ + **Se**$^{25+}$	Photoexcitation		Th
$h\nu$ + **Se**$^{30+}$	Photoexcitation		Th
$h\nu$ + **Br**$^{26+}$	Photoexcitation		Th
$h\nu$ + **Kr**$^{27+}$	Photoexcitation		Th
$h\nu$ + **Rb**$^{28+}$	Photoexcitation		Th
$h\nu$ + **Sr**$^{29+}$	Photoexcitation		Th
$h\nu$ + **Y**$^{30+}$	Photoexcitation		Th

119. M. Dulick, C. W., Jr. Bauschlicher, A. Burrows, C. M. Sharp, R. S. Ram, P. Bernath
Line intensities and molecular opacities of the FeH $F^4\Delta_i$-X $^4\Delta_i$ transition.
Astrophys. J., Part 1 594, 651 (2003)

$h\nu$ + **FeH**	Photoexcitation	10,000 cm^{-1}	Th

120. A. Alonso-Medina, C. Colon, C. Herran Martinez
Transitions from autoionized single-ionized tin states: A theoretical study of the 5s5p (^{3}P^0) nl (nl=5d, 6s) levels of Sn II.
Astrophys. J., Part 1 595, 550 (2003)

$h\nu$ + **Sn**$^+$	Photoexcitation	1500 $\AA$	E/T

121. H. S. Chakraborty, P. C. Deshmukh, S. T. Manson
Interchannel coupling in ionic photoionization far above threshold: The neon isoelectronic sequence.
Astrophys. J., Part 1 595, 1307 (2003)

$h\nu$ + **Ne**	Photoionization	200-21,500 eV	Th
$h\nu$ + **Na**$^+$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Mg**$^{2+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Al**$^{3+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Si**$^{4+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **P**$^{5+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **S**$^{6+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Cl**$^{7+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Ar**$^{8+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **K**$^{9+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Ca**$^{10+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Sc**$^{11+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Ti**$^{12+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **V**$^{13+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Cr**$^{14+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Mn**$^{15+}$	Photoionization	200-21,500 eV	Th
$h\nu$ + **Fe**$^{16+}$	Photoionization	200-21,500 eV	Th

122. N. D. Gibson, C. W. Walter, O. Zatsarinny, T. W. Gorczyca, G. D. Ackerman, J. D. Bozek, M. Martins, B. M. McLaughlin, N. Berrah
K-shell photodetachment from C$^-$: Experiment and theory.
Phys. Rev. A 67, 030703(R) (2003)

$h\nu$ + **C**$^-$	Photodetachment	280-285 eV	E/T

123. R. Feifel, K. Ueda, A. De Fanis, K. Okada, S. Tanimoto, T. Furuta, H. Shindo, M. Kitajima, H. Tanaka, O. Bjoerneholm, L. Karlsson, S. Svensson, S. L. Sorensen
Probing doubly excited ionic states of N_2^+ via a triple excitation above the N 1s threshold in the N_2 molecule.
Phys. Rev. A 67, 032504 (2003)

hν + N_2	Total Absorption, Scattering	410-422 eV	Exp
hν + N_2	Photoexcitation	410-422 eV	Exp
hν + N_2	Photoionization	410-422 eV	Exp

124. I. M. Savukov, H. G. Berry
Laser gas-discharge absorption measurements of the ratio of two transition rates in neutral argon.
Phys. Rev. A 67, 032505 (2003)

hν + Ar	Total Absorption, Scattering	978.7-922.7 nm	E/T

125. O. Mauron, J.-Cl. Dousse, S. Baechler, M. Berset, Y.-P. Maillard, P.-A. Raboud, J. Hoszowska
Reexamination of L_3 and M_1 atomic-level widths of elements 54¡Z¡77.
Phys. Rev. A 67, 032506 (2003)

hν + Xe	Fluorescence	3500-6750 eV	Exp
hν + Ba	Fluorescence	3500-6750 eV	Exp
hν + La	Fluorescence	3500-6750 eV	Exp
hν + Pr	Fluorescence	3500-6750 eV	Exp
hν + Nd	Fluorescence	3500-6750 eV	Exp
hν + Sm	Fluorescence	3500-6750 eV	Exp
hν + Gd	Fluorescence	3500-6750 eV	Exp
hν + Tb	Fluorescence	3500-6750 eV	Exp
hν + Dy	Fluorescence	3500-6750 eV	Exp
hν + Ho	Fluorescence	3500-6750 eV	Exp
hν + Yb	Fluorescence	3500-6750 eV	Exp
hν + W	Fluorescence	3500-6750 eV	Exp
hν + Ir	Fluorescence	3500-6750 eV	Exp

126. S. Schippers, A. Mueller, S. Ricz, M. E. Bannister, G. H. Dunn, A. S. Schlachter, G. Hinojosa, C. Cisneros, A. Aguilar, A. M. Covington, M. F. Gharaibeh, R. A. Phaneuf
Photoionization of Sc^{2+} ions by synchrotron radiation: Measurements and absolute cross sections in the photon energy range 23-68 eV.
Phys. Rev. A 67, 032702 (2003)

hν + Sc^{2+}	Photoionization	23-68 eV	Exp

127. R. Sankari, A. Kivimaki, H. Aksela, S. Aksela, K. C. Prince, M. Coreno, M. Alagia, M. de Simone
Krypton 3p excitations and subsequent resonant Auger decay.
Phys. Rev. A 67, 032710 (2003)

hν + Kr	Total Absorption, Scattering	20-900 eV	Exp
hν + Kr	Photoexcitation	20-900 eV	Exp
hν + Kr	Photoionization	20-900 eV	Exp

128. A. Saenz
Photoabsorption and photoionization of HeH^+.
Phys. Rev. A 67, 033409 (2003)

hν + HeH^+	Total Absorption, Scattering	15-800 eV	Th

129. J. Rius i Riu, A. Karawajczyk, M. Stankiewicz, K. Yoshiki Franzen, P. Winiarczyk, L. Veseth
Non Franck-Condon effects in the photoionization of molecular oxygen to the O_2^+ X $^2\Pi_g$ state in the 19-31 eV photon energy region.
Chem. Phys. Lett. 333, 91 (2001)

hν + O_2	Photoionization	19-31 eV	Exp

130. J. Rius i Riu, A. Karawajczyk, M. Stankiewicz, K. Yoshiki Franzen, P. Winiarczyk, L. Veseth
Non Franck-Condon effects in the photoionization of molecular nitrogen to the N_2^+ A $^2\Pi_u$ state in the 19-34 eV photon energy region.
Chem. Phys. Lett. 338, 285 (2001)

hν + N_2	Photoionization	19-34 eV	Exp

131. R. K. Vatsa, H.-R. Volpp
Absorption cross-sections for some atmospherically important molecules at the H atom Lyman-α wavelength (121.567 nm).
Chem. Phys. Lett. 340, 289 (2001)

hν + H_2O	Total Absorption, Scattering	1216 nm	Exp
hν + CH_4	Total Absorption, Scattering	1216 nm	Exp

132. J. Chen, S. G. Chen, J. Liu
Quantum electrodynamic approach to multiphoton ionization in strong fields.
J. Phys. B 36, 1559 (2003)

hν + H	Free-Free Transition	2x10^{13} - 8x10^{13} W/cm^2	Th
hν + H	Photoionization	2x10^{13} - 8x10^{13} W/cm^2	Th

133. C. McKenna, H. W. van der Hart
Single- and two-photon ionization of neutral Ca.
J. Phys. B 36, 1627 (2003)

hν + Ca	Photoionization	10^{10}-10^{12} W/cm^2	Th
2hν + Ca	Photoionization	10^{10}-10^{12} W/cm^2	Th

134. M. Ya. Amusia, L. V. Chernysheva, Z. Felfli, A. Z. Msezane
Determination of discrete transition multipolarity using the generalized oscillator strength.
Phys. Rev. A 67, 022703 (2003)

hν + Ne	Photoexcitation	11.4-20.4 eV	Th
hν + Ar	Photoexcitation	11.4-20.4 eV	Th
hν + Kr	Photoexcitation	11.4-20.4 eV	Th
hν + Xe	Photoexcitation	11.4-20.4 eV	Th
nhν + Ne	Photoexcitation	11.4-20.4 eV	Th
nhν + Ar	Photoexcitation	11.4-20.4 eV	Th
nhν + Kr	Photoexcitation	11.4-20.4 eV	Th
nhν + Xe	Photoexcitation	11.4-20.4 eV	Th

135. B. Kraessig, J.-C. Bilheux, R. W. Dunford, D. S. Gemmell, S. Hasegawa, E. P. Kanter, S. H. Southworth, L. Young, L. A. LaJohn, R. H. Pratt
Nondipole asymmetries of Kr 1s photoelectrons.
Phys. Rev. A 67, 022707 (2003)

hν + Kr	Photoionization	11-8000 eV	Exp

136. A. Baev, R. Feifel, F. Gel'mukhanov, H. Agren, M. N. Piancastelli, M. Baessler, C. Miron, S. L. Sorensen, A. Naves de Brito, O. Bjoerneholm, L. Karlsson, S. Svensson
Geometrical information on core-excited states obtained from interference quenching of vibrational states in resonant x-ray photoemission.
Phys. Rev. A 67, 022713 (2003)

$\mathbf{h\nu + N_2}$	Fluorescence	18-400 eV	E/T
$\mathbf{h\nu + N_2}$	Photoexcitation	18-400 eV	E/T

137. V. Radojevic, D. M. Davidovic, M. Ya. Amusia
Near-threshold photoionization of the Xe 3d spin-orbit doublet: Relativistic, relaxation, and intershell interaction effects.
Phys. Rev. A 67, 022719 (2003)

$\mathbf{h\nu + Xe}$	Photoionization	650-730 eV	Th

138. A. J. Alexander, Z. H. Kim, R. N. Zare
Photodissociation of O_2 via the Herzberg continuum: Measurements of O-atom alignment and orientation.
J. Chem. Phys. 118, 10566 (2003)

$\mathbf{h\nu + O_2}$	Photodissociation	239-218 nm	Exp

139. G. B. Baptista
Simultaneous ionization and excitation by photon absorption in He.
Nucl. Instrum. Methods Phys. Res. B 201, 555 (2003)

$\mathbf{h\nu + He}$	Photoexcitation	70-1500 eV	Th
$\mathbf{h\nu + He}$	Photoionization	70-1500 eV	Th

140. C. Z. Dong, L. Y. Xie, S. Fritzsche, T. Kato
A theoretical study of the 3d-2p resonance to intercombination line-intensity ratio in mid-Z Ne-like ions.
Nucl. Instrum. Methods Phys. Res. B 205, 87 (2003)

$\mathbf{h\nu + Cr^{14+}}$	Photoexcitation	Th
$\mathbf{h\nu + Fe^{16+}}$	Photoexcitation	Th
$\mathbf{h\nu + Ni^{18+}}$	Photoexcitation	Th
$\mathbf{h\nu + Zn^{20+}}$	Photoexcitation	Th
$\mathbf{h\nu + Ge^{22+}}$	Photoexcitation	Th
$\mathbf{h\nu + Se^{24+}}$	Photoexcitation	Th
$\mathbf{h\nu + Kr^{26+}}$	Photoexcitation	Th

141. J. M. Bizau, E. Bouisset, C. Blancard, J. P. Champeaux, A. Compant la Fontaine, C. Couillaud, D. Cubaynes, D. Hitz, C. Vinsot, F. J. Wuilleumier
Recent results on the photoionisation of multiply-charged ions.
Nucl. Instrum. Methods Phys. Res. B 205, 290 (2003)

$\mathbf{h\nu + He^{+}}$	Photoionization	50-170 eV	Exp
$\mathbf{h\nu + Ba^{2+}}$	Photoionization	50-170 eV	Exp
$\mathbf{h\nu + Ba^{3+}}$	Photoionization	50-170 eV	Exp
$\mathbf{h\nu + Ba^{4+}}$	Photoionization	50-170 eV	Exp
$\mathbf{h\nu + Ba^{5+}}$	Photoionization	50-170 eV	Exp
$\mathbf{h\nu + Sm^{2+}}$	Photoionization	50-170 eV	Exp

142. S. Schippers, A. Mueller, S. Ricz, M. E. Bannister, G. H. Dunn, J. D. Bozek, A. S. Schlachter, G. Hinojosa, C. Cisneros, A. Aguilar, A. M. Covington, M. F. Gharaibeh, R. A. Phaneuf
Photoionization of Sc^{2+}: Experimental link with photorecombination of Sc^{3+} by application of detailed balance.
Nucl. Instrum. Methods Phys. Res. B 205, 297 (2003)

hν + Sc^{2+}	Photoionization	8-50 eV	Exp

143. A. Mueller, R. A. Phaneuf, A. Aguilar, M. F. Gharaibeh, A. S. Schlachter, I. Alvarez, C. Cisneros, G. Hinojosa, B. M. McLaughlin
Photoionization of C^{2+} ions.
Nucl. Instrum. Methods Phys. Res. B 205, 301 (2003)

hν + C^{2+}	Photoionization	40-56 eV	Exp

144. P. Singh, M. Sharma, J. S. Shahi, D. Mehta, N. Singh
L$_i$ (i-1.2.3) subshell X-ray production cross-sections and fluorescence yields for Ir, Pt, Pb and Bi.
Nucl. Instrum. Methods Phys. Res. B 211, 33 (2003)

hν + Ir	Photoexcitation	60 keV	Exp
hν + Pt	Photoexcitation	60 keV	Exp
hν + Pb	Photoexcitation	60 keV	Exp
hν + Bi	Photoexcitation	60 keV	Exp
hν + Ir	Photoionization	60 keV	Exp
hν + Pt	Photoionization	60 keV	Exp
hν + Pb	Photoionization	60 keV	Exp
hν + Bi	Photoionization	60 keV	Exp

145. V. V. Petrunin, M. H. Jacobsen, L. B. Madsen, S. A. Aseyev, T. Andersen
Photodetachment of He$^-$ in the vicinity of the two-electron escape threshold.
Phys. Rev. Lett. 90, 013002 (2003)

hν + He$^-$	Photodetachment	261-250 μ m	Exp

146. L.A.A. Nikolopoulos, T. Nakajima, P. Lambropoulos
Direct versus sequential double ionization of Mg with extreme-ultraviolet radiation.
Phys. Rev. Lett. 90, 043003 (2003)

hν + Mg	Photoionization	14-17 eV	E/T
nhν + Mg	Photoionization	14-17 eV	E/T

147. J.H.D. Eland, O. Vieuxmaire, T. Kinugawa, P. Lablanquie, R. I. Hall, F. Penent
Complete two-electron spectra in double photoionization: The rare gases Ar, Kr, and Xe.
Phys. Rev. Lett. 90, 053003 (2003)

hν + Ar	Photoionization	38.7-51 eV	Exp
hν + Kr	Photoionization	38.7-51 eV	Exp
hν + Xe	Photoionization	38.7-51 eV	Exp

148. J. R. Harries, J. P. Sullivan, J. B. Sternberg, S. Obara, T. Suzuki, P. Hammond, J. Bozek, N. Berrah, M. Halka, Y. Azuma
Double photoexcitation of helium in a strong dc electric field.
Phys. Rev. Lett. 90, 133002 (2003)

hν + He	Photoexcitation	65-65.2 eV	Exp

149. I. Yu. Kiyan, H. Helm
Production of energetic electrons in the process of photodetachment of F$^-$.
Phys. Rev. Lett. 90, 183001 (2003)

hν + F$^-$	Photodetachment	1.8 μ m	Exp

150. P. Bogdanovich, R. Karpuskiene, I. Martinson
Ab initio wavelengths and oscillator strengths for Cl X.
Phys. Scr. 67, 44 (2003)

hν + Cl^{9+}	Photoexcitation	Undef	Th

151. O. Sogut, A. Kucukonder, B. G. Durdu, E. Buyukkasap
Chemical effects on L shell cross-sections and fluorescence yields of Th and U compounds.
Phys. Scr. 67, 219 (2003)

hν + Th	Fluorescence	60 keV	Exp
hν + U	Fluorescence	60 keV	Exp
hν + Th	Photoionization	60 keV	Exp
hν + U	Photoionization	60 keV	Exp

152. O. Simsek
Photon-induced L$_3$ subshell X-ray intensity ratios for Re, Au, Tl and Pb.
Phys. Scr. 67, 301 (2003)

hν + Re	Fluorescence	60 keV	Exp
hν + Au	Fluorescence	60 keV	Exp
hν + Tl	Fluorescence	60 keV	Exp
hν + Pb	Fluorescence	60 keV	Exp
hν + Re	Photoionization	60 keV	Exp
hν + Au	Photoionization	60 keV	Exp
hν + Tl	Photoionization	60 keV	Exp
hν + Pb	Photoionization	60 keV	Exp

153. R. Das, N. C. Deb, K. Roy, A. Z. Msezane
Fine-structure energy levels of Ni XVII and their lifetimes.
Phys. Scr. 67, 401 (2003)

hν + Ni^{26+}	Photoexcitation		Th

154. K. T. Taylor
Multiphoton absorption by helium, magnesium and H$_2$ at high frequencies and intensities.
Phys. Scr. T105, 31 (2003)

hν + He	Photoionization		Th
hν + Mg	Photoionization		Th

155. R. Schnabel, M. Schultz-Johanning, M. Kock
Fe II lifetimes and transition probabilities.
Astron. Astrophys. 414, 1169 (2004)

hν + Fe^{+}	Photoexcitation	780-220 nm	Exp

156. E. Traebert
On the transition rates of the Fe X and Fe XIV coronal lines.
Astron. Astrophys. 415, L39 (2004)

hν + Fe^{9+}	Photoexcitation	637-530 nm	Exp
hν + Fe^{13+}	Photoexcitation	637-530 nm	Exp

157. D. A. Mistrov, A. De Fanis, M. Kitajima, M. Hoshino, H. Shindo, T. Tanaka, Y. Tamenori, H. Tanaka, A. A. Pavlychev, K. Ueda
Vibrational effects on the shape resonance energy in the K-shell photoionization spectra of CO.
Phys. Rev. A 68, 022508 (2003)

hν + CO	Photoionization	3-18 eV	Exp

158. F. A. Rajgara, M. Krishnamurthy, D. Mathur
Electron rescattering and the fragmentation dynamics of molecules in strong optical fields.
Phys. Rev. A 68, 023407 (2003)

hν + H_2O	Photodissociation	10^{16} W/cm^2	Exp
hν + C_6H_6	Photodissociation	10^{16} W/cm^2	Exp
hν + H_3OH	Photodissociation	10^{16} W/cm^2	Exp
hν + H_2O	Photoionization	10^{16} W/cm^2	Exp
hν + C_6H_6	Photoionization	10^{16} W/cm^2	Exp
hν + CH_3OH	Photoionization	10^{16} W/cm^2	Exp

159. C. Ruiz, L. Plaja, J. R. Vazquez de Aldana, L. Roso
Photoionization of two-electron ortho-atoms.
Phys. Rev. A 68, 023409 (2003)

hν + He	Photoionization	10^{14} - 2x10^{15} W/cm^2	Th

160. J. L. Sanz-Vicario, E. Lindroth
Outer-shell photodetachment of the metastable Be^- $1s^22s2p^2$ $^4P^e$ state.
Phys. Rev. A 68, 012702 (2003)

hν + Be^-	Photodetachment	0.25-10 eV	Th
hν + Be^{-*}	Photodetachment	0.25-10 eV	Th

161. K. Godehusen, H.-C. Mertins, T. Richter, P. Zimmermann, M. Martins
Electron-correlation effects in the angular distribution of photoelectrons from Kr investigated by rotating the polarization axis of undulator radiation.
Phys. Rev. A 68, 012711 (2003)

hν + Kr	Photoionization	325-1000 eV	Exp

162. E. P. Kanter, B. Kraessig, S. H. Southworth, R. Guillemin, O. Hemmers, D. W. Lindle, R. Wehlitz, M. Ya. Amusia, L. V. Chernysheva, N.L.S. Martin
E1-E2 interference in the vuv photoionization of He.
Phys. Rev. A 68, 012714 (2003)

hν + He	Photoionization	25-400 eV	E/T

163. B. Dutta, S. Sen, S. Saha, S. S. Bhattacharyya
Branching and angular distribution of photofragments in two-frequency intense-field multiphoton dissociation of HD^+.
Phys. Rev. A 68, 013401 (2003)

hν + H_2^+	Photodissociation	1.2-2.6 eV	Th
hν + HD^+	Photodissociation	1.2-2.6 eV	Th
nhν + H_2^+	Photodissociation	1.2-2.6 eV	Th
nhν + HD^+	Photodissociation	1.2-2.6 eV	Th

164. J. Zhang, Z. Xu
Above-threshold ionization of Kr atoms in an infinite sequence of circularly polarized few-cycle pulses.
Phys. Rev. A 68, 013402 (2003)

hν + Kr	Photoionization	800 nm	Th

165. S. Laulan, H. Bachau
Correlation effects in two-photon single and double ionization of helium.
Phys. Rev. A 68, 013409 (2003)

hν + He	Photoionization	57 eV	Th

166. S.Y.T. van de Meerakker, B. G. Sartakov, A. P. Mosk, R. T. Jongma, G. Meijer
Optical pumping of metastable NH radicals into the paramagnetic ground state.
Phys. Rev. A 68, 032508 (2003)

hν + NH	Fluorescence	326 nm	Exp

167. H. J. Woerner, U. Hollenstein, F. Merkt
Multichannel quantum defect theory and high-resolution spectroscopy of the hyperfine structure of high Rydberg states of ^{83}Kr.
Phys. Rev. A 68, 032510 (2003)

hν + Kr	Elastic Scattering	112,868-113,867 cm^{-1}	E/T

168. A.P.P. Natalense, L. M. Brescansin, R. R. Lucchese
Cross section and asymmetry parameter calculations for the C 1s photoionization of CH_4, CF_4, and CCl_4.
Phys. Rev. A 68, 032701 (2003)

hν + CH_4	Photoionization	280-360 eV	Th
hν + CF_4	Photoionization	280-360 eV	Th
hν + CCl_4	Photoionization	280-360 eV	Th

169. R. Puettner, Y. F. Hu, G. M. Bancroft, A. Kivimaeki, M. Jurvansuu, H. Aksela, S. Aksela
Relating the 4sσ^{-1} inner-valence photoelectron spectrum of HBr with the Br 3d^{-1}5lλ resonant Auger spectra: An approach to the assignments.
Phys. Rev. A 68, 032705 (2003)

hν + HBr	Photoionization	50-1200 eV	Exp

170. G. Pruemper, S. Kroeger, R. Mueller, M. Martins, J. Viefhaus, P. Zimmermann, U. Becker
Magnetic circular dichroism in the ion yield of polarized chromium atoms at the 2p edge.
Phys. Rev. A 68, 032710 (2003)

hν + Cr	Photoionization	560-595 eV	Exp

171. G. D. Gillen, L. D. Van Woerkom
Analysis of resonance structure in the above-threshold ionization photoelectron spectra of magnesium.
Phys. Rev. A 68, 033401 (2003)

hν + Mg	Photoionization	33 TW/cm^2	Exp

172. J. S. Cohen
Effect of tunneling on ionization of Rydberg states in intense fields: Hydrogenic atoms.
Phys. Rev. A 68, 033409 (2003)

hν + H	Photoionization	scaled field strength	Th

173. J. N. Yukich, T. Kramer, C. Bracher
Observed photodetachment in parallel electric and magnetic fields.
Phys. Rev. A 68, 033412 (2003)

hν + S^-	Photodetachment	10 V/m	E/T

174. A. Wetzels, A. Guertler, F. Rosca-Pruna, S. Zamith, M.J.J. Vrakking, F. Robicheaux, W. J. van der Zande
Two-dimensional momentum imaging of Rydberg states using half-cycle pulse ionization and velocity map imaging.
Phys. Rev. A 68, 041401 (2003)

hν + Xe*	Photoionization		Exp

175. J. Padeznik Gomilsek, A. Kodre, I. Arcon, M. Hribar
K-edge x-ray absorption spectra of Cs and Xe.
Phys. Rev. A 68, 042505 (2003)

hν + Cs	Total Absorption, Scattering	35.94-37.14 keV	Exp
hν + Cs	Photoexcitation	35.94-37.14 keV	Exp
hν + Cs	Photoionization	35.94-37.14 keV	Exp

176. M. Kutzner, J. T. Brown, J. Thorarinson
Relaxation and polarization effects in photodetachment of the negative iodide ion.
Phys. Rev. A 68, 042713 (2003)

hν + I^-	Photodetachment	0-300 eV	Th

177. M. Hiyama, K. Someda
Photoelectron spectra in intense laser fields: The effect of resonance with autoionizing Rydberg states.
Phys. Rev. A 68, 043402 (2003)

hν + CO	Photoionization	0.52-0.549 a.u.	Th
nhν + CO	Photoionization	0.52-0.549 a.u.	Th

178. V. I. Makarov, S. A. Kochubei, I. V. Khmelinskii
Intramolecular energy-transfer processes induced by an external electric field.
Phys. Rev. A 68, 043403 (2003)

hν + C_2H_2	Fluorescence	43,550-43,740 cm^{-1}	Exp

179. R. Baer, D. Neuhauser, P. Zdanska, N. Moiseyev
Ionization and high-order harmonic generation in aligned benzene by a short intense circularly polarized laser pulse.
Phys. Rev. A 68, 043406 (2003)

hν + C_6H_6	Photoionization	800 nm	Th
nhν + C_6H_6	Photoionization	800 nm	Th

180. S. X. Hu, A. F. Starace
Controlling H^- detachment with few-cycle pulses.
Phys. Rev. A 68, 043407 (2003)

hν + H^-	Photodetachment	0.0046-0.022 a.u.	Th

181. K. C. Prince, R. Richter, M. de Simone, M. Alagia, M. Coreno
Photoabsorption cross section and ion-yield spectra of helium double-excitation resonances.
Phys. Rev. A 68, 044701 (2003)

hν + He	Total Absorption, Scattering	59.6-63.80 eV	Exp
hν + He	Fluorescence	59.6-63.80 eV	Exp
hν + He	Photoionization	59.6-63.80 eV	Exp

182. A. S. Kheifets, I. Bray
Double shake-off model for the triple photoionization of beryllium.
J. Phys. B 36, L211 (2003)

hν + Be	Photoionization	8-500 eV	Th

183. J. N. Das, K. Chakrabarti, S. Paul
Hyperspherical partial wave calculation for double photoionization of the helium atom at 20 eV excess energy.
J. Phys. B 36, 2707 (2003)

hν + He	Photoionization	99 eV	Th

184. A. Emmanouilidou, T. Schneider, J.-M. Rost
Quasiclassical double photoionization from the 2 ^{1,3}S excited states of helium including shake-off.
J. Phys. B 36, 2717 (2003)

hν + He	Photoionization	60-5000 eV	Th
hν + He*	Photoionization	60-5000 eV	Th

185. J.-H. Fillion, F. Dulieu, S. Baouche, J.-L. Lemaire, H. W. Jochims, S. Leach
Ionization yield and absorption spectra reveal superexcited Rydberg state relaxation processes in H_2O and D_2O.
J. Phys. B 36, 2767 (2003)

hν + H_2O	Total Absorption, Scattering	9-22 eV	Exp
hν + H_2O	Photoionization	9-22 eV	Exp

186. G. Jolicard, O. Atabek, M. L. Dubernet-Tuckey, N. Balakrishnan
Nonadiabatic molecular response to short, intense laser pulses: A wave operator generalized Floquet approach.
J. Phys. B 36, 2777 (2003)

hν + H_2^+	Photodissociation	154 nm	Th

187. L. Labzowsky, D. Solovyev, V. Sharipov, G. Plunien, G. Soff
One- and two-photon resonant spectroscopy of hydrogen and anti-hydrogen atoms in external electric fields.
J. Phys. B 36, L227 (2003)

hν + H	Elastic Scattering		Th

188. J. L. Campbell
Measurement of the L1 sub-shell fluorescence and Coster-Kronig yields of bismuth.
J. Phys. B 36, 3219 (2003)

hν + Bi	Fluorescence	46.5 keV	Exp
hν + Bi	Photoionization	46.5 keV	Exp

189. S. S. Tayal
Strong term dependence of wavefunctions and series perturbations in singly ionized chlorine.
J. Phys. B 36, 3239 (2003)

hν + Cl^+	Photoexcitation		Th

190. B. M. Lagutin, I. D. Petrov, V. L. Sukhorukov, Ph. V. Demekhin, B. Zimmermann, S. Mickat, S. Kammer, K.-H. Schartner, A. Ehresmann, Yu. A. Shutov, H. Schmoranzer
The interference effects in the alignment and orientation of the Kr II $4p^4 5p$ states following Kr I $3d^9$ np resonance excitation.
J. Phys. B 36, 3251 (2003)

hν + Kr^+	Photoexcitation	91-93 eV	Th
hν + Kr^+	Photoionization	91-93 eV	Th

191. E. Eremina, X. Liu, H. Rottke, W. Sandner, A. Dreischuh, F. Lindner, F. Grasbon, G. G. Paulus, H. Walther, R. Moshammer, B. Feuerstein, J. Ullrich
Laser-induced non-sequential double ionization investigated at and below the threshold for electron impact ionization.
J. Phys. B 36, 3269 (2003)

hν + Ne	Photoionization	800 nm	Exp
hν + Ar	Photoionization	800 nm	Exp

192. M. Drescher, T. Khalil, N. Mueller, S. Fritzsche, N. M. Kabachnik, U. Heinzmann
Spin polarization transfer in the resonant Auger decay following Kr $3d^{-1}5p$ photoexcitation.
J. Phys. B 36, 3337 (2003)

hν + Kr	Photoexcitation	90 eV	E/T
hν + Kr	Photoionization	90 eV	E/T

193. S. Schippers, A. Mueller, B. M. McLaughlin, A. Aguilar, C. Cisneros, E. D. Emmons, M. F. Gharaibeh, R. A. Phaneuf
Photoionization studies of the B^+ valence shell: Experiment and theory.
J. Phys. B 36, 3371 (2003)

hν + B^+	Photoionization	22.4-31.3 eV	E/T

194. H. W. van der Hart
The recollision model applied to strong-field double ionization of C^+.
J. Phys. B 36, 3477 (2003)

hν + C^+	Photoionization	780 nm	Th

195. M. Kato, T. Odagiri, K. Kameta, N. Kouchi, Y. Hatano
Doubly excited states of ammonia in the vacuum ultraviolet range.
J. Phys. B 36, 3541 (2003)

$\mathbf{h\nu + NH_3}$	Photodissociation	13-40 eV	Exp
$\mathbf{h\nu + NH_3}$	Photoexcitation	13-40 eV	Exp
$\mathbf{h\nu + NH_3}$	Photoionization	13-40 eV	Exp

196. J. R. Harries, J. P. Sullivan, S. Obara, P. Hammond, Y. Azuma
Doubly excited states of helium observed in N- and l-specific partial photoionization cross-sections using lifetime-resolved fluorescence spectroscopy.
J. Phys. B 36, L319 (2003)

$\mathbf{h\nu + He}$	Photoionization	71-79 eV	Exp
$\mathbf{h\nu + He^*}$	Photoionization	71-79 eV	Exp

197. J. B. West, J. E. Hansen, B. Kristensen, F. Folkmann, H. Kjeldsen
Revised interpretation of the photoionization of Cr^+ in the 3p excitation region.
J. Phys. B 36, L327 (2003)

$\mathbf{h\nu + Cr^+}$	Photoionization	40-58 eV	Exp

198. H. Yamaoka, M. Oura, K. Takahiro, T. Morikawa, S. Ito, M. Mizumaki, S. K. Semenov, N. Cherepkov, N. Kabachnik, T. Mukoyama
Alignment following Au L_3 photoionization by synchrotron radiation.
J. Phys. B 36, 3889 (2003)

$\mathbf{h\nu + Au}$	Photoionization	13 keV	Exp

199. V. Kisand, E. Kukk, M. Huttula, A. Koivukangas, H. Aksela, E. Nommiste, S. Aksela
Fragmentation and electronic decay of vacuum-ultraviolet-excited resonant states of molecular CsCl.
J. Phys. B 36, 3909 (2003)

$\mathbf{h\nu + CsCl}$	Photoionization	8-22 eV	Exp

200. G. Oehrwall, M. Tchaplyguine, M. Gisselbrecht, M. Lundwall, R. Feifel, T. Rander, J. Schulz, R.R.T. Marinho, A. Lindgren, S. L. Sorensen, S. Svensson, O. Bjoerneholm
Observation of elastic scattering effects on photoelectron angular distributions in free Xe clusters.
J. Phys. B 36, 3937 (2003)

$\mathbf{h\nu + Xe}$	Photoionization	110-250 eV	Exp

201. M. Wetzstein, T. Benchekmoumou, O. I. Zatsarinny, A. N. Grum-Grzhimailo, K. Bartschat, W. Mehlhorn
Alignment after 2p ionization of Na atoms by electron impact: The $2p^5 3s\ ^1P_1$ and $^3P_1$ states.
J. Phys. B 36, 3961 (2003)

$\mathbf{h\nu + Na}$	Photoionization	38.7-400 eV	Exp

202. J. T. Paci, D. M. Wardlaw, A. D. Bandrauk
Interpreting the dynamics of HCl^+ dissociation in a strong laser field at $\lambda = 10.3$ μ m.
J. Phys. B 36, 3999 (2003)

$\mathbf{h\nu + HCl^+}$	Photodissociation	0.12 eV	Th

203. L. B. Madsen
Triply excited states: Electron-electron correlations in lithium.
J. Phys. B 36, R223 (2003)

hν + Li	Photon Collisions	140 eV	E/T
hν + Li	Fluorescence	140 eV	E/T
hν + Li	Photoexcitation	140 eV	E/T

204. K. Kawatsura, T. Morikawa, K. Takahiro, M. Oura, H. Yamaoka, K. Maeda, S. Hayakawa, S. Ito, M. Terasawa, T. Mukoyama
Evolution of the Kα x-ray satellites for Fe, Ni and Zn: From threshold to saturation.
J. Phys. B 36, 4065 (2003)

hν + Fe	Fluorescence	7-15 keV	Exp
hν + Ni	Fluorescence	7-15 keV	Exp
hν + Zn	Fluorescence	7-15 keV	Exp
hν + Fe	Photoexcitation	7-15 keV	Exp
hν + Ni	Photoexcitation	7-15 keV	Exp
hν + Zn	Photoexcitation	7-15 keV	Exp

205. V. Veniard, R. Taieb, A. Maquet
Double ionization of excited helium states by an intense laser field: Spin and dressing effects.
J. Phys. B 36, 4145 (2003)

hν + He	Photoionization	0.057 a.u.	Th

206. A. I. Gomonai, O. I. Plekan
Single-colour resonance three-photon ionization of samarium atoms.
J. Phys. B 36, 4155 (2003)

hν + Sm	Photoionization	542.4-581.6 nm	Exp

207. M. Zitnik, A. Stanic, K. Bucar, J. G. Lambourne, F. Penent, R. I. Hall, P. Lablanquie
Lifetimes of n ^{1}P states in helium.
J. Phys. B 36, 4175 (2003)

hν + He	Fluorescence	21.218-24.5874 eV	Th
hν + He	Photoexcitation	21.218-24.5874 eV	Th

208. A. Jaron-Becker, A. Becker, F.H.M. Faisal
Dependence of strong-field photoelectron angular distribution on molecular orientation.
J. Phys. B 36, L375 (2003)

hν + NO	Photoionization	800 nm	Th
hν + O_2	Photoionization	800 nm	Th
hν + C_7	Photoionization	800 nm	Th

209. M. Hoshino, T. Tanaka, M. Kitajima, H. Tanaka, A. De Fanis, A. A. Pavlychev, K. Ueda
The excitation mechanism of the lowest-energy satellite bands in the C 1s core level photoemission of CO_2.
J. Phys. B 36, L381 (2003)

hν + CO_2	Photoexcitation	320 eV	Exp
hν + CO_2	Photoionization	320 eV	Exp

210. K. Godehusen, T. Richter, P. Zimmermann, M. Martins
Ion-charge resolved 3p photoabsorption measurements of atomic Cr.
J. Phys. B 36, L387 (2003)

hν + Cr	Total Absorption, Scattering	37-52 eV	Exp
hν + Cr	Photoionization	37-52 eV	Exp

211. J. S. Parker, B.J.S. Doherty, K. J. Meharg, K. T. Taylor
Time delay between singly and doubly ionizing wavepackets in laser-driven helium.
J. Phys. B 36, L393 (2003)

hν + He	Photoionization	780 nm	Th

212. A. I. Magunov, I. Rotter, S. I. Strakhova
Overlapping of Rydberg autoionizing states with a broad resonance in argon.
J. Phys. B 36, L401 (2003)

hν + Ar	Total Absorption, Scattering	28.98-36.6 eV	Th
hν + Ar	Photoionization	28.98-36.6 eV	Th

213. D. A. Shaw, D.M.P. Holland, E. E. Rennie, L. G. Shpinkova
A vibrationally resolved fluorescence polarization study of the CO^+ A $^2\Pi$ -¿ X $^2\Sigma^+$ transition in the 16.5-20 eV excitation range.
J. Phys. B 36, 4233 (2003)

hν + CO	Photoexcitation	16.5-19.75 eV	Exp
hν + CO	Photoionization	16.5-19.75 eV	Exp

214. Y. Hikosaka, P. Lablanquie, M. Ahmad, R. I. Hall, J. G. Lambourne, F. Penent, J.H.D. Eland
Competition between autoionization and dissociation in the [O_2^+(B $^2\Sigma_g^-$)]nl and [O_2^+(c $^4\Sigma_u^-$)]nl Rydberg states investigated by photon-induced dissociation to neutral fragments.
J. Phys. B 36, 4311 (2003)

hν + O_2	Photodissociation	20.2-25 eV	Exp
hν + O_2	Photoionization	20.2-25 eV	Exp

215. J. G. Lambourne, F. Penent, P. Lablanquie, R. I. Hall, M. Ahmad, M. Zitnik, K. Bucar, P. Hammond, S. Stranges, R. Richter, M. Alagia, M. Coreno
Detailed observations of photo-accessible triplet doubly excited states in helium.
J. Phys. B 36, 4339 (2003)

hν + He	Fluorescence	64.1-65.4 eV	Exp
hν + He	Photoexcitation	64.1-65.4 eV	Exp

216. J. G. Lambourne, F. Penent, P. Lablanquie, R. I. Hall, M. Ahmed, M. Zitnik, K. Bucar, P. Hammond, S. Stranges, R. Richter, M. Alagia, M. Coreno
Angular distribution of the fluorescence of helium doubly photo-excited states converging on the He^+(N=2) ionization threshold.
J. Phys. B 36, 4351 (2003)

hν + He	Fluorescence	64.9-65.4 eV	Exp
hν + He	Photoexcitation	64.9-65.4 eV	Exp

217. N. R. Badnell, M. J. Seaton
On the importance of inner-shell transitions for opacity calculations.
J. Phys. B 36, 4367 (2003)

hν + H	Photoexcitation	$10^{3.5}$ - 10^{8} K	Th
hν + He	Photoexcitation	$10^{3.5}$ - 10^{8} K	Th
hν + C	Photoexcitation	$10^{3.5}$ - 10^{8} K	Th
hν + O	Photoexcitation	$10^{3.5}$ - 10^{8} K	Th
hν + S	Photoexcitation	$10^{3.5}$ - 10^{8} K	Th
hν + Fe	Photoexcitation	$10^{3.5}$ - 10^{8} K	Th

218. N. M. Carlin, C. A. Ramsbottom, K. L. Bell, A. Hibbert
K-shell photodetachment of the negative ion of beryllium.
J. Phys. B 36, 3637 (2003)

hν + Be$^-$	Photodetachment	4-4.5 a.u.	Th

219. A. Ehresmann, H. Liebel, H. Schmoranzer, B. Zimmermann, S. Kammer, K.-H. Schartner, Ph. V. Demekhin, V. L. Sukhorukov
Double photoionization of N_2 into the $N_2{}^{2+}$ D $^1\Sigma_u{}^+$-state.
J. Phys. B 36, 3669 (2003)

hν + N_2	Fluorescence	50-66.5 eV	E/T
hν + N_2	Photoionization	50-66.5 eV	E/T

220. V. Jonauskas, L. Partanen, S. Kucas, R. Karazija, M. Huttula, S. Aksela, H. Aksela
Auger cascade satellites following 3d ionization in xenon.
J. Phys. B 36, 4403 (2003)

hν + Xe	Photoionization	8-40 eV	Exp

221. S. A. Sheinerman
Capture and re-emission of slow photoelectrons in Ar $2p^6$-subshell photoionization processes.
J. Phys. B 36, 4435 (2003)

hν + Ar	Photoionization	250-254 eV	Th

222. A. Bhattacharjee, K. R. Dastidar
Control of (1+1')-photon dissociation in NaH.
J. Phys. B 36, 4467 (2003)

hν + NaH	Photodissociation	395.57 nm	Th
hν + NaH	Photoexcitation	395.57 nm	Th

223. M. Walter, A. V. Meremianin, J. S. Briggs
Multi-particle photoionization by a single photon.
J. Phys. B 36, 4561 (2003)

hν + H_2	Photodissociation	78 eV	Th
hν + He	Photoionization	78 eV	Th
hν + H_2	Photoionization	78 eV	Th

224. A. Lafosse, M. Lebech, J. C. Brenot, P. M. Guyon, L. Spielberger, O. Jagutzki, J. C. Houver, D. Dowek
Molecular frame photoelectron angular distributions in dissociative photoionization of H_2 in the region of the Q_1 and Q_2 doubly excited states.
J. Phys. B 36, 4683 (2003)

hν + H_2	Photodissociation	20-32.5 eV	E/T
hν + H_2	Photoionization	20-32.5 eV	E/T

225. T. W. Gorczyca, O. Zatsarinny, H.-L. Zhou, S. T. Manson, Z. Felfli, A. Z. Msezane
Postcollision recapture in the K-shell photodetachment of Li^-.
Phys. Rev. A 68, 050703(R) (2003)

hν + Li$^-$	Photodetachment	56.5-63.5 eV	E/T

226. A. K. Kazansky, P. Selles, L. Malegat
Hyperspherical time-dependent method with semiclassical outgoing waves for double photoionization of helium.
Phys. Rev. A 68, 052701 (2003)

hν + He	Photoionization	near threshold	Th

227. K. Godehusen, P. Wernet, T. Richter, P. Zimmermann, M. Martins
Determination of the β parameter for atomic Mn and Cr 2p photoemission: A benchmark test for core-electron photoionization theories.
Phys. Rev. A 68, 052707 (2003)

hν + Cr	Photoionization	720-850 eV	E/T
hν + Mn	Photoionization	720-850 eV	E/T

228. R. Wehlitz, D. Lukic, J. B. Bluett
Resonance parameters of autoionizing Be 2pnl states.
Phys. Rev. A 68, 052708 (2003)

hν + Be	Photoionization	9-13 eV	E/T

229. J.-P. Mosnier, M. H. Sayyad, E. T. Kennedy, J.-M. Bizau, D. Cubaynes, F. J. Wuilleumier, J.-P. Champeaux, C. Blancard, R. Hari Varma, T. Banerjee, P. C. Deshmukh, S. T. Manson
Absolute photoionization cross sections and resonance structure of doubly ionized silicon in the region of the $2p^{-1}$ threshold: Experiment and theory.
Phys. Rev. A 68, 052712 (2003)

hν + Si^{2+}	Photoionization	95-170 eV	E/T

230. Z. Chen, A. Z. Msezane
Reduced dipole matrix element for photoionization calculation of two open-shell atoms or ions.
Phys. Rev. A 68, 054701 (2003)

hν + Cr	Photoionization	50-230 eV	E/T

3.2.2 Electron Collisions

231. A. Lahmam-Bennani, A. Duguet, C. Dal Cappello, H. Nebdi, B. Piraux
Importance of non-first-order effects in the (e,3e) double ionization of helium.
Phys. Rev. A 67, 010701 (2003)

e + He	Angular Scattering	0.6 keV	E/T
e + He	Ionization	0.6 keV	E/T

232. J. Roder, M. Baertschy, I. Bray
Measurements of the ionization of atomic hydrogen by 17.6-eV electrons.
Phys. Rev. A 67, 010702 (2003)

e + H	Angular Scattering	17.6 eV	E/T
e + H	Ionization	17.6 eV	E/T

233. S. Jones, D. H. Madison, M. Baertschy
Perturbative and nonperturbative calculations of electron-hydrogen ionization.
Phys. Rev. A 67, 012703 (2003)

e + H	Angular Scattering	54.4 eV	Th
e + H	Ionization	54.4 eV	Th

234. R. K. Singh, R. Shanker
Polarization of argon K x radiation following electron-impact ionization.
Phys. Rev. A 67, 012708 (2003)

e + Ar	Fluorescence	10-24 keV	Exp
e + Ar	Ionization	10-24 keV	Exp

235. Y. Zou, J. R. Crespo Lopez-Urrutia, J. Ullrich
Observation of dielectronic recombination through two-electron–one-photon correlative stabilization in an electron-beam ion trap.
Phys. Rev. A 67, 042703 (2003)

e + Ar^{16+}	Recombination	2160 eV	E/T

236. C. W. McCurdy, W. A. Isaacs, H.-D. Meyer, T. N. Rescigno
Resonant vibrational excitation of CO_2 by electron impact: Nuclear dynamics on the coupled components of the $^2\Pi_u$ resonance.
Phys. Rev. A 67, 042708 (2003)

e + CO_2	Angular Scattering	0-8 eV	Th
e + CO_2	Excitation	0-8 eV	Th

237. C.A.S. Maia, M.H.F. Bettega
Elastic scattering of low-energy electrons by XH_3YH_3 (X, Y = C, Si, Ge, Sn).
Phys. Rev. A 67, 042710 (2003)

e + C_2H_6	Elastic Scattering	5-40 eV	Th
e + Si_2H_6	Elastic Scattering	5-40 eV	Th
e + CH_3SiH_3	Elastic Scattering	5-40 eV	Th
e + CH_3GeH_3	Elastic Scattering	5-40 eV	Th
e + CH_3SnH_3	Elastic Scattering	5-40 eV	Th
e + SiH_3GeH_3	Elastic Scattering	5-40 eV	Th
e + SiH_3SnH_3	Elastic Scattering	5-40 eV	Th
e + Ge_2H_6	Elastic Scattering	5-40 eV	Th
e + GeH_3SnH_3	Elastic Scattering	5-40 eV	Th
e + Sn_2H_6	Elastic Scattering	5-40 eV	Th
e + C_2H_6	Angular Scattering	5-40 eV	Th
e + Si_2H_6	Angular Scattering	5-40 eV	Th
e + CH_3SiH_3	Angular Scattering	5-40 eV	Th
e + CH_3GeH_3	Angular Scattering	5-40 eV	Th
e + CH_3SnH_3	Angular Scattering	5-40 eV	Th
e + SiH_3GeH_3	Angular Scattering	5-40 eV	Th
e + SiH_3SnH_3	Angular Scattering	5-40 eV	Th
e + Ge_2H_6	Angular Scattering	5-40 eV	Th
e + GeH_3SnH_3	Angular Scattering	5-40 eV	Th
e + Sn_2H_6	Angular Scattering	5-40 eV	Th

238. S. D. Loch, J. Colgan, M. S. Pindzola, M. Westermann, F. Scheuermann, K. Aichele, D. Hathiramani, E. Salzborn
Electron-impact ionization of O^{q+} ions for q = 1-4.
Phys. Rev. A 67, 042714 (2003)

e + O^+	Ionization	0-1000 eV	E/T
e + O^{2+}	Ionization	0-1000 eV	E/T
e + O^{3+}	Ionization	0-1000 eV	E/T
e + O^{4+}	Ionization	0-1000 eV	E/T

239. J. N. Das, S. Paul, K. Chakrabarti
Hyperspherical partial-wave theory applied to electron-hydrogen-atom ionization calculation for equal-energy-sharing kinematics.
Phys. Rev. A 67, 042717 (2003)

e + H	Angular Scattering	15.6-30 eV	Th
e + H	Ionization	15.6-30 eV	Th

240. C. M. Evans, E. S. Shuman, T. F. Gallagher
Microwave-induced dielectronic recombination above the classical ionization limit in a static field.
Phys. Rev. A 67, 043410 (2003)

e + Ba^+	Recombination	8 eV	Exp

241. M. Kampp, N. C. Pyper, C. T. Whelan, H.R.J. Walters
Spin asymmetries in spatially resolved processes of ionization of heavy atoms by relativistic electrons.
Phys. Rev. A 67, 044702 (2003)

e + U	Angular Scattering	300 keV	Th
e + U	Ionization	300 keV	Th

242. P. Beiersdorfer, E. Traebert, H. Chen, M.-H. Chen, M. J. May, A. L. Osterheld
Measurement of the $3s_{1/2}$-$3p_{3/2}$ resonance line in Na-like U^{81+}.
Phys. Rev. A 67, 052103 (2003)

e + U^{81+}	Fluorescence	20 keV	E/T
e + U^{81+}	Excitation	20 keV	E/T

243. P. H. Janzen, L. D. Gardner, D. B. Reisenfeld, J. L. Kohl
Absolute cross section for Si^{2+} ($3s3p\ ^3P^0 \rightarrow 3s3p\ ^1P^0$) electron-impact excitation.
Phys. Rev. A 67, 052702 (2003)

e + Si^{2+}	Excitation	2-10 eV	E/T

244. T. Li, B. Piraux, R. Shakeshaft
Representation of a complex Green function on a real basis: Generalization to a three-body system.
Phys. Rev. A 67, 052704 (2003)

e + H	Elastic Scattering	0.76-0.88 Ry; 14-40 eV	E/T
e + H	Excitation	0.76-0.88 Ry; 14-40 eV	E/T

245. A.C.F. Santos, A. Hasan, T. Yates, R. D. DuBois
Doubly differential measurements for multiple ionization of argon by electron impact: Comparison with positron impact and photoionization.
Phys. Rev. A 67, 052708 (2003)

e + Ar	Ionization	500-750 eV	Exp

246. A. Prideaux, D. H. Madison
Role of the postcollision interaction in electron-impact ionization of argon and krypton.
Phys. Rev. A 67, 052710 (2003)

e + Ar	Ionization	2-85 eV	E/T
e + Kr	Ionization	2-85 eV	E/T

247. A. N. Artemyev, T. Beier, J. Eichler, A. E. Klasnikov, C. Kozhuharov, V. M. Shabaev, T. Stohlker, V. A. Yerokhin
Negative-continuum dielectronic recombination for heavy ions.
Phys. Rev. A 67, 052711 (2003)

e + Pb^{82+}	Recombination	760-3000 keV	Th
e + U^{92+}	Recombination	760-3000 keV	Th

248. K. Bartschat, H. R. Sadeghpour
Ultralow-energy electron scattering from alkaline-earth atoms: The scattering-length limit.
J. Phys. B 36, L9 (2003)

e + Mg	Elastic Scattering	0-0.5 eV	Th
e + Ca	Elastic Scattering	0-0.5 eV	Th
e + Sr	Elastic Scattering	0-0.5 eV	Th

249. C. C. Jia, A. Lahmam-Bennani, C. Dal Cappello, A. Duguet, L. Avaldi
Deviations between experimental and theoretical results in Ar (e, 3e) double ionization.
J. Phys. B 36, L17 (2003)

e + Ar	Angular Scattering	561.4 eV	E/T
e + Ar	Ionization	561.4 eV	E/T

250. L. Mouret, K. M. Dunseath, M. Terao-Dunseath, J.-M. Launay
Converged wavepacket calculations for electron-impact ionization of hydrogen. Comparison with two-electron R-matrix propagation.
J. Phys. B 36, L39 (2003)

e + H	Angular Scattering	13.6-45 eV	Th
e + H	Ionization	13.6-45 eV	Th

251. K. L. Baluja, J. A. Tossell
Electron scattering by the sulfur fluoride radical using the R-matrix method.
J. Phys. B 36, 19 (2003)

e + SF	Elastic Scattering	0-15 eV	Th
e + SF	Excitation	0-15 eV	Th

252. K. Bartschat, N. Andersen
Electron-impact excitation of He 3 ^{1}D: Channel-coupling effects on the orientation, charge cloud, and cross section.
J. Phys. B 36, 163 (2003)

e + He	Angular Scattering	24-60 eV	Th
e + He	Excitation	24-60 eV	Th

253. F. Sattin, K. Katsonis
Electron impact ionization close to the threshold: classical calculations.
J. Phys. B 36, L63 (2003)

e + Ar	Ionization	0-0.25 Δ E/v	Th
e + Ar^{5+}	Ionization	0-0.25 Δ E/v	Th

254. R. P. McEachran, M. T. Elford
The momentum transfer cross section and transport coefficients for low energy electrons in mercury.
J. Phys. B 36, 427 (2003)

e + Hg	Elastic Scattering	0.01-10 eV	Th
e + Hg	Total Scattering	0.01-10 eV	Th

255. M. Stano, V. Foltin, S. Matejcik, J. Langer, S. Gohlke, E. Illenberger
A study of dissociative electron attachment to $CHBr_3$ and CHI_3.
J. Phys. B 36, 443 (2003)

e + $CHBr_3$	Attachment	0-10 eV	Exp
e + CHI_3	Attachment	0-10 eV	Exp
e + $CHBr_3$	Dissociation	0-10 eV	Exp
e + CHI_3	Dissociation	0-10 eV	Exp

256. G.-X. Chen, A. K. Pradhan, W. Eissner
Breit-Pauli R-matrix calculations for electron impact excitation of Fe XVII: A benchmark study.
J. Phys. B 36, 453 (2003)

e + Fe^{16+}	Excitation	535-85 eV	Th

257. R. K. Singh, S. Mondal, R. Shanker
Measurement of the mean transverse kinetic energy of recoil ions produced in energetic electron-atom collisions.
J. Phys. B 36, 489 (2003)

e + Ar	Ionization	24 keV	Exp

258. J. R. Gotz, M. Walter, J. S. Briggs
Appearance of non-first-Born effects in (e, 3e) on helium.
J. Phys. B 36, L77 (2003)

e + He	Angular Scattering	240-640 eV	Th
e + He	Ionization	240-640 eV	Th

259. T. Geyer, J. M. Rost
Dynamical stabilization of classical multi-electron targets against autoionization.
J. Phys. B 36, L107 (2003)

e + He	Ionization	30-3000 eV	Th

260. A. M. Demesie, J. W. Darewych, R. P. McEachran, A. D. Stauffer
Contribution of the Breit interaction to electron scattering from heavy atoms.
J. Phys. B 36, 665 (2003)

e + Xe	Elastic Scattering	2-150 eV	Th
e + Hg	Elastic Scattering	2-150 eV	Th
e + Xe	Angular Scattering	2-150 eV	Th
e + Hg	Angular Scattering	2-150 eV	Th

261. D. Ghosh, C. Sinha
Complete break up of the lithium atom by electron impact.
J. Phys. B 36, 675 (2003)

e + Li	Angular Scattering	500-5000 eV	Th
e + Li	Ionization	500-5000 eV	Th

262. D. M. Mitnik, D. C. Griffin, C. P. Balance, N. R. Badnell
An R-matrix with pseudo-states calculation of electron-impact excitation in C^{2+}.
J. Phys. B 36, 717 (2003)

e + C^{2+}	Excitation	0-150 eV	Th

263. W. Y. Baek, B. Grosswendt
Total electron scattering cross sections of He, Ne, and Ar, in the energy range 4 eV-2 keV.
J. Phys. B 36, 731 (2003)

e + He	Elastic Scattering	4-2000 eV	Exp
e + Ne	Elastic Scattering	4-2000 eV	Exp
e + Ar	Elastic Scattering	4-2000 eV	Exp
e + He	Excitation	4-2000 eV	Exp
e + Ne	Excitation	4-2000 eV	Exp
e + Ar	Excitation	4-2000 eV	Exp
e + He	Ionization	4-2000 eV	Exp
e + Ne	Ionization	4-2000 eV	Exp
e + Ar	Ionization	4-2000 eV	Exp

264. S. Keller
Perturbation theory for (e, 3e) on helium.
J. Phys. B 36, 755 (2003)

e + He	Angular Scattering	1099-100,099 eV	Th
e + He	Ionization	1099-100,099 eV	Th

265. M. A. Haynes, B. Lohmann, A. Prideaux, D. H. Madison
Coplanar symmetric (e, 2e) cross sections for krypton 4s ionization.
J. Phys. B 36, 811 (2003)

e + Kr	Ionization	35.5-197.5 eV	E/T

266. R. Merz, F. Linder
Vibrational excitation in low-energy e-C_2H_6 scattering.
J. Phys. B 36, 1143 (2003)

e + C_2H_6	Excitation	1-10 eV	Exp

267. A. I. Florescu, V. Ngassam, I. F. Schneider, A. Suzor-Weiner
H_2 triplet states contribution to low-energy dissociative recombination of H_2^+.
J. Phys. B 36, 1205 (2003)

e + H_2^+	Dissociation	0-0.2 eV	Th
e + H_2^+	Recombination	0-0.2 eV	Th

268. M.H.F. Bettega, A.P.P. Natalense, M.A.P. Lima, L. G. Ferreira
Elastic scattering of low-energy electrons by CF_3Cl, CF_3Br, and CF_3I.
J. Phys. B 36, 1263 (2003)

e + CF_3Br	Elastic Scattering	5-30 eV	Th
e + CF_3I	Elastic Scattering	5-30 eV	Th
e + CF_3Cl	Elastic Scattering	5-30 eV	Th
e + CF_3Br	Angular Scattering	5-30 eV	Th
e + CF_3I	Angular Scattering	5-30 eV	Th
e + CF_3Cl	Angular Scattering	5-30 eV	Th

269. N. R. Badnell, D. C. Griffin, D. M. Mitnik
Electron-impact excitation of B^+ using the R-matrix with pseudo-states method.
J. Phys. B 36, 1337 (2003)

e + B^+	Excitation	1000-1,000,000 K	Th
e + B^{+*}	Excitation	1000-1,000,000 K	Th

270. C. Makochekanwa, H. Kawate, O. Sueoka, M. Kimura
Total cross section measurement for electron scattering from chlorine molecules in the energy region from 0.8 to 600 eV.
J. Phys. B 36, 1673 (2003)

e + Cl	Elastic Scattering	0.8-600 eV	Exp
e + Cl	Excitation	0.8-600 eV	Exp
e + Cl	Ionization	0.8-600 eV	Exp

271. R. Choubisa, G. Purohit, K. K. Sud
Second-order Born calculation of the (e, 3e) process on the He atom in coplanar constant θ_{12} mode.
J. Phys. B 36, 1731 (2003)

e + He	Angular Scattering	1099-5599 eV	Th
e + He	Ionization	1099-5599 eV	Th

272. K. Sunohara, M. Kitajima, H. Tanaka, M. Kimura, H. Cho
Low-energy electron scattering by CF_3Cl and CF_3Br: elastic scattering and vibrational excitation.
J. Phys. B 36, 1843 (2003)

e + CF_3Br	Elastic Scattering	1.5-100 eV	E/T
e + CF_3Cl	Elastic Scattering	1.5-100 eV	E/T
e + CF_3Br	Angular Scattering	1.5-100 eV	E/T
e + CF_3Cl	Angular Scattering	1.5-100 eV	E/T
e + CF_3Br	Excitation	1.5-100 eV	E/T
e + CF_3Cl	Excitation	1.5-100 eV	E/T

273. I. Beigman, P. Defrance, L. Vainshtein
Electron impact ionization of Kr XI-Kr XIX ions.
J. Phys. B 36, 2019 (2003)

e + Kr^{10+}	Ionization	0-5,000 eV	Th
e + Kr^{11+}	Ionization	0-5,000 eV	Th
e + Kr^{12+}	Ionization	0-5,000 eV	Th
e + Kr^{13+}	Ionization	0-5,000 eV	Th
e + Kr^{14+}	Ionization	0-5,000 eV	Th
e + Kr^{15+}	Ionization	0-5,000 eV	Th
e + Kr^{16+}	Ionization	0-5,000 eV	Th
e + Kr^{17+}	Ionization	0-5,000 eV	Th
e + Kr^{18+}	Ionization	0-5,000 eV	Th

274. J.-M. Yuan
The resonance structures of electron interaction with Sr and Ba atoms: Low-energy electron scattering and photodetachment of the negative ions.
J. Phys. B 36, 2053 (2003)

e + Sr	Elastic Scattering	0-10 eV	Th
e + Ba	Elastic Scattering	0-10 eV	Th
e + Sr	Excitation	0-10 eV	Th
e + Ba	Excitation	0-10 eV	Th

275. M.-Y. Song, Y.-D. Jung
Screening and collective effects on electron-impact excitation of hydrogen-like ions in nonideal plasmas.
J. Phys. B 36, 2119 (2003)

e + H Z= ?-?	Excitation	1-10 Z^2 Ry	Th

276. C. Szmytkowski, S. Kwitnewski
Electron scattering from C_4H_6 and C_4F_6 molecules.
J. Phys. B 36, 2129 (2003)

e + C_4H_6	Dissociation	0.5-370 eV	Exp
e + C_4F_6	Dissociation	0.5-370 eV	Exp
e + C_4H_6	Elastic Scattering	0.5-370 eV	Exp
e + C_4F_6	Elastic Scattering	0.5-370 eV	Exp
e + C_4H_6	Excitation	0.5-370 eV	Exp
e + C_4F_6	Excitation	0.5-370 eV	Exp
e + C_4H_6	Ionization	0.5-370 eV	Exp
e + C_4F_6	Ionization	0.5-370 eV	Exp

277. R. Curik, P. Carsky
Vibrationally inelastic electron scattering on polyatomic molecules by the discrete momentum representation (DMR) method.
J. Phys. B 36, 2165 (2003)

e + H_2	Angular Scattering	1-20 eV	E/T
e + H_2O	Angular Scattering	1-20 eV	E/T
e + H_2	Excitation	1-20 eV	E/T
e + H_2O	Excitation	1-20 eV	E/T

278. I. Bray
On convergence of the close-coupling method for calculating electron-hydrogen ionization.
J. Phys. B 36, 2203 (2003)

e + H	Ionization	27.7 eV	E/T

279. I. Bray, D. V. Fursa, A. T. Stelbovics
Electron-impact ionization doubly differential cross sections of helium.
J. Phys. B 36, 2211 (2003)

e + He	Ionization	28.6-100 eV	E/T

280. A. S. Dhaliwal
Study of the Z-dependence of external bremsstrahlung produced by beta particles of ^{147}Pm and ^{32}P.
J. Phys. B 36, 2229 (2003)

e + Al	Bremsstrahlung	225-1706 keV	E/T
e + Cu	Bremsstrahlung	225-1706 keV	E/T
e + Sn	Bremsstrahlung	225-1706 keV	E/T
e + Pb	Bremsstrahlung	225-1706 keV	E/T

281. T. T. Gien
Accurate calculation of phase shifts for electron collisions with positive ions.
J. Phys. B 36, 2291 (2003)

e + Li^{2+}	Elastic Scattering	0.2-9 Ry	Th
e + Be^{3+}	Elastic Scattering	0.2-9 Ry	Th
e + B^{4+}	Elastic Scattering	0.2-9 Ry	Th
e + Li^{2+}	Angular Scattering	0.2-9 Ry	Th
e + Be^{3+}	Angular Scattering	0.2-9 Ry	Th
e + B^{4+}	Angular Scattering	0.2-9 Ry	Th
e + Li^{2+}	Total Scattering	0.2-9 Ry	Th
e + Be^{3+}	Total Scattering	0.2-9 Ry	Th
e + B^{4+}	Total Scattering	0.2-9 Ry	Th
e + Li^{2+}	Excitation	0.2-9 Ry	Th
e + Be^{3+}	Excitation	0.2-9 Ry	Th
e + B^{4+}	Excitation	0.2-9 Ry	Th

282. K. Muktavat, R. Srivastava, A. D. Stauffer
Complete description of the excitation of the 6 $^3P_1$ and 6 $^1P_1$ states of mercury by spin-polarized electrons.
J. Phys. B 36, 2341 (2003)

e + Hg	Excitation	8 eV	E/T

283. B. Predojevic, D. Sevic, V. Pejcev, B. P. Marinkovic, D. M. Filipovic
Electron-impact excitation of the (n - 1)d^9 ns^3np autoionizing states of cadmium (n=5) and zinc (n=4).
J. Phys. B 36, 2371 (2003)

e + Zn	Excitation	15-60 eV	E/T
e + Cd	Excitation	15-60 eV	E/T
e + Zn	Ionization	15-60 eV	E/T
e + Cd	Ionization	15-60 eV	E/T

284. I. Rozum, N. J. Mason, J. Tennyson
Electron collisions with the CF radicals using the R-matrix method.
J. Phys. B 36, 2419 (2003)

e + CF	Elastic Scattering	0-10 eV	Th
e + CF	Excitation	0-10 eV	Th

285. M. Allan
Threshold peaks and structures in elastic and vibrationally inelastic electron impact cross sections for CS_2.
J. Phys. B 36, 2489 (2003)

e + CS_2	Elastic Scattering	0.6-4 eV	Exp
e + CS_2	Excitation	0.6-4 eV	Exp

286. M. Takahashi, T. Saito, J. Hiraka, Y. Udagawa
The impact energy dependence of momentum profiles of glyoxal and biacetyl and comparison with theory at their high-energy limits.
J. Phys. B 36, 2539 (2003)

e + OHCCHO	Ionization	800-1600 eV	Exp
e + $CH_3COCOCH_3$	Ionization	800-1600 eV	Exp

287. M. Fogle, N. Ekloew, E. Lindroth, T. Mohamed, R. Schuch, M. Tokman
Spectroscopic study of Mg-like Ni by means of dielectronic recombination of stored ions.
J. Phys. B 36, 2563 (2003)

e + Ni^{17+}	Recombination	0-6.5 eV	Exp

288. J. R. Harries, P. Hammond, A. J. Murray
Electron-impact excitation of He and H_2 in the doubly excited state energy region observed using a momentum transfer technique.
J. Phys. B 36, 2579 (2003)

e + He	Excitation	56-80 eV	Exp
e + H_2	Excitation	56-80 eV	Exp

289. S. Tsurubuchi, H. Kobayashi, M. Hyodo
Electron-impact emission cross-sections for the 5p → 5s and 5s → 4p transitions of Kr I.
J. Phys. B 36, 2629 (2003)

e + Kr	Excitation	10-1000 eV	Exp

290. I. Bray, K. Bartschat, A. T. Stelbovics
Box-based convergent close-coupling method for solving Coulomb few-body problems.
Phys. Rev. A 67, 060704 (2003)

e + H	Angular Scattering	15.6 eV	Th
e + H	Ionization	15.6 eV	Th

291. W.-B. Li, L.-F. Zhu, X.-J. Liu, Z.-S. Yuan, J.-M. Sun, H.-D. Cheng, Z.-P. Zhong, K.-Z. Xu
Generalized oscillator strengths for 5s, 5s', and 5p excitations of krypton.
Phys. Rev. A 67, 062708 (2003)

e + Kr	Excitation	2500 eV	Exp

292. S. Segui, M. Dingfelder, F. Salvat
Distorted-wave calculation of cross sections for inner-shell ionization by electron and positron impact.
Phys. Rev. A 67, 062710 (2003)

e + Ar	Excitation	3-200 keV	Th
e + Cr	Excitation	3-200 keV	Th
e + Mn	Excitation	3-200 keV	Th
e + Fe	Excitation	3-200 keV	Th
e + Ni	Excitation	3-200 keV	Th
e + Cu	Excitation	3-200 keV	Th
e + Ag	Excitation	3-200 keV	Th
e + Au	Excitation	3-200 keV	Th

293. M. C. Chidichimo, N. R. Badnell, J. A. Tully
Atomic data from the IRON Project: LII. Electron excitation of Ni^{+24}.
Astron. Astrophys. 401, 1177 (2003)

e + Ni^{24+}	Excitation	6.3-8.3 log T(K)	Th

294. M. A. Bautista, C. Mendoza, T. R. Kallman, P. Palmeri
Atomic data for the K-vacancy states of Fe XXIV.
Astron. Astrophys. 403, 339 (2003)

e + Fe^{23+}	Excitation	10^5-10^8 K	Th

295. S. Boehm, A. Mueller, S. Schippers, W. Shi, N. Ekloew, R. Schuch, H. Danared, N. R. Badnell
Experimental O VI dielectronic recombination rate coefficient and its enhancement by external electric fields.
Astron. Astrophys. 405, 1157 (2003)

e + O^{5+}	Recombination	10^3-10^7 K	Exp

296. N. R. Badnell, M. G. O'Mullane, H. P. Summers, Z. Altun, M. A. Bautista, J. Colgan, T. W. Gorczyca, D. M. Mitnik, M. S. Pindzola, O. Zatsarinny
Dielectronic recombination data for dynamic finite-density plasmas. I. Goals and methodology.
Astron. Astrophys. 406, 1151 (2003)

e + O^{4+}	Recombination	10^2-10^6 K	Th
e + O^{5+}	Recombination	10^2-10^6 K	Th

297. K. M. Aggarwal, F. P. Keenan
Excitation rates for transitions in Ca XV.
Astron. Astrophys. 407, 769 (2003)

e + Ca^{14+}	Excitation	0-300 Ry	Th

298. M. Fogle, N. R. Badnell, N. Ekloew, T. Mohamed, R. Schuch
Determination of the Ni XVIII plasma recombination rate coefficient.
Astron. Astrophys. 409, 781 (2003)

e + Ni^{17+}	Recombination	0-43 eV	E/T

299. K. M. Aggarwal, F. P. Keenan, A. Z. Msezane
Effective collision strengths for transitions in Fe XV.
Astron. Astrophys. 410, 349 (2003)

e + Fe^{14+}	Excitation	0-160 Ry	Th

300. O. Zatsarinny, T. W. Gorczyca, K. T. Korista, N. R. Badnell, D. W. Savin
Dielectronic recombination data for dynamic finite-density plasmas. II. The oxygen isoelectronic sequence.
Astron. Astrophys. 412, 587 (2003)

e + F^{+}	Recombination	1-10^5 eV	Th
e + Ne^{2+}	Recombination	1-10^5 eV	Th
e + Na^{3+}	Recombination	1-10^5 eV	Th
e + Mg^{4+}	Recombination	1-10^5 eV	Th
e + Al^{5+}	Recombination	1-10^5 eV	Th
e + Si^{6+}	Recombination	1-10^5 eV	Th
e + P^{7+}	Recombination	1-10^5 eV	Th
e + S^{8+}	Recombination	1-10^5 eV	Th
e + Cl^{9+}	Recombination	1-10^5 eV	Th
e + Ar^{10+}	Recombination	1-10^5 eV	Th
e + K^{11+}	Recombination	1-10^5 eV	Th
e + Ca^{12+}	Recombination	1-10^5 eV	Th
e + Ca^{40+}	Recombination	1-10^5 eV	Th
e + Sc^{13+}	Recombination	1-10^5 eV	Th
e + Ti^{14+}	Recombination	1-10^5 eV	Th
e + V^{15+}	Recombination	1-10^5 eV	Th
e + Cr^{16+}	Recombination	1-10^5 eV	Th

e + Mn^{17+}	Recombination	1-10^5 eV	Th
e + Fe^{18+}	Recombination	1-10^5 eV	Th
e + Co^{19+}	Recombination	1-10^5 eV	Th
e + Ni^{20+}	Recombination	1-10^5 eV	Th
e + Cu^{21+}	Recombination	1-10^5 eV	Th
e + Zn^{22+}	Recombination	1-10^5 eV	Th
e + Kr^{28+}	Recombination	1-10^5 eV	Th
e + Mo^{34+}	Recombination	1-10^5 eV	Th
e + Xe^{46+}	Recombination	1-10^5 eV	Th

301. J. Colgan, M. S. Pindzola, A. D. Whiteford, N. R. Badnell
Dielectronic recombination data for dynamic finite-density plasmas. III. The beryllium isoelectronic sequence.
Astron. Astrophys. 412, 597 (2003)

e + B^{+}	Recombination	10^3-10^8 K	Th
e + C^{2+}	Recombination	10^3-10^8 K	Th
e + N^{3+}	Recombination	10^3-10^8 K	Th
e + O^{4+}	Recombination	10^3-10^8 K	Th
e + F^{5+}	Recombination	10^3-10^8 K	Th
e + Ne^{6+}	Recombination	10^3-10^8 K	Th
e + Na^{7+}	Recombination	10^3-10^8 K	Th
e + Mg^{8+}	Recombination	10^3-10^8 K	Th
e + Al^{9+}	Recombination	10^3-10^8 K	Th
e + Si^{10+}	Recombination	10^3-10^8 K	Th
e + P^{11+}	Recombination	10^3-10^8 K	Th
e + S^{12+}	Recombination	10^3-10^8 K	Th
e + Cl^{13+}	Recombination	10^3-10^8 K	Th
e + Ar^{14+}	Recombination	10^3-10^8 K	Th
e + K^{15+}	Recombination	10^3-10^8 K	Th
e + Ca^{16+}	Recombination	10^3-10^8 K	Th
e + Sc^{17+}	Recombination	10^3-10^8 K	Th
e + Ti^{18+}	Recombination	10^3-10^8 K	Th
e + V^{19+}	Recombination	10^3-10^8 K	Th
e + Cr^{20+}	Recombination	10^3-10^8 K	Th
e + Mn^{21+}	Recombination	10^3-10^8 K	Th
e + Fe^{22+}	Recombination	10^3-10^8 K	Th
e + Ni^{24+}	Recombination	10^3-10^8 K	Th
e + Zn^{26+}	Recombination	10^3-10^8 K	Th
e + Kr^{32+}	Recombination	10^3-10^8 K	Th
e + Mo^{38+}	Recombination	10^3-10^8 K	Th
e + Xe^{50+}	Recombination	10^3-10^8 K	Th

302. E. Landi, A. K. Bhatia
Atomic data and emission-line intensities for Ca VII.
Astrophys. J., Part 1 589, 1075 (2003)

e + Ca^{6+}	Excitation	8-60 Ry	Th

303. M. F. Gu
Radiative recombination rate coefficients for bare through F-like isosequences of Mg, Si, S, Ar, Ca, Fe, and Ni.
Astrophys. J., Part 1 589, 1085 (2003)

e + Mg^{4+}	Recombination	10^{-4}-10^4 eV	Th
e + Mg^{5+}	Recombination	10^{-4}-10^4 eV	Th
e + Mg^{6+}	Recombination	10^{-4}-10^4 eV	Th

e + Mg^{7+}	Recombination	10^{-4}-10^{4} eV	Th
e + Mg^{8+}	Recombination	10^{-4}-10^{4} eV	Th
e + Mg^{9+}	Recombination	10^{-4}-10^{4} eV	Th
e + Mg^{10+}	Recombination	10^{-4}-10^{4} eV	Th
e + Mg^{11+}	Recombination	10^{-4}-10^{4} eV	Th
e + Mg^{12+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{6+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{7+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{8+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{9+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{10+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{11+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{12+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{13+}	Recombination	10^{-4}-10^{4} eV	Th
e + Si^{14+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{8+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{9+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{10+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{11+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{12+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{13+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{14+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{15+}	Recombination	10^{-4}-10^{4} eV	Th
e + S^{16+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{10+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{11+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{12+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{13+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{14+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{15+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{16+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{17+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ar^{18+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{12+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{13+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{14+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{15+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{16+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{17+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{18+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{19+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ca^{20+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{18+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{19+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{20+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{21+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{22+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{23+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{24+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{25+}	Recombination	10^{-4}-10^{4} eV	Th
e + Fe^{26+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ni^{20+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ni^{21+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ni^{22+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ni^{23+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ni^{24+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ni^{25+}	Recombination	10^{-4}-10^{4} eV	Th

e + Ni^{26+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ni^{27+}	Recombination	10^{-4}-10^{4} eV	Th
e + Ni^{28+}	Recombination	10^{-4}-10^{4} eV	Th

304. M. F. Gu
Dielectronic recombination rate coefficients for H-like through Ne-like isosequences of Mg, Si, S, Ar, Ca, Fe, and Ni.
Astrophys. J., Part 1 590, 1131 (2003)

e + Mg^{2+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{3+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{4+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{5+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{6+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{7+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{8+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{9+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{10+}	Recombination	-2 - 5 log(TeV)	Th
e + Mg^{11+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{4+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{5+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{6+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{7+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{8+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{9+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{10+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{11+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{12+}	Recombination	-2 - 5 log(TeV)	Th
e + Si^{13+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{6+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{7+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{8+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{9+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{10+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{11+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{12+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{13+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{14+}	Recombination	-2 - 5 log(TeV)	Th
e + S^{15+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{8+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{9+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{10+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{11+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{12+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{13+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{14+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{15+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{16+}	Recombination	-2 - 5 log(TeV)	Th
e + Ar^{17+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{10+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{11+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{12+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{13+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{14+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{15+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{16+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{17+}	Recombination	-2 - 5 log(TeV)	Th

e + Ca^{18+}	Recombination	-2 - 5 log(TeV)	Th
e + Ca^{19+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{16+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{17+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{18+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{19+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{20+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{21+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{22+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{23+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{24+}	Recombination	-2 - 5 log(TeV)	Th
e + Fe^{25+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{18+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{19+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{20+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{21+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{22+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{23+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{24+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{25+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{26+}	Recombination	-2 - 5 log(TeV)	Th
e + Ni^{27+}	Recombination	-2 - 5 log(TeV)	Th

305. M. F. Gu
Recombination x-ray line formation of iron L-shell ions in low-temperature plasmas.
Astrophys. J., Part 1 593, 1249 (2003)

e + Fe^{16+}	Recombination	1-500 eV	Th
e + Fe^{17+}	Recombination	1-500 eV	Th
e + Fe^{18+}	Recombination	1-500 eV	Th
e + Fe^{19+}	Recombination	1-500 eV	Th
e + Fe^{20+}	Recombination	1-500 eV	Th
e + Fe^{21+}	Recombination	1-500 eV	Th
e + Fe^{22+}	Recombination	1-500 eV	Th
e + Fe^{23+}	Recombination	1-500 eV	Th

306. I. Murakami, U. I. Safronova, T. Kato
Dielectronic recombination-rate coefficients to excited states of Be-like oxygen and dielectronic satellite lines.
Can. J. Phys. 80, 1525 (2002)

e + O^{5+}	Recombination	1.0-10^3 eV	Exp

307. D. H. Yu, J. F. Williams, X. J. Chen, P. A. Hayes, K. Bartschat, V. Zeman
Cascade effects in the excitation of np^5(n+1)p states of krypton and xenon atoms by polarized electrons.
Phys. Rev. A 67, 032707 (2003)

e + Kr	Fluorescence	10-100 eV	Exp
e + Xe	Fluorescence	10-100 eV	Exp
e + Kr	Excitation	10-100 eV	Exp
e + Xe	Excitation	10-100 eV	Exp

308. A. R. Lopes, M.H.F. Bettega
Elastic scattering of low-energy electrons by C_3H_4 isomers.
Phys. Rev. A 67, 032711 (2003)

e + C_3H_4	Elastic Scattering	0-40 eV	Th
e + C_3H_4	Angular Scattering	0-40 eV	Th
e + C_3H_4	Total Scattering	0-40 eV	Th

309. M. C. Witthoeft, M. S. Pindzola, J. Colgan
Time-dependent electron-impact scattering from He^+ using variable lattice spacings.
Phys. Rev. A 67, 032713 (2003)

e + He^+	Excitation	100-300 eV	Th
e + He^+	Ionization	100-300 eV	Th

310. P. Bolognesi, C. C. Jia, L. Avaldi, A. Lahmam-Bennani, K. A. Kouzakov, Yu. V. Popov
Double ionization of He by electron impact at large momentum transfer.
Phys. Rev. A 67, 034701 (2003)

e + He	Angular Scattering	580 eV	Exp
e + He	Ionization	580 eV	Exp

311. G. Garcia, F. Blanco, A. Williart
Cross-sections for electron scattering by O_2 at intermediate and high energies, 0.1-10 keV.
Chem. Phys. Lett. 335, 227 (2001)

e + O_2	Elastic Scattering	0.1-10 keV	E/T
e + O_2	Angular Scattering	0.1-10 keV	E/T

312. X. Liu, D. E. Shemansky, H. Abgrall, E. Roueff, S. M. Ahmed, J. M. Ajello
Electron impact excitation of H_2: Resonance excitation of B $^1\Sigma_u{}^+$ ($J_j = 2$, $\upsilon_j = 0$) and effective excitation function of EF $^1\Sigma_g{}^+$.
J. Phys. B 36, 173 (2003)

e + H_2	Excitation	0-1800 eV	Exp

313. M. M. Tabanli, J. L. Peacher, D. H. Madison
A convenient formalism for Auger and autoionization of overlapping resonances.
J. Phys. B 36, 217 (2003)

e + Cd	Excitation	2.6-3.6 eV	Th
e + Cd	Ionization	2.6-3.6 eV	Th

314. C. P. Ballance, N. R. Badnell, D. C. Griffin, S. D. Loch, D. M. Mitnik
The effects of coupling to the target continuum on the electron-impact excitation of Li^+.
J. Phys. B 36, 235 (2003)

e + Li^+	Excitation	4.6-9 Ry	Th

315. M. Stano, S. Matejcik, J. D. Skalny, T. D. Maerk
Electron impact ionization of CH_4: Ionization energies and temperature effects.
J. Phys. B 36, 261 (2003)

e + Ar	Ionization	11.5-28 eV	Exp
e + CH_4	Ionization	11.5-28 eV	Exp

316. D. Ghosh, B. Nath, C. Sinha
Double ionization of a negative hydrogen ion by positron and electron impact at high and intermediate energies.
J. Phys. B 36, 1479 (2003)

e + H^-	Detachment	500-5000 eV	Th
e + H^-	Ionization	500-5000 eV	Th

317. M. A. Bautista
Electron impact excitation of helium-like neon.
J. Phys. B 36, 1503 (2003)

e + Ne^{8+}	Excitation	65-130 Ry	Th

318. S. E. Michelin, T. Kroin, A. S. Falck, E. A. y. Castro, O. Pessoa, H. L. Oliveira, M.-T. Lee
Comparative study of core-excited processes of C(1s) in CO, CO_2, OCS and CS_2 molecules by electron impact.
J. Phys. B 36, 1525 (2003)

e + CO	Excitation	300-800 eV	Th
e + CO_2	Excitation	300-800 eV	Th
e + CS_2	Excitation	300-800 eV	Th
e + OCS	Excitation	300-800 eV	Th

319. R. K. Singh, R. Shanker
Differential partial ionization cross sections for 10-24 keV electrons colliding with helium and neon atoms.
J. Phys. B 36, 1545 (2003)

e + He	Recombination	10-24 keV	Exp
e + Ne	Recombination	10-24 keV	Exp

320. R. Panajotovic, M. Kitajima, H. Tanaka, M. Jelisavcic, J. Lower, L. Campbell, M. J. Brungner, S. J. Buckman
Electron collisions with ethylene.
J. Phys. B 36, 1615 (2003)

e + C_2H_4	Elastic Scattering	1-100 eV	Exp
e + C_2H_4	Excitation	1-100 eV	Exp

321. D. V. Fursa, I. Bray
Electron-impact ionization of the helium metastable 2 ^{3}S state.
J. Phys. B 36, 1663 (2003)

e + He	Ionization	6-1000 eV	Th

322. F. Blanco, G. Garcia
Improvements on the quasifree absorption model for electron scattering.
Phys. Rev. A 67, 022701 (2003)

e + He	Elastic Scattering	10-10^4 eV	Th
e + Ne	Elastic Scattering	10-10^4 eV	Th
e + Ar	Elastic Scattering	10-10^4 eV	Th
e + Kr	Elastic Scattering	10-10^4 eV	Th
e + Xe	Elastic Scattering	10-10^4 eV	Th
e + CO	Elastic Scattering	10-10^4 eV	Th
e + CO_2	Elastic Scattering	10-10^4 eV	Th
e + N_2	Elastic Scattering	10-10^4 eV	Th

323. M. Ya. Amusia, L. V. Chernysheva, Z. Felfli, A. Z. Msezane
Determination of discrete transition multipolarity using the generalized oscillator strength.
Phys. Rev. A 67, 022703 (2003)

e + Ne	Excitation	11.4-20.4 eV	Th
e + Ar	Excitation	11.4-20.4 eV	Th
e + Kr	Excitation	11.4-20.4 eV	Th
e + Xe	Excitation	11.4-20.4 eV	Th

324. R. K. Singh, R. Hippler, R. Shanker
Partial dissociative ionization of SF_6 by electron impact using an ejected electron-ion coincidence technique.
Phys. Rev. A 67, 022704 (2003)

e + SF_6	Dissociation	10-20 keV	Exp
e + SF_6	Ionization	10-20 keV	Exp

325. K. Fritioff, J. Sandstroem, D. Hanstorp, F. Hellberg, A. Ehlerding, M. Larsson, G. F. Collins, D. J. Pegg, H. Danared, A. Kaellberg
Electron-impact detachment from S^-.
Eur. Phys. J. D 27, 23 (2003)

e + S^-	Detachment	0-60 eV	Exp

326. S. Gortchakov, H. Lange, D. Uhrlandt
Model of a He-Xe low-pressure dc positive column plasma.
J. Appl. Phys. 93, 9508 (2003)

e + Xe	Excitation	8-20 eV	Exp

327. R. K. Janev, D. Reiter
Unified analytic representation of hydrocarbon impurity collision cross-sections.
J. Nucl. Mater. 313-316, 1202 (2003)

e + CH	Dissociation	5 - 25x10^3 eV	Th
e + CH_2	Dissociation	5 - 25x10^3 eV	Th
e + CH_3	Dissociation	5 - 25x10^3 eV	Th
e + CH_4	Dissociation	5 - 25x10^3 eV	Th
e + C_2H_2	Dissociation	5 - 25x10^3 eV	Th
e + C_2H_4	Dissociation	5 - 25x10^3 eV	Th
e + C_2H_6	Dissociation	5 - 25x10^3 eV	Th
e + C_3H_6	Dissociation	5 - 25x10^3 eV	Th
e + C_2H_5	Dissociation	5 - 25x10^3 eV	Th
e + C_3H_5	Dissociation	5 - 25x10^3 eV	Th
e + C_3H_8	Dissociation	5 - 25x10^3 eV	Th
e + C_3H_4	Dissociation	5 - 25x10^3 eV	Th
e + C_2H	Dissociation	5 - 25x10^3 eV	Th
e + C_3H_2	Dissociation	5 - 25x10^3 eV	Th
e + C_2H_3	Dissociation	5 - 25x10^3 eV	Th
e + C_3H	Dissociation	5 - 25x10^3 eV	Th
e + C_3H_3	Dissociation	5 - 25x10^3 eV	Th
e + C_3H_7	Dissociation	5 - 25x10^3 eV	Th
e + CH	Excitation	5 - 25x10^3 eV	Th
e + CH^+	Excitation	5 - 25x10^3 eV	Th
e + CH_2	Excitation	5 - 25x10^3 eV	Th
e + CH_2^+	Excitation	5 - 25x10^3 eV	Th
e + CH_3	Excitation	5 - 25x10^3 eV	Th
e + CH_3^+	Excitation	5 - 25x10^3 eV	Th
e + CH_4	Excitation	5 - 25x10^3 eV	Th
e + CH_4^+	Excitation	5 - 25x10^3 eV	Th
e + C_2H_2	Excitation	5 - 25x10^3 eV	Th

e + $C_2H_2^+$	Excitation	5 - 25x10^3 eV	Th
e + C_2H_4	Excitation	5 - 25x10^3 eV	Th
e + $C_2H_4^+$	Excitation	5 - 25x10^3 eV	Th
e + C_2H_6	Excitation	5 - 25x10^3 eV	Th
e + $C_2H_6^+$	Excitation	5 - 25x10^3 eV	Th
e + C_3H_6	Excitation	5 - 25x10^3 eV	Th
e + $C_3H_6^+$	Excitation	5 - 25x10^3 eV	Th
e + C_2H_5	Excitation	5 - 25x10^3 eV	Th
e + $C_2H_5^+$	Excitation	5 - 25x10^3 eV	Th
e + C_3H_5	Excitation	5 - 25x10^3 eV	Th
e + $C_3H_5^+$	Excitation	5 - 25x10^3 eV	Th
e + C_3H_8	Excitation	5 - 25x10^3 eV	Th
e + $C_3H_8^+$	Excitation	5 - 25x10^3 eV	Th
e + C_3H_4	Excitation	5 - 25x10^3 eV	Th
e + $C_3H_4^+$	Excitation	5 - 25x10^3 eV	Th
e + C_2H	Excitation	5 - 25x10^3 eV	Th
e + C_2H^+	Excitation	5 - 25x10^3 eV	Th
e + C_3H_2	Excitation	5 - 25x10^3 eV	Th
e + C_2H_3	Excitation	5 - 25x10^3 eV	Th
e + $C_2H_3^+$	Excitation	5 - 25x10^3 eV	Th
e + C_3H	Excitation	5 - 25x10^3 eV	Th
e + C_3H^+	Excitation	5 - 25x10^3 eV	Th
e + C_3H_3	Excitation	5 - 25x10^3 eV	Th
e + $C_3H_3^+$	Excitation	5 - 25x10^3 eV	Th
e + C_3H_7	Excitation	5 - 25x10^3 eV	Th
e + $C_3H_7^+$	Excitation	5 - 25x10^3 eV	Th
e + CH	Ionization	5 - 25x10^3 eV	Th
e + CH^+	Ionization	5 - 25x10^3 eV	Th
e + CH_2	Ionization	5 - 25x10^3 eV	Th
e + CH_2^+	Ionization	5 - 25x10^3 eV	Th
e + CH_3	Ionization	5 - 25x10^3 eV	Th
e + CH_3^+	Ionization	5 - 25x10^3 eV	Th
e + CH_4	Ionization	5 - 25x10^3 eV	Th
e + CH_4^+	Ionization	5 - 25x10^3 eV	Th
e + C_2H_2	Ionization	5 - 25x10^3 eV	Th
e + $C_2H_2^+$	Ionization	5 - 25x10^3 eV	Th
e + C_2H_4	Ionization	5 - 25x10^3 eV	Th
e + $C_2H_4^+$	Ionization	5 - 25x10^3 eV	Th
e + C_2H_6	Ionization	5 - 25x10^3 eV	Th
e + $C_2H_6^+$	Ionization	5 - 25x10^3 eV	Th
e + C_3H_6	Ionization	5 - 25x10^3 eV	Th
e + $C_3H_6^+$	Ionization	5 - 25x10^3 eV	Th
e + C_2H_5	Ionization	5 - 25x10^3 eV	Th
e + $C_2H_5^+$	Ionization	5 - 25x10^3 eV	Th
e + C_3H_5	Ionization	5 - 25x10^3 eV	Th
e + $C_3H_5^+$	Ionization	5 - 25x10^3 eV	Th
e + C_3H_8	Ionization	5 - 25x10^3 eV	Th
e + $C_3H_8^+$	Ionization	5 - 25x10^3 eV	Th
e + C_3H_4	Ionization	5 - 25x10^3 eV	Th
e + $C_3H_4^+$	Ionization	5 - 25x10^3 eV	Th
e + C_2H	Ionization	5 - 25x10^3 eV	Th
e + C_2H^+	Ionization	5 - 25x10^3 eV	Th
e + C_3H_2	Ionization	5 - 25x10^3 eV	Th
e + C_2H_3	Ionization	5 - 25x10^3 eV	Th
e + $C_2H_3^+$	Ionization	5 - 25x10^3 eV	Th
e + C_3H	Ionization	5 - 25x10^3 eV	Th
e + C_3H^+	Ionization	5 - 25x10^3 eV	Th

e + C_3H_3	Ionization	5 - 25x10^3 eV	Th
e + $C_3H_3^+$	Ionization	5 - 25x10^3 eV	Th
e + C_3H_7	Ionization	5 - 25x10^3 eV	Th
e + $C_3H_7^+$	Ionization	5 - 25x10^3 eV	Th

328. S. Kieslich, S. Boehm, C. Brandau, A. Mueller, S. Schippers, W. Shi, G. Gwinner, M. Schnell, A. Wolf
Dielectronic recombination at low energies: Spectroscopy of doubly excited states in beryllium-like Na^{7+} ions.
Nucl. Instrum. Methods Phys. Res. B 205, 99 (2003)

e + Na^{7+}	Recombination	0-250 eV	Th

329. S. Schippers, A. Mueller, S. Ricz, M. E. Bannister, G. H. Dunn, J. D. Bozek, A. S. Schlachter, G. Hinojosa, C. Cisneros, A. Aguilar, A. M. Covington, M. F. Gharaibeh, R. A. Phaneuf
Photoionization of Sc^{2+}: Experimental link with photorecombination of Sc^{3+} by application of detailed balance.
Nucl. Instrum. Methods Phys. Res. B 205, 297 (2003)

e + Sc^{3+}	Recombination	8-50 eV	Exp

330. M. Schnell, M. E. Bannister, S. Boehm, G. Gwinner, S. Kieslich, A. Mueller, S. Schippers, D. Schwalm, W. Shi, A. Wolf, S.-G. Zhou
Trielectronic recombination in Be-like ions.
Nucl. Instrum. Methods Phys. Res. B 205, 367 (2003)

e + F^{5+}	Recombination	0-60 eV	Exp
e + Cl^{13+}	Recombination	0-60 eV	Exp
e + Fe^{22+}	Recombination	0-60 eV	Exp
e + Cu^{25+}	Recombination	0-60 eV	Exp

331. S. Boehm, A. Mueller, S. Schippers, W. Shi, H. Danared, N. Ekloew, M. Fogel, R. Schuch, N. Djuric, G. H. Dunn, K. B. MacAdam
Measurement of the field-induced dielectronic recombination rate enhancement of N^{4+} ions differential in the Rydberg quantum number n.
Nucl. Instrum. Methods Phys. Res. B 205, 370 (2003)

e + N^{4+}	Recombination	0-10 eV	Exp

332. B. E. O'Rourke, F. J. Currell, H. Kuramoto, Y.-M. Li, S. Ohtani, X.-M. Tong, H. Watanabe
Dielectronic recombination in highly charged He-like ions.
Nucl. Instrum. Methods Phys. Res. B 205, 378 (2003)

e + Ti^{20+}	Recombination	0-7 keV	Exp
e + Fe^{24+}	Recombination	0-7 keV	Exp

333. J. Yan, Y.-M. Li, J.-H. Yao
Configuration interaction effect on dielectronic recombination rate of complex ions.
Nucl. Instrum. Methods Phys. Res. B 205, 382 (2003)

e + Xe^{27+}	Recombination	0.1-10^4 eV	Th

334. S. Zakowicz, W. Scheid, N. Gruen
Angular distribution and correlation of photons emitted during dielectronic recombination into hydrogen-like ions.
Nucl. Instrum. Methods Phys. Res. B 205, 386 (2003)

e + U^{91+}	Recombination	$6.3x10^4$-$6.4x10^4$ eV	Th

335. A. Surzhykov, S. Fritzsche, Th. Stoehlker
Two-step radiative recombination of polarized electrons into bare, high-Z ions.
Nucl. Instrum. Methods Phys. Res. B 205, 391 (2003)

e + U^{92+}	Recombination		Th

336. C. Heerlein, G. Zwicknagel, C. Toepffer
Scaling law for recombination in electron coolers.
Nucl. Instrum. Methods Phys. Res. B 205, 395 (2003)

e + N^{7+}	Recombination	10^{-5} - 10^3 eV	Th

337. H. Merabet, R. Bruch, S. Fuelling, M. Bailey, A. L. Godunov, J. H. McGuire, A. N. Grum-Grzhimailo, K. Bartschat
Ionization-excitation magnetic sublevel cross sections for He^+ $(2p)^2P^0$ states following fast electron and proton impact.
Nucl. Instrum. Methods Phys. Res. B 205, 399 (2003)

e + He	Excitation	25-100 ev; 50-200 keV	Th
e + He	Ionization	25-100 ev; 50-200 keV	Th

338. P. Defrance, T. M. Kereselidze, Z. S. Machavariani
Double ionization of helium by electrons: Role of angular correlation between the target electrons.
Nucl. Instrum. Methods Phys. Res. B 205, 405 (2003)

e + He	Ionization	10^2-10^4 eV	Th

339. J. Jacobi, H. Knopp, S. Schippers, W. Shi, A. Mueller
Strong contributions of indirect processes to the electron-impact ionization cross section of Sc^+ ions.
Nucl. Instrum. Methods Phys. Res. B 205, 410 (2003)

e + Sc^+	Ionization	10-80 eV	Exp

340. B. Gstir, S. Denifl, G. Hanel, M. Ruemmele, T. Fiegele, M. Stano, L. Feketeova, S. Matejcik, K. Becker, P. Scheier, T. D. Maerk
High resolution multiple electron impact ionisation of He, Ne, Ar, Kr and Xe atoms close to threshold: Appearance energies and Wannier exponents.
Nucl. Instrum. Methods Phys. Res. B 205, 413 (2003)

e + He	Ionization	24-300 eV	Exp
e + Ne	Ionization	24-300 eV	Exp
e + Ar	Ionization	24-300 eV	Exp
e + Kr	Ionization	24-300 eV	Exp
e + Xe	Ionization	24-300 eV	Exp

341. H. Watanabe, F. J. Currell, H. Kuramoto, Y. M. Li, S. Ohtani, B. E. O'Rourke, X. M. Tong
The measurement of the electron impact ionization cross-sections of hydrogen-like ions.
Nucl. Instrum. Methods Phys. Res. B 205, 417 (2003)

e + Fe^{25+}	Ionization	13.5-120 keV	Exp
e + Mo^{41+}	Ionization	13.5-120 keV	Exp

342. A.C.H. Smith, M. E. Bannister, Y.-S. Chung, A. Derkatch, N. Djuric, H. F. Krause, D. B. Popovic, B. Wallbank, G. H. Dunn
Absolute measurements of cross-sections for near-threshold electron-impact excitation of Na-like and Mg-like multiply-charged ions.
Nucl. Instrum. Methods Phys. Res. B 205, 421 (2003)

e + Al^{2+}	Excitation	6-21 eV	Exp
e + Si^{2+}	Excitation	6-21 eV	Exp
e + Cl^{5+}	Excitation	6-21 eV	Exp
e + Cl^{6+}	Excitation	6-21 eV	Exp
e + Ar^{6+}	Excitation	6-21 eV	Exp
e + Ar^{7+}	Excitation	6-21 eV	Exp

343. I. Beigman, P. Defrance, L. Vainshtein
Electron impact ionization of Kr^{10+} - Kr^{18+} ions.
Nucl. Instrum. Methods Phys. Res. B 205, 427 (2003)

e + Kr^{10+}	Ionization	300-6000 eV	Th
e + Kr^{11+}	Ionization	300-6000 eV	Th
e + Kr^{12+}	Ionization	300-6000 eV	Th
e + Kr^{17+}	Ionization	300-6000 eV	Th
e + Kr^{18+}	Ionization	300-6000 eV	Th

344. H. Knopp, C. Boehme, J. Jacobi, S. Ricz, S. Schippers, A. Mueller
Electron-impact multiple ionization of Ba^{q+} ions (1<q<13) via resonant 3d excitation.
Nucl. Instrum. Methods Phys. Res. B 205, 433 (2003)

e + Ba^{+}	Ionization	700-840 eV	E/T
e + Ba^{2+}	Ionization	700-840 eV	E/T
e + Ba^{3+}	Ionization	700-840 eV	E/T
e + Ba^{4+}	Ionization	700-840 eV	E/T
e + Ba^{5+}	Ionization	700-840 eV	E/T
e + Ba^{6+}	Ionization	700-840 eV	E/T
e + Ba^{7+}	Ionization	700-840 eV	E/T
e + Ba^{8+}	Ionization	700-840 eV	E/T
e + Ba^{9+}	Ionization	700-840 eV	E/T
e + Ba^{10+}	Ionization	700-840 eV	E/T
e + Ba^{11+}	Ionization	700-840 eV	E/T
e + Ba^{12+}	Ionization	700-840 eV	E/T
e + Ba^{13+}	Ionization	700-840 eV	E/T

345. K. Aichele, W. Arnold, H. Brauning, D. Hathiramani, F. Scheuermann, R. Trassl, E. Salzborn
Electron-impact single and multiple ionization of praseodymium ions.
Nucl. Instrum. Methods Phys. Res. B 205, 437 (2003)

e + Pr^{+}	Ionization	0.01-1 keV	Exp
e + Pr^{2+}	Ionization	0.01-1 keV	Exp
e + Pr^{3+}	Ionization	0.01-1 keV	Exp
e + Pr^{4+}	Ionization	0.01-1 keV	Exp
e + Pr^{6+}	Ionization	0.01-1 keV	Exp
e + Pr^{7+}	Ionization	0.01-1 keV	Exp
e + Pr^{8+}	Ionization	0.01-1 keV	Exp
e + Pr^{11+}	Ionization	0.01-1 keV	Exp

346. D. L. Moores
Fully relativistic cross-sections for electron collisions with very highly stripped ions.
Nucl. Instrum. Methods Phys. Res. B 205, 444 (2003)

e + Pt	Excitation	10^2-10^3 keV	Th
e + Au	Excitation	10^2-10^3 keV	Th
e + Hg^{77+}	Excitation	10^2-10^3 keV	Th
e + Th	Excitation	10^2-10^3 keV	Th
e + U	Excitation	10^2-10^3 keV	Th
e + U^{89+}	Excitation	10^2-10^3 keV	Th
e + Pt	Ionization	10^2-10^3 keV	Th
e + Au	Ionization	10^2-10^3 keV	Th
e + Hg^{77+}	Ionization	10^2-10^3 keV	Th
e + Th	Ionization	10^2-10^3 keV	Th
e + U	Ionization	10^2-10^3 keV	Th
e + U^{89+}	Ionization	10^2-10^3 keV	Th

347. T.J.M. Zouros, E. P. Benis, T. W. Gorczyca, A. D. Gonzalez, M. Zamkov, P. Richard
Differential electron scattering from positive ions measured by zero-degree ion-atom spectroscopy.
Nucl. Instrum. Methods Phys. Res. B 205, 508 (2003)

e + B^{3+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T
e + B^{4+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T
e + C^{4+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T
e + N^{5+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T
e + O^{6+}	Elastic Scattering	3.9-15 MeV; 150-520 eV	E/T

348. Z. An, M. T. Liu, Y. C. Fu, Z. M. Luo, C. H. Tang, C. M. Li, B. H. Zhang, Y. J. Tang
Some recent progress on the measurement of K-shell ionization cross-sections of atoms by electron impact: Application to Ti and Cr elements.
Nucl. Instrum. Methods Phys. Res. B 207, 268 (2003)

e + Ti	Ionization	6-27 keV	Exp
e + Cr	Ionization	6-27 keV	Exp

349. H. Date, Y. Ishimaru, M. Shimozuma
Electron collision processes in gaseous xenon.
Nucl. Instrum. Methods Phys. Res. B 207, 373 (2003)

e + Xe	Elastic Scattering	0.1-10^4 eV	Th
e + Xe	Excitation	0.1-10^4 eV	Th
e + Xe	Ionization	0.1-10^4 eV	Th

350. M. Vinodkumar, K. N. Joshipura, C. G. Limbachiya, B. K. Antony
Electron impact ionization of H_2O molecule in crystalline ice.
Nucl. Instrum. Methods Phys. Res. B 212, 63 (2003)

e + H_2O	Ionization	0-2000 eV	Th

351. Yu. M. Smirnov
Excitation of a singly charged Sr ion by e-Sr collisions.
Opt. Spectrosc. 94, 327 (2003)

e + Sr	Excitation	8-200 eV	Exp
e + Sr	Ionization	8-200 eV	Exp

352. Yu. M. Smirnov
Excitation of the BaI ^{1}P levels in collisions of slow electrons with barium atoms.
Opt. Spectrosc. 94, 332 (2003)

e + Ba	Excitation	3-200 eV	Exp

353. A. N. Gomonai
Excitation of resonance lines of the cadmium ion by monoenergetic electrons.
Opt. Spectrosc. 94, 488 (2003)

e + Cd^+	Excitation	4-139 eV	Exp

354. V. Kokoouline, C. H. Greene
Theory of dissociative recombination of D_{3h} triatomic ions applied to H_3^+.
Phys. Rev. Lett. 90, 133201 (2003)

e + H_3^+	Recombination	0.2-2000 K	Th

355. M.-T. Huang, W. W. Wong, M. Inokuti, S. H. Southworth, L. Young
Triple ionization of lithium by electron impact.
Phys. Rev. Lett. 90, 163201 (2003)

e + Li	Ionization	1000 eV	Exp

356. S. Jones, D. H. Madison
Role of the ground state in electron-atom double ionization.
Phys. Rev. Lett. 91, 073201 (2003)

e + He	Ionization	5.6 keV	Th

357. M. Alfaz Uddin, A. K. Basak
K-shell ionization of atoms.
Phys. Scr. 67, 37 (2003)

e + C	Ionization	0-60 keV	Th
e + N	Ionization	0-60 keV	Th
e + O	Ionization	0-60 keV	Th
e + Cr	Ionization	0-60 keV	Th
e + Mn	Ionization	0-60 keV	Th
e + Fe	Ionization	0-60 keV	Th
e + Cu	Ionization	0-60 keV	Th
e + Ga	Ionization	0-60 keV	Th
e + Ge	Ionization	0-60 keV	Th
e + Zr	Ionization	0-60 keV	Th

358. M. Alfaz Uddin, A. K. Basak
Relativistic effects in K-shell electron impact ionization.
Phys. Scr. 67, 112 (2003)

e + K	Ionization	10-10^4 keV	Th
e + Ca	Ionization	10-10^4 keV	Th
e + Sc	Ionization	10-10^4 keV	Th
e + Ti	Ionization	10-10^4 keV	Th
e + V	Ionization	10-10^4 keV	Th
e + Rb	Ionization	10-10^4 keV	Th
e + Sr	Ionization	10-10^4 keV	Th
e + Sn	Ionization	10-10^4 keV	Th
e + Au	Ionization	10-10^4 keV	Th

359. A. M. Derkatch, B. Minaev, M. Larsson
Ab initio calculations of the three-body C_2 + H + H dissociative recombination channel for the $C_2H_2^+$ + e reaction.
Phys. Scr. 67, 407 (2003)

e + $C_2H_2^+$	Dissociation		Th
e + $C_2H_2^+$	Recombination		Th

360. A. Starobinets, I. Bray, L. A. Vainshtein, Yu. V. Ralchenko, Y. Maron
Excitation cross sections for Li-like ions of beryllium and boron.
Phys. Scr. 67, 500 (2003)

e + Be^+	Excitation	2-300 eV	Th
e + B^{2+}	Excitation	2-300 eV	Th

361. R. Schuch
Atomic and molecular physics at storage rings.
Phys. Scr. T104, 181 (2003)

e + Be^+	Recombination	10^{-5}-4 eV; 2.5-4.5 MeV	Exp
e + Pb^{53+}	Recombination	10^{-5}-4 eV; 2.5-4.5 MeV	Exp
e + Pb^{54+}	Recombination	10^{-5}-4 eV; 2.5-4.5 MeV	Exp

362. M. Alfaz Uddin, M.N.A. Abdullah, M. S. Mahbub, A. K. Basak
Electron impact ionization of hydrogenic atoms.
Phys. Scr. 68, 192 (2003)

e + H	Ionization	10-10^4 keV	Th
e + He^+	Ionization	10-10^4 keV	Th
e + Li^{2+}	Ionization	10-10^4 keV	Th
e + B^{4+}	Ionization	10-10^4 keV	Th
e + C^{5+}	Ionization	10-10^4 keV	Th
e + N^{6+}	Ionization	10-10^4 keV	Th
e + O^{7+}	Ionization	10-10^4 keV	Th
e + Ne^{9+}	Ionization	10-10^4 keV	Th
e + Fe^{25+}	Ionization	10-10^4 keV	Th
e + Mo^{41+}	Ionization	10-10^4 keV	Th
e + Dy^{65+}	Ionization	10-10^4 keV	Th
e + Au^{78+}	Ionization	10-10^4 keV	Th
e + Bi^{82+}	Ionization	10-10^4 keV	Th
e + U^{91+}	Ionization	10-10^4 keV	Th

363. P. V. Grujic
Threshold law for e + A^- → A + 2e detachment.
Phys. Scr. 68, C90 (2003)

e + H^-	Detachment	0-30 eV	Th

364. E. Illenberger
Formation and evolution of negative ion resonances at surfaces.
Surf. Sci. 528, 67 (2003)

e + NF_3	Dissociation	0-5 eV	Exp

365. P. L. Bartlett, I. Bray, S. Jones, A. T. Stelbovics, A. S. Kadyrov, K. Bartschat, G. L. Ver Steeg, M. P. Scott, P. G. Burke
Unambiguous ionization amplitudes for electron-hydrogen scattering.
Phys. Rev. A 68, 020702 (2003)

e + H	Ionization	4 Ry	Th

366. K. Seiersen, A. Al-Khalili, O. Heber, M. J. Jensen, I. B. Nielsen, H. B. Pedersen, C. P. Safvan, L. H. Andersen
Dissociative recombination of the cation and dication of CO_2.
Phys. Rev. A 68, 022708 (2003)

e + CO_2^+	Dissociation	10^{-3} - 10^{1} eV	Exp
e + CO_2^+	Recombination	10^{-3} - 10^{1} eV	Exp

367. M. Witthoeft, J. Colgan, M. S. Pindzola, C. P. Ballance, D. C. Griffin
Electron-impact excitation of Li to high principal quantum numbers.
Phys. Rev. A 68, 022711 (2003)

e + Li	Excitation	10 eV	Th

368. T.J.M. Zouros, E. P. Benis, T. W. Gorczyca
Large-angle elastic resonant and nonresonant scattering of electrons from B^{3+} ($1s^2$) and B^{4+} (1s) ions: Comparison of experiment and theory.
Phys. Rev. A 68, 010701 (2003)

e + B^{3+}	Elastic Scattering	150-260 eV	E/T
e + B^{4+}	Elastic Scattering	150-260 eV	E/T
e + B^{3+}	Angular Scattering	150-260 eV	E/T
e + B^{4+}	Angular Scattering	150-260 eV	E/T

369. T. Kroin, S. E. Michelin, A. S. Falck, F. Arretche, M.-T. Lee, I. Iga
Influence of chemical environment on resonant core excitation of C(1s) in CO_2, OCS, and CS_2 by electron impact.
Phys. Rev. A 68, 012701 (2003)

e + CO_2	Excitation	300-800 eV	Th
e + CS_2	Excitation	300-800 eV	Th
e + OCS	Excitation	300-800 eV	Th

370. V. Kokoouline, C. H. Greene
Unified theoretical treatment of dissociative recombination of D_{3h} triatomic ions: Application to H_3^+ and D_3^+.
Phys. Rev. A 68, 012703 (2003)

e + H_3^+	Recombination	10^{-5}-1 eV; 0.1-3000 K	Th

371. M.H.F. Bettega, M. T. do N Varella, M.A.P. Lima
Polarization effects in the elastic scattering of low-energy electrons by XH_4 (X=C, Si, Ge, Sn, Pb).
Phys. Rev. A 68, 012706 (2003)

e + CH_4	Elastic Scattering	3-10 eV	Th
e + SiH_4	Elastic Scattering	3-10 eV	Th
e + GeH−4	Elastic Scattering	3-10 eV	Th
e + SnH_4	Elastic Scattering	3-10 eV	Th
e + PbH_4	Elastic Scattering	3-10 eV	Th
e + CH_4	Angular Scattering	3-10 eV	Th
e + SiH_4	Angular Scattering	3-10 eV	Th
e + GeH−4	Angular Scattering	3-10 eV	Th
e + SnH_4	Angular Scattering	3-10 eV	Th
e + PbH_4	Angular Scattering	3-10 eV	Th

372. F. Salvat
Optical-model potential for electron and positron elastic scattering by atoms.
Phys. Rev. A 68, 012708 (2003)

e + He	Elastic Scattering	100-3000 eV	Th
e + Ne	Elastic Scattering	100-3000 eV	Th
e + Ar	Elastic Scattering	100-3000 eV	Th
e + Kr	Elastic Scattering	100-3000 eV	Th
e + Xe	Elastic Scattering	100-3000 eV	Th
e + Hg	Elastic Scattering	100-3000 eV	Th
e + He	Angular Scattering	100-3000 eV	Th
e + Ne	Angular Scattering	100-3000 eV	Th
e + Ar	Angular Scattering	100-3000 eV	Th
e + Kr	Angular Scattering	100-3000 eV	Th
e + Xe	Angular Scattering	100-3000 eV	Th
e + Hg	Angular Scattering	100-3000 eV	Th

373. K. Fritioff, J. Sandstroem, D. Hanstorp, A. Ehlerding, M. Larsson, G. F. Collins, D. J. Pegg, H. Danared, A. Kaellberg, A. Le Padellec
Electron-impact detachment from Cl^-.
Phys. Rev. A 68, 012712 (2003)

e + Cl^-	Detachment	0-95 eV	Exp

374. A. Dorn, A. Kheifets, C. D. Schroeter, C. Hoehr, G. Sakhelashvili, R. Moshammer, J. Lower, J. Ullrich
Appearance and disappearance of the second Born effects in the (e,3e) reaction on He.
Phys. Rev. A 68, 012715 (2003)

e + He	Angular Scattering	500 eV	Exp
e + He	Ionization	500 eV	Exp

375. V. Klimenko, L. Ko, T. F. Gallagher
Enhancement of dielectronic recombination in crossed electric and magnetic fields.
Phys. Rev. A 68, 012723 (2003)

e + Ba^+	Recombination	300 K	Exp

376. M. Alducin, A. Arnau, I. Nagy
Role of the bound-state wave function in capture-loss rates: Slow proton in an electron gas.
Phys. Rev. A 68, 014701 (2003)

e + H^+	Recombination	0.2-2 a.u.	Th

377. P. L. Bartlett, A. T. Stelbovics, I. Bray
Threshold ionization laws for electron-hydrogen scattering and their dominant region of configuration space.
Phys. Rev. A 68, 030701(R) (2003)

e + H	Ionization	0.005-0.2 a.u.	Th

378. J. G. Childers, K. E. James, M. Hughes, I. Bray, M. Baertschy, M. A. Khakoo
Electron-impact ionization of atomic hydrogen at incident electron energies of 15.6, 17.6, 25, and 40 eV.
Phys. Rev. A 68, 030702(R) (2003)

e + H	Angular Scattering	15.6-40 eV	E/T
e + H	Ionization	15.6-40 eV	E/T

379. H. Oohashi, T. Tochio, Y. Ito, A. M. Vlaicu
Origin of Au Lβ_2 visible satellites.
Phys. Rev. A 68, 032506 (2003)

e + Au	Fluorescence	25-55 keV	Exp
e + Au	Excitation	25-55 keV	Exp

380. V. Ngassam, O. Motapon, A. Florescu, L. Pichl, I. F. Schneider, A. Suzor-Weiner
Vibrational relaxation and dissociative recombination of H_2^+ induced by slow electrons.
Phys. Rev. A 68, 032704 (2003)

e + H_2^+	De-excitation	0-0.1 eV	Th
e + H_2^+	Recombination	0-0.1 eV	Th

381. C. Makochekanwa, O. Sueoka, M. Kimura
Comparative study of electron and positron scattering from benzene (C_6H_6) and hexafluorobenzene (C_6F_6) molecules.
Phys. Rev. A 68, 032707 (2003)

e + C_6H_6	Attachment	0.2-1000 eV	E/T
e + C_6F_6	Attachment	0.2-1000 eV	E/T
e + C_6H_6	Dissociation	0.2-1000 eV	E/T
e + C_6F_6	Dissociation	0.2-1000 eV	E/T
e + C_6H_6	Elastic Scattering	0.2-1000 eV	E/T
e + C_6F_6	Elastic Scattering	0.2-1000 eV	E/T
e + C_6H_6	Excitation	0.2-1000 eV	E/T
e + C_6F_6	Excitation	0.2-1000 eV	E/T
e + C_6H_6	Ionization	0.2-1000 eV	E/T
e + C_6F_6	Ionization	0.2-1000 eV	E/T

382. W. M. Ariyasinghe, T. Wijerathna, D. Powers
Total electron scattering cross sections of PH_3 and SiH_4 molecules in the energy range 90-3500 eV.
Phys. Rev. A 68, 032708 (2003)

e + SiH_4	Dissociation	90-3500 eV	Exp
e + PH_3	Dissociation	90-3500 eV	Exp
e + SiH_4	Elastic Scattering	90-3500 eV	Exp
e + PH_3	Elastic Scattering	90-3500 eV	Exp
e + SiH_4	Excitation	90-3500 eV	Exp
e + PH_3	Excitation	90-3500 eV	Exp
e + SiH_4	Ionization	90-3500 eV	Exp
e + PH_3	Ionization	90-3500 eV	Exp

383. J. Colgan, S. D. Loch, M. S. Pindzola, C. P. Ballance, D. C. Griffin
Electron-impact ionization of all ionization stages of beryllium.
Phys. Rev. A 68, 032712 (2003)

e + Be	Ionization	0.1-400 eV	Th
e + Be^+	Ionization	0.1-400 eV	Th
e + Be^{2+}	Ionization	0.1-400 eV	Th
e + Be^{3+}	Ionization	0.1-400 eV	Th

384. C. Szmytkowski, S. Kwitnewski, E. Ptasinska-Denga
Electron collisions with tetrafluoroethylene (C_2F_4) and ethylene (C_2H_4) molecules.
Phys. Rev. A 68, 032715 (2003)

e + C_2H_4	Dissociation	0.6-370 eV	Exp
e + C_2F_4	Dissociation	0.6-370 eV	Exp
e + C_2H_4	Elastic Scattering	0.6-370 eV	Exp
e + C_2F_4	Elastic Scattering	0.6-370 eV	Exp
e + C_2H_4	Excitation	0.6-370 eV	Exp
e + C_2F_4	Excitation	0.6-370 eV	Exp
e + C_2H_4	Ionization	0.6-370 eV	Exp
e + C_2F_4	Ionization	0.6-370 eV	Exp

385. T. Weber, J. B. Boffard, C. C. Lin
Electron-impact excitation cross sections of the higher argon $3p^5np$ (n=5,6,7) levels.
Phys. Rev. A 68, 032719 (2003)

e + Ar	Fluorescence	0-300 eV	Exp
e + Ar	Excitation	0-300 eV	Exp

386. J. Rangama, D. Hennecart, N. Stolterfoht, J. A. Tanis, B. Sulik, F. Fremont, X. Husson, J.-Y. Chesnel
Identification and characterization of the dielectronic process in the formation of two K-shell vacancies in atomic Li by fast electron impact.
Phys. Rev. A 68, 040701 (2003)

e + Li	Excitation	5 keV	Exp
e + Li	Ionization	5 keV	Exp

387. A. Al-Khalili, S. Rosen, H. Danared, A. M. Derkatch, A. Kaellberg, M. Larsson, A. Le Padellec, A. Neau, J. Semaniak, R. Thomas, M. af Ugglas, L. Vikor, W. Zong, W. J. van der Zande, X. Urbain, M. J. Jensen, R. C. Bilodeau, O. Heber, H. B. Pedersen, C. P. Safvan, L. H. Andersen, M. Lange, J. Levin, G. Gwinner, L. Knoll, M. Scheffel, D. Schwalm, R. Wester, D. Zajfman, A. Wolf
Absolute high-resolution rate coefficients for dissociative recombination of electrons with HD^+: Comparison of results from three heavy-ion storage rings.
Phys. Rev. A 68, 042702 (2003)

e + H_2^+	Dissociation	10^{-4} - 3x10^1 eV	Exp
e + HD^+	Dissociation	10^{-4} - 3x10^1 eV	Exp
e + H_2^+	Recombination	10^{-4} - 3x10^1 eV	Exp
e + HD^+	Recombination	10^{-4} - 3x10^1 eV	Exp

388. M. Takahashi, Y. Khajuria, Y. Udagawa
(e,2e) ionization-excitation of H_2.
Phys. Rev. A 68, 042710 (2003)

e + H_2	Excitation	1200-2000 eV	Exp
e + H_2	Ionization	1200-2000 eV	Exp

389. M. E. Bannister, H. F. Krause, C. R. Vane, N. Djuric, D. B. Popovic, M. Stepanovic, G. H. Dunn, Y.-S. Chung, A.C.H. Smith, B. Wallbank
Electron-impact dissociation of CH^+ ions: Measurement of C^+ fragment ions.
Phys. Rev. A 68, 042714 (2003)

e + CH^+	Dissociation	3-100 eV	Exp

390. M. Cizek, J. Horacek, M. Allan, I. I. Fabrikant, W. Domcke
Vibrational excitation of hydrogen fluoride by low-energy electrons: Theory and experiment.
J. Phys. B 36, 2837 (2003)

e + HF	Excitation	0.3-3 eV	E/T

391. R. Merz, F. Linder
Elastic and vibrationally inelastic scattering of low-energy electrons from propane.
J. Phys. B (2003)

e + $CH_3CH_2CH_3$	Elastic Scattering	0.5-10 eV	Exp
e + propane	Elastic Scattering	0.5-10 eV	Exp
e + $CH_3CH_2CH_3$	Angular Scattering	0.5-10 eV	Exp
e + propane	Angular Scattering	0.5-10 eV	Exp
e + $CH_3CH_2CH_3$	Excitation	0.5-10 eV	Exp
e + propane	Excitation	0.5-10 eV	Exp

392. S. Houamer, A. Mansouri, C. Dal Cappello, A. Lahmam-Bennani, S. Elazzouzi, M. Moulay, I. Charpentier
Second Born approximation for the ionization of H_2 by electron impact.
J. Phys. B 36, 3009 (2003)

e + H_2	Angular Scattering	250-4168 eV	Th
e + H_2	Ionization	250-4168 eV	Th

393. R. K. Singh, R. Shanker
The emission of characteristic and non-characteristic x-rays from collisions of 10-22 keV electrons with argon.
J. Phys. B 36, 3031 (2003)

e + Ar	Bremsstrahlung	10-22 keV	Exp
e + Ar	Ionization	10-22 keV	Exp

394. P. V. Johnson, I. Kanik, D. E. Shemansky, X. Liu
Electron-impact cross sections of atomic oxygen.
J. Phys. B 36, 3203 (2003)

e + O	Fluorescence	9-1000 eV	E/T
e + O	Excitation	9-1000 eV	E/T

395. G. F. Gribakin, S. Sahoo
Mixing of dielectronic and multiply excited states in electron-ion recombination: A study of Au^{24+}.
J. Phys. B 36, 3349 (2003)

e + Au^{24+}	Recombination	27-29.5 a.u.	Th

396. H. Merabet, R. Bruch, S. Fuelling, K. Bartschat, A. L. Godunov
Ionization-excitation of helium to He^+(2p) magnetic sublevels following electron, proton, and molecular hydrogen ($H_2{}^+$ and $H_3{}^+$) impact.
J. Phys. B 36, 3383 (2003)

e + He	Ionization	1.4-8.5 a.u.	Exp

397. M. Allan, T. Skalicky
Structures in elastic, vibrational, and dissociative electron attachment cross sections in N_2O near threshold.
J. Phys. B 36, 3397 (2003)

e + N_2O	Attachment	0-12 eV	Exp
e + N_2O	Dissociation	0-12 eV	Exp
e + N_2O	Elastic Scattering	0-12 eV	Exp
e + N_2O	Excitation	0-12 eV	Exp

398. D. O. Brown, D. Cvejanovic, A. Crowe
The scattering of 40 eV electrons from magnesium: A polarization correlation study for the 3^1P state and differential cross sections for elastic scattering and excitation of the 3^1P and 3^3P states.
J. Phys. B 36, 3411 (2003)

e + Mg	Excitation	40 eV	Exp

399. I. Bray, K. Bartschat, D. V. Fursa, A. T. Stelbovics
Box-based and Laguerre-based convergent close-coupling calculations of electron-helium ionization.
J. Phys. B 36, 3425 (2003)

e + He	Ionization	50 eV	Th

400. E. P. Benis, T.J.M. Zouros, T. W. Gorczyca, M. Zamkov, P. Richard
Isoelectronic study of triply excited Li-like states.
J. Phys. B 36, L341 (2003)

e + C^{4+}	Elastic Scattering	4-20 MeV; 270-300 eV	E/T
e + C^{4+}	Excitation	4-20 MeV; 270-300 eV	E/T

401. R. P. McEachran, A. D. Stauffer
Elastic scattering of electrons from krypton.
J. Phys. B 36, 3977 (2003)

e + Kr	Elastic Scattering	10-200 eV	Th
e + Kr	Angular Scattering	10-200 eV	Th

402. R. E. Robson, R. D. White, M. A. Morrison
Some fundamental questions concerning the kinetic theory of electrons in molecular gases and the e-H_2 vibrational cross section controversy.
J. Phys. B 36, 4127 (2003)

e + H_2	Excitation	77 K	E/T

403. J. P. Santos, F. Parente, Y.-K. Kim
Cross sections for K-shell ionization of atoms by electron impact.
J. Phys. B 36, 4211 (2003)

e + C	Ionization	10-10^5 keV	Th
e + N	Ionization	10-10^5 keV	Th
e + O	Ionization	10-10^5 keV	Th
e + F	Ionization	10-10^5 keV	Th
e + Ne	Ionization	10-10^5 keV	Th
e + Na	Ionization	10-10^5 keV	Th
e + Mg	Ionization	10-10^5 keV	Th
e + Al	Ionization	10-10^5 keV	Th
e + Si	Ionization	10-10^5 keV	Th
e + P	Ionization	10-10^5 keV	Th
e + S	Ionization	10-10^5 keV	Th
e + Cl	Ionization	10-10^5 keV	Th
e + Ar	Ionization	10-10^5 keV	Th
e + K	Ionization	10-10^5 keV	Th
e + Ca	Ionization	10-10^5 keV	Th
e + Sc	Ionization	10-10^5 keV	Th
e + Ti	Ionization	10-10^5 keV	Th

e + V	Ionization	10-10^5 keV	Th
e + Cr	Ionization	10-10^5 keV	Th
e + Mn	Ionization	10-10^5 keV	Th
e + Fe	Ionization	10-10^5 keV	Th
e + Co	Ionization	10-10^5 keV	Th
e + Ni	Ionization	10-10^5 keV	Th
e + Cu	Ionization	10-10^5 keV	Th
e + Zn	Ionization	10-10^5 keV	Th
e + Ga	Ionization	10-10^5 keV	Th
e + Ge	Ionization	10-10^5 keV	Th
e + As	Ionization	10-10^5 keV	Th
e + Se	Ionization	10-10^5 keV	Th
e + Br	Ionization	10-10^5 keV	Th
e + Kr	Ionization	10-10^5 keV	Th
e + Rb	Ionization	10-10^5 keV	Th
e + Sr	Ionization	10-10^5 keV	Th
e + Y	Ionization	10-10^5 keV	Th
e + Zr	Ionization	10-10^5 keV	Th
e + Nb	Ionization	10-10^5 keV	Th
e + Mo	Ionization	10-10^5 keV	Th
e + Tc	Ionization	10-10^5 keV	Th
e + Ru	Ionization	10-10^5 keV	Th
e + Rh	Ionization	10-10^5 keV	Th
e + Pd	Ionization	10-10^5 keV	Th
e + Ag	Ionization	10-10^5 keV	Th
e + Cd	Ionization	10-10^5 keV	Th
e + In	Ionization	10-10^5 keV	Th
e + Sn	Ionization	10-10^5 keV	Th
e + Sb	Ionization	10-10^5 keV	Th

404. D. V. Fursa, I. Bray, G. Lister
Cross sections for electron scattering from the ground state of mercury.
J. Phys. B 36, 4255 (2003)

e + Hg	Elastic Scattering	4-500 eV	Th
e + Hg	Angular Scattering	4-500 eV	Th
e + Hg	Excitation	4-500 eV	Th

405. P. V. Johnson, I. Kanik, M. A. Khakoo, J. W. McConkey, S. S. Tayal
Low energy differential and integral electron-impact cross sections for the $2s^2 2p^4$ $^3P \rightarrow 2p^3 3s\ ^3S^0$ excitation in atomic oxygen.
J. Phys. B 36, 4289 (2003)

e + O	Angular Scattering	15-30 eV	E/T
e + O	Excitation	15-30 eV	E/T

406. C. R. Stia, O. A. Fojon, P. F. Weck, J. Hanssen, R. D. Rivarola
Interference effects in single ionization of molecular hydrogen by electron impact.
J. Phys. B 36, L257 (2003)

e + H_2	Angular Scattering	4087 eV	Th
e + H_2	Ionization	4087 eV	Th

407. D. Cvejanovic, A. J. Murray
Single ionization of calcium by electron impact.
J. Phys. B 36, 3591 (2003)

e + Ca	Ionization	10-101 eV	E/T

408. L. U. Ancarani, P.-A. Hervieux
Scaling law for (e,2e) cross sections for isoelectronic hydrogen- and alkali-like ions.
J. Phys. B 36, 4447 (2003)

e + H Z= ?-?	Angular Scattering	4 I.P.	Th
e + Li Z= ?-?	Angular Scattering	4 I.P.	Th
e + Na Z= ?-?	Angular Scattering	4 I.P.	Th
e + K Z= ?-?	Angular Scattering	4 I.P.	Th
e + H Z= ?-?	Ionization	4 I.P.	Th
e + Li Z= ?-?	Ionization	4 I.P.	Th
e + Na Z= ?-?	Ionization	4 I.P.	Th
e + K Z= ?-?	Ionization	4 I.P.	Th

409. D. A. Erwin, J. A. Kunc
Ionization of heavy rare gas atoms by low-energy electrons.
J. Phys. B 36, 4605 (2003)

e + Ar	Ionization	10-100 eV	E/T
e + Kr	Ionization	10-100 eV	E/T
e + Xe	Ionization	10-100 eV	E/T
e + Rn	Ionization	10-100 eV	E/T

410. H. Luna, E. G. Cavalcanti, J. Nickles, G. M. Sigaud, E. C. Montenegro
CH_4 ionization and dissociation by proton and electron impact.
J. Phys. B 36, 4717 (2003)

e + CH_4	Dissociation	0.5-3.5 MeV; 0-1000 eV	E/T
e + CH_4	Ionization	0.5-3.5 MeV; 0-1000 eV	E/T

3.2.3 Heavy Particles Collisions

411. M. B. Shah, C. McGrath, C. Illescas, B. Pons, A. Riera, H. Luna, D.S.F. Crothers, S. F. O'Rourke, H. B. Gilbody
Shifts in electron capture to the continuum at low collision energies: Enhanced role of target postcollision interactions.
Phys. Rev. A 67, 010704 (2003)

H^+ + He	Charge Transfer	10-20 keV	E/T
H^+ + H_2	Charge Transfer	10-20 keV	E/T
H^+ + He	Total Scattering	10-20 keV	E/T
H^+ + H_2	Total Scattering	10-20 keV	E/T
H^+ + He	Ionization	10-20 keV	E/T
H^+ + H_2	Ionization	10-20 keV	E/T

412. F. Zappa, L.F.S. Coelho, S. D. Magalhaes, W.M.S. Santos, A. M. Luiz, M.H.P. Martins, A.L.F. de Barros, J.A.M. Pereira, N. V. de Castro Faria
Absolute total destruction cross sections of B and Al small anionic clusters impinging on N_2 targets.
Phys. Rev. A 67, 012702 (2003)

B^- + N_2	Dissociation	0.2-1 a.u.	Exp
Al^- + N_2	Dissociation	0.2-1 a.u.	Exp
B_2^- + N_2	Dissociation	0.2-1 a.u.	Exp
Al_2^- + N_2	Dissociation	0.2-1 a.u.	Exp
Al_3^- + N_2	Dissociation	0.2-1 a.u.	Exp
Al_4^- + N_2	Dissociation	0.2-1 a.u.	Exp

$\mathbf{B^- + N_2}$	Detachment	0.2-1 a.u.	Exp
$\mathbf{Al^- + N_2}$	Detachment	0.2-1 a.u.	Exp
$\mathbf{B_2{}^- + N_2}$	Detachment	0.2-1 a.u.	Exp
$\mathbf{Al_2{}^- + N_2}$	Detachment	0.2-1 a.u.	Exp
$\mathbf{Al_3{}^- + N_2}$	Detachment	0.2-1 a.u.	Exp
$\mathbf{Al_4{}^- + N_2}$	Detachment	0.2-1 a.u.	Exp

413. T. Gans, C. C. Lin, V. Schulz-von der Gathen, H. F. Dobele
Phase-resolved emission spectroscopy of a hydrogen rf discharge for the determination of quenching coefficients.
Phys. Rev. A 67, 012707 (2003)

$\mathbf{He^* + H_2}$	De-excitation	300 K	Exp
$\mathbf{Ne^* + H_2}$	De-excitation	300 K	Exp
$\mathbf{Ar^* + H_2}$	De-excitation	300 K	Exp
$\mathbf{Kr^* + H_2}$	De-excitation	300 K	Exp
$\mathbf{H_2{}^* + H_2}$	De-excitation	300 K	Exp
$\mathbf{He + H_2}$	Excitation	300 K	Exp
$\mathbf{He^* + H_2}$	Excitation	300 K	Exp
$\mathbf{Ne + H_2}$	Excitation	300 K	Exp
$\mathbf{Ne^* + H_2}$	Excitation	300 K	Exp
$\mathbf{Ar + H_2}$	Excitation	300 K	Exp
$\mathbf{Ar^* + H_2}$	Excitation	300 K	Exp
$\mathbf{Kr + H_2}$	Excitation	300 K	Exp
$\mathbf{Kr^* + H_2}$	Excitation	300 K	Exp
$\mathbf{H_2 + H_2}$	Excitation	300 K	Exp
$\mathbf{H_2{}^* + H_2}$	Excitation	300 K	Exp

414. J. G. Wang, P. C. Stancil, A. R. Turner, D. L. Cooper
Charge transfer of O^{3+} ions with atomic hydrogen.
Phys. Rev. A 67, 012710 (2003)

$\mathbf{O^{3+} + H}$	Charge Transfer	0.1-1000 eV/u; 100-1,000,000 K	Th

415. K. Slabkowska, M. Polasik, M. Janowicz
Scattering of sulfur ions by carbon: Classical-trajectory Monte Carlo results.
Phys. Rev. A 67, 012713 (2003)

$\mathbf{H^+ + He}$	Charge Transfer	20-120 MeV	Th
$\mathbf{He^{2+} + He}$	Charge Transfer	20-120 MeV	Th
$\mathbf{He^{2+} + Li}$	Charge Transfer	20-120 MeV	Th
$\mathbf{S^{7+} + C}$	Charge Transfer	20-120 MeV	Th
$\mathbf{S^{9+} + C}$	Charge Transfer	20-120 MeV	Th
$\mathbf{S^{11+} + C}$	Charge Transfer	20-120 MeV	Th
$\mathbf{S^{13+} + C}$	Charge Transfer	20-120 MeV	Th
$\mathbf{S^{14+} + C}$	Charge Transfer	20-120 MeV	Th
$\mathbf{H^+ + He}$	Excitation	20-120 MeV	Th
$\mathbf{He^{2+} + He}$	Excitation	20-120 MeV	Th
$\mathbf{He^{2+} + Li}$	Excitation	20-120 MeV	Th
$\mathbf{S^{7+} + C}$	Excitation	20-120 MeV	Th
$\mathbf{S^{9+} + C}$	Excitation	20-120 MeV	Th
$\mathbf{S^{11+} + C}$	Excitation	20-120 MeV	Th
$\mathbf{S^{13+} + C}$	Excitation	20-120 MeV	Th
$\mathbf{S^{14+} + C}$	Excitation	20-120 MeV	Th
$\mathbf{H^+ + He}$	Ionization	20-120 MeV	Th
$\mathbf{He^{2+} + He}$	Ionization	20-120 MeV	Th
$\mathbf{He^{2+} + Li}$	Ionization	20-120 MeV	Th

$\mathbf{S^{7+} + C}$	Ionization	20-120 MeV	Th
$\mathbf{S^{9+} + C}$	Ionization	20-120 MeV	Th
$\mathbf{S^{11+} + C}$	Ionization	20-120 MeV	Th
$\mathbf{S^{13+} + C}$	Ionization	20-120 MeV	Th
$\mathbf{S^{14+} + C}$	Ionization	20-120 MeV	Th

416. S. Blanchard, D. Civello, R. C. Forrey
Index of refraction for sodium matter waves traveling in a cold noble-gas medium.
Phys. Rev. A 67, 013604 (2003)

Na + He	Elastic Scattering	10-40,000 m/s	Th
Na + Ne	Elastic Scattering	10-40,000 m/s	Th
Na + Ar	Elastic Scattering	10-40,000 m/s	Th

417. R. C. Forrey, S. Jonsell, A. Saenz, P. Froelich, A. Dalgarno
Cold collisions of spin-polarized metastable hydrogen atoms.
Phys. Rev. A 67, 040701 (2003)

$\mathbf{H^* + H^*}$	Elastic Scattering	$2x10^{-10}$ - 10^{-4} eV	Th
$\mathbf{h\nu + H}$	Elastic Scattering	$2x10^{-10}$ - 10^{-4} eV	Th
$\mathbf{H^* + H^*}$	Excitation	$2x10^{-10}$ - 10^{-4} eV	Th
$\mathbf{h\nu + H}$	Excitation	$2x10^{-10}$ - 10^{-4} eV	Th
$\mathbf{H^* + H^*}$	Ionization	$2x10^{-10}$ - 10^{-4} eV	Th
$\mathbf{h\nu + H}$	Ionization	$2x10^{-10}$ - 10^{-4} eV	Th

418. B. Jansik, B. Schimmelpfennig, H. Agren
Relativistic study of vuv radiation properties from Kr-Xe gas mixtures.
Phys. Rev. A 67, 042501 (2003)

Kr + Xe	Interaction Potentials		Th

419. J. H. McGuire, A. L. Godunov
Time evolution and use of multiple times in the N-body problem.
Phys. Rev. A 67, 042701 (2003)

$\mathbf{H^+ + He}$	Total Scattering	100-1500 keV	Th
$\mathbf{H^+ + He^+}$	Total Scattering	100-1500 keV	Th
$\mathbf{H^+ + He}$	Excitation	100-1500 keV	Th
$\mathbf{H^+ + He^+}$	Excitation	100-1500 keV	Th
$\mathbf{H^+ + He}$	Ionization	100-1500 keV	Th
$\mathbf{H^+ + He^+}$	Ionization	100-1500 keV	Th

420. O. P. Makarov, R. Cote, H. Michels, W. W. Smith
Radiative charge-transfer lifetime of the excited state of $(NaCa)^+$.
Phys. Rev. A 67, 042705 (2003)

$\mathbf{Na^+ + Ca}$	Elastic Scattering	$2x10^{-16}$ - 10^{-3} eV	Th
$\mathbf{Ca^+ + Na}$	Elastic Scattering	$2x10^{-16}$ - 10^{-3} eV	Th
$\mathbf{Na^+ + Ca}$	Charge Transfer	$2x10^{-16}$ - 10^{-3} eV	Th
$\mathbf{Ca^+ + Na}$	Charge Transfer	$2x10^{-16}$ - 10^{-3} eV	Th
$\mathbf{Na^+ + Ca}$	Energy Transfer	$2x10^{-16}$ - 10^{-3} eV	Th
$\mathbf{Ca^+ + Na}$	Energy Transfer	$2x10^{-16}$ - 10^{-3} eV	Th
$\mathbf{Na^+ + Ca}$	Total Scattering	$2x10^{-16}$ - 10^{-3} eV	Th
$\mathbf{Ca^+ + Na}$	Total Scattering	$2x10^{-16}$ - 10^{-3} eV	Th

421. B. Zygelman, A. Dalgarno, M. J. Jamieson, P. C. Stancil
Multichannel study of spin-exchange and hyperfine-induced frequency shift and line broadening in cold collisions of hydrogen atoms.
Phys. Rev. A 67, 042715 (2003)

H + H	Line Broadening	0.010-1000 K	Th
H + H	Elastic Scattering	0.010-1000 K	Th
H + H	Interaction Potentials	0.010-1000 K	Th

422. C.-N. Liu, A.-T. Le, T. Morishita, B. D. Esry, C. D. Lin
Hyperspherical close-coupling calculations for charge-transfer cross sections in He^{2+} + H(1s) collisions at low energies.
Phys. Rev. A 67, 052705 (2003)

He^{2+} + H	Charge Transfer	10-5000 eV/u	Th

423. V. L. Kravchuk, H. W. Wilschut, A. M. van den Berg, B. Davids, F. Fleurot, M. Hunyadi, M. A. de Huu, H. Lohner, A. van der Woude
Direct K-shell ionization probabilities in 30-MeV/u Ne- and 8.3-MeV/u C-induced reactions near zero impact parameter.
Phys. Rev. A 67, 052709 (2003)

C + Zr	Ionization	8.3-30 MeV/u	E/T
C + Ag	Ionization	8.3-30 MeV/u	E/T
C + Sn	Ionization	8.3-30 MeV/u	E/T
C + Sm	Ionization	8.3-30 MeV/u	E/T
C + Au	Ionization	8.3-30 MeV/u	E/T
C + Pb	Ionization	8.3-30 MeV/u	E/T
C + Th	Ionization	8.3-30 MeV/u	E/T
Ne + Sn	Ionization	8.3-30 MeV/u	E/T
Ne + Tb	Ionization	8.3-30 MeV/u	E/T
Ne + Pb	Ionization	8.3-30 MeV/u	E/T
Ne + Th	Ionization	8.3-30 MeV/u	E/T

424. K. Okada, M. Wada, L. Boesten, T. Nakamura, I. Katayama, S. Ohtani
Acceleration of the chemical reaction of trapped Ca^+ ions with H_2O molecules by laser excitation.
J. Phys. B 36, 33 (2003)

Ca^+ + H_2O	Charge Transfer	3100 K	Exp
Ca^{+*} + H_2O	Charge Transfer	3100 K	Exp

425. A. Bordenave-Montesquieu, P. Moretto-Capelle, D. Bordenave-Montesquieu
High-resolution electron spectroscopy of the $1s^2$3lnl' Be-like series in oxygen and neon. Test of theoretical data: II. Experimental results.
J. Phys. B 36, 65 (2003)

O^{6+} + He	Charge Transfer	60-80 keV	Exp
O^{6+} + H_2	Charge Transfer	60-80 keV	Exp
Ne^{8+} + He	Charge Transfer	60-80 keV	Exp

426. I. Mancev
Single charge exchange in fast collisions of alpha particles with helium.
J. Phys. B 36, 93 (2003)

He^{2+} + He	Charge Transfer	100-10,000 keV	Th

427. J. Fiol, R. E. Olson, R. Moshammer, J. Ullrich
Dynamical electron-electron correlation in C^{2+} + He simultaneous target-projectile collisional ionization.
J. Phys. B 36, L99 (2003)

C^{2+} + He	Total Scattering	3.6 MeV/amu	Th
C^{2+} + He	Ionization	3.6 MeV/amu	Th

428. M. Saito, T. Muneda, M. Mitani, K. Oguri, Y. Haruyama
Dissociative electron capture and target ionization in 20 keV H_2^+ + Ar collisions: Observation of an anisotropic fragment distribution.
J. Phys. B 36, 699 (2003)

H_2^+ + Ar	Dissociation	20 keV	Exp
H_2^+ + Ar	Charge Transfer	20 keV	Exp
H_2^+ + Ar	Total Scattering	20 keV	Exp
H_2^+ + Ar	Ionization	20 keV	Exp

429. M. J. Jamieson, H. Sarbazi-Azad, H. Ouerdane, G.-H. Jeung, Y. S. Lee, W. C. Lee
Elastic scattering of cold caesium and rubidium atoms.
J. Phys. B 36, 1085 (2003)

Cs + Rb	Elastic Scattering		Th
Cs + Rb	Interaction Potentials		Th

430. G. D. Billing, C. Coletti, A. K. Kurnosov, A. P. Napartovich
Sensitivity of molecular vibrational dynamics to energy exchange rate constants.
J. Phys. B 36, 1175 (2003)

CO + CO	Energy Transfer	100-1000 K	Th
CO + CO^*	Energy Transfer	100-1000 K	Th
CO^* + CO^*	Energy Transfer	100-1000 K	Th

431. L. F. Errea, A. Macias, L. Mendez, B. Pons, A. Riera
Molecular treatment of single (dissociative and nondissociative) and double electron capture in He^{2+} + H_2 collisions.
J. Phys. B 36, L135 (2003)

He^{2+} + H_2	Dissociation	0.5-25 keV/u	Th
He^{2+} + H_2	Charge Transfer	0.5-25 keV/u	Th

432. P. Sobocinski, J. Rangama, J.-Y. Chesnel, G. Allio, D. Hennecart, G. Laurent, L. Adoui, A. Cassimi, S. Dubois, O. James, D. Martina, A. Spicq, J.-H. Bremer, A. Dubois, F. Fremont
Impact parameter dependence of electron capture in slow O^{5+} + He collisions.
J. Phys. B 36, 1283 (2003)

O^{5+} + He	Charge Transfer	100-2500 eV	E/T
O^{5+} + He	Total Scattering	100-2500 eV	E/T

433. Z. Stachura, W. Vollmer, S. Fritzsche, T. Stohlker, W. Meierkord, B. Sulkio-Cleff
Polarization of the Kα L^1 x-ray satellite in copper after 2 MeV proton impact.
J. Phys. B 36, 1297 (2003)

H^+ + Cu	Fluorescence	2 MeV	E/T

434. J. Sanchez-Fortun Stoker, A. S. Dickinson
Line mixing in H broadening of the Na 3P-3D lines.
J. Phys. B 36, 1309 (2003)

Na + H	Line Broadening	300-6000 K	Th
Na^* + H	Line Broadening	300-6000 K	Th

435. L. Wiesenfeld, A. Faure, T. Johann
Rotational transition states: Relative equilibrium points in inelastic molecular collisions.
J. Phys. B 36, 1319 (2003)

H_2O + H_2	Energy Transfer	0.001 a.u.	Th
H_2O + H_2	Excitation	0.001 a.u.	Th

436. R. J. Marsh, A. J. McCaffery
Quantitative prediction of collision-induced vibration-rotation distributions from physical data.
J. Phys. B 36, 1363 (2003)

H_2 + Ar	Energy Transfer	0-5000 m/s	Th
HF + Ar	Energy Transfer	0-5000 m/s	Th
Li_2 + Xe	Energy Transfer	0-5000 m/s	Th
OH + Ar	Energy Transfer	0-5000 m/s	Th
LiH + He	Energy Transfer	0-5000 m/s	Th
H_2 + Ar	Excitation	0-5000 m/s	Th
HF + Ar	Excitation	0-5000 m/s	Th
Li_2 + Xe	Excitation	0-5000 m/s	Th
OH + Ar	Excitation	0-5000 m/s	Th
LiH + He	Excitation	0-5000 m/s	Th

437. K. Motohashi, S. Tsurubuchi
3D-momentum-imaging spectroscopy of fragment ions produced in electron transfer collisions between energy-gain selected Ar^{q+} (q = 3, 8, 9, 11 and 12) and CF_4 molecules.
J. Phys. B 36, 1811 (2003)

Ar^{3+} + CF_4	Dissociation	8 keV	Exp
Ar^{8+} + CF_4	Dissociation	8 keV	Exp
Ar^{9+} + CF_4	Dissociation	8 keV	Exp
Ar^{11+} + CF_4	Dissociation	8 keV	Exp
Ar^{12+} + CF_4	Dissociation	8 keV	Exp
Ar^{3+} + CF_4	Charge Transfer	8 keV	Exp
Ar^{8+} + CF_4	Charge Transfer	8 keV	Exp
Ar^{9+} + CF_4	Charge Transfer	8 keV	Exp
Ar^{11+} + CF_4	Charge Transfer	8 keV	Exp
Ar^{12+} + CF_4	Charge Transfer	8 keV	Exp

438. M. Seo, M. Nimura, M. Hasuo, T. Fujimoto
Disalignment of excited atoms by radiation re-absorption: Neon $2p_2$ atoms in a discharge plasma.
J. Phys. B 36, 1869 (2003)

Ne + Ne	De-excitation	77 K	Exp

439. M. Seo, T. Shimamura, T. Furutani, M. Hasuo, C. Bahrim, T. Fujimoto
Disalignment rate coefficient of neon excited atoms due to helium atom collisions at low temperatures.
J. Phys. B 36, 1885 (2003)

Ne + He	De-excitation	15-77 K	Exp

440. D. H. Jakubassa-Amundsen
Radiative electron capture to continuum in relativistic ion-atom collisions.
J. Phys. B 36, 1971 (2003)

Kr^{36+} + H	Charge Transfer	20-400 MeV/amu	Th
U^{92+} + H	Charge Transfer	20-400 MeV/amu	Th
U^{92+} + N	Charge Transfer	20-400 MeV/amu	Th
Kr^{36+} + H	Total Scattering	20-400 MeV/amu	Th
U^{92+} + H	Total Scattering	20-400 MeV/amu	Th
U^{92+} + N	Total Scattering	20-400 MeV/amu	Th
Kr^{36+} + H	Ionization	20-400 MeV/amu	Th
U^{92+} + H	Ionization	20-400 MeV/amu	Th
U^{92+} + N	Ionization	20-400 MeV/amu	Th

441. V. V. Afrosimov, A. A. Basalaev, B. Fastrup, E. Horsdal-Pedersen, M. N. Panov, A. V. Tulub, D. S. Yakovlev
Ionization and fragmentation of freon-12 molecules in collisions with protons.
J. Phys. B 36, 1991 (2003)

H^+ + CF_2Cl_2	Dissociation	10-1,000 keV	Exp
H^+ + CF_2Cl_2	Ionization	10-1,000 keV	Exp

442. W. DeGraffenreid, S. C. Campbell, C. J. Sansonetti
Foreign gas pressure broadening and shifts of the 2S-4S two-photon transition in lithium.
J. Phys. B 36, 2099 (2003)

Li + Ne	Line Broadening	680 deg C	Exp
Li + Ar	Line Broadening	680 deg C	Exp

443. B. Gao
Effective potentials for atom-atom interactions at low temperatures.
J. Phys. B 36, 2111 (2003)

Na + Na	Interaction Potentials		Th

444. K. B. MacAdam, E. Horsdal-Pedersen
Charge transfer from coherent elliptic states.
J. Phys. B 36, R167 (2003)

Na^+ + Li	Charge Transfer	1-4 keV	E/T
Na^+ + Li^*	Charge Transfer	1-4 keV	E/T

445. L. Sarkadi
Interference effects in electron emission from H_2 by particle impact.
J. Phys. B 36, 2153 (2003)

Kr^{33+} + H_2	Ionization	68 MeV/u	E/T

446. A. B. Voitkiv, B. Najjari, J. Ullrich
An approach for considering ionization of light atoms by relativistic projectiles generating strong electromagnetic fields.
J. Phys. B 36, 2325 (2003)

U^{92+} + He	Ionization	1 GeV	E/T

447. M. F. Ferreira da Silva, J.M.P. Serrao
Electron capture in H^+-H(1s) collisions: Two-state approximation with a continuum distorted wave basis.
J. Phys. B 36, 2357 (2003)

H^+ + H	Charge Transfer	0.1-10 MeV	E/T

448. A. B. Voitkiv, B. Najjari, J. Ullrich
On the higher-order effects in target single ionization by bare ions in the perturbative regime.
J. Phys. B 36, 2591 (2003)

H^+ + H	Ionization	2.5-100 MeV/u	Th
C^{6+} + H	Ionization	2.5-100 MeV/u	Th

449. R. V. Krems, A. Dalgarno, N. Balakrishnan, G. C. Groenenboom
Spin-flipping transitions in $^2\Sigma$ molecules induced by collisions with structureless atoms.
Phys. Rev. A 67, 060703 (2003)

CaH + He	Excitation	10^{-6}-1 cm^{-1}	Th

450. C. C. Montanari, J. E. Miraglia, N. R. Arista
Antiscreening mode of projectile-electron loss.
Phys. Rev. A 67, 062702 (2003)

H^+ + O	Ionization	10-2000 keV	Th
H^+ + Ne	Ionization	10-2000 keV	Th
H^+ + Ar	Ionization	10-2000 keV	Th
He^+ + He	Ionization	10-2000 keV	Th
He^+ + Ne	Ionization	10-2000 keV	Th
He^+ + Ar	Ionization	10-2000 keV	Th

451. A. B. Voitkiv, J. Ullrich
Three-body Coulomb dynamics in hydrogen ionization by protons and antiprotons at intermediate collision velocities.
Phys. Rev. A 67, 062703 (2003)

H^+ + H	Total Scattering	3-6 a.u.	Th
H^+ + H	Ionization	3-6 a.u.	Th

452. I. Reiser, C. L. Cocke, H. Brauning
Alignment effects in electron capture from D_2^+ molecular ions by Ar^{2+}, N^{2+}, and He^{2+}.
Phys. Rev. A 67, 062718 (2003)

H_2^+ + He^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp
H_2^+ + N^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp
H_2^+ + Ar^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp
D_2^+ + He^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp
D_2^+ + N^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp
D_2^+ + Ar^{2+}	Charge Transfer	0.19-0.51 a.u.	Exp

453. A. Grosjean, M.-L. Dubernet, C. Ceccarelli
Collisional excitation rates of H_2O with H_2. II. Rotational excitation with ortho-H_2 at very low temperature and application to cold molecular clouds.
Astron. Astrophys. 408, 1197 (2003)

H_2 + H_2O	Energy Transfer	5-20 K	Th

454. P. S. Barklem, A. K. Belyaev, M. Asplund
Inelastic H+Li and H^-+Li^+ collisions and non-LTE Li I line formation in stellar atmospheres.
Astron. Astrophys. 409, L1 (2003)

H + Li	Interchange reaction	2000-8000 K	Th
Li^+ + H^-	Interchange reaction	2000-8000 K	Th

455. H. Tawara, P. Richard
Ar K x-ray production in slow, highly charged Ar^{q+} (q=8-18) + Ar collisions.
Can. J. Phys. 80, 1579 (2002)

Ar + Ar	Interaction Potentials	9-60 keV/u	Exp
Ar^{12+} + Ar	Excitation	9-60 keV/u	Exp
Ar^{16+} + Ar	Excitation	9-60 keV/u	Exp

456. N. Stolterfoht, B. Sulik, L. Gulyas, B. Skogvall, J. Y. Chesnel, F. Fremont, D. Hennecart, A. Cassimi, L. Adoui, S. Hossain, J. A. Tanis
Interference effects in electron emission from H_2 by 68-MeV/u Kr^{33+} impact: Dependence on the emission angle.
Phys. Rev. A 67, 030702(R) (2003)

Kr^{33+} + H_2	Ionization	68 MeV/u	Exp

457. U. Kadhane, C. C. Montanari, L. C. Tribedi
K-shell processes in heavy-ion collisions in solids and the local plasma approximation.
Phys. Rev. A 67, 032703 (2003)

O^{7+} + Cl	Charge Transfer	1.5-6 MeV/u	Exp
O^{7+} + K	Charge Transfer	1.5-6 MeV/u	Exp
O^{7+} + Ti	Charge Transfer	1.5-6 MeV/u	Exp
O^{7+} + Fe	Charge Transfer	1.5-6 MeV/u	Exp
O^{7+} + Cu	Charge Transfer	1.5-6 MeV/u	Exp
O^{7+} + Cl	Fluorescence	1.5-6 MeV/u	Exp
O^{7+} + K	Fluorescence	1.5-6 MeV/u	Exp
O^{7+} + Ti	Fluorescence	1.5-6 MeV/u	Exp
O^{7+} + Fe	Fluorescence	1.5-6 MeV/u	Exp
O^{7+} + Cu	Fluorescence	1.5-6 MeV/u	Exp
O^{7+} + Cl	Ionization	1.5-6 MeV/u	Exp
O^{7+} + K	Ionization	1.5-6 MeV/u	Exp
O^{7+} + Ti	Ionization	1.5-6 MeV/u	Exp
O^{7+} + Fe	Ionization	1.5-6 MeV/u	Exp
O^{7+} + Cu	Ionization	1.5-6 MeV/u	Exp

458. E. Wells, K. D. Carnes, I. Ben-Itzhak
Probing very slow H^+ + D(1s) collisions using the ground-state dissociation of HD^+.
Phys. Rev. A 67, 032708 (2003)

H^+ + H	Elastic Scattering	0-0.00125 a.u.	Exp
H^+ + D	Elastic Scattering	0-0.00125 a.u.	Exp
H^+ + H	Charge Transfer	0-0.00125 a.u.	Exp
H^+ + D	Charge Transfer	0-0.00125 a.u.	Exp

459. R. Bruch, J. Hanni, J. H. McGuire, A. L. Godunov, Kh. Kh. Shakov, V. A. Shipakov, H. Merabet
Time ordering in multi-electron dynamics.
J. Phys. B 36, 209 (2003)

H^+ + He	Excitation	100-1600 keV/u	Th
H^+ + He	Ionization	100-1600 keV/u	Th

460. C. N. Cabello, L. F. Errea, L. Fernandez, L. Mendez, A. Macias, I. Rabadan, A. Riera
State-selective electron capture in collisions of ground and metastable O^{2+} ions with H(1s).
J. Phys. B 36, 307 (2003)

O^{2+} + H	Charge Transfer	125-3400 eV/u	Th

461. P. S. Krstic, D. R. Schultz
Elastic processes involving vibrationally excited molecules in cold hydrogen plasmas.
J. Phys. B 36, 385 (2003)

H + H_2^+	Elastic Scattering	0.1-6 eV	Th
H^+ + H_2	Elastic Scattering	0.1-6 eV	Th

462. H. Hidaka, S. Jinno, H. Tanuma, N. Kobayashi
Mobility of NO^+ in helium gas at 77 and 4.3 K.
J. Phys. B 36, 1515 (2003)

NO^+ + He	Elastic Scattering	4.3-77 K	Exp
NO^+ + He	Interaction Potentials	4.3-77 K	Exp
NO^+ + He	Total Scattering	4.3-77 K	Exp

463. A. Rentenier, D. Bordenave-Montesquieu, P. Moretto-Capelle, A. Bordenave-Montesquieu
Kinetic energies of charged fragments resulting from multifragmentation and asymmetric fission of the C_{60} molecules in collisions with monocharged ions (2-130 keV).
J. Phys. B 36, 1585 (2003)

H^+ + C_{60}	Dissociation	2-130 keV	Exp
He^+ + C_{60}	Dissociation	2-130 keV	Exp
H_2^+ + C_{60}	Dissociation	2-130 keV	Exp
H_3^+ + C_{60}	Dissociation	2-130 keV	Exp

464. J. A. Spirko, J. J. Zirbel, A. P. Hickman
Quantum mechanical scattering calculations for charge exchange: O + H^+ $\leftrightarrow$ O^+ + H.
J. Phys. B 36, 1645 (2003)

H^+ + O	Charge Transfer	100-7000 cm^{-1}	Th
O^+ + H	Charge Transfer	100-7000 cm^{-1}	Th

465. S. N. Altunata, R. W. Field
Modeling LiH potential-energy curves: An approach based on integration in finite spaces.
Phys. Rev. A 67, 022507 (2003)

Li + H	Interaction Potentials	Undef	Th

466. K. Gao, Z. Nie, Y. Jiang, J. Li
Measurement of the charge-transfer rate of Fe^{3+}-ion coefficients with H_2 and N_2 at electron-volt energy.
Phys. Rev. A 67, 022702 (2003)

Fe^{3+} + H_2	Charge Transfer	1 eV	Exp
Fe^{3+} + N_2	Charge Transfer	1 eV	Exp

467. D.-C. Ionescu, Th. Stoehlker
Asymptotic energy dependence of projectile excitation in relativistic ion-atom collisions.
Phys. Rev. A 67, 022705 (2003)

Au^{78+} + H	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + He	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + Li	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + Be	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + B	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + C	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + N	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + O	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + F	Excitation	0.1-10^3 GeV/u	Th
Au^{78+} + Ne	Excitation	0.1-10^3 GeV/u	Th

468. R. L. Watson, Y. Peng, V. Horvat, G. J. Kim, R. E. Olson
Target Z dependence and additivity of cross sections for electron loss by 6-MeV/amu Xe^{18+} projectiles.
Phys. Rev. A 67, 022706 (2003)

Xe^{18+} + He	Charge Transfer	6 MeV/u	Exp
Xe^{18+} + Ne	Charge Transfer	6 MeV/u	Exp
Xe^{18+} + Kr	Charge Transfer	6 MeV/u	Exp
Xe^{18+} + Xe	Charge Transfer	6 MeV/u	Exp
Xe^{18+} + He	Ionization	6 MeV/u	Exp
Xe^{18+} + Ne	Ionization	6 MeV/u	Exp
Xe^{18+} + Kr	Ionization	6 MeV/u	Exp
Xe^{18+} + Xe	Ionization	6 MeV/u	Exp

469. P. S. Krstic, R. K. Janev
Inelastic processes from vibrationally excited states in slow H^+ + H_2 and H + $H_2{}^+$ collisions. II. Dissociation.
Phys. Rev. A 67, 022708 (2003)

H^+ + H_2	Association	4.5-9.5 eV	E/T
$H_2{}^+$ + H	Association	4.5-9.5 eV	E/T
H^+ + H_2	Dissociation	4.5-9.5 eV	E/T
$H_2{}^+$ + H	Dissociation	4.5-9.5 eV	E/T

470. J. M. Geremia, H. Rabitz
Error bounds for molecular Hamiltonians inverted from experimental data.
Phys. Rev. A 67, 022711 (2003)

Na + Na	Interaction Potentials		E/T

471. B. G. Lindsay, R. F. Stebbings
Charge transfer in keV O^+ (^{4}S, ^{2}D, ^{2}P)-He collisions.
Phys. Rev. A 67, 022715 (2003)

O^+ + He	Charge Transfer	1-5 keV	Exp

472. P. Pusa, E. Rauhala, T. Alanko, J. Raisen
Elastic scattering in the iodine-carbon system near the Coulomb barrier.
J. Appl. Phys. 93, 6370 (2003)

I + C	Elastic Scattering	470-530 MeV	Exp
I + C	Total Scattering	470-530 MeV	Exp

473. X. Zhang, G.-H. Yang, K.-L. Han, M. L. Wang, J.Z.H. Zhang
Quantum dynamics study of isotope effect for H + CH_4 reaction using the SVRT model.
J. Chem. Phys. 118, 9266 (2003)

H + CH_4	Interchange reaction		Th

474. B. K. Kendrick
Quantum reactive scattering calculations for the D + H_2 → HD + H reaction.
J. Chem. Phys. 118, 10502 (2003)

H + H_2	Interchange reaction	0.4-2.32 eV	Th
D + H_2	Interchange reaction	0.4-2.32 eV	Th

475. F. Mrugala, V. Spirko, W. P. Kraemer
Radiative association of HeH_2^+.
J. Chem. Phys. 118, 10547 (2003)

He + H_2^+	Association	2-100 K	Th

476. N. Balakrishnan
Quantum mechanical investigation of the O + H_2 → OH + H reaction.
J. Chem. Phys. 119, 195 (2003)

O + H_2	Interchange reaction	200-1000 K	Th

477. J. D. Ayers, A. E. Pomerantz, F. Fernandez-Alonso, F. Ausfelder, B. D. Bean, R. N. Zare
Measurement of the cross section for H + D_2 → HD (ν' = 3, j' = 0) + D as a function of angle and energy.
J. Chem. Phys. 119, 4662 (2003)

H + H_2	Interchange reaction	1.39-1.85 eV	Exp
H + D_2	Interchange reaction	1.39-1.85 eV	Exp

478. K. H. Kim, Y. S. Lee, T. Ishida, G.-H. Jeung
Dynamics calculations for the LiH + H ↔ Li + H_2 reactions using interpolations of accurate ab initio potential energy surfaces.
J. Chem. Phys. 119, 4689 (2003)

LiH + H	Interchange reaction	0.001-1.00 eV	Th

479. G. E. Moyano, M. A. Collins
Interperolated potential energy surface and classical dynamics for H_3^+ + HD and H_3^+ + D_2.
J. Chem. Phys. 119, 5510 (2003)

H_3^+ + H_2	Interchange reaction	30-80 K	Th
H_3^+ + HD	Interchange reaction	30-80 K	Th

480. T. Zhang, X.-M. Qian, X. N. Tang, C. Y. Ng, Y. Chiu, D. J. Levandier, J. S. Miller, R. A. Dressler
A state-selected study of the H_2^+ (X,v^+ = 0-17, N^+ = 1) + Ne proton transfer reaction using the pulsed-field ionization-photoelectron-secondary ion coincidence scheme.
J. Chem. Phys. 119, 10175 (2003)

H_2^+ + Ne	Interchange reaction	0.0-5.0 eV	Exp

481. J. Xie, B. Poirier, G. I. Gellene
A quantum dynamical study of the $He^+ + 2He \rightarrow He_2{}^+ + He$ reaction.
J. Chem. Phys. 119, 10678 (2003)

$He^+ + He$	Interchange reaction	0-400 K	Th
$He^+ + He + He$	Interchange reaction	0-400 K	Th
$He^+ + He_2$	Interchange reaction	0-400 K	Th

482. S. Y. Lin, H. Guo
Quantum wave packet study of reactive and inelastic scattering between $C(^1D)$ and H_2.
J. Chem. Phys. 119, 11602 (2003)

$C + H_2$	Interchange reaction	0-1.0 eV	Th

483. D. Wang
Quantum dynamics scattering study of AB + CDE reactions: A seven-dimensional treatment for the $H_2{}^+ + C_2H$ reaction.
J. Chem. Phys. 119, 12057 (2003)

$H_2 + C_2H$	Interchange reaction	0-1 eV	Th

484. B. Kerkeni, D. C. Clary
Ab initio rate constants from hyperspherical quantum scattering: Application to $H + CH_4 \rightarrow H_2 + CH_3$.
J. Chem. Phys. 120, 2308 (2003)

$H + CH_4$	Interchange reaction	0.0-1.0 eV	Th

485. R. K. Janev, D. Reiter
Unified analytic representation of hydrocarbon impurity collision cross-sections.
J. Nucl. Mater. 313-316, 1202 (2003)

$H^+ + CH$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + CH_2$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + CH_3$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + CH_4$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_2H_2$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_2H_4$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_2H_6$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_3H_6$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_2H_5$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_3H_5$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_3H_8$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_3H_4$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_2H$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_3H_2$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_2H_3$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_3H$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_3H_3$	Charge Transfer	5 - 25x10^3 eV	Th
$H^+ + C_3H_7$	Charge Transfer	5 - 25x10^3 eV	Th

486. X. Zhang, G. Li, B. Ding, Z. Liu
Non-Rutherford elastic scattering cross sections of natural magnesium for protons.
Nucl. Instrum. Methods Phys. Res. B 201, 551 (2003)

H^+ + Mg	Elastic Scattering	775-2500 keV	Exp
H^+ + Mg	Total Scattering	775-2500 keV	Exp

487. K. T. Kuwata, R. I. Erickson, J. R. Doyle
A comparative study of interatomic potentials for copper and aluminum gas phase sputter atom transport simulations.
Nucl. Instrum. Methods Phys. Res. B 201, 566 (2003)

Al + Ar	Interaction Potentials	Th
Ar + Ar	Interaction Potentials	Th
Cu + Ar	Interaction Potentials	Th

488. J. Rzadkiewicz, D. Chmielewska, A. Gojska, Z. Sujkowski, M. Berset, J.-Cl. Dousse, Y.-P. Maillard, O. Mauron, P.-A. Raboud, M. Polasik, J. Hoszowska, M. Pagek
M-subshell ionization in near-central collisions of 20-MeV/amu carbon ions with molybdenum atoms.
Nucl. Instrum. Methods Phys. Res. B 205, 128 (2003)

C^{5+} + Mo	Excitation	250 MeV	Exp
C^{5+} + Mo	Ionization	250 MeV	Exp

489. M. Czarnota, M. Pajek, D. Banas, D. Chmielewska, J. Rzadkiewicz, Z. Sujkowski, J.-Cl. Dousse, M. Berset, O. Mauron, Y.-P. Maillard, P. A. Raboud, J. Hoszowska, M. Polasike, K. Sabkowskae
Observation of L-X-ray satellites and hypersatellites in collisions of O and Ne ions with Mo and Pd.
Nucl. Instrum. Methods Phys. Res. B 205, 133 (2003)

O^{7+} + Mo	Excitation	178-376 MeV	Exp
O^{7+} + Pd	Excitation	178-376 MeV	Exp
Ne^{6+} + Mo	Excitation	178-376 MeV	Exp
Ne^{6+} + Pd	Excitation	178-376 MeV	Exp

490. H. Merabet, R. Bruch, S. Fuelling, M. Bailey, A. L. Godunov, J. H. McGuire, A. N. Grum-Grzhimailo, K. Bartschat
Ionization-excitation magnetic sublevel cross sections for He^+ $(2p)^2P^0$ states following fast electron and proton impact.
Nucl. Instrum. Methods Phys. Res. B 205, 399 (2003)

H^+ + He	Excitation	25-100 ev; 50-200 keV	Th
H^+ + He	Ionization	25-100 ev; 50-200 keV	Th

491. R. D. Rivarola, P. D. Fainstein
Electron emission in collisions of highly charged ions with atoms and diatomic molecules.
Nucl. Instrum. Methods Phys. Res. B 205, 448 (2003)

H^+ + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
He^{2+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
Li^{3+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
F^{9+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
Ne^{10+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
Kr^{34+} + H_2	Total Scattering	0.1 - 2.5x10^3 MeV	Th
Mo^{40+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
I^{7+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
I^{7+} + H_2	Total Scattering	0.1 - 2.5x10^3 MeV	Th
I^{23+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th

I^{23+} + H_2	Total Scattering	0.1 - 2.5x10^3 MeV	Th
Au^{53+} + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
Au^{53+} + Ar	Total Scattering	0.1 - 2.5x10^3 MeV	Th
H_2^+ + He	Total Scattering	0.1 - 2.5x10^3 MeV	Th
H^+ + He	Ionization	0.1 - 2.5x10^3 MeV	Th
He^{2+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th
Li^{3+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th
F^{9+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th
Ne^{10+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th
Kr^{34+} + H_2	Ionization	0.1 - 2.5x10^3 MeV	Th
Mo^{40+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th
I^{7+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th
I^{7+} + H_2	Ionization	0.1 - 2.5x10^3 MeV	Th
I^{23+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th
I^{23+} + H_2	Ionization	0.1 - 2.5x10^3 MeV	Th
Au^{53+} + He	Ionization	0.1 - 2.5x10^3 MeV	Th
Au^{53+} + Ar	Ionization	0.1 - 2.5x10^3 MeV	Th
H_2^+ + He	Ionization	0.1 - 2.5x10^3 MeV	Th

492. A. Orban, T.J.M. Zouros, B. Sulik
Wave-function effects in the formation of ^2S, $^2P_-$ and $^2P_+$ states in collisions of lithium-like O^{5+} ions with He target.
Nucl. Instrum. Methods Phys. Res. B 205, 464 (2003)

O^{5+} + He	Excitation	5-40 MeV	Th
O^{5+} + He	Ionization	5-40 MeV	Th

493. S. Fritzsche, A. Surzhykov, Th. Stoehlker
Wave packet approach to the ionization of high-Z, hydrogen-like ions.
Nucl. Instrum. Methods Phys. Res. B 205, 469 (2003)

Au^{78+} + C	Ionization	0.1-10 GeV/u	Th

494. J. Fiol, R. E. Olson
Correlation in fast collisions of highly charged ions with atoms.
Nucl. Instrum. Methods Phys. Res. B 205, 474 (2003)

Au^{53+} + H	Ionization	3.6 MeV/u	Th
Au^{53+} + He	Ionization	3.6 MeV/u	Th

495. T. Kirchner, L. Gulyas, R. Moshammer, M. Schulz, J. Ullrich
Correlation effects in differential electron-emission spectra obtained from double ionisation of He by fast Au^{53+} impact.
Nucl. Instrum. Methods Phys. Res. B 205, 479 (2003)

Au^{53+} + He	Total Scattering	3.6 MeV/u	E/T
Au^{53+} + He	Ionization	3.6 MeV/u	E/T

496. S. Hossain, A. S. Alnaser, A. L. Landers, D. J. Pole, H. Knutson, A. Robison, B. Stamper, N. Stolterfoht, J. A. Tanis
Interference effects in electron emission from H_2 by 3 and 5 MeV H^+ impact.
Nucl. Instrum. Methods Phys. Res. B 205, 484 (2003)

H^+ + H_2	Ionization	3-5 MeV	Exp

497. R. Bruch, H. Merabet, K. T. Chung
Excitation of triply excited Be^+ (2lnl' n'l") states in 300 and 500 keV-Be^+ + CH_4 collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 488 (2003)

Be^+ + CH_4	Excitation	300-500 keV	Exp

498. M. Gochitashvili, B. Kikiani, R. Lomsadze
Formation of doubly charged potassium ions in K^+ - He and K^+ - Kr collisions in the 1-10 keV energy range.
Nucl. Instrum. Methods Phys. Res. B 205, 494 (2003)

K^+ + He	Excitation	1-10 keV	Th
K^+ + Kr	Excitation	1-10 keV	Th
K^+ + He	Ionization	1-10 keV	Th
K^+ + Kr	Ionization	1-10 keV	Th

499. V. D. Rodriguez
CDW-EIS theoretical calculations of projectile deflection for single ionization in highly charged ion-atom collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 498 (2003)

C^{6+} + He	Total Scattering	100 MeV/u	Th
Au^{53+} + He	Total Scattering	100 MeV/u	Th
C^{6+} + He	Ionization	100 MeV/u	Th
Au^{53+} + He	Ionization	100 MeV/u	Th

500. A. B. Voitkiv, C. Mueller, N. Gruen
On the high-energy limits for the double-to-single ionization ratio of helium and helium-like ions in collisions with charged and neutral particles.
Nucl. Instrum. Methods Phys. Res. B 205, 504 (2003)

S^{14+} + Kr	Ionization	Th
S^{14+} + Xe	Ionization	Th
S^{14+} + Au	Ionization	Th
Kr^{34+} + Kr	Ionization	Th
Kr^{34+} + Xe	Ionization	Th
Kr^{34+} + Au	Ionization	Th
Xe^{52+} + Kr	Ionization	Th
Xe^{52+} + Xe	Ionization	Th
Xe^{52+} + Au	Ionization	Th
Pb^{80+} + Kr	Ionization	Th
Pb^{80+} + Xe	Ionization	Th
Pb^{80+} + Au	Ionization	Th

501. T.J.M. Zouros, E. P. Benis, T. W. Gorczyca, A. D. Gonzalez, M. Zamkov, P. Richard
Differential electron scattering from positive ions measured by zero-degree ion-atom spectroscopy.
Nucl. Instrum. Methods Phys. Res. B 205, 508 (2003)

B^{3+} + H_2	Ionization	3.9-15 MeV; 150-520 eV	E/T
B^{4+} + H_2	Ionization	3.9-15 MeV; 150-520 eV	E/T
C^{4+} + H_2	Ionization	3.9-15 MeV; 150-520 eV	E/T
N^{5+} + H_2	Ionization	3.9-15 MeV; 150-520 eV	E/T
O^{6+} + H_2	Ionization	3.9-15 MeV; 150-520 eV	E/T

502. E. P. Benis, M. Zamkov, P. Richard, T.J.M. Zouros
Comparison of two experimental techniques for the determination of the 1s2s ^{3}S metastable beam fraction in energetic B^{3+} ions.
Nucl. Instrum. Methods Phys. Res. B 205, 517 (2003)

$\mathbf{B^{3+}}$ **+ He**	Charge Transfer	4 MeV	Exp
$\mathbf{B^{3+}}$ **+** $\mathbf{H_2}$	Charge Transfer	4 MeV	Exp
$\mathbf{B^{3+}}$ **+ He**	Excitation	4 MeV	Exp
$\mathbf{B^{3+}}$ **+** $\mathbf{H_2}$	Excitation	4 MeV	Exp
$\mathbf{B^{3+}}$ **+ He**	Ionization	4 MeV	Exp
$\mathbf{B^{3+}}$ **+** $\mathbf{H_2}$	Ionization	4 MeV	Exp

503. M. Zamkov, E. P. Benis, P. Richard, T. G. Lee, T.J.M. Zouros
Absolute measurements and calculation of triple electron capture cross sections in fast 0.5-1.1 MeV/u $\mathbf{C^{6+}}$ on Ar collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 522 (2003)

$\mathbf{C^{6+}}$ **+ Ar**	Charge Transfer	0.5-1.1 MeV/u	E/T

504. K. Kawatsura, K. Takahiro, M. Imai, M. Sataka, K. Komaki, H. Shibata
Ejected electron spectra from highly excited states in high-energy collisions of $\mathbf{O^{q+}}$ with He.
Nucl. Instrum. Methods Phys. Res. B 205, 528 (2003)

$\mathbf{O^{3+}}$ **+ He**	Excitation	32 MeV	Exp
$\mathbf{O^{4+}}$ **+ He**	Excitation	32 MeV	Exp
$\mathbf{O^{3+}}$ **+ He**	Ionization	32 MeV	Exp
$\mathbf{O^{4+}}$ **+ He**	Ionization	32 MeV	Exp

505. L. Sarkadi
Theoretical study of cusp-electron emission from $\mathbf{O^{8+}}$ + Ar collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 533 (2003)

$\mathbf{O^{8+}}$ **+ Ar**	Charge Transfer	0.3-3.2 MeV/u	Th
$\mathbf{O^{8+}}$ **+ Ar**	Total Scattering	0.3-3.2 MeV/u	Th
$\mathbf{O^{8+}}$ **+ Ar**	Ionization	0.3-3.2 MeV/u	Th

506. G. Laurent, M. Tarisien, X. Flechard, P. Jardin, L. Guillaume, P. Sobocinski, L. Adoui, A. Bordenave-Montesquieu, D. Bordenave-Montesquieu, J.-Y. Chesnel, F. Fremont, D. Hennecart, E. Lienard, L. Maunoury, P. Moretto-Capelle, A. Cassimi
Coincident Auger electron and recoil ion momentum spectroscopy for low-energy ion-atom collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 546 (2003)

$\mathbf{O^{6+}}$ **+ He**	Charge Transfer	138 keV	Exp

507. X. Ma, P. H. Mokler, G. Bednarz, F. Bosch, A. Gumberidze, C. Kozhuharov, D. Liesen, D. Sierpowski, Z. Stachura, Th. Stoehlker, A. Warczak
Electron-electron interaction in strong central fields studied by resonant transfer and excitation with two-photon processes in $\mathbf{U^{91+}}$ - $\mathbf{H_2}$ collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 550 (2003)

$\mathbf{U^{91+}}$ **+** $\mathbf{H_2}$	Charge Transfer	102-133 MeV/u	Exp
$\mathbf{U^{91+}}$ **+** $\mathbf{H_2}$	Excitation	102-133 MeV/u	Exp

508. H. Brauning, A. Diehl, A. Theiss, R. Trassl, E. Salzborn
Electron transfer and ionisation in homonuclear collisions of triply charged Ar and Kr ions.
Nucl. Instrum. Methods Phys. Res. B 205, 555 (2003)

$\mathbf{Ar^{3+}}$ **+** $\mathbf{Ar^{3+}}$	Charge Transfer	15-65 keV	Exp
$\mathbf{Kr^{3+}}$ **+** $\mathbf{Kr^{3+}}$	Charge Transfer	15-65 keV	Exp
$\mathbf{Ar^{3+}}$ **+** $\mathbf{Ar^{3+}}$	Ionization	15-65 keV	Exp
$\mathbf{Kr^{3+}}$ **+** $\mathbf{Kr^{3+}}$	Ionization	15-65 keV	Exp

509. S. Knoop, J. W. Turkstra, R. Morgenstern, R. E. Olson, R. Hoekstra
Multi-electron processes in slow He^{2+} - Na collisions measured with MOTRIMS.
Nucl. Instrum. Methods Phys. Res. B 205, 560 (2003)

He^{2+} + Na	Charge Transfer	6 keV/amu	Exp
He^{2+} + Na	Ionization	6 keV/amu	Exp

510. M. Hoshino, Y. Kanai, F. Mallet, Y. Nakai, M. Kitajima, H. Tanaka, Y. Yamazaki
Angular differential energy gain measurements of highly charged ion-atom collisions at 100 and 120 eV/q.
Nucl. Instrum. Methods Phys. Res. B 205, 568 (2003)

C^{4+} + He	Charge Transfer	400-480 eV	Exp
N^{4+} + He	Charge Transfer	400-480 eV	Exp
C^{4+} + He	Total Scattering	400-480 eV	Exp
N^{4+} + He	Total Scattering	400-480 eV	Exp

511. G. Bednarz, D. Sierpowski, Th. Stoehlker, A. Warczak, H. Beyer, F. Bosch, A. Brauning-Demian, H. Brauning, X. Cai, A. Gumberidze, S. Hagmann, C. Kozhuharov, D. Liesen, X. Ma, P. H. Mokler, A. Muthig, Z. Stachura, S. Toleikis
Double-electron capture in relativistic U^{92+} collisions at the ESR gas-jet target.
Nucl. Instrum. Methods Phys. Res. B 205, 573 (2003)

U^{92+} + Ar	Charge Transfer	297 MeV/u	Exp
U^{92+} + Ar	Excitation	297 MeV/u	Exp

512. E. Y. Kamber, R. Ali, A. A. Hasan
State-selective single-electron capture in Ne^{4+} - He collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 577 (2003)

Ne^{4+} + He	Charge Transfer	8 keV	Exp
Ne^{4+} + He	Excitation	8 keV	Exp

513. R. W. McCullough, D. M. Kearns, J. B. Greenwood, H. B. Gilbody
Studies of state selective electron capture processes by helium-like ions in H and H_2.
Nucl. Instrum. Methods Phys. Res. B 205, 581 (2003)

C^{4+} + H	Charge Transfer	214-900 eV/amu	Exp
C^{4+} + H_2	Charge Transfer	214-900 eV/amu	Exp
N^{5+} + H	Charge Transfer	214-900 eV/amu	Exp
N^{5+} + H_2	Charge Transfer	214-900 eV/amu	Exp
O^{6+} + H	Charge Transfer	214-900 eV/amu	Exp
O^{6+} + H_2	Charge Transfer	214-900 eV/amu	Exp
C^{4+} + H	Excitation	214-900 eV/amu	Exp
C^{4+} + H_2	Excitation	214-900 eV/amu	Exp
N^{5+} + H	Excitation	214-900 eV/amu	Exp
N^{5+} + H_2	Excitation	214-900 eV/amu	Exp
O^{6+} + H	Excitation	214-900 eV/amu	Exp
O^{6+} + H_2	Excitation	214-900 eV/amu	Exp

514. A. Konnai, H. Tanuma, N. Kobayashi
Electron transfer to individual magnetic substates of 3p ^{2}P in collisions of helium-like ions with two-electron targets.
Nucl. Instrum. Methods Phys. Res. B 205, 586 (2003)

C^{4+} + H_2	Charge Transfer	30-80 keV	Exp
C^{4+} + H_2	Excitation	30-80 keV	Exp

515. L. Lugosi, L. Sarkadi
Theoretical investigation of the electron capture in collisions of O^{8+} ion with H and He atoms: Comparison between the Landau-Zener and the over-barrier models.
Nucl. Instrum. Methods Phys. Res. B 205, 591 (2003)

O^{8+} + H	Charge Transfer	0-10 keV/amu	Th
O^{8+} + He	Charge Transfer	0-10 keV/amu	Th
O^{8+} + H	Excitation	0-10 keV/amu	Th
O^{8+} + He	Excitation	0-10 keV/amu	Th

516. N. Shimakura, K. Atarashi, S. Suzuki, T. Shirai
Two-electron capture processes in collisions of Be^{4+} and Be^{3+} ions with He atoms.
Nucl. Instrum. Methods Phys. Res. B 205, 596 (2003)

Be^{3+} + He	Charge Transfer	0.04-10 keV/amu	Th
Be^{4+} + He	Charge Transfer	0.04-10 keV/amu	Th
Be^{3+} + He	Excitation	0.04-10 keV/amu	Th
Be^{4+} + He	Excitation	0.04-10 keV/amu	Th

517. T. Kusakabe, Y. Miyamoto, R. Ishida, K. Itoh, N. Kuroyanagi, Y. Nakai, T. Shirai
Total cross sections for charge transfer by multiply charged neon and argon ions colliding with various hydrocarbons at keV energies.
Nucl. Instrum. Methods Phys. Res. B 205, 600 (2003)

Ne^{2+} + CH_4	Charge Transfer	4-18 keV	Exp
Ne^{2+} + C_2H_2	Charge Transfer	4-18 keV	Exp
Ne^{2+} + C_2H_4	Charge Transfer	4-18 keV	Exp
Ne^{2+} + C_2H_6	Charge Transfer	4-18 keV	Exp
Ne^{2+} + C_3H_4	Charge Transfer	4-18 keV	Exp
Ne^{3+} + CH_4	Charge Transfer	4-18 keV	Exp
Ne^{3+} + C_2H_2	Charge Transfer	4-18 keV	Exp
Ne^{3+} + C_2H_4	Charge Transfer	4-18 keV	Exp
Ne^{3+} + C_2H_6	Charge Transfer	4-18 keV	Exp
Ne^{3+} + C_3H_4	Charge Transfer	4-18 keV	Exp
Ne^{4+} + CH_4	Charge Transfer	4-18 keV	Exp
Ne^{4+} + C_2H_2	Charge Transfer	4-18 keV	Exp
Ne^{4+} + C_2H_4	Charge Transfer	4-18 keV	Exp
Ne^{4+} + C_2H_6	Charge Transfer	4-18 keV	Exp
Ne^{4+} + C_3H_4	Charge Transfer	4-18 keV	Exp
Ne^{5+} + CH_4	Charge Transfer	4-18 keV	Exp
Ne^{5+} + C_2H_2	Charge Transfer	4-18 keV	Exp
Ne^{5+} + C_2H_4	Charge Transfer	4-18 keV	Exp
Ne^{5+} + C_2H_6	Charge Transfer	4-18 keV	Exp
Ne^{5+} + C_3H_4	Charge Transfer	4-18 keV	Exp
Ne^{6+} + CH_4	Charge Transfer	4-18 keV	Exp
Ne^{6+} + C_2H_2	Charge Transfer	4-18 keV	Exp
Ne^{6+} + C_2H_4	Charge Transfer	4-18 keV	Exp
Ne^{6+} + C_2H_6	Charge Transfer	4-18 keV	Exp
Ne^{6+} + C_3H_4	Charge Transfer	4-18 keV	Exp
Ar^{2+} + CH_4	Charge Transfer	4-18 keV	Exp
Ar^{2+} + C_2H_2	Charge Transfer	4-18 keV	Exp
Ar^{2+} + C_2H_4	Charge Transfer	4-18 keV	Exp
Ar^{2+} + C_2H_6	Charge Transfer	4-18 keV	Exp
Ar^{2+} + C_3H_4	Charge Transfer	4-18 keV	Exp
Ar^{3+} + CH_4	Charge Transfer	4-18 keV	Exp
Ar^{3+} + C_2H_2	Charge Transfer	4-18 keV	Exp

$\mathbf{Ar^{3+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{3+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{3+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{4+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{4+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{4+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{4+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{4+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{5+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{5+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{5+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{5+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{5+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{6+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{6+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{6+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{6+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{6+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{7+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{7+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{7+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{7+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{7+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{8+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{8+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{8+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{8+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{8+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{9+}}$ + $\mathbf{CH_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{9+}}$ + $\mathbf{C_2H_2}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{9+}}$ + $\mathbf{C_2H_4}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{9+}}$ + $\mathbf{C_2H_6}$	Charge Transfer	4-18 keV	Exp
$\mathbf{Ar^{9+}}$ + $\mathbf{C_3H_4}$	Charge Transfer	4-18 keV	Exp

518. H. Tawara, E. Takacs, L. P. Ratliff, J. D. Gillaspy, K. Tokesi
Cascade transition X-rays from electron capture into highly charged ions in collisions with neutral gas targets.
Nucl. Instrum. Methods Phys. Res. B 205, 605 (2003)

$\mathbf{Kr^{27+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{28+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{29+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{30+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{31+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{32+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{33+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{34+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{35+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{36+}}$ + $\mathbf{Ar}$	Charge Transfer	216-288 keV	Exp
$\mathbf{Kr^{27+}}$ + $\mathbf{Ar}$	Excitation	216-288 keV	Exp
$\mathbf{Kr^{28+}}$ + $\mathbf{Ar}$	Excitation	216-288 keV	Exp
$\mathbf{Kr^{29+}}$ + $\mathbf{Ar}$	Excitation	216-288 keV	Exp
$\mathbf{Kr^{30+}}$ + $\mathbf{Ar}$	Excitation	216-288 keV	Exp
$\mathbf{Kr^{31+}}$ + $\mathbf{Ar}$	Excitation	216-288 keV	Exp
$\mathbf{Kr^{32+}}$ + $\mathbf{Ar}$	Excitation	216-288 keV	Exp
$\mathbf{Kr^{33+}}$ + $\mathbf{Ar}$	Excitation	216-288 keV	Exp
$\mathbf{Kr^{34+}}$ + $\mathbf{Ar}$	Excitation	216-288 keV	Exp

Kr^{35+} + Ar	Excitation	216-288 keV	Exp
Kr^{36+} + Ar	Excitation	216-288 keV	Exp

519. B. Zarour, U. Saalmann
Multiple electron transfer in slow collisions of highly charged ions and atoms.
Nucl. Instrum. Methods Phys. Res. B 205, 610 (2003)

Ar^{5+} + Ar	Charge Transfer		Th
Ar^{6+} + Ar	Charge Transfer		Th
Ar^{7+} + Ar	Charge Transfer		Th
Ar^{8+} + Ar	Charge Transfer		Th
Ar^{9+} + Ar	Charge Transfer		Th
Ar^{10+} + Ar	Charge Transfer		Th
Ar^{5+} + Ar	Ionization		Th
Ar^{6+} + Ar	Ionization		Th
Ar^{7+} + Ar	Ionization		Th
Ar^{8+} + Ar	Ionization		Th
Ar^{9+} + Ar	Ionization		Th
Ar^{10+} + Ar	Ionization		Th

520. I. Reiser, C. L. Cocke
Alignment measurements in collisions of D_2^+ with doubly charged projectiles.
Nucl. Instrum. Methods Phys. Res. B 205, 614 (2003)

H_2^+ + He^{2+}	Charge Transfer	10-30 keV	Exp
H_2^+ + N^{2+}	Charge Transfer	10-30 keV	Exp
H_2^+ + Ar^{2+}	Charge Transfer	10-30 keV	Exp
D_2^+ + He^{2+}	Charge Transfer	10-30 keV	Exp
D_2^+ + N^{2+}	Charge Transfer	10-30 keV	Exp
D_2^+ + Ar^{2+}	Charge Transfer	10-30 keV	Exp

521. T. Ohyama-Yamaguchi, A. Ichimura
Orientation dependence of multiple electron transfer in collisions of slow highly charged ions with rare gas dimers.
Nucl. Instrum. Methods Phys. Res. B 205, 620 (2003)

Ar^{8+} + Ne_2	Charge Transfer		Th

522. T. Kaneyasu, T. Azuma, M. Ehrich, M. Yoshino, K. Okuno
State-selective scattering angular dependent fragmentation of N_2 by slow Kr^{8+} ion impact.
Nucl. Instrum. Methods Phys. Res. B 205, 624 (2003)

Kr^{8+} + N_2	Dissociation	19 eV/u	Exp
Kr^{8+} + N_2	Charge Transfer	19 eV/u	Exp
Kr^{8+} + N_2	Total Scattering	19 eV/u	Exp
Kr^{8+} + N_2	Ionization	19 eV/u	Exp

523. B. Siegmann, U. Werner, H. Lebius, B. Huber, H. O. Lutz, R. Mann
Orientation dependence of N_2 and O_2 multiple ionization in slow and fast collisions with highly charged Xe-ions.
Nucl. Instrum. Methods Phys. Res. B 205, 629 (2003)

Xe^{14+} + N_2	Dissociation	5.9 MeV/u	Exp
Xe^{14+} + O_2	Dissociation	5.9 MeV/u	Exp
Xe^{18+} + N_2	Dissociation	5.9 MeV/u	Exp
Xe^{18+} + O_2	Dissociation	5.9 MeV/u	Exp

$\mathbf{Xe^{28+} + N_2}$	Dissociation	5.9 MeV/u	Exp
$\mathbf{Xe^{28+} + O_2}$	Dissociation	5.9 MeV/u	Exp
$\mathbf{Xe^{43+} + N_2}$	Dissociation	5.9 MeV/u	Exp
$\mathbf{Xe^{43+} + O_2}$	Dissociation	5.9 MeV/u	Exp
$\mathbf{Xe^{14+} + N_2}$	Charge Transfer	5.9 MeV/u	Exp
$\mathbf{Xe^{14+} + O_2}$	Charge Transfer	5.9 MeV/u	Exp
$\mathbf{Xe^{18+} + N_2}$	Charge Transfer	5.9 MeV/u	Exp
$\mathbf{Xe^{18+} + O_2}$	Charge Transfer	5.9 MeV/u	Exp
$\mathbf{Xe^{28+} + N_2}$	Charge Transfer	5.9 MeV/u	Exp
$\mathbf{Xe^{28+} + O_2}$	Charge Transfer	5.9 MeV/u	Exp
$\mathbf{Xe^{43+} + N_2}$	Charge Transfer	5.9 MeV/u	Exp
$\mathbf{Xe^{43+} + O_2}$	Charge Transfer	5.9 MeV/u	Exp
$\mathbf{Xe^{14+} + N_2}$	Total Scattering	5.9 MeV/u	Exp
$\mathbf{Xe^{14+} + O_2}$	Total Scattering	5.9 MeV/u	Exp
$\mathbf{Xe^{18+} + N_2}$	Total Scattering	5.9 MeV/u	Exp
$\mathbf{Xe^{18+} + O_2}$	Total Scattering	5.9 MeV/u	Exp
$\mathbf{Xe^{28+} + N_2}$	Total Scattering	5.9 MeV/u	Exp
$\mathbf{Xe^{28+} + O_2}$	Total Scattering	5.9 MeV/u	Exp
$\mathbf{Xe^{43+} + N_2}$	Total Scattering	5.9 MeV/u	Exp
$\mathbf{Xe^{43+} + O_2}$	Total Scattering	5.9 MeV/u	Exp
$\mathbf{Xe^{14+} + N_2}$	Ionization	5.9 MeV/u	Exp
$\mathbf{Xe^{14+} + O_2}$	Ionization	5.9 MeV/u	Exp
$\mathbf{Xe^{18+} + N_2}$	Ionization	5.9 MeV/u	Exp
$\mathbf{Xe^{18+} + O_2}$	Ionization	5.9 MeV/u	Exp
$\mathbf{Xe^{28+} + N_2}$	Ionization	5.9 MeV/u	Exp
$\mathbf{Xe^{28+} + O_2}$	Ionization	5.9 MeV/u	Exp
$\mathbf{Xe^{43+} + N_2}$	Ionization	5.9 MeV/u	Exp
$\mathbf{Xe^{43+} + O_2}$	Ionization	5.9 MeV/u	Exp

524. O. Abu-Haija, E. Y. Kamber, S. M. Ferguson
Single-electron capture by He^{2+} ions from triatomic molecules.
Nucl. Instrum. Methods Phys. Res. B 205, 634 (2003)

$\mathbf{He^{2+} + H_2O}$	Dissociation	0.1-1.0 keV	Exp
$\mathbf{He^{2+} + CO_2}$	Dissociation	0.1-1.0 keV	Exp
$\mathbf{He^{2+} + H_2O}$	Charge Transfer	0.1-1.0 keV	Exp
$\mathbf{He^{2+} + CO_2}$	Charge Transfer	0.1-1.0 keV	Exp
$\mathbf{He^{2+} + H_2O}$	Ionization	0.1-1.0 keV	Exp
$\mathbf{He^{2+} + CO_2}$	Ionization	0.1-1.0 keV	Exp

525. U. Werner, B. Siegmann, H. Lebius, B. Huber, H. O. Lutz
Multiple ionization and fragmentation of CH_4 in collisions with slow highly charged ions.
Nucl. Instrum. Methods Phys. Res. B 205, 639 (2003)

$\mathbf{Xe^{14+} + CH_4}$	Dissociation	280-560 keV	Exp
$\mathbf{Xe^{18+} + CH_4}$	Dissociation	280-560 keV	Exp
$\mathbf{Xe^{28+} + CH_4}$	Dissociation	280-560 keV	Exp
$\mathbf{Xe^{14+} + CH_4}$	Ionization	280-560 keV	Exp
$\mathbf{Xe^{18+} + CH_4}$	Ionization	280-560 keV	Exp
$\mathbf{Xe^{28+} + CH_4}$	Ionization	280-560 keV	Exp

526. C. Champion
Multiple ionization of water by heavy ions: A Monte Carlo approach.
Nucl. Instrum. Methods Phys. Res. B 205, 671 (2003)

$\mathbf{Xe^{44+} + H_2O}$	Ionization	0.2-6.7 MeV/u	Th

527. Y. Singh, L. C. Tribedi
Inner-shell vacancy production and multiple ionization effects in 0.1-1.75 MeV/u Mn, Fe, Co, Ni, Cu + Au, Bi collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 789 (2003)

Mn^+ + Au	Ionization	0.1-1.75 MeV/u	Exp
Mn^+ + Bi	Ionization	0.1-1.75 MeV/u	Exp
Fe^+ + Au	Ionization	0.1-1.75 MeV/u	Exp
Fe^+ + Bi	Ionization	0.1-1.75 MeV/u	Exp
Co^+ + Au	Ionization	0.1-1.75 MeV/u	Exp
Co^+ + Bi	Ionization	0.1-1.75 MeV/u	Exp
Ni^+ + Au	Ionization	0.1-1.75 MeV/u	Exp
Ni^+ + Bi	Ionization	0.1-1.75 MeV/u	Exp
Cu^+ + Au	Ionization	0.1-1.75 MeV/u	Exp
Cu^+ + Bi	Ionization	0.1-1.75 MeV/u	Exp

528. Y. Singh, L. C. Tribedi
M-shell X-ray production cross sections of Bi induced by highly charged F ions.
Nucl. Instrum. Methods Phys. Res. B 205, 794 (2003)

F^{4+} + Bi	Ionization	20-102 MeV	Exp
F^{5+} + Bi	Ionization	20-102 MeV	Exp
F^{6+} + Bi	Ionization	20-102 MeV	Exp
F^{7+} + Bi	Ionization	20-102 MeV	Exp
F^{8+} + Bi	Ionization	20-102 MeV	Exp
F^{9+} + Bi	Ionization	20-102 MeV	Exp

529. H. Brauning, A. Brauning-Demian, G. Bednarz, F. Bosch, X. Cai, C. Cohen, D. Dauvergne, A. Gumberidze, R. Kirsch, C. Kozhuharov, D. Liesen, P. H. Mokler, J.-P. Rozet, Z. Stachura, Th. Stoehlker, M. Terasawa, S. Toleikis, A. Warczak
Multiple electron capture from thin C-foils into 46 MeV/u U^{91+}.
Nucl. Instrum. Methods Phys. Res. B 205, 826 (2003)

U^{91+} + C	Charge Transfer	46 MeV/u	Exp
U^{91+} + C	Ionization	46 MeV/u	Exp

530. M. Purkait
Classical/quantum correspondence in state selective charge transfer and ionization cross-sections for Li^{q+} (q = 1-3) ions with neutral hydrogen.
Nucl. Instrum. Methods Phys. Res. B 207, 101 (2003)

Li^+ + H	Charge Transfer	30-200 keV/amu	Th
Li^{2+} + H	Charge Transfer	30-200 keV/amu	Th
Li^{3+} + H	Charge Transfer	30-200 keV/amu	Th
Li^+ + H	Ionization	30-200 keV/amu	Th
Li^{2+} + H	Ionization	30-200 keV/amu	Th
Li^{3+} + H	Ionization	30-200 keV/amu	Th

531. M. Mayer, B. Diaz-Herrera, M. Schneider
Backscattering of ^{6}Li and ^{7}Li ions from oxygen below 6 MeV.
Nucl. Instrum. Methods Phys. Res. B 207, 263 (2003)

Li^+ + O	Elastic Scattering	1-5 MeV	Exp

532. D. Emfietzoglou, M. Moscovitch
Secondary electron spectra for fast proton impact on gaseous and liquid water.
Nucl. Instrum. Methods Phys. Res. B 209, 239 (2003)

$\mathbf{H^+ + H_2O}$	Ionization	0.3-10 MeV	E/T

533. V. Horvat, R. L. Watson, K. E. Zaharakis, Y. Peng
Projectile charge dependence of cross-sections for multiple electron capture and loss by 2 MeV/u Xe ions in nitrogen.
Nucl. Instrum. Methods Phys. Res. B 211, 495 (2003)

$\mathbf{Xe^{12+} + N_2}$	Charge Transfer	2 MeV/u	Exp
$\mathbf{Xe^{17+} + N_2}$	Charge Transfer	2 MeV/u	Exp
$\mathbf{Xe^{18+} + N_2}$	Charge Transfer	2 MeV/u	Exp
$\mathbf{Xe^{22+} + N_2}$	Charge Transfer	2 MeV/u	Exp
$\mathbf{Xe^{24+} + N_2}$	Charge Transfer	2 MeV/u	Exp
$\mathbf{Xe^{27+} + N_2}$	Charge Transfer	2 MeV/u	Exp
$\mathbf{Xe^{30+} + N_2}$	Charge Transfer	2 MeV/u	Exp
$\mathbf{Xe^{35+} + N_2}$	Charge Transfer	2 MeV/u	Exp
$\mathbf{Xe^{12+} + N_2}$	Ionization	2 MeV/u	Exp
$\mathbf{Xe^{17+} + N_2}$	Ionization	2 MeV/u	Exp
$\mathbf{Xe^{18+} + N_2}$	Ionization	2 MeV/u	Exp
$\mathbf{Xe^{22+} + N_2}$	Ionization	2 MeV/u	Exp
$\mathbf{Xe^{24+} + N_2}$	Ionization	2 MeV/u	Exp
$\mathbf{Xe^{27+} + N_2}$	Ionization	2 MeV/u	Exp
$\mathbf{Xe^{30+} + N_2}$	Ionization	2 MeV/u	Exp
$\mathbf{Xe^{35+} + N_2}$	Ionization	2 MeV/u	Exp

534. B. Sulik, N. Stolterfoht, R. Hellhammer, Z. Pesic, Cs. Koncz, K. Tokesi, D. Berenyi
Fermi-shuttle acceleration of electrons in ion-matter interaction.
Nucl. Instrum. Methods Phys. Res. B 212, 32 (2003)

$\mathbf{C^+ + Xe}$	Ionization	150 keV/u	Th

535. Y. P. Singh, U. Kadhane, D. Trautmann, P. N. Tandon, L. C. Tribedi
K-shell ionization of high Z elements with low to intermediate velocity Si ions.
Nucl. Instrum. Methods Phys. Res. B 212, 72 (2003)

$\mathbf{Si^+ + Au}$	Ionization	110 MeV	E/T
$\mathbf{Si^+ + Bi}$	Ionization	110 MeV	E/T

536. T. Morishita, T. Sasajima, S. Watanabe, M. Matsuzawa
Double-ionization of He by fast proton and antiproton impact.
Nucl. Instrum. Methods Phys. Res. B 214, 144 (2003)

$\mathbf{H^+ + He}$	Ionization	1-10 MeV	Th

537. E. Bodo, F. A. Gianturco, R. Martinazzo
The gas-phase lithium chemistry in the early universe: Elementary processes, interaction forces and quantum dynamics.
Phys. Rep. 384, 85 (2003)

LiH	Heavy Particle Collisions		E/T

538. D. Fischer, R. Moshammer, A. Dorn, J. R. Crespo Lopez-Urrutia, B. Feuerstein, C. Hoehr, C. D. Schroeter, S. Hagmann, H. Kollmus, R. Mann, B. Bapat, J. Ullrich
Projectile-charge sign dependence of four-particle dynamics in helium double ionization.
Phys. Rev. Lett. 90, 243201 (2003)

$\mathbf{H^+ + He}$	Ionization	6 MeV	Exp

539. S. L. Mielke, K. A. Peterson, D. W. Schwenke, B. C. Garrett, D. G. Truhlar, J. V. Michael, M.-C. Su, J. W. Sutherland
$H + H_2$ thermal reaction: A convergence of theory and experiment.
Phys. Rev. Lett. 91, 063201 (2003)

$H + H_2$	Interchange reaction	167-2112 K	Exp

540. R. Schuch
Atomic and molecular physics at storage rings.
Phys. Scr. T104, 181 (2003)

$H^+ + He$	Charge Transfer	10^{-5}-4 eV; 2.5-4.5 MeV	Exp
$H^+ + He$	Ionization	10^{-5}-4 eV; 2.5-4.5 MeV	Exp

541. A. Amelink, P. van der Straten
Photoassociation of ultracold sodium atoms.
Phys. Scr. 68, C82 (2003)

Na + Na	Association		Exp

542. X. Cai, D. H. Yu, X. J. Chen, R. Lu, Z. Cao, W. Yang, C. Shao, X. Ma
The transfer ionization of Ar^{q+} - He, Ar^{1+} - Ne and Ar^{q+} - Ar collisions.
Phys. Scr. 68, 227 (2003)

$Ar^{8+} + He$	Charge Transfer	4.5 keV/u	Exp
$Ar^{8+} + Ne$	Charge Transfer	4.5 keV/u	Exp
$Ar^{8+} + Ar$	Charge Transfer	4.5 keV/u	Exp
$Ar^{9+} + He$	Charge Transfer	4.5 keV/u	Exp
$Ar^{9+} + Ne$	Charge Transfer	4.5 keV/u	Exp
$Ar^{9+} + Ar$	Charge Transfer	4.5 keV/u	Exp
$Ar^{11+} + He$	Charge Transfer	4.5 keV/u	Exp
$Ar^{11+} + Ne$	Charge Transfer	4.5 keV/u	Exp
$Ar^{11+} + Ar$	Charge Transfer	4.5 keV/u	Exp
$Ar^{12+} + He$	Charge Transfer	4.5 keV/u	Exp
$Ar^{12+} + Ne$	Charge Transfer	4.5 keV/u	Exp
$Ar^{12+} + Ar$	Charge Transfer	4.5 keV/u	Exp
$Ar^{13+} + He$	Charge Transfer	4.5 keV/u	Exp
$Ar^{13+} + Ne$	Charge Transfer	4.5 keV/u	Exp
$Ar^{13+} + Ar$	Charge Transfer	4.5 keV/u	Exp
$Ar^{14+} + He$	Charge Transfer	4.5 keV/u	Exp
$Ar^{14+} + Ne$	Charge Transfer	4.5 keV/u	Exp
$Ar^{14+} + Ar$	Charge Transfer	4.5 keV/u	Exp
$Ar^{8+} + He$	Ionization	4.5 keV/u	Exp
$Ar^{8+} + Ne$	Ionization	4.5 keV/u	Exp
$Ar^{8+} + Ar$	Ionization	4.5 keV/u	Exp
$Ar^{9+} + He$	Ionization	4.5 keV/u	Exp
$Ar^{9+} + Ne$	Ionization	4.5 keV/u	Exp
$Ar^{9+} + Ar$	Ionization	4.5 keV/u	Exp
$Ar^{11+} + He$	Ionization	4.5 keV/u	Exp
$Ar^{11+} + Ne$	Ionization	4.5 keV/u	Exp
$Ar^{11+} + Ar$	Ionization	4.5 keV/u	Exp
$Ar^{12+} + He$	Ionization	4.5 keV/u	Exp
$Ar^{12+} + Ne$	Ionization	4.5 keV/u	Exp
$Ar^{12+} + Ar$	Ionization	4.5 keV/u	Exp
$Ar^{13+} + He$	Ionization	4.5 keV/u	Exp
$Ar^{13+} + Ne$	Ionization	4.5 keV/u	Exp
$Ar^{13+} + Ar$	Ionization	4.5 keV/u	Exp

Ar^{14+} + He	Ionization	4.5 keV/u	Exp
Ar^{14+} + Ne	Ionization	4.5 keV/u	Exp
Ar^{14+} + Ar	Ionization	4.5 keV/u	Exp

543. S. Kotochigova, P. S. Julienne, E. Tiesinga
Ab initio calculation of the KRb dipole moments.
Phys. Rev. A 68, 022501 (2003)

K + Rb	Interaction Potentials		Th

544. M. Pajek, D. Banas, J. Semaniak, J. Braziewicz, U. Majewska, S. Chojnacki, T. Czyzewski, I. Fijal, M. Jaskola, A. Glombik, W. Kretschmer, D. Trautmann, G. Lapicki, T. Mukoyama
Multiple ionization and coupling effects in L-subshell ionization of heavy atoms by oxygen ions.
Phys. Rev. A 68, 022705 (2003)

O^{2+} + V	Ionization	6.4-70 MeV	Exp
O^{2+} + Au	Ionization	6.4-70 MeV	Exp
O^{2+} + Bi	Ionization	6.4-70 MeV	Exp
O^{2+} + Th	Ionization	6.4-70 MeV	Exp
O^{3+} + V	Ionization	6.4-70 MeV	Exp
O^{3+} + Au	Ionization	6.4-70 MeV	Exp
O^{3+} + Bi	Ionization	6.4-70 MeV	Exp
O^{3+} + Th	Ionization	6.4-70 MeV	Exp
O^{4+} + V	Ionization	6.4-70 MeV	Exp
O^{4+} + Au	Ionization	6.4-70 MeV	Exp
O^{4+} + Bi	Ionization	6.4-70 MeV	Exp
O^{4+} + Th	Ionization	6.4-70 MeV	Exp
O^{5+} + V	Ionization	6.4-70 MeV	Exp
O^{5+} + Au	Ionization	6.4-70 MeV	Exp
O^{5+} + Bi	Ionization	6.4-70 MeV	Exp
O^{5+} + Th	Ionization	6.4-70 MeV	Exp
O^{6+} + V	Ionization	6.4-70 MeV	Exp
O^{6+} + Au	Ionization	6.4-70 MeV	Exp
O^{6+} + Bi	Ionization	6.4-70 MeV	Exp
O^{6+} + Th	Ionization	6.4-70 MeV	Exp

545. V. Venturi, P. J. Leo, E. Tiesinga, C. J. Williams, I. B. Whittingham
Purely-long-range bound states of He(2s ^{3}S) + He(2p ^{3}P).
Phys. Rev. A 68, 022706 (2003)

He + He	Interaction Potentials		Th

546. I. D. Kaganovich, E. A. Startsev, R. C. Davidson
Comparison of quantum-mechanical and classical trajectory calculations of cross sections for ion-atom impact ionization of negative and positive ions for heavy-ion fusion applications.
Phys. Rev. A 68, 022707 (2003)

I^- + N	Ionization	3.2 GeV	Th
Cs^+ + N	Ionization	3.2 GeV	Th

547. M. Kavcic
Kα x-ray satellite lines of Si induced in collisions with 1-3-MeV protons.
Phys. Rev. A 68, 022713 (2003)

H^+ + Si	Ionization	1-3 MeV	Exp

548. T. Volz, S. Durr, S. Ernst, A. Marte, G. Rempe
Characterization of elastic scattering near a Feshbach resonance in ^{87}Rb.
Phys. Rev. A 68, 010702 (2003)

Rb + Rb	Elastic Scattering	10^{-6} K	Exp

549. A. R. Turner, D. L. Cooper, J. G. Wang, P. C. Stancil
Ab initio study of charge transfer in B^{2+} low-energy collisions with atomic hydrogen.
Phys. Rev. A 68, 012704 (2003)

B^{2+} + H	Charge Transfer	0.1-10,000 eV; 100-10^7 K	Th

550. A.-T. Le, C.-N. Liu, C. D. Lin
Charge transfer in slow collisions of H^+ with Na.
Phys. Rev. A 68, 012705 (2003)

H^+ + Na	Charge Transfer	3-40 eV	Th

551. T. W. Imai, M. Kimura, J. P. Gu, G. Hirsch, R. J. Buenker, J. G. Wang, P. C. Stancil, L. Pichl
Ab initio study of one- and two-electron transfer processes in collisions of Ne^{2+} with He at low to intermediate energies.
Phys. Rev. A 68, 012716 (2003)

Ne^{2+} + He	Charge Transfer	10-10,000 eV	Th

552. R. H. Lipson, X. K. Hu, J.B.A. Mitchell, C. Froese-Fischer
State-dependent associative ionization in xenon.
Phys. Rev. A 68, 012717 (2003)

Xe + Xe	Association	300 K	E/T
Xe^* + Xe	Association	300 K	E/T
Xe + Xe	Ionization	300 K	E/T
Xe^* + Xe	Ionization	300 K	E/T

553. Y. Hoshino, Y. Kido
Dynamic response of target electrons on elastic scattering cross sections for heavy-ion impact on a high-Z atom.
Phys. Rev. A 68, 012718 (2003)

He^+ + Ni	Elastic Scattering	90-130 keV	E/T
He^+ + Sb	Elastic Scattering	90-130 keV	E/T
He^+ + Hf	Elastic Scattering	90-130 keV	E/T
Ne^+ + Ni	Elastic Scattering	90-130 keV	E/T
Ne^+ + Sb	Elastic Scattering	90-130 keV	E/T
Ne^+ + Hf	Elastic Scattering	90-130 keV	E/T
He^+ + Ni	Total Scattering	90-130 keV	E/T
He^+ + Sb	Total Scattering	90-130 keV	E/T
He^+ + Hf	Total Scattering	90-130 keV	E/T
Ne^+ + Ni	Total Scattering	90-130 keV	E/T
Ne^+ + Sb	Total Scattering	90-130 keV	E/T
Ne^+ + Hf	Total Scattering	90-130 keV	E/T

554. K. Hirano, K. Enomoto, M. Kumakura, Y. Takahashi, T. Yabuzaki
Emission spectra of Rb*He_n exciplexes in a cold ^{4}He gas.
Phys. Rev. A 68, 012722 (2003)

Rb + He	Line Broadening	1-100 K	E/T
Rb + He_2	Line Broadening	1-100 K	E/T
Rb + He	Interaction Potentials	1-100 K	E/T
Rb + He_2	Interaction Potentials	1-100 K	E/T
Rb + He	Fluorescence	1-100 K	E/T
Rb + He_2	Fluorescence	1-100 K	E/T

555. M. S. Pindzola, T. Minami, D. R. Schultz
Laser-modified charge-transfer processes in proton collisions with lithium atoms.
Phys. Rev. A 68, 013404 (2003)

H^+ + Li	Charge Transfer	5-15 keV	Th

556. R. V. Krems, A. Dalgarno
Disalignment transitions in cold collisions of ^{3}P atoms with structureless targets in a magnetic field.
Phys. Rev. A 68, 013406 (2003)

C + He	Excitation	10^{-10} - 10^{-4} eV; 0.5-1 K	Th
O + He	Excitation	10^{-10} - 10^{-4} eV; 0.5-1 K	Th

557. D. Fischer, A. B. Voitkiv, R. Moshammer, J. Ullrich
Three-body momentum exchange in singly ionizing 2-MeV/u C^{6+}-helium collisions.
Phys. Rev. A 68, 032709 (2003)

C^{6+} + He	Total Scattering	2 MeV/u	E/T
C^{6+} + He	Ionization	2 MeV/u	E/T

558. J. Rzadkiewicz, D. Chmielewska, Z. Sujkowski, J.-Cl. Dousse, D. Castella, D. Corminboeuf, J. Hoszowska, P.-A. Raboud, M. Polasik, K. Slabkowska, M. Pajek
High-resolution study of the Kβ_2 x-ray spectra of mid-Z atoms bombarded with 20-MeV/amu ^{12}C ions.
Phys. Rev. A 68, 032713 (2003)

C^{5+} + Zr	Fluorescence	20 MeV/u	E/T
C^{5+} + Nb	Fluorescence	20 MeV/u	E/T
C^{5+} + Mo	Fluorescence	20 MeV/u	E/T
C^{5+} + Pd	Fluorescence	20 MeV/u	E/T
C^{5+} + Zr	Ionization	20 MeV/u	E/T
C^{5+} + Nb	Ionization	20 MeV/u	E/T
C^{5+} + Mo	Ionization	20 MeV/u	E/T
C^{5+} + Pd	Ionization	20 MeV/u	E/T

559. T. Stoecklin, A. Voronin, J. C. Rayez
Vibrational deactivation of F_2(ν=1,j=0) by ^{3}He at very low energy: A comparative study with the He-N_2 collision.
Phys. Rev. A 68, 032716 (2003)

He + F_2	De-excitation	10^{-6}-2000 cm^{-1}	Th
He + F_2	Excitation	10^{-6}-2000 cm^{-1}	Th

560. B. Bussery-Honvault, J.-M. Launay, R. Moszynski
Cold collisions of ground-state calcium atoms in a laser field: A theoretical study.
Phys. Rev. A 68, 032718 (2003)

Ca + Ca	Association	Ultracold	Th
Ca + Ca	Interaction Potentials	Ultracold	Th

561. T. Mroczkowski, D. W. Savin, R. Rejoub, P. S. Krstic, C. C. Havener
Electron capture by Ne^{2+} ions from atomic hydrogen.
Phys. Rev. A 68, 032721 (2003)

Ne^{2+} + H	Charge Transfer	139-1490 eV/u	E/T
Ne^{2+} + H	Interaction Potentials	139-1490 eV/u	E/T

562. J. P. Jacobs, R. B. Warrington
Pressure shift and broadening of the 254-nm intercombination line of mercury by N_2.
Phys. Rev. A 68, 032722 (2003)

Hg + N_2	Line Broadening	400 torr	Exp

563. L. Wirtz, J. Burgdorfer, M. Dallos, T. Mueller, H. Lischka
Potential-energy surfaces for charge exchange between singly charged ions and a LiF surface.
Phys. Rev. A 68, 032902 (2003)

H^+ + LiF	Charge Transfer	slow	Th
C^+ + LiF	Charge Transfer	slow	Th
Na^+ + LiF	Charge Transfer	slow	Th
S^+ + LiF	Charge Transfer	slow	Th

564. M. T. Yamashita, T. Frederico, L. Tomio, A. Delfino
Weakly bound atomic trimers in ultracold traps.
Phys. Rev. A 68, 033406 (2003)

Na + Na	Association	ultracold	Th
Rb + Rb	Association	ultracold	Th
Na + Na	Elastic Scattering	ultracold	Th
Rb + Rb	Elastic Scattering	ultracold	Th

565. M. Lukomski, J. Koperski, E. Czuchaj, M. Czajkowski
Structure of excitation and fluorescence spectra recorded at the $^1{0_u}^+(5\ ^1P_1)$-X $^1{0_g}^+$ transition of Cd_2.
Phys. Rev. A 68, 042508 (2003)

Cd + Cd	Interaction Potentials	2500-2700 $\AA$	E/T
Cd + Cd	Fluorescence	2500-2700 $\AA$	E/T

566. R. D. DuBois, A.C.F. Santos, R. E. Olson, Th. Stoehlker, F. Bosch, A. Brauning-Demian, A. Gumberidze, S. Hagmann, C. Kozhuharov, R. Mann, A. Orsic Muthig, U. Spillman, S. Tachenov, W. Barth, L. Dahl, B. Franzke, J. Glatz, L. Groening, S. Richter, D. Wilms, A. Kraemer, K. Ullmann, O. Jagutzki
Electron loss from 0.74- and 1.4-MeV/u low-charge-state argon and xenon ions colliding with neon, nitrogen, and argon.
Phys. Rev. A 68, 042701 (2003)

Ar^+ + Ne	Ionization	0.74-1.4 MeV/u	E/T
Ar^+ + Ar	Ionization	0.74-1.4 MeV/u	E/T
Ar^+ + N_2	Ionization	0.74-1.4 MeV/u	E/T
Ar^{2+} + Ne	Ionization	0.74-1.4 MeV/u	E/T
Ar^{2+} + Ar	Ionization	0.74-1.4 MeV/u	E/T
Ar^{2+} + N_2	Ionization	0.74-1.4 MeV/u	E/T
Xe^{3+} + Ne	Ionization	0.74-1.4 MeV/u	E/T
Xe^{3+} + Ar	Ionization	0.74-1.4 MeV/u	E/T
Xe^{3+} + N_2	Ionization	0.74-1.4 MeV/u	E/T

567. B. D. Esry, H. R. Sadeghpour
Split diabatic representation.
Phys. Rev. A 68, 042706 (2003)

H + H$^-$	Interaction Potentials	Th
H* + H$^-$	Interaction Potentials	Th
Rb + Rb	Interaction Potentials	Th

568. M. M. Sant-Anna, H. Luna, A.C.F. Santos, C. McGrath, M. B. Shah, E. G. Cavalcanti, G. M. Sigaud, E. C. Montenegro
Postcollisional decay in Ne multiple ionization by H_2^+ ions in breakup collisions.
Phys. Rev. A 68, 042707 (2003)

H$^+$ + Ne	Dissociation	1 MeV/u	Exp
H_2^+ + Ne	Dissociation	1 MeV/u	Exp
H_2^+ + Ne	Ionization	1 MeV/u	Exp

569. S. B. Weiss, M. Bhattacharya, N. P. Bigelow
Calculation of the interspecies s-wave scattering length in an ultracold Na-Rb vapor.
Phys. Rev. A 68, 042708 (2003)

Na + Rb	Elastic Scattering	Th
Na + Rb	Interaction Potentials	Th
Na + Rb	Excitation	Th

570. C. S. Hwang, K. B. MacAdam
Electron capture from aligned p-state Rydberg atoms.
Phys. Rev. A 68, 042709 (2003)

Li$^+$ + Na	Charge Transfer	298-1191 eV	Exp
Li$^+$ + Na*	Charge Transfer	298-1191 eV	Exp

571. S. Zakowicz, Z. Harman, N. Gruen, W. Scheid
Angular distribution of hypersatellite and satellite radiation emitted after resonant transfer and excitation into U^{91+} ions.
Phys. Rev. A 68, 042711 (2003)

U^{91+} + H_2	Charge Transfer	116.6-133.1 MeV/u	Th
U^{91+} + H_2	Excitation	116.6-133.1 MeV/u	Th

572. X. Ma, P. H. Mokler, F. Bosch, A. Gumberidze, C. Kozhuharov, D. Liesen, D. Sierpowski, Z. Stachura, Th. Stoehlker, A. Warczak
Electron-electron interaction studied in strong central fields by resonant transfer and excitation with H-like U ions.
Phys. Rev. A 68, 042712 (2003)

U^{91+} + H_2	Charge Transfer	100-135 MeV/u	Exp
U^{91+} + H_2	Excitation	100-135 MeV/u	Exp

573. L. Wolniewicz
Nonadiabatic couplings in low-energy collisions of hydrogen ground-state atoms.
Phys. Rev. A 68, 042717 (2003)

H + H	Elastic Scattering	Th
H + H	Interaction Potentials	Th

574. I. Mancev, V. Mergel, L. Schmidt
Electron capture from helium atoms by fast protons.
J. Phys. B 36, 2733 (2003)

H^+ + He	Charge Transfer	0.04-15 MeV	Th
H^+ + He	Total Scattering	0.04-15 MeV	Th

575. U. Kadhane, C. C. Montanari, L. C. Tribedi
Experimental study of K-shell ionization of low-Z solids in collisions with intermediate-velocity carbon ions and the local plasma approximation.
J. Phys. B 36, 3043 (2003)

C^{4+} + Cl	Ionization	1.5-6 MeV	Exp
C^{4+} + K	Ionization	1.5-6 MeV	Exp
C^{4+} + Ti	Ionization	1.5-6 MeV	Exp
C^{4+} + Fe	Ionization	1.5-6 MeV	Exp
C^{4+} + Cu	Ionization	1.5-6 MeV	Exp
C^{5+} + Cl	Ionization	1.5-6 MeV	Exp
C^{5+} + K	Ionization	1.5-6 MeV	Exp
C^{5+} + Ti	Ionization	1.5-6 MeV	Exp
C^{5+} + Fe	Ionization	1.5-6 MeV	Exp
C^{5+} + Cu	Ionization	1.5-6 MeV	Exp
C^{6+} + Cl	Ionization	1.5-6 MeV	Exp
C^{6+} + K	Ionization	1.5-6 MeV	Exp
C^{6+} + Ti	Ionization	1.5-6 MeV	Exp
C^{6+} + Fe	Ionization	1.5-6 MeV	Exp
C^{6+} + Cu	Ionization	1.5-6 MeV	Exp

576. E. G. Cavalcanti, G. M. Sigaud, E. C. Montenegro, H. Schmidt-Boecking
Absolute cross sections for multiple ionization of noble gases by swift proton impact.
J. Phys. B 36, 3087 (2003)

H^+ + He	Ionization	0.75-3.5 MeV	Exp
H^+ + Ar	Ionization	0.75-3.5 MeV	Exp
H^+ + Kr	Ionization	0.75-3.5 MeV	Exp
H^+ + Xe	Ionization	0.75-3.5 MeV	Exp

577. R. J. Hinde
Mg-He and Ca-He van der Waals interactions: Approaching the Born-Oppenheimer limit.
J. Phys. B 36, 3119 (2003)

Mg + He	Interaction Potentials		Th
Ca + He	Interaction Potentials		Th

578. A.-T. Le, M. Hesse, T. G. Lee, C. D. Lin
Hyperspherical close-coupling calculations for charge transfer cross sections in Si^{4+} + H(D) and Be^{4+} + H collisions at low energies.
J. Phys. B 36, 3281 (2003)

Be^{4+} + H	Charge Transfer	$10^{-}3$ - 10^3 eV/u	Th
Si^{4+} + H	Charge Transfer	$10^{-}3$ - 10^3 eV/u	Th
Si^{4+} + D	Charge Transfer	$10^{-}3$ - 10^3 eV/u	Th

579. I. Cadez, J. B. Greenwood, J. Lozano, R. J. Mawhorter, M. Niimura, S. J. Smith, A. Chutjian
Absolute cross sections for single and double charge-exchange in Fe^{q+} impacting on He.
J. Phys. B 36, 3303 (2003)

Fe^{5+} + He	Charge Transfer	7xq keV	Exp
Fe^{6+} + He	Charge Transfer	7xq keV	Exp
Fe^{7+} + He	Charge Transfer	7xq keV	Exp
Fe^{8+} + He	Charge Transfer	7xq keV	Exp
Fe^{9+} + He	Charge Transfer	7xq keV	Exp
Fe^{10+} + He	Charge Transfer	7xq keV	Exp
Fe^{11+} + He	Charge Transfer	7xq keV	Exp
Fe^{12+} + He	Charge Transfer	7xq keV	Exp
Fe^{13+} + He	Charge Transfer	7xq keV	Exp

580. H. Merabet, R. Bruch, S. Fuelling, K. Bartschat, A. L. Godunov
Ionization-excitation of helium to He^+(2p) magnetic sublevels following electron, proton, and molecular hydrogen (H_2^+ and H_3^+) impact.
J. Phys. B 36, 3383 (2003)

H^+ + He	Excitation	1.4-8.5 a.u.	Exp
H_2^+ + He	Excitation	1.4-8.5 a.u.	Exp
H_3^+ + He	Excitation	1.4-8.5 a.u.	Exp
H^+ + He	Ionization	1.4-8.5 a.u.	Exp
H_2^+ + He	Ionization	1.4-8.5 a.u.	Exp
H_3^+ + He	Ionization	1.4-8.5 a.u.	Exp

581. H. Martinez, A. Amaya-Tapia
Charge transfer of positive hydrogen ions and Ca vapour at keV energies.
J. Phys. B 36, 3509 (2003)

H^+ + Ca	Charge Transfer	1-100 keV	Th

582. S. Zivanov, M. Cizek, J. Horacek, M. Allan
Electron spectra for associative detachment in low-energy collisions of Cl^- and Br^- with H and D.
J. Phys. B 36, 3513 (2003)

Cl^- + H	Association	0.2-8.0 eV	Exp
Cl^- + D	Association	0.2-8.0 eV	Exp
Br^- + H	Association	0.2-8.0 eV	Exp
Br^- + D	Association	0.2-8.0 eV	Exp
Cl^- + H	Detachment	0.2-8.0 eV	Exp
Cl^- + D	Detachment	0.2-8.0 eV	Exp
Br^- + H	Detachment	0.2-8.0 eV	Exp
Br^- + D	Detachment	0.2-8.0 eV	Exp

583. A. V. Selin, A. M. Ermolaev, C. J. Joachain
A semi-relativistic eikonal distorted wave model for collisions of fast highly charged ions with light atomic targets.
J. Phys. B 36, L303 (2003)

U^{92+} + He	Ionization	1 GeV/u	Th

584. M. Schulz, R. Moshammer, D. Fischer, J. Ullrich
Evidence for significant projectile-target nucleus scattering in single ionization of helium.
J. Phys. B 36, L311 (2003)

C^{6+} + He	Total Scattering	3.6-100 MeV/u	Exp
Au^{53+} + He	Total Scattering	3.6-100 MeV/u	Exp
C^{6+} + He	Ionization	3.6-100 MeV/u	Exp
Au^{53+} + He	Ionization	3.6-100 MeV/u	Exp

585. E. P. Benis, T.J.M. Zouros, T. W. Gorczyca, M. Zamkov, P. Richard
Isoelectronic study of triply excited Li-like states.
J. Phys. B 36, L341 (2003)

B^{3+} + H_2	Charge Transfer	4-20 MeV; 270-300 eV	E/T
C^{4+} + H_2	Charge Transfer	4-20 MeV; 270-300 eV	E/T
N^{5+} + H_2	Charge Transfer	4-20 MeV; 270-300 eV	E/T
O^{6+} + H_2	Charge Transfer	4-20 MeV; 270-300 eV	E/T
F^{7+} + H_2	Charge Transfer	4-20 MeV; 270-300 eV	E/T
B^{3+} + H_2	Ionization	4-20 MeV; 270-300 eV	E/T
C^{4+} + H_2	Ionization	4-20 MeV; 270-300 eV	E/T
N^{5+} + H_2	Ionization	4-20 MeV; 270-300 eV	E/T
O^{6+} + H_2	Ionization	4-20 MeV; 270-300 eV	E/T
F^{7+} + H_2	Ionization	4-20 MeV; 270-300 eV	E/T

586. D. Lisak, A. Bielski, R. Ciurylo, J. Domyslawska, R. S. Trawinski, J. Szudy
On the role of Dicke narrowing in the formation of atomic line shapes in the optical domain.
J. Phys. B 36, 3985 (2003)

Cd + Xe	Line Broadening	724 K	E/T

587. D. Modeley, S. Diehl-Guilbaud, J. L. Montmagnon, J. P. Grouard, L. Sarkadi, F. Penent
Excitation and decay of H^- (n=3) Feshbach resonances in H^-/rare gas collisions.**
J. Phys. B 36, 4035 (2003)

H^- + He	Excitation	2-7 keV	Exp
H^- + Ne	Excitation	2-7 keV	Exp
H^- + Ar	Excitation	2-7 keV	Exp

588. R. E. Olson, J. Fiol
Dynamics underlying fully differential cross sections for fast C^{6+} + He collisions.
J. Phys. B 36, L365 (2003)

C^{6+} + He	Ionization	100 MeV/u	Th

589. T. G. Lee, A.-T. Le, C. D. Lin
Charge transfer and excitation in slow 20 eV-2 keV H^+ + D(1s) collisions.
J. Phys. B 36, 4081 (2003)

H^+ + H	Charge Transfer	20-2000 eV	Th
H^+ + D	Charge Transfer	20-2000 eV	Th
H^+ + H	Excitation	20-2000 eV	Th
H^+ + D	Excitation	20-2000 eV	Th

590. D. Fischer, R. Moshammer, M. Schulz, A. Voitkiv, J. Ullrich
Fully differential cross sections for the single ionization of helium by ion impact.
J. Phys. B 36, 3555 (2003)

C^{6+} + He	Ionization	2-3.6 MeV/u	E/T
Au^{24+} + He	Ionization	2-3.6 MeV/u	E/T
Au^{53+} + He	Ionization	2-3.6 MeV/u	E/T

591. D. M. Kearns, R. W. McCullough, R. Trassl, H. B. Gilbody
Collision mechanisms in one-electron capture by slow H and He-like ions of C, N and O in H and H_2.
J. Phys. B 36, 3653 (2003)

$\mathbf{C^{4+} + H_2}$	Dissociation	250-900 eV/amu	Exp
$\mathbf{C^{5+} + H_2}$	Dissociation	250-900 eV/amu	Exp
$\mathbf{N^{5+} + H_2}$	Dissociation	250-900 eV/amu	Exp
$\mathbf{N^{6+} + H_2}$	Dissociation	250-900 eV/amu	Exp
$\mathbf{O^{6+} + H_2}$	Dissociation	250-900 eV/amu	Exp
$\mathbf{O^{7+} + H_2}$	Dissociation	250-900 eV/amu	Exp
$\mathbf{C^{4+} + H}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{C^{4+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{C^{5+} + H}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{C^{5+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{N^{5+} + H}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{N^{5+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{N^{6+} + H}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{N^{6+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{O^{6+} + H}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{O^{6+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{O^{7+} + H}$	Charge Transfer	250-900 eV/amu	Exp
$\mathbf{O^{7+} + H_2}$	Charge Transfer	250-900 eV/amu	Exp

592. X. Chu, M. J. Jamieson, A. Dalgarno
Scattering lengths for collisions of hydrogen and deuterium atoms.
J. Phys. B 36, L415 (2003)

H + H	Interaction Potentials	Th
H + D	Interaction Potentials	Th

593. M. Hiyama, M. S. Child
Ab initio R-matrix-multi-channel quantum defect theory study of nitric oxide: II. Analysis of valence/Rydberg interactions.
J. Phys. B 36, 4547 (2003)

N + O	Interaction Potentials	Th

594. H. Luna, E. G. Cavalcanti, J. Nickles, G. M. Sigaud, E. C. Montenegro
CH_4 ionization and dissociation by proton and electron impact.
J. Phys. B 36, 4717 (2003)

$\mathbf{H^+ + CH_4}$	Dissociation	0.5-3.5 MeV; 0-1000 eV	E/T
$\mathbf{H^+ + CH_4}$	Ionization	0.5-3.5 MeV; 0-1000 eV	E/T

595. T. Kusakabe, M. Kimura, L. Pichl, R. J. Buenker, H. Tawara
Observation of significant differences in charge transfer between collisions of H^+ ions with H_2 and with D_2 molecules in the high-eV to low-keV range.
Phys. Rev. A 68, 050701(R) (2003)

$\mathbf{H^+ + H_2}$	Charge Transfer	0.18-1.5 keV/u	E/T

596. U. Schloeder, T. Deuschle, C. Silber, C. Zimmermann
Autler-Townes splitting in two-color photoassociation of ^{6}Li.
Phys. Rev. A 68, 051403 (2003)

Li + Li	Association	24 GHz	E/T

597. S. Bhattacharya, R. Das, N. C. Deb, K. Roy, D.S.F. Crothers
Ionization from the outer shell of Ar by proton impact.
Phys. Rev. A 68, 052702 (2003)

$\mathbf{H^+ + Ar}$	Ionization	10-300 keV	E/T

598. D. Chen, H. Gao, V.H.S. Kwong
Thermal energy charge transfer between S^{2+} and H_2, N_2, and CO.
Phys. Rev. A 68, 052703 (2003)

S^{2+} + H_2	Charge Transfer	1077-6462 K	Exp
S^{2+} + CO	Charge Transfer	1077-6462 K	Exp
S^{2+} + N_2	Charge Transfer	1077-6462 K	Exp

599. H. Gao, V.H.S. Kwong
Charge transfer between C^{2+} and H_2, N_2, He, and CO at electron-volt energies.
Phys. Rev. A 68, 052704 (2003)

C^{2+} + He	Charge Transfer	2630-11,700 K	Exp
C^{2+} + H_2	Charge Transfer	2630-11,700 K	Exp
C^{2+} + CO	Charge Transfer	2630-11,700 K	Exp
C^{2+} + N_2	Charge Transfer	2630-11,700 K	Exp

3.3 Surface Interactions

600. L. Wirtz, C. O. Reinhold, C. Lemell, J. Burgdorfer
Liouville master equation for multielectron dynamics: Neutralization of highly charged ions near a LiF surface.
Phys. Rev. A 67, 012903 (2003)

O^{8+} + LiF	Reflection	27-250 eV	Th
Ne^{10+} + LiF	Reflection	27-250 eV	Th
O^{8+} + LiF	Neutraliz., Ioniz., Dissoc.	27-250 eV	Th
Ne^{10+} + LiF	Neutraliz., Ioniz., Dissoc.	27-250 eV	Th

601. M. S. Gravielle, J. E. Miraglia
Acceleration and deceleration of convoy electrons in grazing-ion–surface collisions.
Phys. Rev. A 67, 042901 (2003)

H^+ + Al	Secondary Electron Emission	100 keV	Th
H^+ + LiF	Secondary Electron Emission	100 keV	Th

602. A. Robin, D. Niemann, N. Stolterfoht, W. Heiland
Highly charged ions impinging on a stepped metal surface under grazing incidence.
Phys. Rev. A 67, 052901 (2003)

N^{5+} + Pt	Reflection	60-75 keV	Exp
N^{6+} + Pt	Reflection	60-75 keV	Exp

603. A. V. Lugovskoy, I. Bray
Effect of quenching in resonant coherent excitation of hydrogen atoms scattered from LiF surfaces.
Phys. Rev. A 67, 032901 (2003)

H + LiF	Reflection	0-25 keV	Th

604. M. Alducin, V. M. Silkin, J. I. Juaristi, E. V. Chulkov
Energy loss of ions at metal surfaces: Band-structure effects.
Phys. Rev. A 67, 032903 (2003)

H^+ + Cu	Reflection	0.25-2 v(a.u.)	Th

605. T. Minami, C. O. Reinhold, J. Burgdorfer
Quantum-trajectory Monte Carlo method for internal-state evolution of fast ions traversing amorphous solids.
Phys. Rev. A 67, 022902 (2003)

Kr^{35+} + C	Surface Interactions	55 MeV/u	Th
Kr^{35+} + C	Neutraliz., Ioniz., Dissoc.	55 MeV/u	Th

606. Y. Miura, H. Kasai, W. Dino, H. Nakanishi, T. Sugimoto
First principles studies for the dissociative adsorption of H_2 on graphene.
J. Appl. Phys. 93, 3395 (2003)

H_2 + $C_{62}H_{20}$	Adsorption, Desorption	Th

607. R. P. Doerner, D. G. Whyte, D. M. Goebel
Sputtering yield measurements during low energy xenon plasma bombardment.
J. Appl. Phys. 93, 5816 (2003)

Xe^+ + Be	Sputtering	10-200 eV	Exp
Xe^+ + C	Sputtering	10-200 eV	Exp
Xe^+ + Ti	Sputtering	10-200 eV	Exp
Xe^+ + Mo	Sputtering	10-200 eV	Exp

608. Y. Ueda, K. Tobita, Y. Katoh
PSI issues at plasma facing surfaces of blankets in fusion reactors.
J. Nucl. Mater. 313-316, 32 (2003)

H^+ + Be	Sputtering	10-10^3 eV	E/T
H^+ + V	Sputtering	10-10^3 eV	E/T
H^+ + Fe	Sputtering	10-10^3 eV	E/T
H^+ + W	Sputtering	10-10^3 eV	E/T
H^+ + SiC	Sputtering	10-10^3 eV	E/T
D^+ + Be	Sputtering	10-10^3 eV	E/T
D^+ + V	Sputtering	10-10^3 eV	E/T
D^+ + Fe	Sputtering	10-10^3 eV	E/T
D^+ + W	Sputtering	10-10^3 eV	E/T
D^+ + SiC	Sputtering	10-10^3 eV	E/T

609. V. Barabash, G. Federici, J. Linke, C. H. Wu
Material/plasma surface interaction issues following neutron damage.
J. Nucl. Mater. 313-316, 42 (2003)

H^+ + Be	Trapping, Detrapping	E/T
H^+ + C	Trapping, Detrapping	E/T
H^+ + W	Trapping, Detrapping	E/T
T^+ + Be	Trapping, Detrapping	E/T
T^+ + C	Trapping, Detrapping	E/T
T^+ + W	Trapping, Detrapping	E/T

610. P. Traskelin, E. Salonen, K. Nordlund, A. V. Krasheninnikov, J. Keionen, C. H. Wu
Molecular dynamics simulations of CH_3 sticking on carbon first wall structures.
J. Nucl. Mater. 313-316, 52 (2003)

CH_3 + C	Adsorption, Desorption	Th

611. K. U. Klages, A. Wiltner, J. Luthin, Ch. Linsmeier
Deuterium bombardment of carbon and carbon layers on titanium.
J. Nucl. Mater. 313-316, 56 (2003)

H^+ + C	Sputtering	1-4 keV	Exp
D^+ + C	Sputtering	1-4 keV	Exp

612. I. S. Landman, H. Wuerz
Molecular dynamics simulations of the effect of deuterium on tungsten erosion by oxygen.
J. Nucl. Mater. 313-316, 77 (2003)

O^+ + W	Sputtering	20 eV	Th

613. K. Tokunaga, R. P. Doerner, R. Seraydarian, N. Noda, Y. Kubota, N. Yoshida, T. Sogabe, T. Kato, B. Schedler
Surface morphology and helium retention on tungsten exposed to low energy and high flux helium plasma.
J. Nucl. Mater. 313-316, 92 (2003)

He^+ + W	Trapping, Detrapping	100 eV	Exp

614. I. Takagi, K. Moritani, H. Moriyama
Asymmetric surface recombination of hydrogen on palladium exposed to plasma.
J. Nucl. Mater. 313-316, 102 (2003)

H^+ + Pd	Neutraliz., Ioniz., Dissoc.	E/T
D^+ + Pd	Neutraliz., Ioniz., Dissoc.	E/T
H^+ + Pd	Trapping, Detrapping	E/T
D^+ + Pd	Trapping, Detrapping	E/T

615. A. F. Bardamid, A. I. Belyayeva, V. N. Bondarenko, A. A. Galuza, V. V. Gann, L. Jacobson, V. G. Konovalov, D. V. Orlinskij, I. I. Papirov, I. V. Ryzhkov, A. N. Shapoval, F. Shtan, S. I. Solodovchenko, A. A. Vasil'ev
Some peculiarities in the behavior of Be surfaces under bombardment by ions from a deuterium plasma.
J. Nucl. Mater. 313-316, 112 (2003)

H^+ + Be	Chemical Reactions	100 eV	Exp
H^+ + BeO	Chemical Reactions	100 eV	Exp
D^+ + Be	Chemical Reactions	100 eV	Exp
D^+ + BeO	Chemical Reactions	100 eV	Exp

616. H. Kodama, T. Sugiyama, Y. Morimoto, Y. Oya, K. Okuno, N. Inoue, A. Sagara, N. Noda
Thermal annealing effects on chemical states of deuterium implanted into boron coating film.
J. Nucl. Mater. 313-316, 153 (2003)

H_2^+ + Be	Chemical Reactions	1 keV	Exp
D_2^+ + Be	Chemical Reactions	1 keV	Exp
H_2^+ + Be	Trapping, Detrapping	1 keV	Exp
D_2^+ + Be	Trapping, Detrapping	1 keV	Exp

617. P. B. Wright, J. W. Davis, R. G. Macaulay-Newcombe, C. G. Hamilton, A. A. Haasz
Chemical erosion of DIII-D divertor tile specimens.
J. Nucl. Mater. 313-316, 158 (2003)

H_2^+ + C	Sputtering	50-200 eV	Exp
D_2^+ + C	Sputtering	50-200 eV	Exp

618. Y. Hirohata, D. Motojima, T. Hino, S. Sengoku
Suppression of hydrogen absorption to V_4 CR_4 Ti alloy by TiO_2/TiC coating.
J. Nucl. Mater. 313-316, 172 (2003)

H + TiO_2	Adsorption, Desorption	300 K	Exp
D + TiO_2	Adsorption, Desorption	300 K	Exp

619. D. A. Alman, D. N. Ruzic
Molecular dynamics calculation of carbon/hydrocarbon reflection coefficients on a hydrogenated graphite surface.
J. Nucl. Mater. 313-316, 182 (2003)

C + C	Reflection	0-10 eV	Exp
CH + C	Reflection	0-10 eV	Exp
CH_2 + C	Reflection	0-10 eV	Exp
CH_3 + C	Reflection	0-10 eV	Exp
CH_4 + C	Reflection	0-10 eV	Exp

620. M. Poon, A. A. Haasz, J. W. Davis, R. G. Macaulay-Newcombe
Impurity effects and temperature dependence of D retention in single crystal tungsten.
J. Nucl. Mater. 313-316, 199 (2003)

H^+ + W	Trapping, Detrapping	500 eV	Exp
D^+ + W	Trapping, Detrapping	500 eV	Exp

621. A. V. Golubeva, V. A. Kurnaev, D. V. Levchuk, N. N. Trifonov
Influence of thin alien layers on hydrogen reflection and trapping by PFM.
J. Nucl. Mater. 313-316, 219 (2003)

H^+ + C	Reflection	10-1000 eV	Th
H^+ + W	Reflection	10-1000 eV	Th
D^+ + C	Reflection	10-1000 eV	Th
D^+ + W	Reflection	10-1000 eV	Th
T^+ + C	Reflection	10-1000 eV	Th
T^+ + W	Reflection	10-1000 eV	Th
H^+ + C	Trapping, Detrapping	10-1000 eV	Th
H^+ + W	Trapping, Detrapping	10-1000 eV	Th
D^+ + C	Trapping, Detrapping	10-1000 eV	Th
D^+ + W	Trapping, Detrapping	10-1000 eV	Th
T^+ + C	Trapping, Detrapping	10-1000 eV	Th
T^+ + W	Trapping, Detrapping	10-1000 eV	Th

622. B. Tsuchiya, K. Morita, S. Yamamoto, S. Nagata, N. Ohtsu, T. Shikama, H. Naramoto
Re-emission of hydrogen implanted into graphite by helium ion bombardment.
J. Nucl. Mater. 313-316, 274 (2003)

H_2^+ + C	Trapping, Detrapping	5 keV	Exp

623. S. Nagata, B. Tsuchiya, N. Ohtsu, T. Sugawara, T. Shikama, K. Tokunaga, M. Takenaka, E. Kuramoto
Hydrogen and deuterium uptake in helium implanted layer of Mo and W.
J. Nucl. Mater. 313-316, 279 (2003)

H_2 + Mo	Adsorption, Desorption	300 K	Exp
H_2 + W	Adsorption, Desorption	300 K	Exp
D_2 + Mo	Adsorption, Desorption	300 K	Exp
D_2 + W	Adsorption, Desorption	300 K	Exp

624. H. Yagi, H. Toyoda, H. Sugai
Dramatic reduction of chemical sputtering of graphite under intercalation of lithium.
J. Nucl. Mater. 313-316, 284 (2003)

H_2^+ + Li	Sputtering	50-400 eV	Exp
H_2^+ + C	Sputtering	50-400 eV	Exp

625. Y. Furuyama, K. Ito, S. Dohi, A. Taniike, A. Kitamura
Characteristics of lithium thin films under deuterium ion implantation.
J. Nucl. Mater. 313-316, 288 (2003)

H_2O + Li	Adsorption, Desorption	1 keV; 300 K	Exp
H^+ + Li	Trapping, Detrapping	1 keV; 300 K	Exp
H^+ + C	Trapping, Detrapping	1 keV; 300 K	Exp
D^+ + Li	Trapping, Detrapping	1 keV; 300 K	Exp
D^+ + C	Trapping, Detrapping	1 keV; 300 K	Exp

626. K. Schmid, J. Roth
Erosion of high-Z metals with typical impurity ions.
J. Nucl. Mater. 313-316, 302 (2003)

H^+ + C	Sputtering	0.2-2.4 keV	E/T
H^+ + W	Sputtering	0.2-2.4 keV	E/T
C^+ + C	Sputtering	0.2-2.4 keV	E/T
C^+ + W	Sputtering	0.2-2.4 keV	E/T
D^+ + C	Sputtering	0.2-2.4 keV	E/T
D^+ + W	Sputtering	0.2-2.4 keV	E/T
CH_3^+ + W	Sputtering	0.2-2.4 keV	E/T

627. M. Balden, J. Roth, E. de Juan Pardo, A. Wiltner
Chemical erosion of atomically dispersed doped hydrocarbon layers by deuterium.
J. Nucl. Mater. 313-316, 348 (2003)

H^+ + CH	Sputtering	30 eV	Exp
D^+ + CH	Sputtering	30 eV	Exp

628. M. Taniguchi, K. Sato, K. Ezato, K. Yokoyama, M. Dairaku, M. Akiba
Sputtering of carbon, tungsten mixed materials by low energy deuterium.
J. Nucl. Mater. 313-316, 360 (2003)

H_3^+ + C	Sputtering	200 eV	Exp
H_3^+ + W	Sputtering	200 eV	Exp
D_3^+ + C	Sputtering	200 eV	Exp
D_3^+ + W	Sputtering	200 eV	Exp

629. E. Salonen, K. Nordlund, J. Keinonen, C. H. Wu
Molecular dynamics studies of the sputtering of divertor materials.
J. Nucl. Mater. 313-316, 404 (2003)

H^+ + C	Sputtering	5-300 eV	Th
H^+ + Si	Sputtering	5-300 eV	Th
W^+ + W	Sputtering	5-300 eV	Th
D^+ + C	Sputtering	5-300 eV	Th
D^+ + Si	Sputtering	5-300 eV	Th

630. V. Bandourko, R. Jimbou, K. Nakamura, M. Akiba, Y. Okumura
Erosion of CRC under simultaneous bombardment by helium and deuterium ions.
J. Nucl. Mater. 313-316, 413 (2003)

$\mathbf{H^+ + C}$	Sputtering	200 eV	Exp
$\mathbf{He^+ + C}$	Sputtering	200 eV	Exp
$\mathbf{H_2^+ + C}$	Sputtering	200 eV	Exp
$\mathbf{H_3^+ + C}$	Sputtering	200 eV	Exp
$\mathbf{D^+ + C}$	Sputtering	200 eV	Exp
$\mathbf{D_2^+ + C}$	Sputtering	200 eV	Exp
$\mathbf{D_3^+ + C}$	Sputtering	200 eV	Exp

631. J. N. Brooks, A. Kirschner, D. G. Whyte, D. N. Ruzic, D. A. Alman
Advances in the modeling of chemical erosion/redeposition of carbon divertors and application to the JET tritium codeposition problem.
J. Nucl. Mater. 313-316, 424 (2003)

$\mathbf{C^+ + C}$	Reflection		Th
$\mathbf{C^+ + CH}$	Reflection		Th
$\mathbf{CH_4 + C}$	Reflection		Th
$\mathbf{CH_4 + CH}$	Reflection		Th

632. O. V. Ogorodnikova, J. Roth, M. Mayer
Deuterium retention in tungsten in dependence of the surface conditions.
J. Nucl. Mater. 313-316, 469 (2003)

$\mathbf{H_3^+ + W}$	Trapping, Detrapping	600 eV	E/T
$\mathbf{H_3^+ + WO_3}$	Trapping, Detrapping	600 eV	E/T
$\mathbf{D_3^+ + W}$	Trapping, Detrapping	600 eV	E/T
$\mathbf{D_3^+ + WO_3}$	Trapping, Detrapping	600 eV	E/T

633. H. Atsumi
Hydrogen retention in graphite and carbon materials under a fusion reactor environment.
J. Nucl. Mater. 313-316, 543 (2003)

$\mathbf{H_2 + C}$	Adsorption, Desorption	300 K	Exp
$\mathbf{H_2 + C}$	Trapping, Detrapping	300 K	Exp

634. Y. Morimoto, K. Okuno
Correlation between annealing effects of damage and implanted deuterium release from graphite.
J. Nucl. Mater. 313-316, 595 (2003)

$\mathbf{H_2^+ + C}$	Trapping, Detrapping	1 keV	Exp
$\mathbf{D_2^+ + C}$	Trapping, Detrapping	1 keV	Exp

635. V. Kh. Alimov, D. A. Komarov
Deuterium retention in carbon and tungstencarbon mixed films deposited by magnetron sputtering in D_2 atmosphere.
J. Nucl. Mater. 313-316, 599 (2003)

$\mathbf{H + C}$	Trapping, Detrapping		Exp
$\mathbf{D + C}$	Trapping, Detrapping		Exp

636. A. A. Pisarev, I. D. Voskresensky, S. I. Porfirev
Computer modeling of ion implanted deuterium release from tungsten.
J. Nucl. Mater. 313-316, 604 (2003)

$\mathbf{H_2^+ + W}$	Trapping, Detrapping	15 keV	Th
$\mathbf{D_2^+ + W}$	Trapping, Detrapping	15 keV	Th

637. B. I. Khripunov, V. B. Petrov, V. V. Shapkin, A. S. Pleshakov, A. S. Rupyshev, N. V. Antonov, A. M. Litnovsky, D. Yu. Prokhorov, Yu. S. Shpansky, V. A. Evtikhin, I. E. Lyublinskyb, A. V. Vertkovb
Liquid lithium surface research and development.
J. Nucl. Mater. 313-316, 619 (2003)

H^+ + Li	Sputtering	10^{-3} - 10^{0} keV	Th
Li^+ + Li	Sputtering	10^{-3} - 10^{0} keV	Th
D^+ + Li	Sputtering	10^{-3} - 10^{0} keV	Th
T^+ + Li	Sputtering	10^{-3} - 10^{0} keV	Th

638. M. D. Coventry, J. P. Allain, D. N. Ruzic
D^+, He^+ and H^+ sputtering of solid and liquid phase tin.
J. Nucl. Mater. 313-316, 636 (2003)

H^+ + Sn	Sputtering	300-1000 eV	Exp
He^+ + Sn	Sputtering	300-1000 eV	Exp
D^+ + Sn	Sputtering	300-1000 eV	Exp

639. J. P. Allain, M. D. Coventry, D. N. Ruzic
Temperature dependence of liquid-lithium sputtering from oblique 700 eV He ions.
J. Nucl. Mater. 313-316, 641 (2003)

He^+ + Li	Sputtering	700 eV	Th

640. M. Nieto, D. N. Ruzic, J. P. Allain, M. D. Coventry, E. Vargas-Lopez
Helium retention and diffusivity in flowing liquid lithium.
J. Nucl. Mater. 313-316, 646 (2003)

H + Li	Trapping, Detrapping	5 keV	Exp
He + Li	Trapping, Detrapping	5 keV	Exp
D + Li	Trapping, Detrapping	5 keV	Exp

641. A. Qayyum, W. Schustereder, C. Mair, P. Scheier, T. D. Maerk, S. Cernusca, HP. Winter, F. Aumayr
Electron emission and molecular fragmentation during hydrogen and deuterium ion impact on carbon surfaces.
J. Nucl. Mater. 313-316, 670 (2003)

H^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp
H_2^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp
H_3^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp
D^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp
D_2^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp
D_3^+ + C	Secondary Electron Emission	0.1-5.0 keV	Exp
D_3^+ + C	Neutraliz., Ioniz., Dissoc.	0.1-5.0 keV	Exp

642. H. Nakamura, W. Shu, T. Hayashi, M. Nishi
Tritium permeation study through tungsten and nickel using pure tritium ion beam.
J. Nucl. Mater. 313-316, 679 (2003)

H^+ + Ni	Trapping, Detrapping	1 keV	Exp
H^+ + W	Trapping, Detrapping	1 keV	Exp
D^+ + Ni	Trapping, Detrapping	1 keV	Exp
D^+ + W	Trapping, Detrapping	1 keV	Exp
T^+ + Ni	Trapping, Detrapping	1 keV	Exp
T^+ + W	Trapping, Detrapping	1 keV	Exp

643. W. Eckstein, R. Preuss
New fit formulae for the sputtering yield.
J. Nucl. Mater. 320, 209 (2003)

H^+ + W	Sputtering	10^{-1} - 10^5 eV	Th
He^+ + W	Sputtering	10^{-1} - 10^5 eV	Th
C^+ + C	Sputtering	10^{-1} - 10^5 eV	Th
N^+ + W	Sputtering	10^{-1} - 10^5 eV	Th
Ne^+ + C	Sputtering	10^{-1} - 10^5 eV	Th
Ne^+ + W	Sputtering	10^{-1} - 10^5 eV	Th
Ar^+ + W	Sputtering	10^{-1} - 10^5 eV	Th
Xe^+ + C	Sputtering	10^{-1} - 10^5 eV	Th
Xe^+ + Ni	Sputtering	10^{-1} - 10^5 eV	Th
W^+ + W	Sputtering	10^{-1} - 10^5 eV	Th
T^+ + W	Sputtering	10^{-1} - 10^5 eV	Th

644. R. C. Monreal, L. Guillemot, V. A. Esaulov
On Auger neutralization of He^+ ions on a Ag(111) surface.
J. Phys. Condens. Matter 15, 1165 (2003)

He^+ + Ag	Reflection	1-4 keV	E/T
He^+ + Ag	Neutraliz., Ioniz., Dissoc.	1-4 keV	E/T

645. Y. Yang, J. A. Yarmoff
Effects of adsorbates on charge exchange in Li^+ ion scattering from Ni(100).
J. Vac. Sci. Technol. A 21, 1317 (2003)

Li^+ + Ni	Reflection	3.0 keV	Exp
Li^+ + H + Ni	Reflection	3.0 keV	Exp
Li^+ + N + Ni	Reflection	3.0 keV	Exp

646. R. A. Rosenberg, M. W. McDowell, Q. Ma, K. C. Harkay
X-ray photoelectron spectroscopy and secondary electron yield analysis of Al and Cu samples exposed to an accelerator environment.
J. Vac. Sci. Technol. A 21, 1625 (2003)

e + Al	Secondary Electron Emission	0-800 eV	Exp
e + Cu	Secondary Electron Emission	0-800 eV	Exp

647. J. N. DeFazio, T. M. Stephen, B. L. Peko
Charge state effects in atom-surface scattering.
Nucl. Instrum. Methods Phys. Res. B 201, 453 (2003)

H + Cu	Reflection	25-200 eV	Exp
H^+ + Cu	Reflection	25-200 eV	Exp

648. E.F.C. Haddeman, B. J. Thijsse
Transient sputtering of silicon by argon studied by molecular dynamics simulations.
Nucl. Instrum. Methods Phys. Res. B 202, 161 (2003)

Ar + Si	Sputtering	50-500 eV	Th

649. D. Ramasawmy, S. D. Kenny, R. Smith
Computer modelling of ballistic particle ejection from NaCl.
Nucl. Instrum. Methods Phys. Res. B 202, 175 (2003)

Na^+ + NaCl	Sputtering	1 keV	Th

650. J. H. Liang, M. Mayer, J. Roth, W. Eckstein
Computer simulation of chemical erosion of graphite due to hydrogen ion bombardment.
Nucl. Instrum. Methods Phys. Res. B 202, 195 (2003)

H + C	Sputtering	10-1000 eV	Th

651. E. E. Zhurkin, A. S. Kolesnikov
Atomic scale modelling of Al and Ni(111) surface erosion under cluster impact.
Nucl. Instrum. Methods Phys. Res. B 202, 269 (2003)

Al^+ + Al	Sputtering	500 eV	Th
Al^+ + Ni	Sputtering	500 eV	Th
Ni^+ + Al	Sputtering	500 eV	Th
Ni^+ + Ni	Sputtering	500 eV	Th

652. S. Cernusca, HP. Winter, F. Aumayr, R. Diez Muino, J. I. Juaristi
Molecular projectile effects for kinetic electron emission from carbon- and metal-surfaces bombarded by slow hydrogen ions.
Nucl. Instrum. Methods Phys. Res. B 203, 1 (2003)

H^+ + C	Secondary Electron Emission	0.05-10 keV	Exp
C^+ + C	Secondary Electron Emission	0.05-10 keV	Exp
N^+ + C	Secondary Electron Emission	0.05-10 keV	Exp
O^+ + C	Secondary Electron Emission	0.05-10 keV	Exp
H_2^+ + C	Secondary Electron Emission	0.05-10 keV	Exp
H_3^+ + C	Secondary Electron Emission	0.05-10 keV	Exp
D^+ + C	Secondary Electron Emission	0.05-10 keV	Exp
D_2^+ + C	Secondary Electron Emission	0.05-10 keV	Exp
D_3^+ + C	Secondary Electron Emission	0.05-10 keV	Exp

653. R. Diez Muino
Role of target polarization in the electron capture by ions in metals.
Nucl. Instrum. Methods Phys. Res. B 203, 8 (2003)

He^+ + Metal	Reflection	Th
He^+ + Metal	Neutraliz., Ioniz., Dissoc.	Th

654. F. A. Gutierrez, C. Harel, S. Jequier, H. Jouin
Analysis of charge transfer mechanisms in grazing incidence collisions between He^+ (1s) ions and Al(111) surfaces.
Nucl. Instrum. Methods Phys. Res. B (2003)

He^+ + Al	Reflection	Th
He^+ + Al	Neutraliz., Ioniz., Dissoc.	Th

655. S. Lederer, A. Mertens, H. Winter, F. Aumayr, HP. Winter, V. Staemmler
Electronic processes near kinematic threshold for grazing scattering of fast hydrogen atoms from a LiF(001) surface.
Nucl. Instrum. Methods Phys. Res. B 203, 23 (2003)

H + LiF	Reflection	350-800 eV	Exp
H + LiF	Secondary Electron Emission	350-800 eV	Exp
H + LiF	Neutraliz., Ioniz., Dissoc.	350-800 eV	Exp

656. R. Moroni, E. Oliveri, L. Mattera
Penning de-excitation of spin-polarised metastable He atoms on magnetic surfaces: Mg on Fe.
Nucl. Instrum. Methods Phys. Res. B 203, 29 (2003)

He + Mg	Secondary Electron Emission	300 K	Exp
He* + Mg	Secondary Electron Emission	300 K	Exp
He + Mg	Neutraliz., Ioniz., Dissoc.	300 K	Exp
He* + Mg	Neutraliz., Ioniz., Dissoc.	300 K	Exp

657. N. Pauly, A. Dubus, M. Rosler
Influence of the charge changing processes on proton induced electron emission from polycrystalline aluminium.
Nucl. Instrum. Methods Phys. Res. B 203, 36 (2003)

H$^+$ + Al	Reflection	3-20 keV	Th
H$^+$ + Al	Secondary Electron Emission	3-20 keV	Th
H$^+$ + Al	Neutraliz., Ioniz., Dissoc.	3-20 keV	Th

658. E. A. Sanchez, G. Otero, N. Tognalli, O. Grizzi, V. H. Ponce
Interaction of keV ions with insulator films at grazing incidence: growth characterization and electron emission.
Nucl. Instrum. Methods Phys. Res. B 203, 41 (2003)

H$^+$ + Al	Secondary Electron Emission	60 keV	Exp
H$^+$ + AlF$_3$	Secondary Electron Emission	60 keV	Exp

659. J. Sjakste, A. G. Borisov, J. P. Gauyacq
Wave packet propagation study of the electron transfer in back-scattering of H$^-$ ions from alkali adsorbates on an Al surface.
Nucl. Instrum. Methods Phys. Res. B 203, 49 (2003)

H$^-$ + Li	Neutraliz., Ioniz., Dissoc.		Th
H$^-$ + Cs	Neutraliz., Ioniz., Dissoc.		Th

660. S. Wethekam, A. Mertens, H. Winter
Charge exchange of He atoms and ions during grazing collisions with a Ag(111)-surface.
Nucl. Instrum. Methods Phys. Res. B 203, 57 (2003)

He + Ag	Reflection	0.1-120 keV	Exp
He$^+$ + Ag	Reflection	0.1-120 keV	Exp
He + Ag	Neutraliz., Ioniz., Dissoc.	0.1-120 keV	Exp
He$^+$ + Ag	Neutraliz., Ioniz., Dissoc.	0.1-120 keV	Exp

661. M. L. Martiarena, V. H. Ponce
Ionization by ion impact at grazing incidence on insulator surface.
Nucl. Instrum. Methods Phys. Res. B 203, 62 (2003)

H$^+$ + LiF	Secondary Electron Emission	300 keV	Th

662. F. B. Dunning, H. R. Dunham, C. Oubre, P. Nordlander
Behavior of Rydberg atoms at surfaces: energy level shifts and ionization.
Nucl. Instrum. Methods Phys. Res. B 203, 69 (2003)

Xe + Au	Neutraliz., Ioniz., Dissoc.	300 K	E/T
Xe* + Au	Neutraliz., Ioniz., Dissoc.	300 K	E/T

663. M. Kato, R. Souda
Inelastic energy loss of low energy proton colliding with cryogenic crystals of Ar, Kr and Xe.
Nucl. Instrum. Methods Phys. Res. B 203, 89 (2003)

H^+ + Ar	Reflection	500 eV	E/T
H^+ + Kr	Reflection	500 eV	E/T
H^+ + Xe	Reflection	500 eV	E/T
H^+ + Ar	Neutraliz., Ioniz., Dissoc.	500 eV	E/T
H^+ + Kr	Neutraliz., Ioniz., Dissoc.	500 eV	E/T
H^+ + Xe	Neutraliz., Ioniz., Dissoc.	500 eV	E/T

664. Z. D. Pesic, J. Anton, J.-H. Bremer, V. Hoffmann, N. Stolterfoht, Gy. Vikor, R. Schuch
Inelastic energy loss in large angle scattering of Ar^{9+} ions from Au(111) crystal.
Nucl. Instrum. Methods Phys. Res. B 203, 96 (2003)

Ar^{9+} + Au	Surface Interactions	4 keV	E/T

665. A. Sarasola, V. H. Ponce, A. Arnau
Energy loss of protons at surfaces: A local density approach.
Nucl. Instrum. Methods Phys. Res. B 203, 104 (2003)

H^+ + Al	Surface Interactions	120-500 keV	Th
H^+ + LiF	Surface Interactions	120-500 keV	Th

666. Sh. Akhunov, S. N. Morozov, U. Kh. Rasulev
Features of polyatomic ion emission under sputtering of a silicon single crystal by Au_m^- cluster ions.
Nucl. Instrum. Methods Phys. Res. B 203, 146 (2003)

Au^- + Si	Sputtering	4-18 keV	Exp
Au_2^- + Si	Sputtering	4-18 keV	Exp
Au_3^- + Si	Sputtering	4-18 keV	Exp
Au_4^- + Si	Sputtering	4-18 keV	Exp
Au_5^- + Si	Sputtering	4-18 keV	Exp

667. W. M. Arnoldbik, N. Tomozeiu, F.H.P.M. Habraken
Electronic sputtering of thin SiO_2 films by MeV heavy ions.
Nucl. Instrum. Methods Phys. Res. B 203, 151 (2003)

Si^{5+} + Si	Sputtering	35-66 MeV	Exp
Si^{5+} + Si_3N_4	Sputtering	35-66 MeV	Exp
Si^{5+} + SiO_2	Sputtering	35-66 MeV	Exp
Cl^{5+} + Si	Sputtering	35-66 MeV	Exp
Cl^{5+} + Si_3N_4	Sputtering	35-66 MeV	Exp
Cl^{5+} + SiO_2	Sputtering	35-66 MeV	Exp
Cu^{8+} + Si	Sputtering	35-66 MeV	Exp
Cu^{8+} + Si_3N_4	Sputtering	35-66 MeV	Exp
Cu^{8+} + SiO_2	Sputtering	35-66 MeV	Exp
Cu^{9+} + Si	Sputtering	35-66 MeV	Exp
Cu^{9+} + Si_3N_4	Sputtering	35-66 MeV	Exp
Cu^{9+} + SiO_2	Sputtering	35-66 MeV	Exp
Cu^{16+} + Si	Sputtering	35-66 MeV	Exp
Cu^{16+} + Si_3N_4	Sputtering	35-66 MeV	Exp
Cu^{16+} + SiO_2	Sputtering	35-66 MeV	Exp
Ag^{10+} + Si	Sputtering	35-66 MeV	Exp
Ag^{10+} + Si_3N_4	Sputtering	35-66 MeV	Exp
Ag^{10+} + SiO_2	Sputtering	35-66 MeV	Exp

668. S. F. Belykh, V. V. Palitsin, I. V. Veryovkin, A. Adriaens, F. Adams
Non-additive sputtering of niobium and tantalum as neutral and charged clusters.
Nucl. Instrum. Methods Phys. Res. B 203, 164 (2003)

Ar^+ + Nb	Sputtering	5-18 keV	Th
Ar^+ + Ta	Sputtering	5-18 keV	Th
Au^- + Nb	Sputtering	5-18 keV	Th
Au^- + Ta	Sputtering	5-18 keV	Th
Au_2^- + Nb	Sputtering	5-18 keV	Th
Au_2^- + Ta	Sputtering	5-18 keV	Th
Au_3^- + Nb	Sputtering	5-18 keV	Th
Au_3^- + Ta	Sputtering	5-18 keV	Th

669. S. F. Belykh, V. V. Palitsin, A. Adriaens, F. Adams
Effect of the relaxation of the electron subsystem excitation in metals on the ionization probability of sputtered atoms.
Nucl. Instrum. Methods Phys. Res. B 203, 172 (2003)

Ar^+ + Cu	Sputtering	1 keV	Th

670. K. Kuroki, K. Komaki, Y. Yamazaki
Potential sputtering of protons from hydrogen- and H_2O-terminated Si(100) surfaces with slow highly charged ions.
Nucl. Instrum. Methods Phys. Res. B 203, 183 (2003)

Ar^{3+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{4+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{5+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{6+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{7+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{8+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{9+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{10+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{11+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{12+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{13+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{14+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{15+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{16+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{17+} + SiH	Sputtering	0.5-5.0 keV	E/T
Ar^{18+} + SiH	Sputtering	0.5-5.0 keV	E/T
Xe^{4+} + SiH	Sputtering	0.5-5.0 keV	E/T
Xe^{5+} + SiH	Sputtering	0.5-5.0 keV	E/T
Xe^{6+} + SiH	Sputtering	0.5-5.0 keV	E/T
Xe^{7+} + SiH	Sputtering	0.5-5.0 keV	E/T
Xe^{8+} + SiH	Sputtering	0.5-5.0 keV	E/T
Xe^{9+} + SiH	Sputtering	0.5-5.0 keV	E/T
Xe^{10+} + SiH	Sputtering	0.5-5.0 keV	E/T

671. S. N. Morozov, U. Kh. Rasulev
Non-linear effects in Ta sputtering by Au_m^- ions.
Nucl. Instrum. Methods Phys. Res. B 203, 192 (2003)

Au^- + Ta	Sputtering	6-21 keV	Exp
Au_2^- + Ta	Sputtering	6-21 keV	Exp
Au_3^- + Ta	Sputtering	6-21 keV	Exp
Au_4^- + Ta	Sputtering	6-21 keV	Exp
Au_5^- + Ta	Sputtering	6-21 keV	Exp
Au_6^- + Ta	Sputtering	6-21 keV	Exp
Au_7^- + Ta	Sputtering	6-21 keV	Exp
Au_8^- + Ta	Sputtering	6-21 keV	Exp
Au_9^- + Ta	Sputtering	6-21 keV	Exp

672. A. Tolstogouzov, S. Daolio, C. Pagura, C. L. Greenwood, D. S. Karpuzov, N. S. McIntyre
Energy distributions of Ga^+ and In^+ secondary ions sputtered from $A^{III}B^{V}$ compound semiconductors by noble gas ions: Mass-dependence of the high-energy yield on the second component (P, As, Sb) of the compounds.
Nucl. Instrum. Methods Phys. Res. B 203, 198 (2003)

Ne^+ + GaAs	Sputtering	4 keV	E/T
Ne^+ + InP	Sputtering	4 keV	E/T
Ne^+ + InSb	Sputtering	4 keV	E/T
Ne^+ + GaP	Sputtering	4 keV	E/T
Ne^+ + InAs	Sputtering	4 keV	E/T
Ne^+ + CaSb	Sputtering	4 keV	E/T
Ar^+ + GaAs	Sputtering	4 keV	E/T
Ar^+ + InP	Sputtering	4 keV	E/T
Ar^+ + InSb	Sputtering	4 keV	E/T
Ar^+ + GaP	Sputtering	4 keV	E/T
Ar^+ + InAs	Sputtering	4 keV	E/T
Ar^+ + CaSb	Sputtering	4 keV	E/T
Kr^+ + GaAs	Sputtering	4 keV	E/T
Kr^+ + InP	Sputtering	4 keV	E/T
Kr^+ + InSb	Sputtering	4 keV	E/T
Kr^+ + GaP	Sputtering	4 keV	E/T
Kr^+ + InAs	Sputtering	4 keV	E/T
Kr^+ + CaSb	Sputtering	4 keV	E/T

673. P. Cafarelli, M. Richard-Viard, C. Benazeth, N. Nieuwjaer, N. Lorente
Simulations of the azimuthal distribution of low-energy H atoms scattered off Ag(110) at grazing incidence: DFT many-body versus model pair potentials.
Nucl. Instrum. Methods Phys. Res. B 203, 211 (2003)

H^+ + Ag	Reflection	4 keV	E/T
D^+ + Ag	Reflection	4 keV	E/T

674. M. Draxler, R. Beikler, E. Taglauer, K. Schmid, R. Gruber, S. N. Ermolov, P. Bauer
Explanation of the surface peak in charge integrated LEIS spectra.
Nucl. Instrum. Methods Phys. Res. B 203, 218 (2003)

He^+ + Cu	Reflection	1-9 keV	E/T

675. P. L. Maazouz, M. Maazouz, D. C. Jacobs
Trajectory-dependent energy- and charge-transfer in collisions of $Br^+(^3P_2)$ with Pt(111).
Nucl. Instrum. Methods Phys. Res. B 203, 225 (2003)

Br^+ + Pt	Reflection	11-104 eV	E/T
Br^+ + Pt	Neutraliz., Ioniz., Dissoc.	11-104 eV	E/T

676. F. W. Meyer, H. F. Krause, C. R. Vane
Site-resolved neutralization of slow singly and multiply charged ions during large-angle backscattering collisions with RbI(100).
Nucl. Instrum. Methods Phys. Res. B 203, 231 (2003)

F^+ + RbI	Reflection	4.4-8.0 keV	Exp
Ne^{8+} + RbI	Reflection	4.4-8.0 keV	Exp

677. K. Morita, A. Yoshii
Ion to neutral yield ratio in near 180 degree backscattering of keV He^+ ions from insulating targets.
Nucl. Instrum. Methods Phys. Res. B 203, 239 (2003)

He^+ + NaCl	Reflection	1.5-3.0 keV	Exp

678. F. W. Meyer, H. F. Krause, C. R. Vane
Projectile neutralization in large-angle back-scattering of slow F^{q+}, Ne^{q+} and Ar^{q+} incident on RbI(100).
Nucl. Instrum. Methods Phys. Res. B 205, 700 (2003)

F^+ + RbI	Reflection	2-10 keV	Exp
F^{2+} + RbI	Reflection	2-10 keV	Exp
F^{6+} + RbI	Reflection	2-10 keV	Exp
F^{7+} + RbI	Reflection	2-10 keV	Exp
Ne^{8+} + RbI	Reflection	2-10 keV	Exp
Ne^{9+} + RbI	Reflection	2-10 keV	Exp
Ar^{9+} + RbI	Reflection	2-10 keV	Exp
Ar^{11+} + RbI	Reflection	2-10 keV	Exp

679. K. Nakajima, M. Nakamura, T. Tsujioka, K. Kimura
Energy loss of 15-keV Ar^{q+} (q=1-3) ions reflected from a KCl(001) surface.
Nucl. Instrum. Methods Phys. Res. B 205, 705 (2003)

Ar^+ + KCl	Reflection	15 keV	Exp
Ar^{2+} + KCl	Reflection	15 keV	Exp
Ar^{3+} + KCl	Reflection	15 keV	Exp
Ar^+ + KCl	Neutraliz., Ioniz., Dissoc.	15 keV	Exp
Ar^{2+} + KCl	Neutraliz., Ioniz., Dissoc.	15 keV	Exp
Ar^{3+} + KCl	Neutraliz., Ioniz., Dissoc.	15 keV	Exp

680. S. Jequier, H. Jouin, C. Harel, F. A. Gutierrez
Numerical simulations of electron capture in low energy He^+(1s) on Al(111) collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 709 (2003)

He^+ + Al	Reflection	1 keV	Th
He^+ + Al	Neutraliz., Ioniz., Dissoc.	1 keV	Th

681. A. Robin, D. Niemann, N. Stolterfoht, W. Heiland
Step effects in the interaction of highly charged ions (HCI) with a metal surface.
Nucl. Instrum. Methods Phys. Res. B 205, 719 (2003)

N^{5+} + Pt	Reflection	75 keV	Exp
N^{5+} + Pt	Neutraliz., Ioniz., Dissoc.	75 keV	Exp

682. N. Okabayashi, K. Komaki, Y. Yamazaki
Secondary ion emission from a water and fluorine adsorbed Si(100) surface irradiated with electrons and highly charged ions.
Nucl. Instrum. Methods Phys. Res. B 205, 725 (2003)

e + F + Si	Desorption	1.6-3.2 keV; 450 eV	Exp
e + H_2O + Si	Desorption	1.6-3.2 keV; 450 eV	Exp
Ar^{4+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{4+} + Si	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{4+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{5+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{5+} + Si	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{5+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{6+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{6+} + Si	Sputtering	1.6-3.2 keV; 450 eV	Exp

Ar^{6+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{7+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{7+} + S	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{7+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{8+} + F	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{8+} + Si	Sputtering	1.6-3.2 keV; 450 eV	Exp
Ar^{8+} + H_2O	Sputtering	1.6-3.2 keV; 450 eV	Exp

683. A. Dubus, N. Pauly, M. Roesler
Electron emission from below the surface induced by highly charged ions: Effect of depth distribution of electron excitation and ion transport on the emission properties.
Nucl. Instrum. Methods Phys. Res. B 205, 730 (2003)

Ne^{9+} + Al	Secondary Electron Emission	0.13-22.5 keV	Th

684. D. Dauvergne, A. Brauning-Demian, F. Bosch, H. Brauning, M. Chevallier, C. Cohen, A. Gumberidze, A. L'Hoir, R. Kirsch, C. Kozhuharov, D. Liesen, P. H. Mokler, J. C. Poizat, C. Ray, Th. Stoehlker, M. Tarisien, E. Testa, S. Toleikis, M. Toulemonde
Impact parameter dependent electron capture by decelerated U^{91+} ions at 20 MeV/u using crystal channeling conditions.
Nucl. Instrum. Methods Phys. Res. B 205, 773 (2003)

U^{91+} + Si	Neutraliz., Ioniz., Dissoc.	20 MeV/u	Exp

685. M. Seliger, K. Tokesi, C. O. Reinhold, J. Burgdorfer
Highly transverse velocity distribution of convoy electrons emitted by highly charged ions.
Nucl. Instrum. Methods Phys. Res. B 205, 830 (2003)

Ar^{17+} + C	Secondary Electron Emission	390 MeV/u	Th

686. B. Gervais, M. Beuve, M. Caron, H. Rothard
Saturation effects in highly charged ion interaction with thin carbon foils.
Nucl. Instrum. Methods Phys. Res. B 205, 835 (2003)

H^+ + C	Secondary Electron Emission	9.2 MeV/u	E/T
He^{2+} + C	Secondary Electron Emission	9.2 MeV/u	E/T
C^{6+} + C	Secondary Electron Emission	9.2 MeV/u	E/T
Ne^{10+} + C	Secondary Electron Emission	9.2 MeV/u	E/T
S^{16+} + C	Secondary Electron Emission	9.2 MeV/u	E/T
Ar^{18+} + C	Secondary Electron Emission	9.2 MeV/u	E/T
Ca^{20+} + C	Secondary Electron Emission	9.2 MeV/u	E/T
Ni^{20+} + C	Secondary Electron Emission	9.2 MeV/u	E/T
Mo^{39+} + C	Secondary Electron Emission	9.2 MeV/u	E/T

687. G. Lanzano, E. De Filippo, A. Anzalone, N. Arena, M. Geraci, F. Giustolisi, A. Pagano, H. Rothard, C. Volant
Recent results on fast intermediate velocity electron production induced by 19^+ 45 A MeV ^{58}Ni highly charged ions on thin solid targets.
Nucl. Instrum. Methods Phys. Res. B 205, 841 (2003)

Ni^{19+} + C	Secondary Electron Emission	45 MeV	Exp
Ni^{19+} + Al	Secondary Electron Emission	45 MeV	Exp
Ni^{19+} + Ni	Secondary Electron Emission	45 MeV	Exp
Ni^{19+} + Ag	Secondary Electron Emission	45 MeV	Exp
Ni^{19+} + Au	Secondary Electron Emission	45 MeV	Exp
Ni^{19+} + Bi	Secondary Electron Emission	45 MeV	Exp

688. H. F. Lu, C. Zhang, Q. Y. Zhang
Adatom, vacancy and sputtering yields of low energy Pt atoms impacts on Pt(111) by molecular dynamics simulation.
Nucl. Instrum. Methods Phys. Res. B 206, 22 (2003)

Pt^+ + Pt	Sputtering	0.1-200 eV	Th

689. K. Ohya
Comparative study of target atomic number dependence of ion induced and electron induced secondary electron emission.
Nucl. Instrum. Methods Phys. Res. B 206, 52 (2003)

He^+ + Be	Secondary Electron Emission	50 keV	Th
He^+ + Al	Secondary Electron Emission	50 keV	Th
He^+ + Si	Secondary Electron Emission	50 keV	Th
He^+ + V	Secondary Electron Emission	50 keV	Th
He^+ + Cr	Secondary Electron Emission	50 keV	Th
He^+ + Fe	Secondary Electron Emission	50 keV	Th
He^+ + Co	Secondary Electron Emission	50 keV	Th
He^+ + Ni	Secondary Electron Emission	50 keV	Th
He^+ + Cu	Secondary Electron Emission	50 keV	Th
He^+ + Nb	Secondary Electron Emission	50 keV	Th
He^+ + Mo	Secondary Electron Emission	50 keV	Th
He^+ + Pd	Secondary Electron Emission	50 keV	Th
He^+ + Ag	Secondary Electron Emission	50 keV	Th
He^+ + Ta	Secondary Electron Emission	50 keV	Th
He^+ + W	Secondary Electron Emission	50 keV	Th
He^+ + Pt	Secondary Electron Emission	50 keV	Th
He^+ + Au	Secondary Electron Emission	50 keV	Th
Ne^+ + Be	Secondary Electron Emission	50 keV	Th
Ne^+ + Al	Secondary Electron Emission	50 keV	Th
Ne^+ + Si	Secondary Electron Emission	50 keV	Th
Ne^+ + V	Secondary Electron Emission	50 keV	Th
Ne^+ + Cr	Secondary Electron Emission	50 keV	Th
Ne^+ + Fe	Secondary Electron Emission	50 keV	Th
Ne^+ + Co	Secondary Electron Emission	50 keV	Th
Ne^+ + Ni	Secondary Electron Emission	50 keV	Th
Ne^+ + Cu	Secondary Electron Emission	50 keV	Th
Ne^+ + Nb	Secondary Electron Emission	50 keV	Th
Ne^+ + Mo	Secondary Electron Emission	50 keV	Th
Ne^+ + Pd	Secondary Electron Emission	50 keV	Th
Ne^+ + Ag	Secondary Electron Emission	50 keV	Th
Ne^+ + Ta	Secondary Electron Emission	50 keV	Th
Ne^+ + W	Secondary Electron Emission	50 keV	Th
Ne^+ + Pt	Secondary Electron Emission	50 keV	Th
Ne^+ + Au	Secondary Electron Emission	50 keV	Th
Kr^+ + Be	Secondary Electron Emission	50 keV	Th
Kr^+ + Al	Secondary Electron Emission	50 keV	Th
Kr^+ + Si	Secondary Electron Emission	50 keV	Th
Kr^+ + V	Secondary Electron Emission	50 keV	Th
Kr^+ + Cr	Secondary Electron Emission	50 keV	Th
Kr^+ + Fe	Secondary Electron Emission	50 keV	Th
Kr^+ + Co	Secondary Electron Emission	50 keV	Th
Kr^+ + Ni	Secondary Electron Emission	50 keV	Th
Kr^+ + Cu	Secondary Electron Emission	50 keV	Th
Kr^+ + Nb	Secondary Electron Emission	50 keV	Th
Kr^+ + Mo	Secondary Electron Emission	50 keV	Th

Kr^+ + Pd	Secondary Electron Emission	50 keV	Th
Kr^+ + Ag	Secondary Electron Emission	50 keV	Th
Kr^+ + Ta	Secondary Electron Emission	50 keV	Th
Kr^+ + W	Secondary Electron Emission	50 keV	Th
Kr^+ + Pt	Secondary Electron Emission	50 keV	Th
Kr^+ + Au	Secondary Electron Emission	50 keV	Th
Xe^+ + Be	Secondary Electron Emission	50 keV	Th
Xe^+ + Al	Secondary Electron Emission	50 keV	Th
Xe^+ + Si	Secondary Electron Emission	50 keV	Th
Xe^+ + V	Secondary Electron Emission	50 keV	Th
Xe^+ + Cr	Secondary Electron Emission	50 keV	Th
Xe^+ + Fe	Secondary Electron Emission	50 keV	Th
Xe^+ + Co	Secondary Electron Emission	50 keV	Th
Xe^+ + Ni	Secondary Electron Emission	50 keV	Th
Xe^+ + Cu	Secondary Electron Emission	50 keV	Th
Xe^+ + Nb	Secondary Electron Emission	50 keV	Th
Xe^+ + Mo	Secondary Electron Emission	50 keV	Th
Xe^+ + Pd	Secondary Electron Emission	50 keV	Th
Xe^+ + Ag	Secondary Electron Emission	50 keV	Th
Xe^+ + Ta	Secondary Electron Emission	50 keV	Th
Xe^+ + W	Secondary Electron Emission	50 keV	Th
Xe^+ + Pt	Secondary Electron Emission	50 keV	Th
Xe^+ + Au	Secondary Electron Emission	50 keV	Th

690. Q. Wang, H. Ogiso, S. Nakano, J. Akedo, H. Ishikawa
Martensitic transformation and the stress induced by 3 MeV ion implantation in an austenite stainless steel sheet.
Nucl. Instrum. Methods Phys. Res. B 206, 118 (2003)

Au^+ + Fe	Chemical Reactions	3 MeV	Exp
Au^+ + SS	Chemical Reactions	3 MeV	Exp

691. A. Nakao, M. Iwaki, Y. Yokoyama
Potassium ion implantation into glassy carbon.
Nucl. Instrum. Methods Phys. Res. B 206, 211 (2003)

K^+ + C	Chemical Reactions	50-150 keV	Exp

692. H. Abe, H. Uchida, Y. Azuma, A. Uedono, Z. Q. Chen, H. Itoh
Improvement of hydrogen absorption rate of Pd by ion irradiation.
Nucl. Instrum. Methods Phys. Res. B 206, 224 (2003)

H_2 + Pd	Trapping, Detrapping	300 K	Exp

693. R. Heinrich, A. Wucher
Projectile size effects on cluster formation in sputtering.
Nucl. Instrum. Methods Phys. Res. B 207, 136 (2003)

Ag^+ + Ag	Sputtering	7-21 keV	Exp
Ag_2^+ + Ag	Sputtering	7-21 keV	Exp
Ag_3^+ + Ag	Sputtering	7-21 keV	Exp

694. H. Kudo, K.-I. Takeda, T. Suguri, W. Iwazaki, C. Sakurai, I. Arano, S. Numazawa, S. Seki
Electron loss from fast partially stripped C and O ions incident on crystal targets.
Nucl. Instrum. Methods Phys. Res. B 207, 283 (2003)

C^{4+} + Si	Secondary Electron Emission	2.5-3.5 MeV/u	Exp
C^{4+} + Ge	Secondary Electron Emission	2.5-3.5 MeV/u	Exp
C^{5+} + Si	Secondary Electron Emission	2.5-3.5 MeV/u	Exp
C^{5+} + Ge	Secondary Electron Emission	2.5-3.5 MeV/u	Exp
C^{6+} + Si	Secondary Electron Emission	2.5-3.5 MeV/u	Exp
C^{6+} + Ge	Secondary Electron Emission	2.5-3.5 MeV/u	Exp
C^{8+} + Si	Secondary Electron Emission	2.5-3.5 MeV/u	Exp
C^{8+} + Ge	Secondary Electron Emission	2.5-3.5 MeV/u	Exp

695. G. Schiwietz, M. Roth, K. Czerski, F. Staufenbiel, M. Roesler, P. L. Grande
Spectroscopy of Si-Auger electrons from the center of heavy-ion tracks.
Nucl. Instrum. Methods Phys. Res. B 209, 26 (2003)

Ne^{9+} + Si	Secondary Electron Emission	1.8-5.0 MeV/u	Exp
Ar^{16+} + Si	Secondary Electron Emission	1.8-5.0 MeV/u	Exp
Xe^{15+} + Si	Secondary Electron Emission	1.8-5.0 MeV/u	Exp
Xe^{31+} + Si	Secondary Electron Emission	1.8-5.0 MeV/u	Exp

696. R. Neugebauer, T. Jalowy, J.A.M. Pereira, E. F. da Silveira, H. Rothard, M. Toulemonde, K. O. Groenveld
The influence of energy density inside the nuclear track on the secondary-ion emission.
Nucl. Instrum. Methods Phys. Res. B 209, 62 (2003)

C^{+} + C	Sputtering	1.4 MeV/u	Exp
C^{+} + LiF	Sputtering	1.4 MeV/u	Exp
N^{+} + C	Sputtering	1.4 MeV/u	Exp
N^{+} + LiF	Sputtering	1.4 MeV/u	Exp
Ar^{+} + C	Sputtering	1.4 MeV/u	Exp
Ar^{+} + LiF	Sputtering	1.4 MeV/u	Exp
Kr^{+} + C	Sputtering	1.4 MeV/u	Exp
Kr^{+} + LiF	Sputtering	1.4 MeV/u	Exp
Sn^{+} + C	Sputtering	1.4 MeV/u	Exp
Sn^{+} + LiF	Sputtering	1.4 MeV/u	Exp

697. P. Barone, A. Sindona, R. A. Baragiola, A. Bonanno, A. Oliva, P. Riccardi
Sub-threshold plasmon excitation in free-electron metals by helium ions.
Nucl. Instrum. Methods Phys. Res. B 209, 68 (2003)

He^{+} + Mg	Secondary Electron Emission	0.16-4.0 keV	Exp
He^{+} + Al	Secondary Electron Emission	0.16-4.0 keV	Exp

698. G. Lanzano, A. Anzalone, N. Arena, E. De Filippo, M. Geraci, F. Giustolisi, A. Pagano, H. Rothard, C. Volant
Recent results on fast electron production induced by energetic heavy ions on thin solid targets.
Nucl. Instrum. Methods Phys. Res. B 209, 212 (2003)

C^{3+} + C	Secondary Electron Emission	23 MeV/u	Exp
Ni^{14+} + C	Secondary Electron Emission	23 MeV/u	Exp
Au^{36+} + C	Secondary Electron Emission	23 MeV/u	Exp

699. S. Ninomiya, S. Gomi, C. Imada, M. Nagai, M. Imai, N. Imanishi
Cluster-ion emission from semiconductive chemical compounds under MeV-energy heavy ion bombardment.
Nucl. Instrum. Methods Phys. Res. B 209, 233 (2003)

Si^+ + GaAs	Sputtering	0.5-5.0 MeV	Exp
Si^+ + InSb	Sputtering	0.5-5.0 MeV	Exp
Si^+ + GaP	Sputtering	0.5-5.0 MeV	Exp
Si^+ + GaSb	Sputtering	0.5-5.0 MeV	Exp

700. D. Emfietzoglou, M. Moscovitch
Secondary electron spectra for fast proton impact on gaseous and liquid water.
Nucl. Instrum. Methods Phys. Res. B 209, 239 (2003)

H^+ + H_2O	Secondary Electron Emission	0.3-10 MeV	E/T

701. A. Robin, N. Hatke, J. Jensen, D. Plachke, H. D. Carstanjen, W. Heiland
Energy loss and charge state dependency of swift N^{q+} ions scattered off a Pt(110)(1x2) surface.
Nucl. Instrum. Methods Phys. Res. B 209, 259 (2003)

N^+ + Pt	Reflection	0.7-1.4 MeV/u	Exp
N^{2+} + Pt	Reflection	0.7-1.4 MeV/u	Exp

702. N. Matsunami, M. Sataka, A. Iwase, S. Okayasu
Electronic excitation induced sputtering of insulating and semiconducting oxides by high energy heavy ions.
Nucl. Instrum. Methods Phys. Res. B 209, 288 (2003)

S^+ + Al_2O_3	Sputtering	60-200 MeV	Exp
S^+ + TiO_2	Sputtering	60-200 MeV	Exp
S^+ + SiO_2	Sputtering	60-200 MeV	Exp
S^+ + $SrTiO_3$	Sputtering	60-200 MeV	Exp
S^+ + MgO	Sputtering	60-200 MeV	Exp
S^+ + $SrCeO_3$	Sputtering	60-200 MeV	Exp
S^+ + CeO_2	Sputtering	60-200 MeV	Exp
S^+ + ZnO	Sputtering	60-200 MeV	Exp
Ar^+ + Al_2O_3	Sputtering	60-200 MeV	Exp
Ar^+ + TiO_2	Sputtering	60-200 MeV	Exp
Ar^+ + SiO_2	Sputtering	60-200 MeV	Exp
Ar^+ + $SrTiO_3$	Sputtering	60-200 MeV	Exp
Ar^+ + MgO	Sputtering	60-200 MeV	Exp
Ar^+ + $SrCeO_3$	Sputtering	60-200 MeV	Exp
Ar^+ + CeO_2	Sputtering	60-200 MeV	Exp
Ar^+ + ZnO	Sputtering	60-200 MeV	Exp
Ni^+ + Al_2O_3	Sputtering	60-200 MeV	Exp
Ni^+ + TiO_2	Sputtering	60-200 MeV	Exp
Ni^+ + SiO_2	Sputtering	60-200 MeV	Exp
Ni^+ + $SrTiO_3$	Sputtering	60-200 MeV	Exp
Ni^+ + MgO	Sputtering	60-200 MeV	Exp
Ni^+ + $SrCeO_3$	Sputtering	60-200 MeV	Exp
Ni^+ + CeO_2	Sputtering	60-200 MeV	Exp
Ni^+ + ZnO	Sputtering	60-200 MeV	Exp
I^+ + Al_2O_3	Sputtering	60-200 MeV	Exp
I^+ + TiO_2	Sputtering	60-200 MeV	Exp
I^+ + SiO_2	Sputtering	60-200 MeV	Exp
I^+ + $SrTiO_3$	Sputtering	60-200 MeV	Exp
I^+ + MgO	Sputtering	60-200 MeV	Exp
I^+ + $SrCeO_3$	Sputtering	60-200 MeV	Exp
I^+ + CeO_2	Sputtering	60-200 MeV	Exp
I^+ + ZnO	Sputtering	60-200 MeV	Exp
Xe^+ + Al_2O_3	Sputtering	60-200 MeV	Exp

Xe^+ + TiO_2	Sputtering	60-200 MeV	Exp
Xe^+ + SiO_2	Sputtering	60-200 MeV	Exp
Xe^+ + $SrTiO_3$	Sputtering	60-200 MeV	Exp
Xe^+ + MgO	Sputtering	60-200 MeV	Exp
Xe^+ + $SrCeO_3$	Sputtering	60-200 MeV	Exp
Xe^+ + CeO_2	Sputtering	60-200 MeV	Exp
Xe^+ + ZnO	Sputtering	60-200 MeV	Exp

703. R. A. Baragiola, R. A. Vidal, W. Svendsen, J. Schou, M. Shi, D. A. Bahr, C. L. Atteberrry
Sputtering of water ice.
Nucl. Instrum. Methods Phys. Res. B 209, 294 (2003)

H^+ + H_2O	Sputtering	30 keV	Exp
He^+ + H_2O	Sputtering	30 keV	Exp
O^+ + H_2O	Sputtering	30 keV	Exp
Ar^+ + H_2O	Sputtering	30 keV	Exp

704. M. A. Karolewski
Collision cascade containment in classical dynamics simulations of sputtering.
Nucl. Instrum. Methods Phys. Res. B 211, 43 (2003)

Ar^+ + Cu	Sputtering	3 keV	Th

705. M. A. Karolewski
Sputtering of stepped Cu surfaces by 3 keV Ar projectiles with glancing angles of incidence.
Nucl. Instrum. Methods Phys. Res. B 211, 190 (2003)

Ar^+ + Cu	Sputtering	3 keV	Th

706. F. Allegrini, R.F. Wimmer-Schweingruber, P. Wurz, P. Bochsler
Determination of low-energy ion-induced electron yields from thin carbon foils.
Nucl. Instrum. Methods Phys. Res. B 211, 487 (2003)

O^+ + C	Secondary Electron Emission	0.1-10 keV/u	Exp
Ar^+ + C	Secondary Electron Emission	0.1-10 keV/u	Exp
Fe^+ + C	Secondary Electron Emission	0.1-10 keV/u	Exp

707. L. Guillemot, V. A. Esaulov, E. A. Sanchez
Channelling and stopping of hydrogen and fluorine ions in grazing scattering on an Ag(110) surface at low keV energies and effects of oxygen adsorption.
Nucl. Instrum. Methods Phys. Res. B 212, 20 (2003)

H^+ + Ag	Reflection	1-6 keV	Exp
F^+ + Ag	Reflection	1-6 keV	Exp

708. H. Winter, A. Mertens, S. Lederer, C. Auth, F. Aumayr, HP. Winter
Electronic processes during impact of fast hydrogen atoms on a LiF(001) surface.
Nucl. Instrum. Methods Phys. Res. B 212, 45 (2003)

H + LiF	Secondary Electron Emission	0.1-10 keV	Exp

709. N. V. Novikov, Ya. A. Teplova, Yu. A. Fainberg, V. A. Kurnaev
Theoretical description of fast proton scattering from steel surface under grazing incidence.
Nucl. Instrum. Methods Phys. Res. B 212, 96 (2003)

H^+ + Fe	Reflection	300-500 keV	Th
H^+ + SS	Reflection	300-500 keV	Th

710. L. D. Bogomolova, A. M. Borisov, V. A. Kurnaev, E. S. Mashkova
Modification of graphite surface layers by nitrogen ion irradiation.
Nucl. Instrum. Methods Phys. Res. B 212, 164 (2003)

N_2^+ + C	Secondary Electron Emission	30 keV	Exp

711. D. Datta, S. R. Bhattacharyya
Role of interface modifications in ion-sputtering mechanism of gold thin films.
Nucl. Instrum. Methods Phys. Res. B 212, 201 (2003)

Ar^+ + Si	Sputtering	50 keV	Exp
Ar^+ + Au	Sputtering	50 keV	Exp
Kr^+ + Si	Sputtering	50 keV	Exp
Kr^+ + Au	Sputtering	50 keV	Exp

712. V. A. Kurnaev, N. N. Trifonov, V. A. Urusov
Ion reflection from solids at sliding incidence – computer simulations versus analytical theories and experiment.
Nucl. Instrum. Methods Phys. Res. B 212, 270 (2003)

H^+ + Si	Reflection	20-30 keV	E/T
H^+ + Cu	Reflection	20-30 keV	E/T
H^+ + Au	Reflection	20-30 keV	E/T
D^+ + Si	Reflection	20-30 keV	E/T
D^+ + Cu	Reflection	20-30 keV	E/T
D^+ + Au	Reflection	20-30 keV	E/T

713. J. A. Scheer, P. Wurz, W. Heiland
Scattering of slow ions from insulator surfaces at the example of molecular oxygen from LiF(100).
Nucl. Instrum. Methods Phys. Res. B 212, 291 (2003)

O_2^+ + LiF	Reflection	880-3000 eV	Exp

714. S. Wethekam, A. Mertens, H. Winter
Survival of He^+ ions during grazing scattering from a Cu(111) surface.
Nucl. Instrum. Methods Phys. Res. B 212, 308 (2003)

H + Cu	Reflection	0.1-3.0 keV	Exp
He^+ + Cu	Reflection	0.1-3.0 keV	Exp

715. L. E. Rehn, R. C. Birtcher, P. M. Baldo, A. W. McCormick, L. Funk
Shock-wave production of nanoparticles during high-energy ion sputtering.
Nucl. Instrum. Methods Phys. Res. B 212, 326 (2003)

Ne^+ + Au	Sputtering	400-500 keV	Exp
Ar^+ + Au	Sputtering	400-500 keV	Exp
Kr^+ + Au	Sputtering	400-500 keV	Exp
Au^+ + Au	Sputtering	400-500 keV	Exp

716. P. Riccardi, A. Sindona, P. Barone, A. Bonanno, A. Oliva, R. A. Baragiola
Bulk and surface plasmon excitation in the interaction of He^+ with Mg surfaces.
Nucl. Instrum. Methods Phys. Res. B 212, 339 (2003)

He^+ + Mg	Secondary Electron Emission	160-460 eV	Exp

717. M. Toulemonde, W. Assmann, C. Trautmann, F. Gruener, H. D. Mieskes, H. Kucal, Z. G. Wang
Electronic sputtering of metals and insulators by swift heavy ions.
Nucl. Instrum. Methods Phys. Res. B 212, 346 (2003)

S^+ + Ti	Sputtering	1.1-1.4 MeV/u	Exp
S^+ + Zr	Sputtering	1.1-1.4 MeV/u	Exp
S^+ + Au	Sputtering	1.1-1.4 MeV/u	Exp
S^+ + SiO_2	Sputtering	1.1-1.4 MeV/u	Exp
S^+ + LiF	Sputtering	1.1-1.4 MeV/u	Exp
Ni^+ + Ti	Sputtering	1.1-1.4 MeV/u	Exp
Ni^+ + Zr	Sputtering	1.1-1.4 MeV/u	Exp
Ni^+ + Au	Sputtering	1.1-1.4 MeV/u	Exp
Ni^+ + SiO_2	Sputtering	1.1-1.4 MeV/u	Exp
Ni^+ + LiF	Sputtering	1.1-1.4 MeV/u	Exp
I^+ + Ti	Sputtering	1.1-1.4 MeV/u	Exp
I^+ + Zr	Sputtering	1.1-1.4 MeV/u	Exp
I^+ + Au	Sputtering	1.1-1.4 MeV/u	Exp
I^+ + SiO_2	Sputtering	1.1-1.4 MeV/u	Exp
I^+ + LiF	Sputtering	1.1-1.4 MeV/u	Exp
Au^+ + Ti	Sputtering	1.1-1.4 MeV/u	Exp
Au^+ + Zr	Sputtering	1.1-1.4 MeV/u	Exp
Au^+ + Au	Sputtering	1.1-1.4 MeV/u	Exp
Au^+ + SiO_2	Sputtering	1.1-1.4 MeV/u	Exp
Au^+ + LiF	Sputtering	1.1-1.4 MeV/u	Exp

718. P. Karmakar, D. Ghose
Photo emission in ion beam sputtering of an Mg target.
Nucl. Instrum. Methods Phys. Res. B 212, 358 (2003)

He^+ + Mg	Sputtering	3-56 keV	Exp
N^+ + Mg	Sputtering	3-56 keV	Exp
O^+ + Mg	Sputtering	3-56 keV	Exp
Ne^+ + Mg	Sputtering	3-56 keV	Exp
Ar^+ + Mg	Sputtering	3-56 keV	Exp
Kr^+ + Mg	Sputtering	3-56 keV	Exp
$N_2{}^+$ + Mg	Sputtering	3-56 keV	Exp
$O_2{}^+$ + Mg	Sputtering	3-56 keV	Exp

719. S. Sarkar, P. Chakraborty
Towards an understanding of $MCs_n{}^+$ formation mechanism in SIMS.
Nucl. Instrum. Methods Phys. Res. B 212, 364 (2003)

Cs^+ + Ni	Sputtering	1-5 keV	Exp
Cs^+ + Cu	Sputtering	1-5 keV	Exp
Cs^+ + Au	Sputtering	1-5 keV	Exp

720. N. Pauly, A. Dubus, M. Roesler
Electron emission induced by hydrogen atoms and protons incident on aluminium: Effect of the projectile charge state.
Nucl. Instrum. Methods Phys. Res. B 212, 386 (2003)

H + Al	Secondary Electron Emission	25-100 keV	Th
H^+ + Al	Secondary Electron Emission	25-100 keV	Th

721. N. Pauly, A. Dubus, M. Roesler
Influence of charge changing processes on the forward to backward electron emission yield ratio for light ions impinging on thin metallic foils.
Nucl. Instrum. Methods Phys. Res. B 212, 391 (2003)

H^+ + Al	Secondary Electron Emission	25-100 keV	Th

722. T. Azuma, Y. Takabayashi, T. Ito, K. Komaki, Y. Yamazaki, E. Takada, T. Murakami
Convoy electron emission from resonant coherently excited 390 MeV/u hydrogen-like Ar ions.
Nucl. Instrum. Methods Phys. Res. B 212, 397 (2003)

Ar^{17+} + Si	Secondary Electron Emission	390 MeV/u	Exp

723. A. Tripathi, S. A. Khan, S. K. Srivastava, M. Kumar, S. Kumar, S.V.S.N. Rao, G.B.V.S. Lakshmi, A. M. Siddiquia, N. Bajwae, H. S. Nagarajaa, V. K. Mittalf, A. Szokefalvig, M. Kurthg, A. C. Pandeyb, D. K. Avasthia, H. D. Carstanjen
Electronic sputtering from HOPG: A study of angular dependence.
Nucl. Instrum. Methods Phys. Res. B 212, 402 (2003)

Ag^+ + C	Secondary Electron Emission	130 MeV	Exp

724. H. Gnaser
Formation of molecular doubly charged anions in sputtering.
Nucl. Instrum. Methods Phys. Res. B 212, 407 (2003)

Cs^+ + C	Sputtering	14.5 keV	Th
Cs^+ + TiC	Sputtering	14.5 keV	Th
Cs^+ + BNi	Sputtering	14.5 keV	Th

725. D. Ghose, P. Karmakar, E. Parilis
Evidence of Coulomb explosion sputtering of ultra-thin Pt films due to impact of multi-charged Ar ions.
Nucl. Instrum. Methods Phys. Res. B 212, 420 (2003)

Ar^{3+} + Pt	Sputtering	20 keV	Exp
Ar^{4+} + Pt	Sputtering	20 keV	Exp
Ar^{5+} + Pt	Sputtering	20 keV	Exp
Ar^{6+} + Pt	Sputtering	20 keV	Exp
Ar^{7+} + Pt	Sputtering	20 keV	Exp
Ar^{8+} + Pt	Sputtering	20 keV	Exp

726. B. Tsuchiya, S. Nagata, T. Shikama
Oxygen ion-induced detrapping of hydrogen retained in graphite.
212, 426 (2003)

O^+ + C	Trapping, Detrapping	2-4.8 MeV	Exp
O^+ + H + C	Trapping, Detrapping	2-4.8 MeV	Exp
O^+ + D + C	Trapping, Detrapping	2-4.8 MeV	Exp

727. M. Terasawa, Z. A. Insepov, T. Sekioka, A. A. Valuev, T. Mitamura
Sputtering due to Coulomb explosion in highly charged ion bombardment.
Nucl. Instrum. Methods Phys. Res. B 212, 436 (2003)

Xe^{22+} + Si	Sputtering	Th
Xe^{33+} + Si	Sputtering	Th
Xe^{49+} + Si	Sputtering	Th

728. J. C. Lancaster, F. J. Kontur, G. K. Walters, F. B. Dunning
Dynamics of He^+ ion neutralization at clean metal surfaces: Energy- and spin-resolved studies.
Phys. Rev. B 67, 115413 (2003)

He^+ + Cu	Neutraliz., Ioniz., Dissoc.	10-500 eV	Exp

729. H. D. Mieskes, W. Assmann, F. Gruener, H. Kucal, Z. G. Wang, M. Toulemonde
Electronic and nuclear thermal spike effects in sputtering of metals with energetic heavy ions.
Phys. Rev. B 67, 155414 (2003)

I^{7+} + Ti	Sputtering	55-275 MeV	E/T
I^{7+} + Zr	Sputtering	55-275 MeV	E/T
I^{7+} + Au	Sputtering	55-275 MeV	E/T
I^{8+} + Ti	Sputtering	55-275 MeV	E/T
I^{8+} + Zr	Sputtering	55-275 MeV	E/T
I^{8+} + Au	Sputtering	55-275 MeV	E/T
I^{15+} + Ti	Sputtering	55-275 MeV	E/T
I^{15+} + Zr	Sputtering	55-275 MeV	E/T
I^{15+} + Au	Sputtering	55-275 MeV	E/T
I^{20+} + Ti	Sputtering	55-275 MeV	E/T
I^{20+} + Zr	Sputtering	55-275 MeV	E/T
I^{20+} + Au	Sputtering	55-275 MeV	E/T
I^{21+} + Ti	Sputtering	55-275 MeV	E/T
I^{21+} + Zr	Sputtering	55-275 MeV	E/T
I^{21+} + Au	Sputtering	55-275 MeV	E/T
I^{29+} + Ti	Sputtering	55-275 MeV	E/T
I^{29+} + Zr	Sputtering	55-275 MeV	E/T
I^{29+} + Au	Sputtering	55-275 MeV	E/T
Au^{11+} + Ti	Sputtering	55-275 MeV	E/T
Au^{11+} + Zr	Sputtering	55-275 MeV	E/T
Au^{11+} + Au	Sputtering	55-275 MeV	E/T
Au^{16+} + Ti	Sputtering	55-275 MeV	E/T
Au^{16+} + Zr	Sputtering	55-275 MeV	E/T
Au^{16+} + Au	Sputtering	55-275 MeV	E/T
Au^{18+} + Ti	Sputtering	55-275 MeV	E/T
Au^{18+} + Zr	Sputtering	55-275 MeV	E/T
Au^{18+} + Au	Sputtering	55-275 MeV	E/T
Au^{29+} + Ti	Sputtering	55-275 MeV	E/T
Au^{29+} + Zr	Sputtering	55-275 MeV	E/T
Au^{29+} + Au	Sputtering	55-275 MeV	E/T

730. Z.-W. Deng, R. Souda
Hyperthermal rare-gas ion-stimulated CN^- desorption from a nitrogenated graphite surface.
Phys. Rev. B 67, 235402 (2003)

He^+ + C	Desorption	2-30 eV	Exp
He^+ + N + C	Desorption	2-30 eV	Exp
Ne^+ + C	Desorption	2-30 eV	Exp
Ne^+ + N + C	Desorption	2-30 eV	Exp
Ar^+ + C	Desorption	2-30 eV	Exp
Ar^+ + N + C	Desorption	2-30 eV	Exp

731. J. M. Ripalda, A. Khatiri, T. J. Krzyzewski, J. D. Gale, T. S. Jones
First-principles study of the interaction of hydrogen with GaAs(001).
Phys. Rev. B 68, 073311 (2003)

H + GaAs	Trapping, Detrapping	300 K	Th
H_2 + GaAs	Trapping, Detrapping	300 K	Th

732. J. Bastiaansen, V. Philipsen, F. Vervaecke, E. Vandeweert, P. Lievens, R. E. Silverans
Velocity dependent electron transfer during emission of ion-beam sputtered Cu atoms.
Phys. Rev. B 68, 073409 (2003)

Ar^+ + Cu	Sputtering	12 keV	Exp

733. M. C. Torralba, P. G. Bolcatto, E. C. Goldberg
Calculation of ion-surface collisions for a wide range of scattering geometries.
Phys. Rev. B 68, 075406 (2003)

H^+ + Al	Reflection	1-4 keV	Th
H^+ + Al	Neutraliz., Ioniz., Dissoc.	1-4 keV	Th

734. Z. Sroubek, F. Sroubek, A. Wucher, J. A. Yarmoff
Formation of excited Ag atoms in sputtering of silver.
Phys. Rev. B 68, 115426 (2003)

Ar^+ + Ag	Sputtering	3 keV	E/T

735. M. Fallavier, R. Kirsch, S. N. Morozov, J. C. Poizat, J. P. Thomas, N. Wehbe
Intense emission of cluster anions from gold targets under impact of keV/u gold clusters.
Phys. Rev. B 68, 140102(R) (2003)

Au^+ + Au	Sputtering	150 keV	Exp

736. R. Pfandzelter, H. Winter, I. Urazgil'din, M. Roesler
Spin-polarized electron emission during impact of fast ions on a magnetized Fe(100) surface.
Phys. Rev. B 68, 165415 (2003)

H^+ + Fe	Secondary Electron Emission	150 keV	Exp
He^+ + Fe	Secondary Electron Emission	150 keV	Exp
Ne^+ + Fe	Secondary Electron Emission	150 keV	Exp
Ar^+ + Fe	Secondary Electron Emission	150 keV	Exp

737. K. Wittmaack
Analytical description of the sputtering yields of silicon bombarded with normally incident ions.
Phys. Rev. B 68, 235211 (2003)

H^+ + Si	Sputtering	0.05-540 keV	Th
He^+ + Si	Sputtering	0.05-540 keV	Th
Ne^+ + Si	Sputtering	0.05-540 keV	Th
Ar^+ + Si	Sputtering	0.05-540 keV	Th
Xe^+ + Si	Sputtering	0.05-540 keV	Th
D^+ + Si	Sputtering	0.05-540 keV	Th

738. M. Balden, E. Oyarzabal, E. de Juan Pardo, K. Durocher, J. Roth, C. Garcia-Rosales
Deuterium retention by implantation in carbide-doped graphites.
Phys. Scr. T103, 38 (2003)

H^+ + C	Trapping, Detrapping	1 keV	Exp
D^+ + C	Trapping, Detrapping	1 keV	Exp

739. E. A. Denisov, T. N. Kompaniets, K. L. Kostyushkin, I. V. Makarenko, A. N. Titkov
Retention of hydrogen in well-ordered pyrolytic graphite as a result of its interaction with atomic hydrogen.
Phys. Scr. T103, 43 (2003)

H + C	Trapping, Detrapping		Exp

740. I. I. Arkhipov, A. E. Gorodetsky, A. P. Zakharov
Deuterium retention in the near-surface layer of W singly crystal irradiated with 6 keV deuterium ions.
Phys. Scr. T103, 68 (2003)

H^+ + W	Trapping, Detrapping	6 keV	Exp
D^+ + W	Trapping, Detrapping	6 keV	Exp

741. V. Kh. Alimov, V. M. Sharapov, A. E. Gorodetsky
Deuterium retention in tungsten trioxide irradiated with D ions.
Phys. Scr. T103, 72 (2003)

H^+ + WO_3	Trapping, Detrapping	10 keV	Exp
D^+ + WO_3	Trapping, Detrapping	10 keV	Exp

742. H. Atsumi
Mechanism of hydrogen trapping and transport in carbon materials.
Phys. Scr. T103, 77 (2003)

H + C	Trapping, Detrapping		Th
D + C	Trapping, Detrapping		Th

743. Y. Oya, K. Kawaai, K. Morita, K. Iinuma, K. Okuno, S. Tanaka, Y. Makide
Retention and re-emission behavior of hydrogen isotopes in SiC.
Phys. Scr. T103, 81 (2003)

H_2^+ + SiC	Trapping, Detrapping	4-5 keV	Exp
D_2^+ + SiC	Trapping, Detrapping	4-5 keV	Exp

744. V. A. Kurnaev, N. N. Trifonov
Computer simulations of hydrogen ion interactions with rough surfaces.
Phys. Scr. T103, 85 (2003)

H^+ + Fe	Reflection	100-1500 eV	Th
H^+ + W	Reflection	100-1500 eV	Th
H^+ + SS	Reflection	100-1500 eV	Th
D^+ + Fe	Reflection	100-1500 eV	Th
D^+ + W	Reflection	100-1500 eV	Th
D^+ + SS	Reflection	100-1500 eV	Th

745. O. Benka, M. Steinbatz
Oxidation of aluminum studied by secondary electron emission.
Surf. Sci. 525, 207 (2003)

O_2 + Al	Adsorption, Desorption	3 keV; 300 K	Exp
e + Al	Secondary Electron Emission	3 keV; 300 K	Exp
e + O + Al	Secondary Electron Emission	3 keV; 300 K	Exp

746. D. Martin, T. Jacob, F. Stietz, B. Fricke, F. Traeger
Site-selective, resonant photochemical desorption of metal atoms with laser light: Manipulation of metal surfaces on the atomic scale.
Surf. Sci. 526, L151 (2003)

hν + Na	Desorption	10-30 eV	Exp
hν + K	Desorption	10-30 eV	Exp

747. C. Corriol, G. R. Darling, S. Holloway, I. Andrianov, T. Klamroth, P. Saalfrank
Vibrational heating in electron stimulated desorption of CO from transition metals: A classical mechanics analysis.
Surf. Sci. 528, 27 (2003)

e + Ru	Desorption		Th
e + CO + Ru	Desorption		Th

748. L. Markowski
Tunneling effect in electron-stimulated desorption of Li^+ from LiF/Si(100).
Surf. Sci. 528, 35 (2003)

e + Si	Desorption	300 eV	Exp
e + LiF + Si	Desorption	300 eV	Exp

749. I. Montero, E. Roman, J. L. Segovia, L. Galan
Influence of carbon on the electron stimulated desorption from titanium silicide surfaces.
Surf. Sci. 528, 42 (2003)

e + $TiSi_2$	Desorption	50-500 eV	Exp
e + O + $TiSi_2$	Desorption	50-500 eV	Exp
e + OH + $TiSi_2$	Desorption	50-500 eV	Exp

750. V. N. Ageev, Yu. A. Kuznetsov, T. E. Madey
Electron-stimulated desorption of samarium from oxidized tungsten.
Surf. Sci. 528, 47 (2003)

e + W	Desorption	34-84 eV	Exp
e + Sm + W	Desorption	34-84 eV	Exp

751. B. V. Yakshinskiy, T. E. Madey
DIET of alkali atoms from mineral surfaces.
Surf. Sci. 528, 54 (2003)

e + SiO_2	Desorption	0-40 eV	Exp
e + Na + SiO_2	Desorption	0-40 eV	Exp
e + K + SiO_2	Desorption	0-40 eV	Exp

752. T. Adachi, T. Hirayama, T. Miura, I. Arakawa, M. Sakurai
Absolute measurements of the total PSD and ESD yields at the surface of solid krypton.
Surf. Sci. 528, 60 (2003)

hν + Kr	Desorption	70-320 eV	Exp
e + Kr	Desorption	70-320 eV	Exp

753. E. Illenberger
Formation and evolution of negative ion resonances at surfaces.
Surf. Sci. 528, 67 (2003)

e + NF_3	Desorption	0-5 eV	Exp

754. G. R. Darling, R. Kosloff, Y. Zeiri
Time-dependent quantum calculations of negative ion formation in scattering of atoms from alkali-halide surfaces.
Surf. Sci. 528, 84 (2003)

F + LiF	Reflection	2-14 eV	Th
F + LiF	Neutraliz., Ioniz., Dissoc.	2-14 eV	Th

755. Y. Yamauchi, X. Ju, T. Suzuki, M. Kurahashi
Metastable-atom-stimulated desorption from hydrogen-passivated silicon surfaces.
Surf. Sci. 528, 91 (2003)

He + Si	Desorption	300 K	Exp
He* + Si	Desorption	300 K	Exp
He* + H + Si	Desorption	300 K	Exp
He + Si	Secondary Electron Emission	300 K	Exp
He* + Si	Secondary Electron Emission	300 K	Exp
He* + H + Si	Secondary Electron Emission	300 K	Exp

756. M. Caron, H. Rothard, A. Clouvas
Desorption of nitrogen from amorphous carbon under electron and swift heavy ion bombardment.
Surf. Sci. 528, 103 (2003)

Ar^{17+} + C	Desorption	6-13 MeV/u; 5 keV	Exp
Ar^{17+} + N$_2$ + C	Desorption	6-13 MeV/u; 5 keV	Exp
e + C	Desorption	6-13 MeV/u; 5 keV	Exp
Ar^{17+} + C	Secondary Electron Emission	6-13 MeV/u; 5 keV	Exp
Ar^{17+} + N$_2$ + C	Secondary Electron Emission	6-13 MeV/u; 5 keV	Exp
e + C	Secondary Electron Emission	6-13 MeV/u; 5 keV	Exp
e + N$_2$ + C	Secondary Electron Emission	6-13 MeV/u; 5 keV	Exp

757. G. Comtet, G. Dujardin, L. Hellner
Influence of the temperature on the ion photodesorption from O$_2$ adsorbed on Si(111).
Surf. Sci. 528, 210 (2003)

hν + Si	Desorption	108 eV	Exp
hν + O$_2$ + Si	Desorption	108 eV	Exp

758. M. Henyk, A. G. Joly, K. M. Beck, W. P. Hess
Photon stimulated desorption from KI: Laser control of I-atom velocity distributions.
Surf. Sci. 528, 219 (2003)

hν + KI	Desorption	4.9-5.8 eV	Exp
hν + K + KI	Desorption	4.9-5.8 eV	Exp

759. A. Sindona, G. Falcone
Evidences of a double resonant ionization mechanism in sputtering of metals.
Surf. Sci. 529, 471 (2003)

Ar$^+$ + Cu	Sputtering	1-2 keV	Th

760. A. Tolstogouzov, S. Daolio, C. Pagura, C. L. Greenwood
Dependence of scattered ion yield on the incident energy: Ne$^+$ on pure gallium and indium.
Surf. Sci. 531, 95 (2003)

Ne^+ + Ga	Reflection	0.4-2.2 keV	Exp
Ne^+ + In	Reflection	0.4-2.2 keV	Exp
Ne^+ + Ga	Neutraliz., Ioniz., Dissoc.	0.4-2.2 keV	Exp
Ne^+ + In	Neutraliz., Ioniz., Dissoc.	0.4-2.2 keV	Exp

761. D.-Q. Yang, E. Sacher
A spectroscopic study of CN_x formation by the keV N_2^+ irradiation of highly oriented pyrolytic graphite surfaces.
Surf. Sci. 531, 185 (2003)

N_2^+ + C	Chemical Reactions	3-6 keV	Exp

762. A. Hellman, B. Razaznejad, Y. Yourdshahyan, H. Ternow, I. Zoric, B. I. Lundqvist
Initial sticking of O_2 modeled by nonadiabatic charge transfer.
Surf. Sci. 532-535, 126 (2003)

O_2 + Al	Adsorption, Desorption	0-1.2 eV	Th

763. N.-T.H. Kim-Ngan, W. Soszka
Positive and negative ion emissions induced by low-energy ion single scattering from a single crystalline Fe_3O_4(001) surface.
Surf. Sci. 536, 24 (2003)

He^+ + Fe_3O_4	Reflection	4-8 keV	Exp
Ne^+ + Fe_3O_4	Reflection	4-8 keV	Exp
Ar^+ + Fe_3O_4	Reflection	4-8 keV	Exp
He^+ + Fe_3O_4	Sputtering	4-8 keV	Exp
Ne^+ + Fe_3O_4	Sputtering	4-8 keV	Exp
Ar^+ + Fe_3O_4	Sputtering	4-8 keV	Exp

764. S.-J. Han, C.-W. Lee, R.J.W.E. Lahaye, H. Kang
Hyperthermal scattering of Cs^+ from Pt(111): The effect of image charge on the ion-surface energy transfer.
Surf. Sci. 538, 184 (2003)

Cs^+ + Pt	Reflection	5-100 eV	Exp

765. W. S. Vogan, R. L. Champion, V. A. Esaulov
The role of an oxygen adsorbate on the secondary emission properties of low energy ion-bombarded magnesium.
Surf. Sci. 538, 211 (2003)

He^+ + Mg	Secondary Electron Emission	250 eV	Exp
He^+ + MgO	Secondary Electron Emission	250 eV	Exp
O^- + Mg	Secondary Electron Emission	250 eV	Exp
O^- + MgO	Secondary Electron Emission	250 eV	Exp
Ne^+ + Mg	Secondary Electron Emission	250 eV	Exp
Ne^+ + MgO	Secondary Electron Emission	250 eV	Exp
Ar^+ + Mg	Secondary Electron Emission	250 eV	Exp
Ar^+ + MgO	Secondary Electron Emission	250 eV	Exp
N_2^+ + Mg	Secondary Electron Emission	250 eV	Exp
N_2^+ + MgO	Secondary Electron Emission	250 eV	Exp
He^+ + Mg	Sputtering	250 eV	Exp
He^+ + MgO	Sputtering	250 eV	Exp
O^- + Mg	Sputtering	250 eV	Exp
O^- + MgO	Sputtering	250 eV	Exp
Ne^+ + Mg	Sputtering	250 eV	Exp

Ne^+ + MgO	Sputtering	250 eV	Exp
Ar^+ + Mg	Sputtering	250 eV	Exp
Ar^+ + MgO	Sputtering	250 eV	Exp
N_2^+ + Mg	Sputtering	250 eV	Exp
N_2^+ + MgO	Sputtering	250 eV	Exp

766. M. Hirsimaki, I. Chorkendorff
Effects of steps and defects on O_2 dissociation on clean and modified Cu(100).
Surf. Sci. 538, 233 (2003)

O_2 + Cu	Adsorption, Desorption	300 K	Exp
O_2 + Ag	Adsorption, Desorption	300 K	Exp
O_2 + Cu	Neutraliz., Ioniz., Dissoc.	300 K	Exp
O_2 + Ag	Neutraliz., Ioniz., Dissoc.	300 K	Exp

767. V. G. Zavodinsky, A. Kiejna
Density functional study of alkali metals adsorption on the MgO(111) surface.
Surf. Sci. 538, 240 (2003)

Li + MgO	Adsorption, Desorption	300 K	Th
Na + MgO	Adsorption, Desorption	300 K	Th
K + MgO	Adsorption, Desorption	300 K	Th

768. S. Holloway
The active site for dissociative adsorption of H_2: Was Langmuir right?
Surf. Sci. 540, 1 (2003)

H_2 + Pd	Adsorption, Desorption		Th

769. T. Mitsui, M. K. Rose, E. Fomin, D. F. Ogletree, M. Salmeron
Hydrogen adsorption and diffusion on Pd(111).
Surf. Sci. 540, 5 (2003)

H_2 + Pd	Adsorption, Desorption	300 K	Exp

770. L. Giordano, A. Del Vitto, G. Pacchioni, A. M. Ferrari
CO adsorption on Rh, Pd and Ag atoms deposited on the MgO surface: A comparative ab initio study.
Surf. Sci. 540, 63 (2003)

CO + Rh	Adsorption, Desorption		Th
CO + Pd	Adsorption, Desorption		Th
CO + Ag	Adsorption, Desorption		Th
CO + MgO	Adsorption, Desorption		Th

771. R. Schennach, G. Krenn, B. Kloetzer, K. D. Rendulic
Adsorption of hydrogen and carbon monoxide on Rd(111)/V surface alloys.
Surf. Sci. 540, 237 (2003)

H_2 + Rh	Adsorption, Desorption	0-400 MeV	Exp
CO + Rh	Adsorption, Desorption	0-400 MeV	Exp

772. E. A. Garcia, C. Gonzalez Pascual, E. C. Goldberg, J. E. Gayone, E. A. Sanchez, O. Grizzi
Ion fractions in Ne^+ scattering from a GaAs(110) surface.
Surf. Sci. 541, 160 (2003)

Ne^+ + GaAs	Reflection	6 keV	Exp

773. B. Bahrim, B. Makarenko, J. W. Rabalais
Mechanism of negative ion formation in low velocity collisions at surfaces.
Surf. Sci. 542, 161 (2003)

O^+ + Al	Reflection	0.2-10 keV	Th
O^+ + Al	Neutraliz., Ioniz., Dissoc.	0.2-10 keV	Th

774. A. G. Joly, K. M. Beck, M. Henyk, W. P. Hess, P. V. Sushko, A. L. Shluger
Surface electronic spectra detected by atomic desorption.
Surf. Sci. 544, L683 (2003)

hν + KI	Desorption	5.2-5.7 eV	Exp

775. G. Volpilhac, H. F. Busnengo, W. Dong, A. Salin
Scattering of atomic nitrogen on W(100).
Surf. Sci. 544, 329 (2003)

N + W	Adsorption, Desorption	0.01-1.0 eV	Th
N + W	Reflection	0.01-1.0 eV	Th

776. J. O. Lugo, E. C. Goldberg
The effect of the projectile intra-site Coulomb repulsion in the surface scattering of many-electron ions.
Surf. Sci. 545, 180 (2003)

N^+ + LiF	Reflection	200-1000 eV	Th

777. A. Friedrich, H. M. Urbassek
Xe^+ bombardment of Pt(111) at glancing incidence angles.
Surf. Sci. 547, 315 (2003)

Xe^+ + Pt	Sputtering	5 keV	Th

778. S. Samarin, J. Berakdar, A. Suvorova, O. M. Artamonov, D. K. Waterhouse, J. Kirschner, J. F. Williams
Secondary-electron emission mechanism of LiF film by (e,2e) spectroscopy.
Surf. Sci. 548, 187 (2003)

e + LiF	Secondary Electron Emission	20-50 eV	Exp

779. J. Sielanko, J. Filiks, J. Here
The sputtering of light target material during implantation of heavy ions.
Vacuum 70, 381 (2003)

Cs^+ + Be	Sputtering	2.4-10 keV	E/T
Cs^+ + C	Sputtering	2.4-10 keV	E/T
Cs^+ + BeO	Sputtering	2.4-10 keV	E/T
W^+ + Be	Sputtering	2.4-10 keV	E/T

780. S.-G. Chen, D.-P. Wang, Y.-S. Yin, Z.-X. Wang
Approximation of the interaction of oxygen and nitrogen with Pd and Ni surfaces using the Morse potential.
Vacuum 72, 393 (2004)

N + Ni	Surface Interactions	Th
N + Pd	Surface Interactions	Th
O + Ni	Surface Interactions	Th
O + Pd	Surface Interactions	Th

781. M. Draxler, R. Beikler, E. Taglauer, K. Schmid, R. Gruber, S. N. Ermolov, P. Bauer
Comprehensive study of the surface peak in charge-integrated low-energy ion scattering spectra.
Phys. Rev. A 68, 022901 (2003)

H^+ + Cu	Reflection	1-9 keV	Exp
He^+ + Cu	Reflection	1-9 keV	Exp
Ne^+ + Cu	Reflection	1-9 keV	Exp
H^+ + Cu	Neutraliz., Ioniz., Dissoc.	1-9 keV	Exp
He^+ + Cu	Neutraliz., Ioniz., Dissoc.	1-9 keV	Exp
Ne^+ + Cu	Neutraliz., Ioniz., Dissoc.	1-9 keV	Exp

782. K. A. Kouzakov, J. Berakdar
Ion-induced electron emission from surfaces: Dynamical screening effects.
Phys. Rev. A 68, 022902 (2003)

H^+ + Al	Secondary Electron Emission	100-400 keV	Th

783. Y.-H. Song, Y.-N. Wang, Z. L. Miskovic
Kinetic electron emission induced by grazing scattering of heavy ions from metal surfaces.
Phys. Rev. A 68, 022903 (2003)

H^+ + Al	Secondary Electron Emission	5-625 keV/u	Th
C^+ + Al	Secondary Electron Emission	5-625 keV/u	Th
C^{2+} + Al	Secondary Electron Emission	5-625 keV/u	Th
C^{3+} + Al	Secondary Electron Emission	5-625 keV/u	Th
C^{4+} + Al	Secondary Electron Emission	5-625 keV/u	Th
C^{5+} + Al	Secondary Electron Emission	5-625 keV/u	Th
N^+ + Al	Secondary Electron Emission	5-625 keV/u	Th

784. E. De Filippo, G. Lanzano, H. Rothard, C. Volant, D. H. Jakubassa-Amundsen, S. Ajello, A. Anzalone, N. Arena, M. Geraci, F. Giustolisi, A. Pagano
Absolute cross sections for binary-encounter electron ejection by 95-MeV/u $^{36}Ar^{18+}$ penetrating carbon foils.
Phys. Rev. A 68, 024701 (2003)

Ar^{18+} + C	Secondary Electron Emission	95 MeV/u	Exp

785. N. N. Nedeljkovic, Lj. D. Nedeljkovic, M. A. Mirkovic
Electron capture into large-l Rydberg states of multiply charged ions escaping from solid surfaces.
Phys. Rev. A 68, 012721 (2003)

+ S	Reflection	1.4-2.5 a.u.	Th
+ Cl	Reflection	1.4-2.5 a.u.	Th
+ Ar	Reflection	1.4-2.5 a.u.	Th
+ S	Neutraliz., Ioniz., Dissoc.	1.4-2.5 a.u.	Th
+ Cl	Neutraliz., Ioniz., Dissoc.	1.4-2.5 a.u.	Th
+ Ar	Neutraliz., Ioniz., Dissoc.	1.4-2.5 a.u.	Th

786. A. G. Borisov, A. Mertens, S. Wethekam, H. Winter
Effect of projected band gap on neutralization of Cs ions during grazing scattering from a Cu(111) surface.
Phys. Rev. A 68, 012901 (2003)

Cs^{2+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{3+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{4+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{5+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{6+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{8+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{9+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{11+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{12+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{13+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{15+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T
Cs^{17+} + Cu	Neutraliz., Ioniz., Dissoc.	0.01-1.8 MeV	E/T

787. J. I. Juaristi, R. Diez Muino, A. Dubus, M. Roesler
Charge-state dependence of kinetic electron emission induced by slow ions in metals.
Phys. Rev. A 68, 012902 (2003)

N^+ + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th
N^{2+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th
N^{3+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th
N^{4+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th
N^{5+} + Au	Secondary Electron Emission	0.2-0.5 a.u.	Th

788. F. A. Gutierrez, H. Jouin
Atomic description and velocity effects for surface-plasmon neutralization rates in He^+(1s)/Al systems.
Phys. Rev. A 68, 012903 (2003)

He^+ + Al	Reflection	0-0.85 a.u.	Th
He^+ + Al	Neutraliz., Ioniz., Dissoc.	0-0.85 a.u.	Th

789. I. Labazan, S. Milosevic
Laser vaporized Li_2, Na_2, K_2, and LiNa molecules observed by cavity ring-down spectroscopy.
Phys. Rev. A 68, 032901 (2003)

hν + Li	Sputtering	1 J/cm^2	Exp
hν + Na	Sputtering	1 J/cm^2	Exp
hν + K	Sputtering	1 J/cm^2	Exp
hν + LiNa	Sputtering	1 J/cm^2	Exp

790. L. Wirtz, J. Burgdorfer, M. Dallos, T. Mueller, H. Lischka
Potential-energy surfaces for charge exchange between singly charged ions and a LiF surface.
Phys. Rev. A 68, 032902 (2003)

H^+ + LiF	Reflection	slow	Th
C^+ + LiF	Reflection	slow	Th
Na^+ + LiF	Reflection	slow	Th
S^+ + LiF	Reflection	slow	Th

791. Y. Takabayashi, T. Ito, T. Azuma, K. Komaki, Y. Yamazaki, H. Tawara, E. Takeda, T. Murakami, M. Seliger, K. Tokesi, C. O. Reinhold, J. Burgdorfer
Excited-state evolution probed by convoy-electron emission in relativistic heavy-ion collisions.
Phys. Rev. A 68, 042703 (2003)

Ar^{17+} + C	Secondary Electron Emission	390-460 MeV/u	E/T
Fe^{23+} + C	Secondary Electron Emission	390-460 MeV/u	E/T
Fe^{25+} + C	Secondary Electron Emission	390-460 MeV/u	E/T

792. V. M. Strakhovenko
Emission of polarized photons from unpolarized electrons moving in crystals.
Phys. Rev. A 68, 042901 (2003)

e + C	Surface Interactions	150-180 GeV	Th
e + Si	Surface Interactions	150-180 GeV	Th

793. G. Oehrwall, M. Tchaplyguine, M. Gisselbrecht, M. Lundwall, R. Feifel, T. Rander, J. Schulz, R.R.T. Marinho, A. Lindgren, S. L. Sorensen, S. Svensson, O. Bjoerneholm
Observation of elastic scattering effects on photoelectron angular distributions in free Xe clusters.
J. Phys. B 36, 3937 (2003)

hν + Xe	Secondary Electron Emission	110-250 eV	Exp

794. H. Ogawa, H. Tsuchida, N. Sakamoto
Dependence of secondary electron emission on the emergent angle of 2.5 MeV protons penetrating a thin carbon foil.
Phys. Rev. A 68, 052901 (2003)

H^+ + C	Secondary Electron Emission	2.5 MeV	E/T

3.4 Particle Beam-Matter Interactions

795. Z. L. Miskovic, F. O. Goodman, W.-K. Liu, Y.-N. Wang
Stochastic treatment of nonequilibrium ion stopping in solids.
Phys. Rev. A 67, 012902 (2003)

He^+ + Al + C	Part. Beam-Matter Interaction	2-4 a.u.	Th

796. J. E. Miraglia, M. S. Gravielle
Model calculation for energy loss in ion-surface collisions.
Phys. Rev. A 67, 062901 (2003)

H^+ + Al + C	Part. Beam-Matter Interaction	100-1500 keV	Th
H^+ + LiF + C	Part. Beam-Matter Interaction	100-1500 keV	Th
H^+ + SnTe + C	Part. Beam-Matter Interaction	100-1500 keV	Th

797. A. Arnau, M. S. Gravielle, J. E. Miraglia, V. H. Ponce
Surface track potential created by fast protons at LiF surfaces.
Phys. Rev. A 67, 062902 (2003)

H + LiF + C	Part. Beam-Matter Interaction	50-600 keV	Th

798. G. Bocan, J. E. Miraglia
Electron excitation after plasmon decay in proton-aluminum collisions.
Phys. Rev. A 67, 032902 (2003)

H^+ + Al + C	Part. Beam-Matter Interaction	1-7 v(a.u.)	Th

799. M. Alducin, V. M. Silkin, J. I. Juaristi, E. V. Chulkov
Energy loss of ions at metal surfaces: Band-structure effects.
Phys. Rev. A 67, 032903 (2003)

H^+ + Cu + C	Part. Beam-Matter Interaction	0.25-2 v(a.u.)	Th

800. J. Raisanen, W. H. Trzaska, T. Alanko, V. Lyapin, L. E. Porter
Stopping powers of polycarbonate for 0.36-5.94 MeV protons and 1.0-24.0-MeV α particles.
J. Appl. Phys. 94, 2080 (2003)

$H^+ + C_{16}H_{14}O_3$ + C	Part. Beam-Matter Interaction	2.0-24.0 MeV	Exp

801. Y. Sato, A. Kitagawa, M. Muramatsu, T. Murakami, S. Yamada, C. Kobayashi, Y. Kageyama, T. Miyoshi, H. Ogawa, H. Nakabushi, T. Fujimoto, T. Miyata, Y. Sano
Charge fraction of 6.0 MeV/n heavy ions with a carbon foil: Dependence on the foil thickness and projectile atomic number.
Nucl. Instrum. Methods Phys. Res. B 201, 571 (2003)

C^{2+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp
Ne^{4+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp
Si^{5+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp
Ar^{8+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp
Fe^{9+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp
Cu^{10+} + C + C	Part. Beam-Matter Interaction	6.0 MeV/amu	Exp

802. J. Peltola, K. Nordlund, J. Keinonen
Molecular dynamics simulation method for calculating fluence-dependent range profiles.
Nucl. Instrum. Methods Phys. Res. B 202, 132 (2003)

B^+ + Si + C	Part. Beam-Matter Interaction	10-80 keV	Th
P^+ + Si + C	Part. Beam-Matter Interaction	10-80 keV	Th
Ge^+ + Si + C	Part. Beam-Matter Interaction	10-80 keV	Th

803. M. Alducin, R. Diez Muino, J. I. Juaristi
Ion induced electronic excitations in a spin-polarized electron gas.
Nucl. Instrum. Methods Phys. Res. B 203, 83 (2003)

H + A + C	Part. Beam-Matter Interaction		Th

804. M. Kato, R. Souda
Inelastic energy loss of low energy proton colliding with cryogenic crystals of Ar, Kr and Xe.
Nucl. Instrum. Methods Phys. Res. B 203, 89 (2003)

H^+ + Ar + C	Part. Beam-Matter Interaction	500 eV	E/T
H^+ + Kr + C	Part. Beam-Matter Interaction	500 eV	E/T
H^+ + Xe + C	Part. Beam-Matter Interaction	500 eV	E/T

805. Z. D. Pesic, J. Anton, J.-H. Bremer, V. Hoffmann, N. Stolterfoht, Gy. Vikor, R. Schuch
Inelastic energy loss in large angle scattering of Ar^{9+} ions from Au(111) crystal.
Nucl. Instrum. Methods Phys. Res. B 203, 96 (2003)

Ar^{9+} + Au + C	Part. Beam-Matter Interaction	4 keV	E/T

806. A. Sarasola, V. H. Ponce, A. Arnau
Energy loss of protons at surfaces: A local density approach.
Nucl. Instrum. Methods Phys. Res. B 203, 104 (2003)

H^+ + Al + C	Part. Beam-Matter Interaction	120-500 keV	Th
H^+ + LiF + C	Part. Beam-Matter Interaction	120-500 keV	Th

807. M. Draxler, R. Beikler, E. Taglauer, K. Schmid, R. Gruber, S. N. Ermolov, P. Bauer
Explanation of the surface peak in charge integrated LEIS spectra.
Nucl. Instrum. Methods Phys. Res. B 203, 218 (2003)

He^+ + Cu + C	Part. Beam-Matter Interaction	1-9 keV	E/T

808. C. Champion
Multiple ionization of water by heavy ions: A Monte Carlo approach.
Nucl. Instrum. Methods Phys. Res. B 205, 671 (2003)

He^{2+} + H_2O + C	Part. Beam-Matter Interaction	0.2-6.7 MeV/u	Th
U^{28+} + H_2O + C	Part. Beam-Matter Interaction	0.2-6.7 MeV/u	Th

809. D. Dauvergne, A. Brauning-Demian, F. Bosch, H. Brauning, M. Chevallier, C. Cohen, A. Gumberidze, A. L'Hoir, R. Kirsch, C. Kozhuharov, D. Liesen, P. H. Mokler, J. C. Poizat, C. Ray, Th. Stoehlker, M. Tarisien, E. Testa, S. Toleikis, M. Toulemonde
Impact parameter dependent electron capture by decelerated U^{91+} ions at 20 MeV/u using crystal channeling conditions.
Nucl. Instrum. Methods Phys. Res. B 205, 773 (2003)

U^{91+} + Si + C	Part. Beam-Matter Interaction	20 MeV/u	Exp

810. Y. Singh, L. C. Tribedi
Inner-shell vacancy production and multiple ionization effects in 0.1-1.75 MeV/u Mn, Fe, Co, Ni, Cu + Au, Bi collisions.
Nucl. Instrum. Methods Phys. Res. B 205, 789 (2003)

Mn^+ + Au + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Mn^+ + Bi + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Fe^+ + Au + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Fe^+ + Bi + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Co^+ + Au + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Co^+ + Bi + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Ni^+ + Au + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Ni^+ + Bi + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Cu^+ + Au + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp
Cu^+ + Bi + C	Part. Beam-Matter Interaction	0.1-1.75 MeV/u	Exp

811. U. Majewska, J. Braziewicz, M. Polasik, K. Slabkowska, I. Fijal, M. Jaskola, A. Korman, S. Chojnacki, W. Kretschmer
Highly excited states of sulphur projectiles inside a carbon target.
Nucl. Instrum. Methods Phys. Res. B 205, 799 (2003)

S^{4+} + C + C	Part. Beam-Matter Interaction	9.6-122 MeV	Exp
S^{6+} + C + C	Part. Beam-Matter Interaction	9.6-122 MeV	Exp

812. M. Moneta, J. Czerbniak
Impact parameter dependent stopping power for highly charged ions.
Nucl. Instrum. Methods Phys. Res. B 205, 808 (2003)

Au + H Z= ?-? + C	Part. Beam-Matter Interaction	0.5-10 MeV	Th
Au + He Z= ?-? + C	Part. Beam-Matter Interaction	0.5-10 MeV	Th
Au + Li Z= ?-? + C	Part. Beam-Matter Interaction	0.5-10 MeV	Th
Au + Be Z= ?-? + C	Part. Beam-Matter Interaction	0.5-10 MeV	Th

813. V. V. Balashov
The role of transient excitations of fast highly charged ions in their stopping kinetics.
Nucl. Instrum. Methods Phys. Res. B 205, 813 (2003)

$\mathbf{O^{4+} + C + C}$	Part. Beam-Matter Interaction	10-13.2 MeV	Th
$\mathbf{O^{5+} + C + C}$	Part. Beam-Matter Interaction	10-13.2 MeV	Th
$\mathbf{O^{6+} + C + C}$	Part. Beam-Matter Interaction	10-13.2 MeV	Th
$\mathbf{O^{7+} + C + C}$	Part. Beam-Matter Interaction	10-13.2 MeV	Th
$\mathbf{O^{8+} + C + C}$	Part. Beam-Matter Interaction	10-13.2 MeV	Th

814. H. Brauning, A. Brauning-Demian, G. Bednarz, F. Bosch, X. Cai, C. Cohen, D. Dauvergne, A. Gumberidze, R. Kirsch, C. Kozhuharov, D. Liesen, P. H. Mokler, J.-P. Rozet, Z. Stachura, Th. Stoehlker, M. Terasawa, S. Toleikis, A. Warczak
Multiple electron capture from thin C-foils into 46 MeV/u $\mathbf{U^{91+}}$.
Nucl. Instrum. Methods Phys. Res. B 205, 826 (2003)

$\mathbf{U^{91+} + C + C}$	Part. Beam-Matter Interaction	46 MeV/u	Exp

815. M. Seliger, K. Tokesi, C. O. Reinhold, J. Burgdorfer
Highly transverse velocity distribution of convoy electrons emitted by highly charged ions.
Nucl. Instrum. Methods Phys. Res. B 205, 830 (2003)

$\mathbf{Ar^{17+} + C + C}$	Part. Beam-Matter Interaction	390 MeV/u	Th

816. B. Gervais, M. Beuve, M. Caron, H. Rothard
Saturation effects in highly charged ion interaction with thin carbon foils.
Nucl. Instrum. Methods Phys. Res. B 205, 835 (2003)

$\mathbf{H^{+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T
$\mathbf{He^{2+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T
$\mathbf{C^{6+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T
$\mathbf{Ne^{10+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T
$\mathbf{S^{16+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T
$\mathbf{Ar^{18+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T
$\mathbf{Ca^{20+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T
$\mathbf{Ni^{20+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T
$\mathbf{Mo^{39+} + C + C}$	Part. Beam-Matter Interaction	9.2 MeV/u	E/T

817. G. Lanzano, E. De Filippo, A. Anzalone, N. Arena, M. Geraci, F. Giustolisi, A. Pagano, H. Rothard, C. Volant
Recent results on fast intermediate velocity electron production induced by $\mathbf{19^{+}}$ 45 A MeV ^{58}Ni highly charged ions on thin solid targets.
Nucl. Instrum. Methods Phys. Res. B 205, 841 (2003)

$\mathbf{Ni^{19+} + C + C}$	Part. Beam-Matter Interaction	45 MeV	Exp
$\mathbf{Ni^{19+} + Al + C}$	Part. Beam-Matter Interaction	45 MeV	Exp
$\mathbf{Ni^{19+} + Ni + C}$	Part. Beam-Matter Interaction	45 MeV	Exp
$\mathbf{Ni^{19+} + Ag + C}$	Part. Beam-Matter Interaction	45 MeV	Exp
$\mathbf{Ni^{19+} + Au + C}$	Part. Beam-Matter Interaction	45 MeV	Exp
$\mathbf{Ni^{19+} + Bi + C}$	Part. Beam-Matter Interaction	45 MeV	Exp

818. J. Peltola, K. Nordlund, J. Keinonen
Heat spike effect on the straggling of cluster implants.
Nucl. Instrum. Methods Phys. Res. B 206, 61 (2003)

$\mathbf{Au^{+} + Cu + C}$	Part. Beam-Matter Interaction	1-10 keV	Th
$\mathbf{Au_2^{+} + Cu + C}$	Part. Beam-Matter Interaction	1-10 keV	Th

819. Q. Wang, H. Ogiso, S. Nakano, J. Akedo, H. Ishikawa
Martensitic transformation and the stress induced by 3 MeV ion implantation in an austenite stainless steel sheet.
Nucl. Instrum. Methods Phys. Res. B 206, 118 (2003)

Au^+ + Fe + C	Part. Beam-Matter Interaction	3 MeV	Exp
Au^+ + SS + C	Part. Beam-Matter Interaction	3 MeV	Exp

820. L. G. Glazov, P. Sigmund
Nuclear stopping in transmission experiments.
Nucl. Instrum. Methods Phys. Res. B 207, 240 (2003)

Li^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th
C^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th
C^+ + Ar + C	Part. Beam-Matter Interaction	20-1500 keV	Th
C^+ + N_2 + C	Part. Beam-Matter Interaction	20-1500 keV	Th
Ne^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th
Ne^+ + Ar + C	Part. Beam-Matter Interaction	20-1500 keV	Th
Ne^+ + N_2 + C	Part. Beam-Matter Interaction	20-1500 keV	Th
Ar^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th
Kr^+ + C + C	Part. Beam-Matter Interaction	20-1500 keV	Th

821. P. Sigmund, A. Fettouhi, A. Schinner
Material dependence of electronic stopping.
Nucl. Instrum. Methods Phys. Res. B 209, 19 (2003)

H^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th
He^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th
N^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th
O^+ + Li + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th
O^+ + F + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th
O^+ + LiF + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th
Ar^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th
Pb^+ + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th

822. H. Paul, A. Schinner
Judging the reliability of stopping power tables and programs for heavy ions.
Nucl. Instrum. Methods Phys. Res. B 209, 252 (2003)

A + A + C	Part. Beam-Matter Interaction	10^{-3} - 10^3 MeV/u	Th

823. K. Kimura, Y. Oota, K. Nakajima, M. Suzuki, T. Aoki, J. Matsuo, A. Agarwal, B. Freer, A. Stevenson, M. Ameen
Molecular effect on projected range in ultralow-energy ion implantation.
Nucl. Instrum. Methods Phys. Res. B 211, 206 (2003)

As^+ + Si + C	Part. Beam-Matter Interaction	3-6 keV	Exp
As_2^+ + Si + C	Part. Beam-Matter Interaction	3-6 keV	Exp

824. R. V. Ribas, N. H. Medina, N. Added, J.R.B. Oliveira, E. W. Cybulska, M. N. Rao, W. A. Seale, F. Brandolini, M. A. Rizzutto, J. A. Alcantara-Nunez
Stopping power of Au for silver ions at low velocities.
Nucl. Instrum. Methods Phys. Res. B 211, 453 (2003)

Ag^+ + Au + C	Part. Beam-Matter Interaction	8-52 MeV	Exp

825. V. Horvat, R. L. Watson, K. E. Zaharakis, Y. Peng
Projectile charge dependence of cross-sections for multiple electron capture and loss by 2 MeV/u Xe ions in nitrogen.
Nucl. Instrum. Methods Phys. Res. B 211, 495 (2003)

$\mathbf{Xe^{12+} + N_2 + C}$	Part. Beam-Matter Interaction	2 MeV/u	Exp
$\mathbf{Xe^{17+} + N_2 + C}$	Part. Beam-Matter Interaction	2 MeV/u	Exp
$\mathbf{Xe^{18+} + N_2 + C}$	Part. Beam-Matter Interaction	2 MeV/u	Exp
$\mathbf{Xe^{22+} + N_2 + C}$	Part. Beam-Matter Interaction	2 MeV/u	Exp
$\mathbf{Xe^{24+} + N_2 + C}$	Part. Beam-Matter Interaction	2 MeV/u	Exp
$\mathbf{Xe^{27+} + N_2 + C}$	Part. Beam-Matter Interaction	2 MeV/u	Exp
$\mathbf{Xe^{30+} + N_2 + C}$	Part. Beam-Matter Interaction	2 MeV/u	Exp
$\mathbf{Xe^{35+} + N_2 + C}$	Part. Beam-Matter Interaction	2 MeV/u	Exp

826. H. Ogawa, I. Katayama, Y. Haruyama, M. Saito, K. Yoshida, M. Tosaki, I. Sugai
Energy losses and straggling of 10 MeV/amu $C^{5+,4+}$ ions in charge state non-equilibrium region.
Nucl. Instrum. Methods Phys. Res. B 212, 27 (2003)

$\mathbf{C^{4+} + C + C}$	Part. Beam-Matter Interaction	10 MeV/u	Exp
$\mathbf{C^{5+} + C + C}$	Part. Beam-Matter Interaction	10 MeV/u	Exp

827. H. H. Andersen, A. Johansen, M. Olsen, V. Touboltsev
Gold-cluster ranges in aluminium, silicon and copper.
Nucl. Instrum. Methods Phys. Res. B 212, 56 (2003)

$\mathbf{Au^+ + Al + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au^+ + Si + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au^+ + Cu + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_2^+ + Al + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_2^+ + Si + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_2^+ + Cu + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_3^+ + Al + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_3^+ + Si + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_3^+ + Cu + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_7^+ + Al + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_7^+ + Si + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp
$\mathbf{Au_7^+ + Cu + C}$	Part. Beam-Matter Interaction	10-700 keV	Exp

828. D. Emfietzoglou, M. Moscovitch, A. Pathak
Inelastic cross-sections of energetic protons in liquid water calculated by model dielectric functions and optical data.
Nucl. Instrum. Methods Phys. Res. B 212, 101 (2003)

$\mathbf{H^+ + H_2O + C}$	Part. Beam-Matter Interaction	0.3-10 MeV	Th

829. J. Peltola, K. Nordlund, J. Keinonen
Explicit phase shift factor stopping model for multi-component targets.
Nucl. Instrum. Methods Phys. Res. B 212, 118 (2003)

$\mathbf{Si^+ + GaAs + C}$	Part. Beam-Matter Interaction	150-300 keV	Th
$\mathbf{S^+ + GaAs + C}$	Part. Beam-Matter Interaction	150-300 keV	Th
$\mathbf{Se^+ + GaAs + C}$	Part. Beam-Matter Interaction	150-300 keV	Th

830. Y. Zhang, W. J. Weber
Validity of Bragg's rule for heavy-ion stopping in silicon carbide.
Phys. Rev. B 68, 235317 (2003)

$\mathbf{O^+ + SiC + C}$	Part. Beam-Matter Interaction	80-600 keV/u	Exp
$\mathbf{Al^+ + SiC + C}$	Part. Beam-Matter Interaction	80-600 keV/u	Exp
$\mathbf{Cr^+ + SiC + C}$	Part. Beam-Matter Interaction	80-600 keV/u	Exp
$\mathbf{Mn^+ + SiC + C}$	Part. Beam-Matter Interaction	80-600 keV/u	Exp
$\mathbf{Co^+ + SiC + C}$	Part. Beam-Matter Interaction	80-600 keV/u	Exp
$\mathbf{Cu^+ + SiC + C}$	Part. Beam-Matter Interaction	80-600 keV/u	Exp

831. S. M. Cohen
Bethe stopping power theory for heavy-element targets and relativistic projectiles.
Phys. Rev. A 68, 012720 (2003)

Al + A + C	Part. Beam-Matter Interaction	0-1 C	Th
Ag + A + C	Part. Beam-Matter Interaction	0-1 C	Th
Pb + A + C	Part. Beam-Matter Interaction	0-1 C	Th
U + A + C	Part. Beam-Matter Interaction	0-1 C	Th

832. M. Alducin, A. Arnau, I. Nagy
Role of the bound-state wave function in capture-loss rates: Slow proton in an electron gas.
Phys. Rev. A 68, 014701 (2003)

e + H^+ + C	Part. Beam-Matter Interaction	0.2-2 a.u.	Th

833. Y. Takabayashi, T. Ito, T. Azuma, K. Komaki, Y. Yamazaki, H. Tawara, E. Takeda, T. Murakami, M. Seliger, K. Tokesi, C. O. Reinhold, J. Burgdorfer
Excited-state evolution probed by convoy-electron emission in relativistic heavy-ion collisions.
Phys. Rev. A 68, 042703 (2003)

Ar^{17+} + C + C	Part. Beam-Matter Interaction	390-460 MeV/u	E/T
Fe^{23+} + C + C	Part. Beam-Matter Interaction	390-460 MeV/u	E/T
Fe^{25+} + C + C	Part. Beam-Matter Interaction	390-460 MeV/u	E/T

834. R. Cabrera-Trujillo, J. R. Sabin, J. Oddershede
Explanation of the observed trend in the mean excitation energy of a target as determined using several projectiles.
Phys. Rev. A 68, 042902 (2003)

H + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
H + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
He + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
He + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
Li + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
Li + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
Be + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
Be + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
B + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
B + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
C + C + C	Part. Beam-Matter Interaction	1-10 a.u.	Th
C + Ni + C	Part. Beam-Matter Interaction	1-10 a.u.	Th

835. J.H.R. dos Santos, P. L. Grande, M. Behar, J. F. Dias, N. R. Arista, J. C. Eckardt, G. H. Lantschner
Experimental energy straggling of protons in SiO_2.
Phys. Rev. A 68, 042903 (2003)

H^+ + SiO_2 + C	Part. Beam-Matter Interaction	30-1500 keV	Exp

836. R. Garcia-Molina, M. D. Barriga-Carrasco
Simulation of the molecular recombination yield for swift $H_2{}^+$ ions through thin carbon foils.
Phys. Rev. A 68, 054901 (2003)

$H_2{}^+$ + C + C	Part. Beam-Matter Interaction	0.4-9.6 MeV	E/T

3.5 Interactions of Atomic Particles with Fields

837. B. Pons
Spheroidal close-coupling scheme to describe ionization processes in one-electron diatomic systems.
Phys. Rev. A 67, 040702 (2003)

H + C	Atom Field Interaction	0-60 eV	Th
H_2^+ + C	Atom Field Interaction	0-60 eV	Th

838. B. Feuerstein, U. Thumm
Fragmentation of H_2^+ in strong 800-nm laser pulses: Initial-vibrational-state dependence.
Phys. Rev. A 67, 043405 (2003)

H_2^+ + C	Atom Field Interaction	800 nm	Th

839. C. M. Evans, E. S. Shuman, T. F. Gallagher
Microwave-induced dielectronic recombination above the classical ionization limit in a static field.
Phys. Rev. A 67, 043410 (2003)

e + Ba^+ + C	Atom Field Interaction	8 eV	Exp

840. M. Forre, J. P. Hansen
Selective-field-ionization dynamics of a lithium m=2 Rydberg state: Landau-Zener model versus quantal approach.
Phys. Rev. A 67, 053402 (2003)

Li + C	Atom Field Interaction	0-800 V/cm	Th

841. J. Chen, J. H. Kim, C. H. Nam
Frequency dependence of non-sequential double ionization.
J. Phys. B 36, 691 (2003)

Ne + C	Atom Field Interaction	100-1100 nm	Th

842. B. Feuerstein, U. Thumm
On the computation of momentum distributions within wavepacket propagation calculations.
J. Phys. B 36, 707 (2003)

H + C	Atom Field Interaction		Th
H_2^+ + C	Atom Field Interaction		Th

843. J. Alnis, K. Blushs, M. Auzinsh, S. Kennedy, N. Shafer-Ray, E.R.I. Abraham
The Hanle effect and level cross spectroscopy in Rb vapour under strong laser excitation.
J. Phys. B 36, 1161 (2003)

Rb + C	Atom Field Interaction	0.004-3.3 W/cm^2	Exp

844. T. Bartsch, J. Main, G. Wunner
The hydrogen atom in an electric field: closed-orbit theory with bifurcating orbits.
J. Phys. B 36, 1231 (2003)

H + C	Atom Field Interaction		Th

845. A. B. Voitkiv, N. Gruen, J. Ullrich
Compton scattering of energetic photons by light atoms in the presence of a low-frequency electromagnetic field.
J. Phys. B 36, 1907 (2003)

hν + H + C	Atom Field Interaction	20.4 keV	Th

846. E. Karule, B. Moine
The general expression for the transition amplitude of two-photon ionization of atomic hydrogen.
J. Phys. B 36, 1963 (2003)

H + C	Atom Field Interaction	10-90 nm	Th

847. W. DeGraffenreid, S. C. Campbell, C. J. Sansonetti
Foreign gas pressure broadening and shifts of the 2S-4S two-photon transition in lithium.
J. Phys. B 36, 2099 (2003)

Li + Ne + C	Atom Field Interaction	680 deg C	Exp
Li + Ar + C	Atom Field Interaction	680 deg C	Exp

848. X.-X. Guan, B. Li, K. T. Taylor
Ionization energies of beryllium in strong magnetic fields: A frozen core approximation.
J. Phys. B 36, 2465 (2003)

Be + C	Atom Field Interaction	0-1 a.u.	Th

849. D. M. Pendergrast, J. N. Yukich
Observed Landau structure in photodetachment from trapped O^-.
Phys. Rev. A 67, 062721 (2003)

hν + O^- + C	Atom Field Interaction	11,781-11,788 cm^{-1}	Exp

850. D. G. Arbo, C. O. Reinhold, J. Burgdorfer, A. K. Pattanayak, C. L. Stokely, W. Zhao, J. C. Lancaster, F. B. Dunning
Pulse-induced focusing of Rydberg wave packets.
Phys. Rev. A 67, 063401 (2003)

H + C	Atom Field Interaction		Th
H^* + C	Atom Field Interaction		Th

851. T. Mercouris, C. A. Nicolaides
Solution of the many-electron many-photon problem for strong fields: Application to Li^- in one- and two-color laser fields.
Phys. Rev. A 67, 063403 (2003)

Li^- + C	Atom Field Interaction	0.011-0.021 a.u.	Th

852. H. Sakai, J. J. Larsen, I. Wendt-Larsen, J. Olesen, P. B. Corkum, H. Stapelfeldt
Nonsequential double ionization of D_2 molecules with intense 20-fs pulses.
Phys. Rev. A 67, 063404 (2003)

H_2 + C	Atom Field Interaction	2x10^{15} W/cm^2	Exp
D_2 + C	Atom Field Interaction	2x10^{15} W/cm^2	Exp

853. B. Feuerstein, U. Thumm
Mapping of coherent and decohering nuclear wave-packet dynamics in D_2^+ with ultrashort laser pulses.
Phys. Rev. A 67, 063408 (2003)

H_2^+ + C	Atom Field Interaction	0.3-1.0 PW/cm^2	Th
D_2^+ + C	Atom Field Interaction	0.3-1.0 PW/cm^2	Th

854. T. Bartsch, J. Main, G. Wunner
Closed orbits and their bifurcations in the crossed-field hydrogen atom.
Phys. Rev. A 67, 063410 (2003)

H + C	Atom Field Interaction		Th

855. T. Bartsch, J. Main, G. Wunner
Semiclassical quantization of the hydrogen atom in crossed electric and magnetic fields.
Phys. Rev. A 67, 063411 (2003)

H + C	Atom Field Interaction		Th

856. F. Rodriguez, J. A. Aparicio, V. R. Gonzalez, J. A. del Val, S. Mar
Measurement of Stark parameters of HeII P_α, P_β, and P_γ spectral lines
Astron. Astrophys. 409, 771 (2003)

He + C	Atom Field Interaction	1.7-2.4 eV	Exp

857. M. S. Dimitrijevic, P. Jovanovic, Z. Simic
Stark broadening of neutral germanium spectral lines.
Astron. Astrophys. 410, 735 (2003)

Ge + C	Atom Field Interaction	2500-50,000 K	Th

858. A. Jaron, A. Becker
Laser-assisted and laser-induced electron-impact ionization during nonsequential double ionization of He.
Phys. Rev. A 67, 035401 (2003)

e + He + C	Atom Field Interaction	5-200 eV	Th

859. O.-A. Al-Hujaj, P. Schmelcher
Helium in superstrong magnetic fields.
Phys. Rev. A 67, 023403 (2003)

He + C	Atom Field Interaction	100-10,000 a.u.	Th

860. S. Boehm, A. Mueller, S. Schippers, W. Shi, H. Danared, N. Ekloew, M. Fogel, R. Schuch, N. Djuric, G. H. Dunn, K. B. MacAdam
Measurement of the field-induced dielectronic recombination rate enhancement of N^{4+} ions differential in the Rydberg quantum number n.
Nucl. Instrum. Methods Phys. Res. B 205, 370 (2003)

e + N^{4+} + C	Atom Field Interaction	0-10 eV	Exp

861. J. R. Harries, J. P. Sullivan, J. B. Sternberg, S. Obara, T. Suzuki, P. Hammond, J. Bozek, N. Berrah, M. Halka, Y. Azuma
Double photoexcitation of helium in a strong dc electric field.
Phys. Rev. Lett. 90, 133002 (2003)

He + C	Atom Field Interaction	65-65.2 eV	Exp

862. K. T. Taylor
Multiphoton absorption by helium, magnesium and H_2 at high frequencies and intensities.
Phys. Scr. T105, 31 (2003)

He + C	Atom Field Interaction		Th
Mg + C	Atom Field Interaction		Th

863. A. Amelink, P. van der Straten
Photoassociation of ultracold sodium atoms.
Phys. Scr. 68, C82 (2003)

Na + Na + C	Atom Field Interaction		Exp

864. F. A. Rajgara, M. Krishnamurthy, D. Mathur
Electron rescattering and the fragmentation dynamics of molecules in strong optical fields.
Phys. Rev. A 68, 023407 (2003)

H_2O + C	Atom Field Interaction	10^{16} W/cm^2	Exp
C_6H_6 + C	Atom Field Interaction	10^{16} W/cm^2	Exp
CH_3OH + C	Atom Field Interaction	10^{16} W/cm^2	Exp

865. T. Volz, S. Durr, S. Ernst, A. Marte, G. Rempe
Characterization of elastic scattering near a Feshbach resonance in ^{87}Rb.
Phys. Rev. A 68, 010702 (2003)

Rb + Rb + C	Atom Field Interaction	10^{-6} K	Exp

866. V. Klimenko, L. Ko, T. F. Gallagher
Enhancement of dielectronic recombination in crossed electric and magnetic fields.
Phys. Rev. A 68, 012723 (2003)

e + Ba^+ + C	Atom Field Interaction	300 K	Exp

867. M. S. Pindzola, T. Minami, D. R. Schultz
Laser-modified charge-transfer processes in proton collisions with lithium atoms.
Phys. Rev. A 68, 013404 (2003)

H^+ + Li + C	Atom Field Interaction	5-15 keV	Th

868. R. V. Krems, A. Dalgarno
Disalignment transitions in cold collisions of ^{3}P atoms with structureless targets in a magnetic field.
Phys. Rev. A 68, 013406 (2003)

C + He + C	Atom Field Interaction	10^{-10} - 10^{-4} eV; 0.5-1 K	Th
O + He + C	Atom Field Interaction	10^{-10} - 10^{-4} eV; 0.5-1 K	Th

869. B. Bussery-Honvault, J.-M. Launay, R. Moszynski
Cold collisions of ground-state calcium atoms in a laser field: A theoretical study.
Phys. Rev. A 68, 032718 (2003)

Ca + Ca + C	Atom Field Interaction	Ultracold	Th

870. J. S. Cohen
Effect of tunneling on ionization of Rydberg states in intense fields: Hydrogenic atoms.
Phys. Rev. A 68, 033409 (2003)

H + C	Atom Field Interaction	scaled field strength	Th

871. I. A. Ivanov, Y. K. Ho
Combined effect of electric field and spin-orbit interaction on doubly excited Feshbach resonance states of helium below the N=2 threshold.
Phys. Rev. A 68, 033410 (2003)

He + C	Atom Field Interaction	0-1.8 Ry	Th
He* + C	Atom Field Interaction	0-1.8 Ry	Th

872. A. Wetzels, A. Guertler, F. Rosca-Pruna, S. Zamith, M.J.J. Vrakking, F. Robicheaux, W. J. van der Zande
Two-dimensional momentum imaging of Rydberg states using half-cycle pulse ionization and velocity map imaging.
Phys. Rev. A 68, 041401 (2003)

Xe* + C	Atom Field Interaction		Exp

873. V. I. Makarov, S. A. Kochubei, I. V. Khmelinskii
Intramolecular energy-transfer processes induced by an external electric field.
Phys. Rev. A 68, 043403 (2003)

C_2H_2 + C	Atom Field Interaction	43,550-43,740 cm^{-1}	Exp

874. S. X. Hu, A. F. Starace
Controlling H$^-$ detachment with few-cycle pulses.
Phys. Rev. A 68, 043407 (2003)

H$^-$ + C	Atom Field Interaction	0.0046-0.022 a.u.	Th

875. L. Labzowsky, D. Solovyev, V. Sharipov, G. Plunien, G. Soff
One- and two-photon resonant spectroscopy of hydrogen and anti-hydrogen atoms in external electric fields.
J. Phys. B 36, L227 (2003)

H + C	Atom Field Interaction		Th

876. J. T. Paci, D. M. Wardlaw, A. D. Bandrauk
Interpreting the dynamics of HCl$^+$ dissociation in a strong laser field at $\lambda = 10.3$ μ m.
J. Phys. B 36, 3999 (2003)

HCl$^+$ + C	Atom Field Interaction	0.12 eV	Th

877. L. B. Madsen
Triply excited states: Electron-electron correlations in lithium.
J. Phys. B 36, R223 (2003)

Li + C	Atom Field Interaction	140 eV	E/T

878. D.-P. Wang, S. Ding, S. Lin
The influence of the oscillating electric field on the recurrence spectra of a Li Rydberg atom in a strong magnetic field.
J. Phys. B 36, 4225 (2003)

Li + C	Atom Field Interaction	4.7 T	Th

879. X. Guan, B. Li, K. T. Taylor
Strong parallel magnetic field effects on the hydrogen molecular ion.
J. Phys. B 36, 3569 (2003)

H_2^+ + C	Atom Field Interaction	0 - 2.4x10^6 T	Th

880. U. Schloeder, T. Deuschle, C. Silber, C. Zimmermann
Autler-Townes splitting in two-color photoassociation of ^{6}Li.
Phys. Rev. A 68, 051403 (2003)

Li + Li + C	Atom Field Interaction	24 GHz	E/T

881. J. R. Guest, G. Raithel
High-$|m|$ Rydberg states in strong magnetic fields.
Phys. Rev. A 68, 052502 (2003)

B + C	Atom Field Interaction	2-20 T	Th

882. O.-A. Al-Hujaj, P. Schmelcher
Electromagnetic transitions of the helium atom in superstrong magnetic fields.
Phys. Rev. A 68, 053403 (2003)

He + C	Atom Field Interaction	100-10,000 a.u.	Th
B + C	Atom Field Interaction	100-10,000 a.u.	Th

AUTHOR INDEX