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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:

Oak Ridge National Laboratory, Oak Ridge, USA
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:

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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 2004 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 will be summarized in each issue of the Bulletin. Several new additions are briefly described below.

As pointed out in a previous edition, there are still important processes for which no reliable data have been measured or calculated. The average approximation for electron impact excitation of atomic ions has been briefly described and the web based interface to a working computer code announced. During the past year, two other significant interfaces to calculational tools have been developed.

A. Dubois and JP. Hansen collaborated with the A+M Data Unit on an interface to a code for calculating cross sections of bare nuclei with hydrogenic ions. Both excitation of the target ion as well as charge transfer cross sections are calculated. Resulting cross sections are displayed in tabular and graphical form. A number of checks on the input and results are preformed with appropriate warning messages displayed to the user. Due to the potential for long run times, users must register and obtain a user-id and password. A link to the interface is now available on the Unit home page.

J. Abdallah, Jr. collaborated with the A+M Unit on an interface to several calculational tools of the Los Alamos National Laboratory (LANL). The interface allows a user to select ionization processes, including electron impact ionization, photoionization and autoionization or electron impact excitation. An arbitrary ionization stage of any element up to tungsten may be selected. Arbitrary electronic configurations may be selected. The interface runs the latest version of the Hatree-Fock method as developed by R. Cowan to obtain atomic structure parameters, including energy levels for fine structure in LSJ coupling as well as oscillator strengths. Configuration interaction and spin-orbit coupling mixing are included and the mixing coefficients can be displayed. Electron impact excitation is calculated in the first-order-many-body-theory for a user- determined set of impact electron energies. Electron impact ionization can be calculated in the distorted-wave-approximation or using the scaled hydrogenic method of D. Sampson. All results can be displayed in tabular or graphical form. A link to the LANL interface is now available on the A+M Unit home page.

The existing software tool, GENIE continues to be updated. Searches are now carried out in parallel, rather than sequentially, greatly decreasing the search time. New databases have been added to the searches.

The web-based interface to the bibliographic database has undergone extensive upgrades. The new version has a much improved selection on reactants, and has a more general retrieval method for combinations of reactants.

Considerable amounts of new data are constantly being added to the on-line databases. New data for charge exchange cross sections, both state selective and total as generated by a recent Co-ordinated Research Project, have been added to the database. Additional cross sections for electron impact excitation and ionization generate at LANL have been added as well. Finally, a large amount of data for Franck-Condon factors, transition probabilities and radiative lifetimes for

hydrogen molecules and their isotopomeres have been included, as calculated by U. Fantz and D. Wünderlich.

Additional database enhancements are underway. 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**.

Due to the increased use of the online access to the bibliographic data and the cost of printed publications, a decision has been made to reduce the frequency of the Bulletin to one volume per year. Readers are reminded that all new bibliographic data are added to the online electronic database as they are received by the A+M Unit. Those data are searchable through the AMBDAS interface found on the A+M Unit home page.

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

O^{6+}	Transition probabil., Oscill. Strengths	Th	20
O^{3+}	Transition probabil., Oscill. Strengths	Th	22
O	Transition probabil., Oscill. Strengths	Th	33
O^{2+}	Transition probabil., Oscill. Strengths	Th	33
O^{3+}	Transition probabil., Oscill. Strengths	Th	33
O^{4+}	Transition probabil., Oscill. Strengths	Th	33
O^{5+}	Transition probabil., Oscill. Strengths	Th	33
O^{3+}	Transition probabil., Oscill. Strengths	Th	42
O^{4+}	Transition probabil., Oscill. Strengths	Th	56
O	Transition probabil., Oscill. Strengths	Exp	64
O^{6+}	Transition probabil., Oscill. Strengths	Th	70
F	Transition probabil., Oscill. Strengths	Th	33
F^{3+}	Transition probabil., Oscill. Strengths	Th	33
F^{4+}	Transition probabil., Oscill. Strengths	Th	33
F^{5+}	Transition probabil., Oscill. Strengths	Th	33
F	Transition probabil., Oscill. Strengths	Th	67
Ne	Transition probabil., Oscill. Strengths	Th	10
Ne^{8+}	Transition probabil., Oscill. Strengths	Th	20
Ne^{6+}	Transition probabil., Oscill. Strengths	Th	29
Ne	Transition probabil., Oscill. Strengths	Th	30
Ne^{4+}	Transition probabil., Oscill. Strengths	Th	33
Ne^{5+}	Transition probabil., Oscill. Strengths	Th	33
Ne, Z= 11-18	Transition probabil., Oscill. Strengths	Th	45
Ne^{2+}	Transition probabil., Oscill. Strengths	Th	54
Ne, Z= 24-36	Transition probabil., Oscill. Strengths	Th	58
Ne^{5+}	Transition probabil., Oscill. Strengths	Th	65
Ne^{+}	Transition probabil., Oscill. Strengths	Th	68
Ne^{8+}	Transition probabil., Oscill. Strengths	Th	70
Na, Z= 26-30	Transition probabil., Oscill. Strengths	Th	13
Na, Z= 14-36	Transition probabil., Oscill. Strengths	Th	24
Na, Z= 19-55	Transition probabil., Oscill. Strengths	Th	31
Na	Transition probabil., Oscill. Strengths	Th	33
Na	Transition probabil., Oscill. Strengths	Th	36
Na^{6+}	Transition probabil., Oscill. Strengths	Th	65
Mg	Transition probabil., Oscill. Strengths	Th	33
Mg^{+}	Transition probabil., Oscill. Strengths	Th	33
Mg	Transition probabil., Oscill. Strengths	Th	36
Mg^{7+}	Transition probabil., Oscill. Strengths	Th	65
Al	Transition probabil., Oscill. Strengths	Th	33
Al^{+}	Transition probabil., Oscill. Strengths	Th	33
Al^{2+}	Transition probabil., Oscill. Strengths	Th	33
Al^{+}	Transition probabil., Oscill. Strengths	Th	38
Al, Z= 21-80	Transition probabil., Oscill. Strengths	Th	50
Si^{6+}	Transition probabil., Oscill. Strengths	Th	7
Si^{2+}	Transition probabil., Oscill. Strengths	Th	14
Si^{12+}	Transition probabil., Oscill. Strengths	Th	20
Si	Transition probabil., Oscill. Strengths	Th	33
Si^{+}	Transition probabil., Oscill. Strengths	Th	33
Si^{2+}	Transition probabil., Oscill. Strengths	Th	33
Si^{3+}	Transition probabil., Oscill. Strengths	Th	33
Si	Transition probabil., Oscill. Strengths	Exp	40
Si^{12+}	Transition probabil., Oscill. Strengths	Th	70
Si^{7+}	Transition probabil., Oscill. Strengths	Th	79
P	Transition probabil., Oscill. Strengths	Th	33
P^{+}	Transition probabil., Oscill. Strengths	Th	33
P^{2+}	Transition probabil., Oscill. Strengths	Th	33
P^{3+}	Transition probabil., Oscill. Strengths	Th	33

P^{4+}	Transition probabil., Oscill. Strengths	Th	33
S	Transition probabil., Oscill. Strengths	Th	33
S^{+}	Transition probabil., Oscill. Strengths	Th	33
S^{2+}	Transition probabil., Oscill. Strengths	Th	33
S^{3+}	Transition probabil., Oscill. Strengths	Th	33
S^{4+}	Transition probabil., Oscill. Strengths	Th	33
S^{5+}	Transition probabil., Oscill. Strengths	Th	33
S^{7+}	Transition probabil., Oscill. Strengths	Th	77
S^{8+}	Transition probabil., Oscill. Strengths	Th	77
S^{9+}	Transition probabil., Oscill. Strengths	Th	77
S^{10+}	Transition probabil., Oscill. Strengths	Th	77
S^{11+}	Transition probabil., Oscill. Strengths	Th	77
S^{12+}	Transition probabil., Oscill. Strengths	Th	77
S^{13+}	Transition probabil., Oscill. Strengths	Th	77
Cl^{+}	Transition probabil., Oscill. Strengths	Th	11
Cl^{12+}	Transition probabil., Oscill. Strengths	Exp	12
Cl^{4+}	Transition probabil., Oscill. Strengths	Th	28
Cl	Transition probabil., Oscill. Strengths	Th	33
Cl^{+}	Transition probabil., Oscill. Strengths	Th	33
Cl^{2+}	Transition probabil., Oscill. Strengths	Th	33
Cl^{3+}	Transition probabil., Oscill. Strengths	Th	33
Cl^{4+}	Transition probabil., Oscill. Strengths	Th	33
Cl^{5+}	Transition probabil., Oscill. Strengths	Th	33
Cl^{9+}	Transition probabil., Oscill. Strengths	Th	57
Cl^{9+}	Transition probabil., Oscill. Strengths	Th	61
Cl^{+}	Transition probabil., Oscill. Strengths	Th	72
Ar, Z= 21-26	Transition probabil., Oscill. Strengths	Th	3
Ar^{16+}	Transition probabil., Oscill. Strengths	Th	20
Ar^{10+}	Transition probabil., Oscill. Strengths	Th	23
Ar^{11+}	Transition probabil., Oscill. Strengths	Th	23
Ar^{12+}	Transition probabil., Oscill. Strengths	Th	23
Ar^{13+}	Transition probabil., Oscill. Strengths	Th	23
Ar^{14+}	Transition probabil., Oscill. Strengths	Th	23
Ar^{15+}	Transition probabil., Oscill. Strengths	Th	23
Ar^{16+}	Transition probabil., Oscill. Strengths	Th	23
Ar	Transition probabil., Oscill. Strengths	Th	33
Ar^{+}	Transition probabil., Oscill. Strengths	Th	33
Ar^{4+}	Transition probabil., Oscill. Strengths	Th	33
Ar^{5+}	Transition probabil., Oscill. Strengths	Th	33
Ar^{16+}	Transition probabil., Oscill. Strengths	Th	70
K^{13+}	Transition probabil., Oscill. Strengths	Th	8
K	Transition probabil., Oscill. Strengths	Th	33
K	Transition probabil., Oscill. Strengths	Th	36
Ca	Transition probabil., Oscill. Strengths	Th	36
Ca	Transition probabil., Oscill. Strengths	Exp	40
Sc	Transition probabil., Oscill. Strengths	Th	33
Sc^{+}	Transition probabil., Oscill. Strengths	Th	33
Sc^{2+}	Transition probabil., Oscill. Strengths	Th	33
Ti	Transition probabil., Oscill. Strengths	Th	33
Ti^{+}	Transition probabil., Oscill. Strengths	Th	33
Ti^{2+}	Transition probabil., Oscill. Strengths	Th	33
Ti	Transition probabil., Oscill. Strengths	Exp	40
V	Transition probabil., Oscill. Strengths	Th	33
V^{+}	Transition probabil., Oscill. Strengths	Th	33
V^{2+}	Transition probabil., Oscill. Strengths	Th	33
Cr	Transition probabil., Oscill. Strengths	Th	33
Cr^{+}	Transition probabil., Oscill. Strengths	Th	33

Cr^{2+}	Transition probabil., Oscill. Strengths	Th	33
Cr	Transition probabil., Oscill. Strengths	Exp	40
Mn	Transition probabil., Oscill. Strengths	Th	33
Mn^{+}	Transition probabil., Oscill. Strengths	Th	33
Fe^{+}	Transition probabil., Oscill. Strengths	Th	4
Fe^{16+}	Transition probabil., Oscill. Strengths	Th	15
Fe^{10+}	Transition probabil., Oscill. Strengths	Th	17
Fe^{15+}	Transition probabil., Oscill. Strengths	Th	19
Fe^{15+}	Transition probabil., Oscill. Strengths	Th	21
Fe^{11+}	Transition probabil., Oscill. Strengths	Th	26
Fe	Transition probabil., Oscill. Strengths	Th	33
Fe^{+}	Transition probabil., Oscill. Strengths	Th	33
Fe^{2+}	Transition probabil., Oscill. Strengths	Th	33
Fe	Transition probabil., Oscill. Strengths	Exp	40
Fe^{+}	Transition probabil., Oscill. Strengths	Th	41
Fe^{2+}	Transition probabil., Oscill. Strengths	Th	41
Fe^{3+}	Transition probabil., Oscill. Strengths	Th	41
Fe^{4+}	Transition probabil., Oscill. Strengths	Th	41
Fe^{5+}	Transition probabil., Oscill. Strengths	Th	41
Fe^{6+}	Transition probabil., Oscill. Strengths	Th	41
Fe^{7+}	Transition probabil., Oscill. Strengths	Th	41
Fe^{8+}	Transition probabil., Oscill. Strengths	Th	41
Fe^{+}	Transition probabil., Oscill. Strengths	Exp	43
Fe^{23+}	Transition probabil., Oscill. Strengths	Th	44
Fe^{13+}	Transition probabil., Oscill. Strengths	Exp	47
Fe^{19+}	Transition probabil., Oscill. Strengths	Th	49
Fe^{20+}	Transition probabil., Oscill. Strengths	Th	49
Fe^{21+}	Transition probabil., Oscill. Strengths	Th	49
Fe^{22+}	Transition probabil., Oscill. Strengths	Th	49
Fe^{23+}	Transition probabil., Oscill. Strengths	Th	49
Fe^{24+}	Transition probabil., Oscill. Strengths	Th	49
Fe^{16+}	Transition probabil., Oscill. Strengths	Th	51
Fe^{7+}	Transition probabil., Oscill. Strengths	Th	53
Fe^{19+}	Transition probabil., Oscill. Strengths	Th	55
Fe^{16+}	Transition probabil., Oscill. Strengths	Th	69
Fe^{7+}	Transition probabil., Oscill. Strengths	Th	73
Fe^{10+}	Transition probabil., Oscill. Strengths	Th	75
Fe^{14+}	Transition probabil., Oscill. Strengths	Th	76
Fe^{15+}	Transition probabil., Oscill. Strengths	Th	76
Co^{16+}	Transition probabil., Oscill. Strengths	Th	21
Co	Transition probabil., Oscill. Strengths	Th	33
Co^{+}	Transition probabil., Oscill. Strengths	Th	33
Co^{2+}	Transition probabil., Oscill. Strengths	Th	33
Ni, Z= 74-84	Transition probabil., Oscill. Strengths	Th	1
Ni^{17+}	Transition probabil., Oscill. Strengths	Th	21
Ni	Transition probabil., Oscill. Strengths	Th	33
Ni^{+}	Transition probabil., Oscill. Strengths	Th	33
Ni	Transition probabil., Oscill. Strengths	Exp	34
Ni^{12+}	Transition probabil., Oscill. Strengths	Th	46
Ni^{13+}	Transition probabil., Oscill. Strengths	Th	46
Ni^{14+}	Transition probabil., Oscill. Strengths	Th	46
Ni^{15+}	Transition probabil., Oscill. Strengths	Th	46
Ni^{20+}	Transition probabil., Oscill. Strengths	Th	52
Ni^{17+}	Transition probabil., Oscill. Strengths	Th	59
Ni^{16+}	Transition probabil., Oscill. Strengths	Th	63
Ni^{13+}	Transition probabil., Oscill. Strengths	Th	66
Ni^{11+}	Transition probabil., Oscill. Strengths	Th	78

Cu	Transition probabil., Oscill. Strengths		Th	33
Cu^+	Transition probabil., Oscill. Strengths		Th	33
Zn	Transition probabil., Oscill. Strengths		Th	33
Zn^+	Transition probabil., Oscill. Strengths		Th	33
Zn	Transition probabil., Oscill. Strengths		Th	74
Ga	Transition probabil., Oscill. Strengths		Th	33
Ga^+	Transition probabil., Oscill. Strengths		Th	33
Ga^{2+}	Transition probabil., Oscill. Strengths		Th	33
Ge, Z= 37-42	Transition probabil., Oscill. Strengths		Th	18
Ge, Z= 44-56	Transition probabil., Oscill. Strengths		Th	18
Kr^{25+}	Transition probabil., Oscill. Strengths		Th	32
Kr^{26+}	Transition probabil., Oscill. Strengths		Th	32
Kr^{27+}	Transition probabil., Oscill. Strengths		Th	32
Rb	Transition probabil., Oscill. Strengths		Th	36
Sr	Transition probabil., Oscill. Strengths		Th	36
Sr	Transition probabil., Oscill. Strengths		Th	74
Mo^+	Transition probabil., Oscill. Strengths		Th	48
Cd	Transition probabil., Oscill. Strengths		Th	74
Cd, Z= 49-56	Transition probabil., Oscill. Strengths		Th	74
Xe^+	Transition probabil., Oscill. Strengths		Th	35
Xe^{7+}	Transition probabil., Oscill. Strengths		Th	37
Xe^{8+}	Transition probabil., Oscill. Strengths		Th	37
Xe^{9+}	Transition probabil., Oscill. Strengths		Th	37
Xe^+	Transition probabil., Oscill. Strengths		Exp	60
Ba	Transition probabil., Oscill. Strengths		Th	74
Yb	Transition probabil., Oscill. Strengths		Th	74
Ta^{2+}	Transition probabil., Oscill. Strengths		Th	62
W^{26+}	Transition probabil., Oscill. Strengths		Th	74
Hg	Transition probabil., Oscill. Strengths		Th	74
Hg, Z= 81-86	Transition probabil., Oscill. Strengths		Th	74

2.2 Atomic and Molecular Collisions

2.2.1 Photon Collisions

hν + H^-	Photodetachment	2.15 μ m	Th	109
hν + H	Photoionization	0.07-0.7 a.u.	Th	138
hν + H	Photon Collisions		Th	164
hν + H	Elastic Scattering		Th	164
hν + H	Fluorescence		Th	164
hν + H	Photoexcitation	1 a.u.	Th	165
hν + H	Photoionization	1 a.u.	Th	165
hν + H	Photoionization	3000-248 nm	Th	189
hν + H	Photoionization	10 μ m	Th	195
hν + H_2	Photoionization	790-1365 nm	Exp	96
hν + H_2	Photoionization	760 μ m	Th	102
hν + H_2	Photodissociation	795 nm	Exp	152
hν + H_2	Photoionization	795 nm	Exp	152
hν + H_2^+	Total Absor., Scat.	0-25 eV	Th	181
hν + H_2^+	Photodissociation	0-25 eV	Th	181
hν + H_2^+	Free-Free Transition	0-25 eV	Th	181
hν + H_2	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
hν + H_2^+	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
hν + H_2	Photoionization	780 nm	E/T	191
hν + H_2^+	Photodissociation	392-785 nm	E/T	196
hν + H_2	Photoionization	76 eV	E/T	201

hν + H_2	Photoionization	1-1.55 eV	Th	204
hν + HD^+	Photodissociation	392-785 nm	E/T	196
hν + HOCl	Photodissociation	330-370 nm	Exp	106
hν + H_2O	Photoionization	535-537 eV	E/T	113
hν + H_2O_2	Photodissociation	330-370 nm	Exp	106
hν + D_2	Photoionization	790-1365 nm	Exp	96
hν + D_2	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
hν + He^+	Photoionization	39-54 eV	Th	97
hν + He	Photoionization	2.9 x 10^{14} - 6.6 x 10^{14} W/cm^2	Th	103
hν + He	Photoionization	1053 nm	Th	117
hν + He	Photoionization	I_1 + I_2 + 20 eV	Th	135
hν + He	Photoionization	530 eV	Exp	153
hν + He	Photoionization		Th	154
hν + He	Photoionization	75 eV	Th	159
hν + He	Photon Collisions		Th	163
hν + He	Photoionization		Th	163
hν + He	Photoionization		Th	169
hν + He	Photoionization	64.5-65.5 eV	E/T	173
hν + He	Photon Collisions		Th	175
hν + He^-	Photodetachment	38-52 eV	Th	179
hν + He	Photoionization	0.8-5.5 a.u.	Th	184
hν + He^*	Photoionization	0.8-5.5 a.u.	Th	184
hν + He^-	Photodetachment	0-5 eV	E/T	193
hν + He	Photoionization	800 nm	E/T	197
hν + He	Photoionization	179 eV	E/T	202
hν + Li	Photoionization	81-110 eV	Exp	91
hν + Li^-	Photoionization	0.012-0.020 a.u.	Th	104
hν + Li^{2+}	Fluorescence	800 nm	Th	110
hν + Li	Photoexcitation	800 nm	E/T	197
hν + Li^*	Photoexcitation	800 nm	E/T	197
hν + Li	Photoionization	36 GHz	E/T	198
hν + Be	Photoionization	10-600 eV	Th	85
hν + Be^{3+}	Fluorescence	800 nm	Th	110
hν + C^{2+}	Photoionization	41-57; 48-49 eV	E/T	116
hν + C	Photoexcitation		Th	134
hν + C	Elastic Scattering		Th	150
hν + C^+	Elastic Scattering		Th	150
hν + C^{2+}	Elastic Scattering		Th	150
hν + C^{3+}	Elastic Scattering		Th	150
hν + CH_4	Photodissociation	70-360 eV	E/T	92
hν + CH_4	Photoionization	70-360 eV	E/T	92
hν + CH_4	Total Absor., Scat.	200-710 eV	Exp	114
hν + CH_4	Fluorescence	10-40 eV	Exp	182
hν + CD_4	Photodissociation	70-360 eV	E/T	92
hν + CD_4	Photoionization	70-360 eV	E/T	92
hν + CO	Photoionization	790-1365 nm	Exp	96
hν + CO	Photodissociation	19-26 eV	E/T	122
hν + CO	Photoionization	400 eV	Th	170
hν + CO	Photoionization	10-21 eV	Th	172
hν + CO^+	Photoionization	25-45 eV	Exp	187
hν + CO	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
hν + CO	Photodissociation	295-545 eV	E/T	199
hν + CO	Photoexcitation	295-545 eV	E/T	199
hν + CO_2	Photodissociation		Exp	94
hν + CO_2	Photoionization		Exp	94
hν + CO_2	Photodissociation		Exp	95
hν + CO_2	Photoionization		Exp	95

$h\nu + CO_2$	Photoionization	290-325 eV	Exp	137
$h\nu + CO_2$	Photon Collisions		Th	167
$h\nu + CO_2$	Photodissociation	120 eV	Exp	168
$h\nu + CO_2$	Photoionization	120 eV	Exp	168
$h\nu + CO_2$	Photodissociation	285-570 eV	Exp	183
$h\nu + CO_2$	Elastic Scattering	285-570 eV	Exp	183
$h\nu + CO_2$	Photoionization	285-570 eV	Exp	183
$h\nu + CO_2$	Photodissociation	538-541.5 eV	Exp	185
$h\nu + N_2$	Photoionization	790-1365 nm	Exp	96
$h\nu + N_2$	Total Absor., Scat.	1200-1950 eV	Exp	98
$h\nu + N_2$	Photoionization	40-70 eV	Exp	127
$h\nu + N_2$	Photoexcitation	8-17 eV	Exp	131
$h\nu + N_2$	Photoionization	8-17 eV	Exp	131
$h\nu + N_2$	Photoexcitation	118,720-125,425 cm^{-1}	Th	147
$h\nu + N_2$	Total Absor., Scat.	277-1486 eV	Exp	149
$h\nu + N_2$	Photoionization	410-460 eV	Th	158
$h\nu + N_2$	Photoionization	10-21 eV	Th	172
$h\nu + N_2$	Photoionization	3000-248 nm	Th	189
$h\nu + N_2$	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
$h\nu + NO$	Photoionization	790-1365 nm	Exp	96
$h\nu + NO$	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
$h\nu + O^{3+}$	Photoexcitation	40 Ry	Th	166
$h\nu + O^{+}$	Photoionization	525-540 eV	Th	178
$h\nu + O_2$	Photoionization	790-1365 nm	Exp	96
$h\nu + O_2$	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
$h\nu + F_2$	Photoionization	790-1365 nm	Exp	96
$h\nu + F_2$	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
$h\nu + Ne^{+}$	Photoionization	841-863 eV	E/T	84
$h\nu + Ne^{2+}$	Photoionization	841-863 eV	E/T	84
$h\nu + Ne^{3+}$	Photoionization	841-863 eV	E/T	84
$h\nu + Ne^{+}$	Photoionization	40-70 eV	Exp	108
$h\nu + Ne^{6+}$	Fluorescence	800 nm	Th	110
$h\nu + Ne$	Photoionization	48-70 eV	Exp	120
$h\nu + Ne^{*}$	Photoionization	48-70 eV	Exp	120
$h\nu + Ne$	Photoionization	91.71-92.71 eV	Th	133
$h\nu + Ne$	Photoexcitation	0.7-9.3 eV	Exp	156
$h\nu + Ne$	Photoionization	0.7-9.3 eV	Exp	156
$h\nu + Ne^{6+}$	Photon Collisions	65 Ry	Th	160
$h\nu + Ne^{6+}$	Photoionization	65 Ry	Th	160
$h\nu + Ne$	Total Absor., Scat.	840-1015 eV	Th	171
$h\nu + Ne^{3+}$	Photoionization	525-540 eV	Th	178
$h\nu + Na$	Photoionization	800 nm	Th	87
$h\nu + Na$	Photoionization	0-3.5 eV	Th	151
$h\nu + Mg$	Photoionization	248.6 nm	E/T	86
$h\nu + Mg$	Photoionization	2-650 a.u.	Th	100
$h\nu + Mg^{+}$	Photoexcitation	40,000-0 $\AA$	Th	146
$h\nu + Al$	Fluorescence	80-1000 eV	Th	141
$h\nu + Al$	Photoionization	80-1000 eV	Th	141
$h\nu + Si^{6+}$	Photoexcitation	15-75 Ry	Th	145
$h\nu + SO$	Photoionization	790-1365 nm	Exp	96
$h\nu + SO$	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
$h\nu + Cl$	Photoionization	25-70 eV	Th	88
$h\nu + Cl$	Photoionization	22-80 eV	Th	132
$h\nu + Ar$	Photoionization	790-1365 nm	Exp	96
$h\nu + Ar$	Photoexcitation	8-17 eV	Exp	131
$h\nu + Ar$	Photoionization	8-17 eV	Exp	131
$h\nu + Ar$	Photoionization	10^{13}-10^{15} W/cm^2	Th	190

hν + K	Photoionization	800 nm	Th	87
hν + K	Fluorescence	766.35-766.80 nm	Exp	136
hν + K	Photoexcitation	766.35-766.80 nm	Exp	136
hν + K	Total Absor., Scat.	35-41.5 eV	Exp	148
hν + K	Photoionization	0-3.5 eV	Th	151
hν + K^{13+}	Photoexcitation	0-65 Ry	Th	205
hν + Ca	Photoionization	2-650 a.u.	Th	100
hν + Ca	Fluorescence	8-35 keV	Exp	128
hν + Ca	Photoionization	8-35 keV	Exp	128
hν + Ca^{+}	Photoionization	28-30.5 eV	Exp	174
hν + Ca	Photoionization	1.55 eV	E/T	194
hν + Sc	Photoionization	29-40 eV	Exp	105
hν + Sc^{15+}	Photoexcitation	0-65 Ry	Th	205
hν + Ti	Elastic Scattering	22.1 keV	Exp	99
hν + Ti	Fluorescence	8-35 keV	Exp	128
hν + Ti	Photoionization	8-35 keV	Exp	128
hν + Ti^{16+}	Photoexcitation	0-65 Ry	Th	205
hν + V	Elastic Scattering	22.1 keV	Exp	99
hν + V	Fluorescence	8-35 keV	Exp	128
hν + V	Photoionization	8-35 keV	Exp	128
hν + V^{17+}	Photoexcitation	0-65 Ry	Th	205
hν + Cr^{18+}	Photoexcitation	0-65 Ry	Th	205
hν + Mn^{19+}	Photoexcitation	0-65 Ry	Th	205
hν + Fe	Elastic Scattering	22.1 keV	Exp	99
hν + Fe^{+}	Photoexcitation	5613-3175 $\mathring{A}$	E/T	140
hν + Fe^{6+}	Photoexcitation	140-60 $\mathring{A}$	Exp	143
hν + Fe^{7+}	Photoexcitation	140-60 $\mathring{A}$	Exp	143
hν + Fe^{8+}	Photoexcitation	140-60 $\mathring{A}$	Exp	143
hν + Fe^{9+}	Photoexcitation	140-60 $\mathring{A}$	Exp	143
hν + Fe	Photoexcitation	300,000-3,000,000 cm^{-1}	Th	144
hν + Fe^{+}	Photoionization	15.8-180 eV	E/T	200
hν + Fe^{13+}	Photoexcitation	5303 $\mathring{A}$	Exp	206
hν + Ni	Elastic Scattering	22.1 keV	Exp	99
hν + Ni^{14+}	Total Absor., Scat.	463-520 eV	Th	101
hν + Ni^{14+}	Photoexcitation	463-520 eV	Th	101
hν + Ni^{14+}	Photoionization	463-520 eV	Th	101
hν + Cu	Elastic Scattering	22.1 keV	Exp	99
hν + Zn	Photoionization	248.6 nm	E/T	86
hν + Zn	Elastic Scattering	22.1 keV	Exp	99
hν + Kr	Photoionization	790-1365 nm	Exp	96
hν + Kr	Photoexcitation	124 nm; 819 nm	Exp	123
hν + Kr	Photoexcitation	15.15-15.8 keV	Exp	125
hν + Kr	Photoexcitation	130-530 eV	Exp	157
hν + Kr	Photoionization	130-530 eV	Exp	157
hν + Kr	Photoexcitation	800-248 nm	Exp	180
hν + Kr	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
hν + Rb	Photoionization	800 nm	Th	87
hν + Rb	Photoionization	266 nm	Exp	107
hν + Rb	Photoexcitation	15.15-15.8 keV	Exp	125
hν + Rb	Photoionization	6286-6318 $\mathring{A}$	E/T	161
hν + Rb^{-}	Photodetachment	0.001-0.06 eV	Th	192
hν + Sr	Photoionization	2-650 a.u.	Th	100
hν + Zr	Elastic Scattering	22.1 keV	Exp	99
hν + Nb	Elastic Scattering	22.1 keV	Exp	99
hν + Mo	Elastic Scattering	22.1 keV	Exp	99
hν + Pd	Elastic Scattering	22.1 keV	Exp	99

hν + Cd	Elastic Scattering	22.1 keV	Exp	99
hν + In	Photoionization	248.6 nm	E/T	86
hν + In	Elastic Scattering	22.1 keV	Exp	99
hν + Sn	Elastic Scattering	22.1 keV	Exp	99
hν + I^-	Photodetachment	40-185 eV	Exp	119
hν + I^-	Photoionization	40-185 eV	Exp	119
hν + Xe	Photoionization	94.5 eV	Th	81
hν + Xe	Photoionization	790-1365 nm	Exp	96
hν + Xe	Photoionization	138-152 eV	Exp	115
hν + Xe	Photoexcitation	130-530 eV	Exp	157
hν + Xe	Photoionization	130-530 eV	Exp	157
hν + Xe	Photoexcitation	64-120 eV	E/T	176
hν + Xe	Photoionization	64-120 eV	E/T	176
hν + Xe	Photoexcitation	65.11 eV	Exp	177
hν + Xe	Photoionization	65.11 eV	Exp	177
hν + Xe	Photoexcitation	800-248 nm	Exp	180
hν + Xe	Photoionization	94.5 eV	Th	186
hν + Xe	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
hν + Xe	Photoionization	800 nm	E/T	203
hν + Cs^+	Photoionization	40-185 eV	Exp	119
hν + Cs	Photoexcitation	457 nm	Exp	155
hν + Cs^-	Photodetachment	0.001-0.06 eV	Th	192
hν + Ba	Photoionization	138 eV	Th	111
hν + Ba^+	Photoionization	40-185 eV	Exp	119
hν + Ba^{2+}	Photoionization	40-185 eV	Exp	119
hν + Ba	Photoionization	8800-17,600 cm^{-1}	Exp	124
hν + Pr^-	Photodetachment	1064 nm	Exp	112
hν + Sm	Elastic Scattering	22.1 keV	Exp	99
hν + Sm^{2+}	Photoexcitation	324-290 nm	Exp	142
hν + Gd	Elastic Scattering	22.1 keV	Exp	99
hν + Gd^{2+}	Photoexcitation	3200-2030 $\AA$	Th	139
hν + Dy	Elastic Scattering	22.1 keV	Exp	99
hν + Er	Elastic Scattering	22.1 keV	Exp	99
hν + Tm^-	Photodetachment	1-1.3 eV	Exp	80
hν + Tm	Photoionization	50-100 eV	Exp	130
hν + Yb	Elastic Scattering	22.1 keV	Exp	99
hν + Au	Elastic Scattering	22.1 keV	Exp	99
hν + Au_{17}^+	Total Absor., Scat.	3-15 eV	Exp	188
hν + Au_{17}^+	Photodissociation	3-15 eV	Exp	188
hν + Au_{18}^+	Total Absor., Scat.	3-15 eV	Exp	188
hν + Au_{18}^+	Photodissociation	3-15 eV	Exp	188
hν + Au_{19}^+	Total Absor., Scat.	3-15 eV	Exp	188
hν + Au_{19}^+	Photodissociation	3-15 eV	Exp	188
hν + Au_{20}^+	Total Absor., Scat.	3-15 eV	Exp	188
hν + Au_{20}^+	Photodissociation	3-15 eV	Exp	188
hν + Au_{21}^+	Total Absor., Scat.	3-15 eV	Exp	188
hν + Au_{21}^+	Photodissociation	3-15 eV	Exp	188
hν + Hg	Photoionization	10-300 eV	Th	90
hν + Pb	Elastic Scattering	22.1 keV	Exp	99
hν + Fr^-	Photodetachment	0.001-0.06 eV	Th	192
hν + LiF^-	Photodetachment		Th	89
hν + CF_4	Total Absor., Scat.	200-710 eV	Exp	114
hν + CCl_4	Total Absor., Scat.	200-710 eV	Exp	114
hν + U	Photoexcitation	530-660 nm	Exp	129
hν + U	Photoionization	530-660 nm	Exp	129
hν + I_2	Photodissociation	800 nm	Exp	121
hν + I_2	Photoionization	800 nm	Exp	121

hν + S_2	Photoionization	790-1365 nm	Exp	96
hν + S_2	Photoionization	10^{13}-10^{15} W/cm^2	Th	190
hν + C_3H_8	Photodissociation		Exp	94
hν + C_3H_8	Photoionization		Exp	94
hν + C_3H_8	Photodissociation		Exp	95
hν + C_3H_8	Photoionization		Exp	95
hν + HCl	Photoionization	64 eV	Exp	82
hν + DCl	Photoionization	64 eV	Exp	82
hν + HCl	Photoionization	64 eV	Th	83
hν + DCl	Photoionization	64 eV	Th	83
hν + SiF_4	Photoionization	15-120 eV	E/T	118
hν + $Na_2I_2NaOH^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_3I_3^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_3I_2NaOH^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_3I_3NaOH^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_3I_3H_2O^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_4I_3^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_4I_4^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_4I_2NaOH^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_4I_3NaOH^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_4I_4H_2O^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_5I_3^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_5I_4^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_6I_6^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + $Na_6I_6H_2O^-$	Photodetachment	2.33-3.49 eV	Exp	93
hν + Air	Total Absor., Scat.	1200-1950 eV	Exp	98
H	Photon Collisions	0-100 a.u.	Th	126
H_2^+ + H^+	Photon Collisions	10^4-10^7 T	Th	162
Ne	Photon Collisions	0-100 a.u.	Th	126
nhν + H_2	Photoionization	1-1.55 eV	Th	204
nhν + Be	Photoionization	10-600 eV	Th	85
nhν + Mg	Photoionization	248.6 nm	E/T	86
nhν + Zn	Photoionization	248.6 nm	E/T	86
nhν + In	Photoionization	248.6 nm	E/T	86
nhν + Xe	Photoionization	94.5 eV	Th	81
2hν + He^+	Photoionization	39-54 eV	Th	97
2hν + Ba	Photoionization	8800-17,600 cm^{-1}	Exp	124
3hν + Rb	Photoionization	6286-6318 $\AA$	E/T	161

2.2.2 Electron Collisions

e + H	Excitation	15-1000 eV	Exp	220
e + H	Angular Scattering	0.25-64 keV	Th	229
e + H	Ionization	0.25-64 keV	Th	229
e + H	Ionization	5-1000 eV	E/T	252
e + H	Elastic Scattering	50-100 eV	Th	275
e + H	Angular Scattering	50-100 eV	Th	275
e + H	Angular Scattering	17.6 eV	Th	280
e + H	Ionization	17.6 eV	Th	280
e + H	Ionization	17.6 eV	Th	287
e + H	Electron Collisions		Th	290
e + H	Elastic Scattering	0-1 Ry	Th	306
e + H	Angular Scattering	0-1 Ry	Th	306
e + H_2	Angular Scattering	2000-4168 eV	Th	213
e + H_2	Ionization	2000-4168 eV	Th	213

e + H_2	Angular Scattering	17.5-30 eV	Exp	259
e + H_2	Excitation	17.5-30 eV	Exp	259
e + H_2^+	Dissociation	0-0.1 meV	Exp	304
e + H_2^+	Recombination	0-0.1 meV	Exp	304
e + H_3^+	Dissociation	0.001-30 eV	E/T	207
e + H_3^+	Recombination	0.001-30 eV	E/T	207
e + H_3^+	Excitation	0.01-5 eV	Th	251
e + H_2O	Angular Scattering	0.05-6 eV	E/T	232
e + H_2O	Excitation	0.05-6 eV	E/T	232
e + H_2O^+	Dissociation	0-0.1 meV	E/T	303
e + H_2O^+	Recombination	0-0.1 meV	E/T	303
e + H_3O^+	Excitation	0.01-5 eV	Th	251
e + D_3^+	Excitation	0.01-5 eV	Th	251
e + D_3^+	Dissociation	0-0.1 meV	Exp	304
e + D_3^+	Recombination	0-0.1 meV	Exp	304
e + DI	Attachment	0-2 eV	Th	224
e + DI	Dissociation	0-2 eV	Th	224
e + D_3O^+	Excitation	0.01-5 eV	Th	251
e + He	Ionization	0-190 eV	Th	227
e + He^*	Ionization	0-190 eV	Th	227
e + He^+	Elastic Scattering	0.4-1.4 a.u.	Th	230
e + He	Angular Scattering	1 keV	Th	231
e + He	Ionization	1 keV	Th	231
e + He	Ionization	1-4 keV	Exp	237
e + He	Elastic Scattering	9.5 eV	Th	238
e + He	Ionization	5-1000 eV	E/T	252
e + He	Ionization	8-330 eV	Exp	258
e + He	Angular Scattering	580 eV	Th	261
e + He	Ionization	580 eV	Th	261
e + He	Angular Scattering	50-200 eV	Th	263
e + He	Excitation	50-200 eV	Th	263
e + He	Ionization	50-200 eV	Th	263
e + He	Angular Scattering	50-100 eV	Th	273
e + He	Ionization	50-100 eV	Th	273
e + He	Ionization		Th	286
e + He	Electron Collisions		Th	286
e + He	Ionization		Th	288
e + He^+	Elastic Scattering	0.2-2.88 Ry	Th	296
e + He	Ionization	0-60 eV	E/T	313
e + He	Elastic Scattering	0-16 eV	E/T	314
e + He	Angular Scattering	0-16 eV	E/T	314
e + Li	Ionization	200-1500 eV	Exp	215
e + Li^{2+}	Ionization	140-1000 eV	Th	216
e + Li^+	Angular Scattering	135.6 eV	Th	228
e + Li^+	Ionization	135.6 eV	Th	228
e + Li^+	Angular Scattering	60-116 eV	Th	234
e + Li^+	Ionization	60-116 eV	Th	234
e + Li^-	Detachment	1-100 eV	E/T	311
e + Be^+	Recombination	0-5 eV	Exp	285
e + C	Excitation	12-5000 eV	Th	211
e + C	Ionization	12-5000 eV	Th	211
e + C^{3+}	Recombination	41-57; 48-49 eV	E/T	235
e + C	Ionization	5-1000 eV	E/T	252
e + C	Excitation		Th	257
e + C^+	Ionization	60-2000 eV	Th	276
e + CH_4	Excitation	0.1-12 eV	Th	239
e + CH_4	Elastic Scattering	200-1400 eV	E/T	308

e + CH_4	Angular Scattering	200-1400 eV	E/T	308
e + CO_2	Electron Collisions		E/T	272
e + CO_2	Excitation	0-65 K^2(a.u.)^2	E/T	309
e + CO_2	Elastic Scattering	0.4-0.9 eV	Exp	310
e + CO_2	Excitation	0.4-0.9 eV	Exp	310
e + C_2H_2	Elastic Scattering	200-1400 eV	E/T	308
e + C_2H_2	Angular Scattering	200-1400 eV	E/T	308
e + N	Excitation	12-5000 eV	Th	211
e + N	Ionization	12-5000 eV	Th	211
e + N	Ionization	5-1000 eV	E/T	252
e + N^+	Ionization	60-2000 eV	Th	276
e + N_2	Angular Scattering	25.6-76.7 eV	Exp	244
e + N_2	Ionization	25.6-76.7 eV	Exp	244
e + N_2	Excitation	11.94 eV	Exp	283
e + N_2O	Elastic Scattering	2.5 eV	Exp	254
e + N_2O	Angular Scattering	2.5 eV	Exp	254
e + N_2O	Excitation	2.5 eV	Exp	254
e + N_2O^*	Elastic Scattering	2.5 eV	Exp	254
e + N_2O^*	Angular Scattering	2.5 eV	Exp	254
e + N_2O^*	Excitation	2.5 eV	Exp	254
e + N_2O	Ionization	0-1000 eV	Exp	318
e + O	Excitation	12-5000 eV	Th	211
e + O	Ionization	12-5000 eV	Th	211
e + O^{6+}	Recombination	43.5-517 Ry	Th	219
e + O^{6+}	Excitation	43.5-517 Ry	Th	219
e + O^{6+}	Excitation	41-49 Ry	Th	243
e + O	Ionization	5-1000 eV	E/T	252
e + O^+	Ionization	60-2000 eV	Th	276
e + O	Angular Scattering	10-3000 eV	Th	293
e + O	Ionization	10-3000 eV	Th	293
e + O	Excitation	10-100 eV	Th	298
e + O_2	Angular Scattering	9-20 eV	Exp	247
e + O_2	Excitation	9-20 eV	Exp	247
e + O_2	Elastic Scattering	100 eV	Exp	260
e + O_2	Excitation	100 eV	Exp	260
e + O_2	Ionization	100 eV	Exp	260
e + O_2	Angular Scattering	10-3000 eV	Th	293
e + O_2	Ionization	10-3000 eV	Th	293
e + O_3	Elastic Scattering	100 eV	Exp	260
e + O_3	Excitation	100 eV	Exp	260
e + O_3	Ionization	100 eV	Exp	260
e + O_3	Angular Scattering	10-3000 eV	Th	293
e + O_3	Ionization	10-3000 eV	Th	293
e + O_4	Angular Scattering	10-3000 eV	Th	293
e + O_4	Ionization	10-3000 eV	Th	293
e + F^{6+}	Recombination	0.003-0.6 eV	E/T	209
e + F	Ionization	5-1000 eV	E/T	252
e + Ne	Ionization	7-3000 eV	Th	210
e + Ne	Ionization	1000-10^8 a.u.	Th	233
e + Ne	Ionization	8-425 eV	Exp	242
e + Ne	Ionization	5-1000 eV	E/T	252
e + Ne	Elastic Scattering	300-10,000 eV	Exp	256
e + Ne	Angular Scattering	300-10,000 eV	Exp	256
e + Ne^+	Ionization	60-2000 eV	Th	276
e + Ne	Excitation	20-100 eV	Th	289
e + Mg^+	Excitation	4-300 eV	Exp	255
e + Mg	Ionization	10-675 eV	Th	269

e + Mg	Electron Collisions		Th	290
e + Mg^{4+}	Recombination	0.001-10,000 eV	E/T	307
e + Al	Ionization	1.5-20 keV	Exp	222
e + Al	Bremsstrahlung	1-10,000 eV	Th	241
e + Al	Angular Scattering	1-10,000 eV	Th	241
e + Al^{2+}	Fluorescence	6-1000 eV	Exp	299
e + Al^{2+}	Excitation	6-1000 eV	Exp	299
e + Al^{2+}	Excitation	6.25-7.1 eV	Exp	300
e + Si	Ionization	7-3000 eV	Th	210
e + Si^{6+}	Excitation	15-75 Ry	Th	268
e + Si^{14+}	Recombination		E/T	279
e + Si^{6+}	Recombination	0.001-10,000 eV	E/T	307
e + P	Ionization	7-3000 eV	Th	210
e + P^{2+}	Excitation		Th	277
e + S	Ionization	7-3000 eV	Th	210
e + S^{8+}	Recombination	0.001-10,000 eV	E/T	307
e + Ar	Ionization	7-3000 eV	Th	210
e + Ar^{+}	Elastic Scattering	16 eV	Exp	226
e + Ar^{+}	Angular Scattering	16 eV	Exp	226
e + Ar	Ionization	8-425 eV	Exp	242
e + Ar^{4+}	Ionization	70-4000 eV	Exp	249
e + Ar^{5+}	Ionization	70-4000 eV	Exp	249
e + Ar^{6+}	Ionization	70-4000 eV	Exp	249
e + Ar^{7+}	Ionization	70-4000 eV	Exp	249
e + Ar^{8+}	Ionization	70-4000 eV	Exp	249
e + Ar^{9+}	Ionization	70-4000 eV	Exp	249
e + Ar^{10+}	Ionization	70-4000 eV	Exp	249
e + Ar^{11+}	Ionization	70-4000 eV	Exp	249
e + Ar	Ionization	5-1000 eV	E/T	252
e + Ar	Elastic Scattering	300-10,000 eV	Exp	256
e + Ar	Angular Scattering	300-10,000 eV	Exp	256
e + Ar	Ionization	2-113.5 eV	Th	265
e + Ar	Excitation	10-20 eV	Th	278
e + Ar	Ionization	10-24 keV	Exp	291
e + Ar^{15+}	Excitation	$5x10^4$-10^9 K	Th	312
e + Ca	Ionization	1.5-20 keV	Exp	222
e + Ca	Electron Collisions		Th	290
e + Ca	Angular Scattering	20-40 eV	Th	315
e + Ca	Excitation	20-40 eV	Th	315
e + Fe^{23+}	Recombination	800-1600 eV	Th	208
e + Fe^{23+}	Excitation	800-1600 eV	Th	208
e + Fe^{24+}	Recombination	43.5-517 Ry	Th	219
e + Fe^{24+}	Excitation	43.5-517 Ry	Th	219
e + Fe^{+}	Excitation	0.1-0.5 Ry	Th	245
e + Fe^{8+}	Excitation	3-16 Ry	Th	266
e + Fe^{10+}	Excitation	10-100 Ry	Th	267
e + Fe^{18+}	Recombination	0.001-10,000 eV	E/T	307
e + Fe^{23+}	Excitation	$5x10^4$-10^9 K	Th	312
e + Fe^{4+}	Excitation	$5x10^3$-10^6 K	Th	316
e + Co	Ionization	1.5-20 keV	Exp	222
e + Cu^{+}	Angular Scattering	60-116 eV	Th	234
e + Cu^{+}	Ionization	60-116 eV	Th	234
e + Zn^{+}	Excitation	0-50 keV	Th	236
e + Ge	Ionization	7-3000 eV	Th	210
e + As	Ionization	7-3000 eV	Th	210
e + Se	Ionization	7-3000 eV	Th	210
e + Kr	Ionization	7-3000 eV	Th	210

e + Kr	Excitation	0-100 eV	E/T	223
e + Kr	Ionization	5-1000 eV	E/T	252
e + Kr	Elastic Scattering	300-10,000 eV	Exp	256
e + Kr	Angular Scattering	300-10,000 eV	Exp	256
e + Kr	Ionization	8-330 eV	Exp	258
e + Kr	Ionization	0-5000 eV	E/T	305
e + Kr^{+}	Ionization	0-5000 eV	E/T	305
e + Kr^{2+}	Ionization	0-5000 eV	E/T	305
e + Kr^{3+}	Ionization	0-5000 eV	E/T	305
e + Kr^{4+}	Ionization	0-5000 eV	E/T	305
e + Kr^{5+}	Ionization	0-5000 eV	E/T	305
e + Kr^{6+}	Ionization	0-5000 eV	E/T	305
e + Kr^{7+}	Ionization	0-5000 eV	E/T	305
e + Kr^{8+}	Ionization	0-5000 eV	E/T	305
e + Kr^{9+}	Ionization	0-5000 eV	E/T	305
e + Kr^{10+}	Ionization	0-5000 eV	E/T	305
e + Kr^{11+}	Ionization	0-5000 eV	E/T	305
e + Kr^{12+}	Ionization	0-5000 eV	E/T	305
e + Kr^{13+}	Ionization	0-5000 eV	E/T	305
e + Kr^{14+}	Ionization	0-5000 eV	E/T	305
e + Kr^{15+}	Ionization	0-5000 eV	E/T	305
e + Kr^{16+}	Ionization	0-5000 eV	E/T	305
e + Kr^{17+}	Ionization	0-5000 eV	E/T	305
e + Kr^{18+}	Ionization	0-5000 eV	E/T	305
e + Kr^{19+}	Ionization	0-5000 eV	E/T	305
e + Kr^{20+}	Ionization	0-5000 eV	E/T	305
e + Kr^{21+}	Ionization	0-5000 eV	E/T	305
e + Kr^{22+}	Ionization	0-5000 eV	E/T	305
e + Kr^{23+}	Ionization	0-5000 eV	E/T	305
e + Kr^{24+}	Ionization	0-5000 eV	E/T	305
e + Kr^{25+}	Ionization	0-5000 eV	E/T	305
e + Kr^{26+}	Ionization	0-5000 eV	E/T	305
e + Kr^{27+}	Ionization	0-5000 eV	E/T	305
e + Kr^{28+}	Ionization	0-5000 eV	E/T	305
e + Kr^{29+}	Ionization	0-5000 eV	E/T	305
e + Kr^{30+}	Ionization	0-5000 eV	E/T	305
e + Kr^{31+}	Ionization	0-5000 eV	E/T	305
e + Kr^{32+}	Ionization	0-5000 eV	E/T	305
e + Kr^{33+}	Ionization	0-5000 eV	E/T	305
e + Kr^{34+}	Ionization	0-5000 eV	E/T	305
e + Kr^{35+}	Ionization	0-5000 eV	E/T	305
e + Kr	Elastic Scattering	20-200 eV	E/T	317
e + Rb^{+}	Angular Scattering	60-116 eV	Th	234
e + Rb^{+}	Ionization	60-116 eV	Th	234
e + Sr	Electron Collisions		Th	290
e + Sr	Angular Scattering	20-40 eV	Th	315
e + Sr	Excitation	20-40 eV	Th	315
e + Y	Excitation	0-200 eV	Exp	274
e + Y	Ionization	0-200 eV	Exp	274
e + Mo	Elastic Scattering	0-10 eV	Th	240
e + Mo	Excitation	0-10 eV	Th	240
e + Mo^{41+}	Ionization	494-79.6 keV	Exp	264
e + Ag^{+}	Angular Scattering	60-116 eV	Th	234
e + Ag^{+}	Ionization	60-116 eV	Th	234
e + Ag^{46+}	Ionization	300-500 keV	Th	250
e + Cd	Angular Scattering	100 eV	Exp	248
e + Cd	Fluorescence	100 eV	Exp	248

e + Cd	Excitation	100 eV	Exp	248
e + Sn	Ionization	7-3000 eV	Th	210
e + $SnCl_4$	Elastic Scattering	5-40 eV	Th	262
e + $SnCl_4$	Angular Scattering	5-40 eV	Th	262
e + $SnBr_4$	Elastic Scattering	5-40 eV	Th	262
e + $SnBr_4$	Angular Scattering	5-40 eV	Th	262
e + SnI_4	Elastic Scattering	5-40 eV	Th	262
e + SnI_4	Angular Scattering	5-40 eV	Th	262
e + Sb	Ionization	7-3000 eV	Th	210
e + Te	Ionization	7-3000 eV	Th	210
e + Xe	Ionization	7-3000 eV	Th	210
e + Xe	Angular Scattering	150 eV	E/T	212
e + Xe	Ionization	150 eV	E/T	212
e + Xe	Ionization	8-425 eV	Exp	242
e + Xe	Angular Scattering	8.3-10.5 eV	Th	246
e + Xe	Excitation	8.3-10.5 eV	Th	246
e + Xe^*	Angular Scattering	8.3-10.5 eV	Th	246
e + Xe^*	Excitation	8.3-10.5 eV	Th	246
e + Xe	Ionization	5-1000 eV	E/T	252
e + Xe	Elastic Scattering	300-10,000 eV	Exp	256
e + Xe	Angular Scattering	300-10,000 eV	Exp	256
e + Cs^+	Angular Scattering	60-116 eV	Th	234
e + Cs^+	Ionization	60-116 eV	Th	234
e + Cs	Elastic Scattering	4-25 eV	E/T	281
e + Cs	Angular Scattering	10 eV	Th	297
e + Cs	Excitation	10 eV	Th	297
e + Ba^+	Excitation	4-300 eV	Exp	255
e + Ba	Angular Scattering	20 eV	E/T	282
e + Ba	Total Scattering	20 eV	E/T	282
e + Ba	Excitation	20 eV	E/T	282
e + Ba	Electron Collisions		Th	290
e + Au^{25+}	Recombination	10^{-6}-1 eV	Th	214
e + Hg	Angular Scattering	8-15 eV	E/T	295
e + Hg	Excitation	8-15 eV	E/T	295
e + Bi^{80+}	Recombination	10^{-5}-10 eV	Exp	284
e + perturbation	Ionization	5-1000 eV	E/T	252
e + HBr	Attachment	0-2 eV	Th	224
e + HBr	Dissociation	0-2 eV	Th	224
e + CS_2	Dissociation	0-400 eV	Exp	294
e + CS_2	Ionization	0-1000 eV	Exp	318
e + CF	Elastic Scattering	1-500 eV	Th	217
e + CF	Angular Scattering	1-500 eV	Th	217
e + CF	Excitation	1-500 eV	Th	217
e + CF_4	Elastic Scattering	0.1-10 keV	E/T	301
e + CF_4	Angular Scattering	0.1-10 keV	E/T	301
e + CF_4	Excitation	0.1-10 keV	E/T	301
e + CF_4	Ionization	0.1-10 keV	E/T	301
e + CBr_4	Elastic Scattering	5-40 eV	Th	262
e + CBr_4	Angular Scattering	5-40 eV	Th	262
e + CI_4	Elastic Scattering	5-40 eV	Th	262
e + CI_4	Angular Scattering	5-40 eV	Th	262
e + U^{89+}	Angular Scattering	5-2000 keV	Th	221
e + U^{89+}	Recombination	5-2000 keV	Th	221
e + U^{91+}	Angular Scattering	5-2000 keV	Th	221
e + U^{91+}	Recombination	5-2000 keV	Th	221
e + U^{91+}	Ionization	300-500 keV	Th	250
e + C_2H_4	Elastic Scattering	200-1400 eV	E/T	308

e + C_2H_4	Angular Scattering	200-1400 eV	E/T	308
e + $GeBr_4$	Elastic Scattering	5-40 eV	Th	262
e + $GeBr_4$	Angular Scattering	5-40 eV	Th	262
e + GeI_4	Elastic Scattering	5-40 eV	Th	262
e + GeI_4	Angular Scattering	5-40 eV	Th	262
e + H_2S	Ionization	0-1000 eV	Exp	318
e + C_2H_6	Elastic Scattering	200-1400 eV	E/T	308
e + C_2H_6	Angular Scattering	200-1400 eV	E/T	308
e + DBr	Attachment	0-2 eV	Th	224
e + DBr	Dissociation	0-2 eV	Th	224
e + SiH	Elastic Scattering	1-500 eV	Th	225
e + SiH	Angular Scattering	1-500 eV	Th	225
e + SiH	Total Scattering	1-500 eV	Th	225
e + CH_3I	Ionization	0-1000 eV	Exp	270
e + CH_3Cl	Ionization	0-1000 eV	Exp	270
e + CH_3Br	Ionization	0-1000 eV	Exp	270
e + HCl	Attachment	0-2 eV	Th	224
e + HCl	Dissociation	0-2 eV	Th	224
e + DCl	Attachment	0-2 eV	Th	224
e + DCl	Dissociation	0-2 eV	Th	224
e + CF_3I	Elastic Scattering	1.5-60 eV	Exp	292
e + CF_3I	Angular Scattering	1.5-60 eV	Exp	292
e + CF_3I	Excitation	1.5-60 eV	Exp	292
e + C_3H_4	Elastic Scattering	1.5-100 eV	E/T	302
e + C_3H_4	Angular Scattering	1.5-100 eV	E/T	302
e + C_3H_4	Excitation	1.5-100 eV	E/T	302
e + B_2H_6	Ionization	0-200 eV	Exp	271
e + CH_2F_2	Elastic Scattering	0.1-10 keV	E/T	301
e + CH_2F_2	Angular Scattering	0.1-10 keV	E/T	301
e + CH_2F_2	Excitation	0.1-10 keV	E/T	301
e + CH_2F_2	Ionization	0.1-10 keV	E/T	301
e + C_3F_8	Elastic Scattering	0.5-30 eV	Exp	218
e + HI	Attachment	0-2 eV	Th	224
e + HI	Dissociation	0-2 eV	Th	224
e + CH_3F	Dissociation	8-85 eV	Exp	253
e + CH_3F	Ionization	8-85 eV	Exp	253
e + CH_3F	Ionization	0-1000 eV	Exp	270
e + CH_3F	Elastic Scattering	0.1-10 keV	E/T	301
e + CH_3F	Angular Scattering	0.1-10 keV	E/T	301
e + CH_3F	Excitation	0.1-10 keV	E/T	301
e + CH_3F	Ionization	0.1-10 keV	E/T	301
e + CF_3H	Elastic Scattering	0.1-10 keV	E/T	301
e + CF_3H	Angular Scattering	0.1-10 keV	E/T	301
e + CF_3H	Excitation	0.1-10 keV	E/T	301
e + CF_3H	Ionization	0.1-10 keV	E/T	301
e + SiF	Elastic Scattering	1-500 eV	Th	225
e + SiF	Angular Scattering	1-500 eV	Th	225
e + SiF	Total Scattering	1-500 eV	Th	225
e + C_3F_6	Elastic Scattering	0.5-30 eV	Exp	218

2.2.3 Heavy Particles Collisions

e + H	Elastic Scattering		Th	336
H^+ + H	Charge Transfer	25-100 keV	Th	324
H^+ + H	Excitation	25-100 keV	Th	324

$\mathbf{H^+ + H}$	Ionization	25-100 keV	Th	324
$\mathbf{H^+ + H}$	Total Scattering	50-60 keV	Th	327
$\mathbf{H^+ + H}$	Ionization	50-60 keV	Th	327
$\mathbf{H^+ + H}$	Total Scattering	0.1-10 keV/amu	Th	337
$\mathbf{H^+ + H}$	Ionization	0.1-10 keV/amu	Th	337
$\mathbf{H + H}$	Association	0.006-3.6 eV	Exp	364
$\mathbf{H + H}$	Ionization	0.006-3.6 eV	Exp	364
$\mathbf{H + H^*}$	Association	0.006-3.6 eV	Exp	364
$\mathbf{H + H^*}$	Ionization	0.006-3.6 eV	Exp	364
$\mathbf{H + H}$	Association	300 Kelv	Exp	373
$\mathbf{H + H^+}$	Heavy Particle Collisions		Th	387
$\mathbf{H + H^+}$	Interaction Potentials		Th	387
$\mathbf{H^+ + H}$	Heavy Particle Collisions		Th	387
$\mathbf{H^+ + H}$	Interaction Potentials		Th	387
$\mathbf{H^+ + H}$	Ionization	100 keV	Th	389
$\mathbf{H^+ + H_2}$	Charge Transfer	50-2000 eV	Th	319
$\mathbf{H^+ + H_2}$	Charge Transfer	0-10 eV	Th	341
$\mathbf{H^+ + H_2}$	Excitation	0-10 eV	Th	341
$\mathbf{H + H_2O}$	Interchange reaction	0.8-1.6 eV	Th	382
$\mathbf{H + D^+}$	Heavy Particle Collisions		Th	387
$\mathbf{H + D^+}$	Interaction Potentials		Th	387
$\mathbf{H^+ + He}$	Excitation	100-900 KeV/u	E/T	320
$\mathbf{H^+ + He}$	Ionization	100-900 KeV/u	E/T	320
$\mathbf{H + He}$	Elastic Scattering	10^{-7}-10^{-2} eV; 0-1000 K	Th	326
$\mathbf{H + He}$	Interaction Potentials	10^{-7}-10^{-2} eV; 0-1000 K	Th	326
$\mathbf{H^+ + He}$	Total Scattering	100-3000 keV/amu	Th	342
$\mathbf{H^+ + He}$	Ionization	100-3000 keV/amu	Th	342
$\mathbf{H^+ + He}$	Total Scattering	100-1600 keV	Th	350
$\mathbf{H^+ + He}$	Ionization	100-1600 keV	Th	350
$\mathbf{H^+ + He}$	Total Scattering	100-1500 keV	E/T	353
$\mathbf{H^+ + He}$	Ionization	100-1500 keV	E/T	353
$\mathbf{H^+ + He}$	Charge Transfer	100-500 keV/u	Th	355
$\mathbf{H^+ + He}$	Ionization	100-500 keV/u	Th	355
$\mathbf{H^+ + He}$	Charge Transfer	$2x10^6$ - $1.3x10^8$ cm/s	Th	367
$\mathbf{H^+ + He}$	Excitation	$2x10^6$ - $1.3x10^8$ cm/s	Th	367
$\mathbf{H^+ + He^*}$	Charge Transfer	$2x10^6$ - $1.3x10^8$ cm/s	Th	367
$\mathbf{H^+ + He^*}$	Excitation	$2x10^6$ - $1.3x10^8$ cm/s	Th	367
$\mathbf{H^+ + He}$	Charge Transfer	2.5-4.5 MeV	Exp	381
$\mathbf{H^+ + He}$	Ionization	2.5-4.5 MeV	Exp	381
$\mathbf{H^+ + He}$	Ionization	1.5 MeV/u	E/T	408
$\mathbf{H^+ + Li}$	Charge Transfer	0.01-10 keV	Th	359
$\mathbf{H^+ + Li^*}$	Charge Transfer	0.01-10 keV	Th	359
$\mathbf{H^+ + Li}$	Excitation	15-50 keV	Th	403
$\mathbf{H + CH_4}$	Interchange reaction	0.1-1.0 eV	Th	369
$\mathbf{H^+ + CO}$	Ionization	50-300 keV	Exp	404
$\mathbf{H^+ + N_2}$	Charge Transfer	0.5-5 keV	E/T	339
$\mathbf{H^+ + N_2}$	Total Scattering	0.5-5 keV	E/T	339
$\mathbf{H^+ + N_2}$	Ionization	50-300 keV	Exp	404
$\mathbf{H^+ + NO}$	Ionization	50-300 keV	Exp	404
$\mathbf{H^+ + O^-}$	Association	0.01-10 eV	Exp	394
$\mathbf{H^+ + O^-}$	Ionization	0.01-10 eV	Exp	394
$\mathbf{H^+ + O_2}$	Ionization	50-300 keV	Exp	404
$\mathbf{H^+ + Ne}$	Ionization	1000-10^8 a.u.	Th	348
$\mathbf{H^+ + Ne}$	Ionization	0.75-3.5 MeV	Exp	360
$\mathbf{H^+ + Ne}$	Ionization	10-4000 keV	Th	380
$\mathbf{H^+ + Na}$	Charge Transfer	0-8 eV	Th	343
$\mathbf{H^+ + Na}$	Charge Transfer	0.01-10 keV	Th	359

$\mathbf{H^+ + Na^*}$	Charge Transfer	0.01-10 keV	Th	359
$\mathbf{H^+ + Ar}$	Charge Transfer	5-1000 keV/u	E/T	411
$\mathbf{H^+ + Ar}$	Ionization	5-1000 keV/u	E/T	411
$\mathbf{H^+ + K}$	Charge Transfer	0-8 eV	Th	343
$\mathbf{H^+ + Au}$	Ionization	20-102 MeV	Exp	344
$\mathbf{H^+ + Au}$	Ionization	1000-10^8 a.u.	Th	348
$\mathbf{H^+ + Au}$	Ionization	0.5-300 MeV	E/T	377
$\mathbf{H_2{}^+ + H}$	Charge Transfer	0-10 eV	Th	341
$\mathbf{H_2{}^+ + H}$	Excitation	0-10 eV	Th	341
$\mathbf{H_2 + H_2}$	Line Broadening	300 K	Th	333
$\mathbf{H_2 + H_2}$	Dissociation	1000-4000 Kelv	Th	374
$\mathbf{H_2 + H_2}$	Interchange reaction	1000-4000 Kelv	Th	374
$\mathbf{H_2 + H_2}$	Energy Transfer	1000-4000 Kelv	Th	374
$\mathbf{H_2 + D_2}$	Interaction Potentials	2-15 $\mathring{A}$	Th	366
$\mathbf{H_2 + He}$	Line Broadening	300 K	Th	333
$\mathbf{H_2 + N_2}$	Line Broadening	300 K	Th	333
$\mathbf{H_2 + Ne}$	Line Broadening	300 K	Th	333
$\mathbf{H_2 + Ar}$	Line Broadening	300 K	Th	333
$\mathbf{H_3{}^+ + He}$	Dissociation	3-9.8 keV	Exp	386
$\mathbf{H_3{}^+ + He}$	Energy Transfer	3-9.8 keV	Exp	386
$\mathbf{HD_2{}^+ + He}$	Dissociation	3-9.8 keV	Exp	386
$\mathbf{HD_2{}^+ + He}$	Energy Transfer	3-9.8 keV	Exp	386
$\mathbf{D + D}$	Association	0.006-3.6 eV	Exp	364
$\mathbf{D + D}$	Ionization	0.006-3.6 eV	Exp	364
$\mathbf{D + D^*}$	Association	0.006-3.6 eV	Exp	364
$\mathbf{D + D^*}$	Ionization	0.006-3.6 eV	Exp	364
$\mathbf{D + D}$	Association	300 Kelv	Exp	373
$\mathbf{D^+ + D}$	Heavy Particle Collisions		Th	387
$\mathbf{D^+ + D}$	Interaction Potentials		Th	387
$\mathbf{D^+ + CO}$	Ionization	50-300 keV	Exp	404
$\mathbf{D^+ + N_2}$	Ionization	50-300 keV	Exp	404
$\mathbf{D^+ + NO}$	Ionization	50-300 keV	Exp	404
$\mathbf{D^+ + O^-}$	Association	0.01-10 eV	Exp	394
$\mathbf{D^+ + O^-}$	Ionization	0.01-10 eV	Exp	394
$\mathbf{D^+ + O_2}$	Ionization	50-300 keV	Exp	404
$\mathbf{D_2 + D_2}$	Interaction Potentials	2-15 $\mathring{A}$	Th	366
$\mathbf{D_3{}^+ + He}$	Dissociation	3-9.8 keV	Exp	386
$\mathbf{D_3{}^+ + He}$	Energy Transfer	3-9.8 keV	Exp	386
$\mathbf{He + H_2{}^+}$	Interchange reaction	1.0 eV	Th	370
$\mathbf{He^+ + He}$	Total Scattering	100-1500 keV	E/T	353
$\mathbf{He^+ + He}$	Ionization	100-1500 keV	E/T	353
$\mathbf{He^{2+} + He}$	Total Scattering	100-1500 keV	E/T	353
$\mathbf{He^{2+} + He}$	Ionization	100-1500 keV	E/T	353
$\mathbf{He^{2+} + He}$	Charge Transfer	100-500 keV/u	Th	355
$\mathbf{He^{2+} + He}$	Ionization	100-500 keV/u	Th	355
$\mathbf{He^{2+} + CO}$	Total Scattering	0.1-20 MeV	Th	323
$\mathbf{He^{2+} + CO}$	Ionization	0.1-20 MeV	Th	323
$\mathbf{He^+ + CO}$	Ionization	50-300 keV	Exp	404
$\mathbf{He^{2+} + CO_2}$	Total Scattering	0.1-20 MeV	Th	323
$\mathbf{He^{2+} + CO_2}$	Ionization	0.1-20 MeV	Th	323
$\mathbf{He^{2+} + N_2}$	Total Scattering	0.1-20 MeV	Th	323
$\mathbf{He^{2+} + N_2}$	Ionization	0.1-20 MeV	Th	323
$\mathbf{He^+ + N_2}$	Ionization	50-300 keV	Exp	404
$\mathbf{He^+ + NO}$	Ionization	50-300 keV	Exp	404
$\mathbf{He^+ + O_2}$	Ionization	50-300 keV	Exp	404
$\mathbf{He^{2+} + F_2}$	Total Scattering	0.1-20 MeV	Th	323
$\mathbf{He^{2+} + F_2}$	Ionization	0.1-20 MeV	Th	323

He^{2+} + Ne	Ionization	10-4000 keV	Th	380
He + Na	Elastic Scattering		Th	409
He + Na	Interaction Potentials		Th	409
He^{2+} + Ar	Charge Transfer	5-1000 keV/u	E/T	411
He^{2+} + Ar	Ionization	5-1000 keV/u	E/T	411
He + Cu^{-}	Ionization	8-30 keV	Exp	400
He^{2+} + Au	Ionization	20-102 MeV	Exp	344
He_2^{+} + He	Dissociation	4-10 keV	Th	385
He_2^{+} + He	Charge Transfer	4-10 keV	Th	385
He_2^{+} + He	Energy Transfer	4-10 keV	Th	385
He_2^{+} + He	Excitation	4-10 keV	Th	385
Li^{+} + H_2	Elastic Scattering	0.01-10 eV	E/T	354
Li^{+} + H_2	Excitation	0.01-10 eV	E/T	354
Li^{+} + He	Elastic Scattering	500-1500 eV	E/T	391
Li^{+} + He	Total Scattering	500-1500 eV	E/T	391
Li^{+} + He	Excitation	500-1500 eV	E/T	391
Li^{+} + Na	Charge Transfer	2.7-24 keV	Exp	398
Li^{+} + Na	Total Scattering	2.7-24 keV	Exp	398
Li^{3+} + Au	Ionization	20-102 MeV	Exp	344
C^{6+} + H	Total Scattering	3.6 MeV/u	Th	356
C^{6+} + H	Ionization	3.6 MeV/u	Th	356
C^{+} + H^{-}	Association	0.01-10 eV	Exp	394
C^{+} + H^{-}	Ionization	0.01-10 eV	Exp	394
C^{6+} + H_2	Total Scattering	13.7 MeV/amu	Th	362
C^{6+} + H_2	Ionization	13.7 MeV/amu	Th	362
C^{+} + D^{-}	Association	0.01-10 eV	Exp	394
C^{+} + D^{-}	Ionization	0.01-10 eV	Exp	394
C + He	Interaction Potentials	10-500 K	E/T	371
C + He	Excitation	10-500 K	E/T	371
C^{6+} + He	Total Scattering	100 MeV/u	E/T	392
C^{6+} + He	Ionization	100 MeV/u	E/T	392
C + He	De-excitation	10^{-5}-1 Kelv	Th	399
C + He	Elastic Scattering	10^{-5}-1 Kelv	Th	399
C + O	Interaction Potentials	19-26 eV	E/T	357
C^{+} + Al	Ionization	14-50 MeV	Exp	379
C^{+} + Si	Ionization	14-50 MeV	Exp	379
C^{+} + S	Ionization	14-50 MeV	Exp	379
C^{+} + Cl	Ionization	14-50 MeV	Exp	379
C^{6+} + Ar	Charge Transfer	0.5-1.1 MeV/amu	Exp	340
C^{+} + K	Ionization	14-50 MeV	Exp	379
C^{+} + Ca	Ionization	14-50 MeV	Exp	379
C^{+} + Ti	Ionization	14-50 MeV	Exp	379
C^{+} + Cr	Ionization	14-50 MeV	Exp	379
C^{+} + Fe	Ionization	14-50 MeV	Exp	379
C^{+} + Cu	Ionization	14-50 MeV	Exp	379
C^{5+} + Au	Ionization	20-102 MeV	Exp	344
C^{2+} + C_{60}	Charge Transfer	0.1 v_0	Th	402
C^{3+} + C_{60}	Charge Transfer	0.1 v_0	Th	402
C^{4+} + C_{60}	Charge Transfer	0.1 v_0	Th	402
C^{5+} + C_{60}	Charge Transfer	0.1 v_0	Th	402
C^{+} + $C_4H_4N_2O_2$	Dissociation	2-120 keV	Exp	396
C^{+} + $C_4H_4N_2O_2$	Excitation	2-120 keV	Exp	396
C^{3+} + $C_4H_4N_2O_2$	Dissociation	2-120 keV	Exp	396
C^{3+} + $C_4H_4N_2O_2$	Excitation	2-120 keV	Exp	396
C^{4+} + $C_4H_4N_2O_2$	Dissociation	2-120 keV	Exp	396
C^{4+} + $C_4H_4N_2O_2$	Excitation	2-120 keV	Exp	396
C^{5+} + $C_4H_4N_2O_2$	Dissociation	2-120 keV	Exp	396

$\mathbf{C^{5+} + C_4H_4N_2O_2}$	Excitation	2-120 keV	Exp	396
$\mathbf{C^{6+} + C_4H_4N_2O_2}$	Dissociation	2-120 keV	Exp	396
$\mathbf{C^{6+} + C_4H_4N_2O_2}$	Excitation	2-120 keV	Exp	396
$\mathbf{N^{4+} + H}$	Charge Transfer	1-2500 eV/u	Th	384
$\mathbf{N^{4+} + H}$	Total Scattering	1-2500 eV/u	Th	384
$\mathbf{N^{4+} + H}$	Excitation	1-2500 eV/u	Th	384
$\mathbf{N^{4+} + H}$	Ionization	1-2500 eV/u	Th	384
$\mathbf{N^{5+} + H}$	Charge Transfer	214-857 eV/u	Exp	395
$\mathbf{N^{5+} + H_2}$	Charge Transfer	214-857 eV/u	Exp	395
$\mathbf{N_2 + He}$	De-excitation	10^{-6}-2000 cm^{-1}	Th	335
$\mathbf{N_2^* + He}$	De-excitation	10^{-6}-2000 cm^{-1}	Th	335
$\mathbf{N_2 + N_2}$	Energy Transfer	3-16 K	Exp	383
$\mathbf{O^+ + H^-}$	Association	0.01-10 eV	Exp	394
$\mathbf{O^+ + H^-}$	Ionization	0.01-10 eV	Exp	394
$\mathbf{O^+ + H_2}$	Charge Transfer	0.001-10 keV/u	Th	372
$\mathbf{O^+ + H_2}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^+ + H_2}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{2+} + H_2}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{2+} + H_2}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{3+} + H_2}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{3+} + H_2}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{4+} + H_2}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{4+} + H_2}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{5+} + H_2}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{5+} + H_2}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{6+} + H_2}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{6+} + H_2}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{7+} + H_2}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{7+} + H_2}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{8+} + H_2}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{8+} + H_2}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^+ + D^-}$	Association	0.01-10 eV	Exp	394
$\mathbf{O^+ + D^-}$	Ionization	0.01-10 eV	Exp	394
O + He	De-excitation	10^{-6}-100 cm^{-1}; 10^{-4}-1 K	Th	325
O + He	Elastic Scattering	10^{-6}-100 cm^{-1}; 10^{-4}-1 K	Th	325
$\mathbf{O^+ + He}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^+ + He}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{2+} + He}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{2+} + He}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{3+} + He}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{3+} + He}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{4+} + He}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{4+} + He}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{5+} + He}$	Charge Transfer	0.138-0.875 MeV	Exp	375
$\mathbf{O^{5+} + He}$	Ionization	0.138-0.875 MeV	Exp	375
$\mathbf{O^{2+} + He}$	Charge Transfer	30-50 eV	Exp	390
$\mathbf{O^{3+} + Au}$	Ionization	0.4-2.2 MeV/amu	Exp	358
$\mathbf{O^{4+} + Au}$	Ionization	0.4-2.2 MeV/amu	Exp	358
$\mathbf{O^{5+} + Au}$	Ionization	0.4-2.2 MeV/amu	Exp	358
$\mathbf{O^{6+} + Au}$	Ionization	0.4-2.2 MeV/amu	Exp	358
$\mathbf{O^+ + Au}$	Ionization	0.5-300 MeV	E/T	377
$\mathbf{O^+ + Bi}$	Ionization	0.5-300 MeV	E/T	377
$\mathbf{O^+ + Th}$	Ionization	0.5-300 MeV	E/T	377
$\mathbf{O^+ + U}$	Ionization	0.5-300 MeV	E/T	377
$\mathbf{F^{9+} + He}$	Ionization	1.5 MeV/u	E/T	408
$\mathbf{F^{4+} + N_2}$	Dissociation	19 MeV	Exp	378
$\mathbf{F^{4+} + N_2}$	Elastic Scattering	19 MeV	Exp	378

F^{7+} + Au	Ionization	20-102 MeV	Exp	344
F^{8+} + Au	Ionization	20-102 MeV	Exp	344
Ne^{10+} + H_2	Charge Transfer	0.009-3 keV/u	Th	347
Ne^{10+} + H_2	Fluorescence	0.009-3 keV/u	Th	347
Ne^{10+} + H_2O	Charge Transfer	0.009-3 keV/u	Th	347
Ne^{10+} + H_2O	Fluorescence	0.009-3 keV/u	Th	347
Ne^{10+} + He	Charge Transfer	0.009-3 keV/u	Th	347
Ne^{10+} + He	Fluorescence	0.009-3 keV/u	Th	347
Ne^{10+} + CO_2	Charge Transfer	0.009-3 keV/u	Th	347
Ne^{10+} + CO_2	Fluorescence	0.009-3 keV/u	Th	347
Ne^{10+} + Ne	Charge Transfer	0.009-3 keV/u	Th	347
Ne^{10+} + Ne	Fluorescence	0.009-3 keV/u	Th	347
Ne^{2+} + Ar	Charge Transfer	4-14 eV	Exp	397
Ne^{2+} + Ar	Total Scattering	4-14 eV	Exp	397
Ne + Cu^-	Ionization	8-30 keV	Exp	400
Na^{2+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Na^{2+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Na^{3+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Na^{3+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Na^{4+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Na^{4+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Na^{5+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Na^{5+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Na^{6+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Na^{6+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Na^{7+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Na^{7+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Na^{8+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Na^{8+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Na^{9+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Na^{9+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Na + Na	Elastic Scattering	0.000001-0.01 a.u.	Th	322
Na + Na	Excitation	0.000001-0.01 a.u.	Th	322
Na^+ + Rb	Charge Transfer	2-7 keV	E/T	334
Na^+ + Rb	Total Scattering	2-7 keV	E/T	334
Mg^{4+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Mg^{4+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Mg^{5+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Mg^{5+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Mg^{6+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Mg^{6+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Mg^{7+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Mg^{7+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Mg^{8+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Mg^{8+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Mg^{9+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Mg^{9+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Mg^{10+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp	375
Mg^{10+} + H_2	Ionization	0.138-0.875 MeV	Exp	375
Si + He	Interaction Potentials	10-500 K	E/T	371
Si + He	Excitation	10-500 K	E/T	371
Si^{6+} + Au	Ionization	0.5-300 MeV	E/T	377
Si^{6+} + Bi	Ionization	0.5-300 MeV	E/T	377
Si^{6+} + Th	Ionization	0.5-300 MeV	E/T	377
Si^{6+} + U	Ionization	0.5-300 MeV	E/T	377
S^{4+} + He	Charge Transfer	10^{-3}-10^7 eV/u	E/T	388
S^{13+} + Rb	Charge Transfer	1 keV/q	Exp	401

S^{13+} + Rb	Fluorescence	1 keV/q	Exp	401
S^{13+} + Rb*	Charge Transfer	1 keV/q	Exp	401
S^{13+} + Rb*	Fluorescence	1 keV/q	Exp	401
S^{14+} + Rb	Charge Transfer	1 keV/q	Exp	401
S^{14+} + Rb	Fluorescence	1 keV/q	Exp	401
S^{14+} + Rb*	Charge Transfer	1 keV/q	Exp	401
S^{14+} + Rb*	Fluorescence	1 keV/q	Exp	401
S^+ + Ta	Ionization	0.5-300 MeV	E/T	377
S^+ + Os	Ionization	0.5-300 MeV	E/T	377
S^+ + Au	Ionization	0.5-300 MeV	E/T	377
S^+ + Bi	Ionization	0.5-300 MeV	E/T	377
S^+ + Th	Ionization	0.5-300 MeV	E/T	377
S^+ + U	Ionization	0.5-300 MeV	E/T	377
Ar^{9+} + He	Charge Transfer	2.25 keV/u	Exp	406
Ar + Ar	Association	0.06-2 eV; 300-1800 K	Th	349
Ar* + Ar	Association	0.06-2 eV; 300-1800 K	Th	349
Ar + Ar	Elastic Scattering	100-1000 K	Exp	361
Ar + Ar	Interaction Potentials	100-1000 K	Exp	361
Ar + Cu^-	Ionization	8-30 keV	Exp	400
Ar^{16+} + C_{60}	Charge Transfer	2 keV/u	Exp	330
Ar^+ + C_{60}	Dissociation	0.04-0.95 a.u.	Exp	365
Ar^+ + C_{60}	Ionization	0.04-0.95 a.u.	Exp	365
Ar^{2+} + C_{60}	Dissociation	0.04-0.95 a.u.	Exp	365
Ar^{2+} + C_{60}	Ionization	0.04-0.95 a.u.	Exp	365
Ar^{3+} + C_{60}	Dissociation	0.04-0.95 a.u.	Exp	365
Ar^{3+} + C_{60}	Ionization	0.04-0.95 a.u.	Exp	365
Ca + Ca	Interaction Potentials		Exp	331
Cu^- + He	Detachment	8-30 keV	Exp	400
Cu^- + He	Ionization	8-30 keV	Exp	400
Cu^- + Ne	Detachment	8-30 keV	Exp	400
Cu^- + Ne	Ionization	8-30 keV	Exp	400
Cu^- + Ar	Detachment	8-30 keV	Exp	400
Cu^- + Ar	Ionization	8-30 keV	Exp	400
Kr^{34+} + H_2	Ionization	60 MeV/u	Th	393
Kr^{34+} + H_2	Ionization	60 MeV/u	E/T	405
Kr^{34+} + Kr	Ionization	150 GeV/u	Th	328
Kr^{34+} + Xe	Ionization	150 GeV/u	Th	328
Kr^{34+} + Au	Ionization	150 GeV/u	Th	328
Kr^{16+} + C_{60}	Charge Transfer	2 keV/u	Exp	330
Rb + H_2	Heavy Particle Collisions	400-500 Kelv	Exp	346
Rb + Rb	Interaction Potentials		Th	338
Xe^{18+} + CO_2	Dissociation	5.9 MeV/u	E/T	412
Xe^{18+} + CO_2	Ionization	5.9 MeV/u	E/T	412
Xe^{43+} + CO_2	Dissociation	5.9 MeV/u	E/T	412
Xe^{43+} + CO_2	Ionization	5.9 MeV/u	E/T	412
Xe^{18+} + N_2	Total Scattering	5.9 MeV/u	E/T	321
Xe^{18+} + N_2	Ionization	5.9 MeV/u	E/T	321
Xe^{43+} + N_2	Total Scattering	5.9 MeV/u	E/T	321
Xe^{43+} + N_2	Ionization	5.9 MeV/u	E/T	321
Xe^{52+} + Kr	Ionization	150 GeV/u	Th	328
Xe + Rb	De-excitation	433-473 Kelv	Exp	407
Xe + Rb	Excitation	433-473 Kelv	Exp	407
Xe^{52+} + Xe	Ionization	150 GeV/u	Th	328
Xe^{52+} + Au	Ionization	150 GeV/u	Th	328
Xe^{16+} + C_{60}	Charge Transfer	2 keV/u	Exp	330
Xe^{25+} + C_{60}	Dissociation	100 keV	Exp	345
Xe^{25+} + C_{60}	Ionization	100 keV	Exp	345

Cs + He	Line Broadening	1.3-100 K	E/T	332
Cs + He	Interaction Potentials	1.3-100 K	E/T	332
Cs^* + He	Line Broadening	1.3-100 K	E/T	332
Cs^* + He	Interaction Potentials	1.3-100 K	E/T	332
Cs^+ + K	Interaction Potentials		Th	368
Cs + Cs	Interaction Potentials		Th	338
Ba + Ar	Interaction Potentials	0-0.5 eV	Th	351
Ba + Ar	Total Scattering	0-0.5 eV	Th	351
Ba + Ar	Excitation	0-0.5 eV	Th	351
Au^{53+} + H	Total Scattering	3.6 MeV/u	Th	356
Au^{53+} + H	Ionization	3.6 MeV/u	Th	356
Au^{53+} + He	Total Scattering	3.6 MeV/u	E/T	352
Au^{53+} + He	Ionization	3.6 MeV/u	E/T	352
Au^+ + C	Charge Transfer	1-1000 MeV/u	E/T	376
Au^+ + C	Ionization	1-1000 MeV/u	E/T	376
Au^+ + Ni	Charge Transfer	1-1000 MeV/u	E/T	376
Au^+ + Ni	Ionization	1-1000 MeV/u	E/T	376
Au^+ + Cu	Charge Transfer	1-1000 MeV/u	E/T	376
Au^+ + Cu	Ionization	1-1000 MeV/u	E/T	376
Au^+ + Au	Charge Transfer	1-1000 MeV/u	E/T	376
Au^+ + Au	Ionization	1-1000 MeV/u	E/T	376
Hg + Hg	Association	100-1000 K	Th	329
Hg + Hg	Ionization	100-1000 K	Th	329
Hg + Hg^+	Interaction Potentials	100-1000 K	Th	329
Hg^* + Hg^*	Association	100-1000 K	Th	329
Hg^* + Hg^*	Ionization	100-1000 K	Th	329
Pb^{80+} + Kr	Ionization	150 GeV/u	Th	328
Pb^{80+} + Xe	Ionization	150 GeV/u	Th	328
Pb^{80+} + Au	Ionization	150 GeV/u	Th	328
Bi^+ + C	Charge Transfer	1-1000 MeV/u	E/T	376
Bi^+ + C	Ionization	1-1000 MeV/u	E/T	376
Bi^+ + Ni	Charge Transfer	1-1000 MeV/u	E/T	376
Bi^+ + Ni	Ionization	1-1000 MeV/u	E/T	376
Bi^+ + Cu	Charge Transfer	1-1000 MeV/u	E/T	376
Bi^+ + Cu	Ionization	1-1000 MeV/u	E/T	376
Bi^+ + Au	Charge Transfer	1-1000 MeV/u	E/T	376
Bi^+ + Au	Ionization	1-1000 MeV/u	E/T	376
$C_{60}{}^{2+}$ + C_{60}	Charge Transfer	0.1 v_0	Th	402
$C_{60}{}^{3+}$ + C_{60}	Charge Transfer	0.1 v_0	Th	402
$C_{60}{}^{4+}$ + C_{60}	Charge Transfer	0.1 v_0	Th	402
$C_{60}{}^{5+}$ + C_{60}	Charge Transfer	0.1 v_0	Th	402
U^{92+} + H	Total Scattering	1 GeV/amu	Th	363
U^{92+} + H	Ionization	1 GeV/amu	Th	363
OH + OH	Interaction Potentials	1-100 μ K	Th	410
OH + OH	Total Scattering	1-100 μ K	Th	410

2.3 Surface Interactions

hν + Na	Desorption	0-3.5 eV	Th	440
hν + K	Desorption	0-3.5 eV	Th	440
e + $H_2{}^+$ + C	Desorption	400-1200 eV; 1 KeV; 673 Kelv	Exp	425
e + D_2 + C	Desorption	400-1200 eV; 1 KeV; 673 Kelv	Exp	425
e + Al	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
e + Cu	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437

e + Ag	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
e + C	Surface Interactions	25 keV	Exp	413
e + Cu	Surface Interactions	25 keV	Exp	413
e + W	Surface Interactions	10-30 keV	Exp	414
e + Pt	Surface Interactions	10-30 keV	Exp	414
e + Au	Surface Interactions	10-30 keV	Exp	414
e + Ag	Second. Elect. Emission	160-600 eV	Exp	449
H^+ + W	Trapping, Detrapping	1.0 keV	Exp	420
H^+ + W	Trapping, Detrapping	800 MeV	Exp	421
H^+ + Be	Trapping, Detrapping	0.1 MeV	Exp	422
H + Li	Trapping, Detrapping		Th	427
H^+ + C	Chemical Reactions	0.7-3.0 keV	Exp	428
H^+ + Al	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
H^+ + Cu	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
H^+ + Ag	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
H + Al	Surface Interactions		Th	442
H + Al	Neutraliz., Ioniz., Dissoc.		Th	442
H + LiF	Reflection	1-6 keV	Exp	450
H + LiF	Second. Elect. Emission	1-6 keV	Exp	450
H_2^+ + W	Trapping, Detrapping	8 keV	Exp	418
H_2^+ + SrCeYb	Desorption	1 keV	Exp	423
H_2^+ + SrCeYb	Trapping, Detrapping	1 keV	Exp	423
H_2 + C	Trapping, Detrapping	300 Kelv	Exp	424
H_2 + C	Adsorption, Desorption	400-1200 eV; 1 KeV; 673 Kelv	Exp	425
H_2 + Mo	Trapping, Detrapping	300 Kelv	Exp	426
H_2 + W	Trapping, Detrapping	300 Kelv	Exp	426
H_2 + Au	Adsorption, Desorption	300 Kelv	Exp	446
H_2 + Au	Neutraliz., Ioniz., Dissoc.	300 Kelv	Exp	446
H_2 + Cu	Adsorption, Desorption	300 Kelv	Exp	448
H_3^+ + W	Trapping, Detrapping	1.5 keV	Exp	419
H_3^+ + Al	Reflection	10-20 keV	Exp	436
D + D + Li	Trapping, Detrapping	300 Kelv	Exp	417
D + D + DLi	Trapping, Detrapping	300 Kelv	Exp	417
D_2^+ + W	Trapping, Detrapping	8 keV	Exp	418
D_2 + Au	Adsorption, Desorption	300 Kelv	Exp	446
D_2 + Au	Neutraliz., Ioniz., Dissoc.	300 Kelv	Exp	446
D_3^+ + W	Trapping, Detrapping	1.5 keV	Exp	419
T^+ + W	Trapping, Detrapping	1.0 keV	Exp	420
T^+ + Be	Trapping, Detrapping	0.1 MeV	Exp	422
T_2^+ + SrCeYb	Desorption	1 keV	Exp	423
T_2^+ + SrCeYb	Trapping, Detrapping	1 keV	Exp	423
He^+ + Be	Trapping, Detrapping	0.1 MeV	Exp	422
He + Mo	Trapping, Detrapping	300 Kelv	Exp	426
He + W	Trapping, Detrapping	300 Kelv	Exp	426
He + Li	Trapping, Detrapping		Th	427
He^+ + Ta	Trapping, Detrapping	3.4-4.0 MeV	E/T	429
He^{2+} + Al	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
He^{2+} + Cu	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
He^{2+} + Ag	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
He^+ + Al	Neutraliz., Ioniz., Dissoc.	2 keV	Th	416
CH_4 + Cu	Adsorption, Desorption	300 Kelv	Exp	448
CO + Cu	Adsorption, Desorption	300 Kelv	Exp	448
CO_2 + Cu	Adsorption, Desorption	300 Kelv	Exp	448
O^+ + C	Chemical Reactions	0.7-3.0 keV	Exp	428
O^{3+} + Al	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
O^{3+} + Cu	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437
O^{3+} + Ag	Second. Elect. Emission	3 keV; 2-6 MeV	Exp	437

O^+ + Au	Chemical Reactions	1-5 keV	Exp	444
O_2^+ + Au	Chemical Reactions	1-5 keV	Exp	444
Ne^+ + Al	Reflection	10-50 keV	Th	431
Ne^+ + Al	Second. Elect. Emission	10-50 keV	Th	431
Ne^+ + Al	Sputtering	10-50 keV	Th	431
Ne^+ + Ge	Sputtering	0.1-100 keV	Th	432
Ne^+ + Si	Sputtering	0.5-5.0 keV	Th	433
Ne^+ + SiC	Sputtering	0.5-5.0 keV	Th	433
Al^+ + Al	Reflection	10-50 keV	Th	431
Al^+ + Al	Second. Elect. Emission	10-50 keV	Th	431
Al^+ + Al	Sputtering	10-50 keV	Th	431
Al^- + Si	Sputtering	4.5-18 keV	Exp	439
Al_2^- + Si	Sputtering	4.5-18 keV	Exp	439
Ar^+ + H_2 + Al	Desorption	3-7 keV	Exp	447
Ar^+ + H_2 + Cu	Desorption	3-7 keV	Exp	447
Ar^+ + Co	Sputtering	1 keV	Exp	430
Ar^+ + Cu	Sputtering	1 keV	Exp	430
Ar^+ + Al	Reflection	10-50 keV	Th	431
Ar^+ + Al	Second. Elect. Emission	10-50 keV	Th	431
Ar^+ + Al	Sputtering	10-50 keV	Th	431
Ar^+ + Fe	Sputtering	0.1-100 keV	Th	432
Ar^+ + Ge	Sputtering	0.1-100 keV	Th	432
Ar^+ + perturbation	Sputtering	0.1-100 keV	Th	432
Ar^+ + Si	Sputtering	0.5-5.0 keV	Th	433
Ar^+ + SiC	Sputtering	0.5-5.0 keV	Th	433
Ar^+ + CH_4 + Al	Desorption	3-7 keV	Exp	447
Ar^+ + CH_4 + Cu	Desorption	3-7 keV	Exp	447
Ar^+ + CO + Al	Desorption	3-7 keV	Exp	447
Ar^+ + CO + Cu	Desorption	3-7 keV	Exp	447
Ar^+ + CO_2 + Al	Desorption	3-7 keV	Exp	447
Ar^+ + CO_2 + Cu	Desorption	3-7 keV	Exp	447
Ar^+ + C_2H_6 + Al	Desorption	3-7 keV	Exp	447
Ar^+ + C_2H_6 + Cu	Desorption	3-7 keV	Exp	447
Cu^{9+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Cu^{9+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Kr^+ + Al	Reflection	10-50 keV	Th	431
Kr^+ + Al	Second. Elect. Emission	10-50 keV	Th	431
Kr^+ + Al	Sputtering	10-50 keV	Th	431
Xe^+ + Al	Reflection	10-50 keV	Th	431
Xe^+ + Al	Second. Elect. Emission	10-50 keV	Th	431
Xe^+ + Al	Sputtering	10-50 keV	Th	431
Xe^+ + Fe	Sputtering	0.1-100 keV	Th	432
Xe^+ + Ge	Sputtering	0.1-100 keV	Th	432
Xe^+ + Pt	Sputtering	0.1-100 keV	Th	432
Xe^+ + perturbation	Sputtering	0.1-100 keV	Th	432
Xe^+ + Si	Sputtering	0.5-5.0 keV	Th	433
Xe^+ + SiC	Sputtering	0.5-5.0 keV	Th	433
Xe^{8+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{8+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{9+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{9+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{10+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{10+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{12+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{12+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{14+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{14+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434

Xe^{16+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{16+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{18+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{18+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{20+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{20+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{22+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{22+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{24+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{24+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{26+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{26+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{28+} + Cu	Second. Elect. Emission	40-4000 keV	Exp	434
Xe^{28+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp	434
Cs^+ + Al	Reflection	10-500 eV	Exp	435
Cs^+ + Si	Reflection	10-500 eV	Exp	435
Cs^+ + Ni	Reflection	10-500 eV	Exp	435
Cs^+ + Si	Sputtering	0.25-5.0 keV	Exp	438
Cs + GaAs	Adsorption, Desorption	300 Kelv	Exp	445
Cs^+ + C	Sputtering	14.5 keV	Exp	415
Au^- + Si	Sputtering	4.5-18 keV	Exp	439
H_2S + UO_2	Adsorption, Desorption	300 Kelv	Exp	443
OH_2^+ + Al	Reflection	10-20 keV	Exp	436

2.4 Particle Beam-Matter Interactions

H + C	Part. Beam-Matter inter.	10^{-3}-10^2 MeV	Th	458
H^+ + C	Part. Beam-Matter inter.	10^{-3}-10^2 MeV	Th	458
H^+ + C	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
H^+ + Al	Part. Beam-Matter inter.	0-20 a.u.	Th	454
H^+ + Al	Part. Beam-Matter inter.	1-700 keV	Th	475
H^+ + Si	Part. Beam-Matter inter.	5-11 a.u.	Th	451
H^+ + Si	Part. Beam-Matter inter.	0-20 a.u.	Th	454
H^+ + Fe	Part. Beam-Matter inter.	2-100 MeV	Th	473
H^+ + Ni	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
H^+ + Cu	Part. Beam-Matter inter.	0-20 a.u.	Th	454
H^+ + Au	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
H_2^+ + C	Part. Beam-Matter inter.	400-1200 eV; 1 KeV; 673 Kelv	Exp	455
H_2^+ + Al	Part. Beam-Matter inter.	3-5 a.u.	Th	453
He + C	Part. Beam-Matter inter.	10^{-3}-10^2 MeV	Th	458
He^+ + C	Part. Beam-Matter inter.	10^{-3}-10^2 MeV	Th	458
He^+ + C	Part. Beam-Matter inter.	32-170 MeV	Th	463
He^{2+} + C	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
He^+ + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
He^{2+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
He^+ + Al	Part. Beam-Matter inter.	0-20 a.u.	Th	454
He^{2+} + Si	Part. Beam-Matter inter.	2-100 MeV	Th	473
He^+ + SiO_2	Part. Beam-Matter inter.	200-3000 keV	Exp	471
He^{2+} + Ni	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
He^+ + Ta	Part. Beam-Matter inter.	3.4-4.0 MeV	E/T	456
He^{2+} + Au	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
He^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
He^{2+} + perturbation	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp	466
Li^+ + He	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460

Li^{2+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
Li^{3+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
Li^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Li^{+} + C	Part. Beam-Matter inter.	32-170 MeV	Th	463
Li^{2+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
Li^{3+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
Li^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Li^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Li^{+} + Si	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Li^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
Be^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Be^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Be^{+} + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Be^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
Be^{+} + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
B^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
B^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
B^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
B^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
B^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
C^{4+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
C^{5+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
C^{6+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
C^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
C^{+} + C	Part. Beam-Matter inter.	0.0-0.5 MeV/u	Th	461
C^{+} + C	Part. Beam-Matter inter.	32-170 MeV	Th	463
C^{4+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
C^{5+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
C^{6+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
C^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
C^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
C^{+} + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
C^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
C^{+} + Si	Part. Beam-Matter inter.	2-100 MeV	Th	473
C^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
C^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
C^{+} + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
C^{+} + Pb	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
N^{4+} + H	Part. Beam-Matter inter.	1-2500 eV/u	Th	474
N^{4+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
N^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
N^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
N^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
N^{+} + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
N^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
N^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
N^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
N^{+} + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
O^{2+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
O^{3+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
O^{4+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
O^{5+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
O^{2+} + He	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
O^{3+} + He	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
O^{4+} + He	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
O^{5+} + He	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
O^{+} + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459

O^{5+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
O^{6+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
O^{7+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
O^{8+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
O^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
O^{+} + C	Part. Beam-Matter inter.	32-170 MeV	Th	463
O^{+} + C	Part. Beam-Matter inter.	0.1-10^{3} MeV/u	Exp	465
O^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV/u	Exp	466
O^{5+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
O^{6+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
O^{7+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
O^{8+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp	467
O^{6+} + C	Part. Beam-Matter inter.	3 MeV/u	Th	468
O^{7+} + C	Part. Beam-Matter inter.	3 MeV/u	Th	468
O^{8+} + C	Part. Beam-Matter inter.	3 MeV/u	Th	468
O^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
O^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
O^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
O^{+} + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
O^{+} + Si	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
O^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
O^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
O^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
O^{+} + Ni	Part. Beam-Matter inter.	0.1-10^{3} MeV/u	Exp	465
O^{+} + Au	Part. Beam-Matter inter.	0.1-10^{3} MeV/u	Exp	465
O^{+} + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
O^{+} + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
F^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
F^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
F^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
F^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
F^{+} + Mo	Part. Beam-Matter inter.	80-350 keV	Exp	472
Ne^{6+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
Ne^{7+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
Ne^{8+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
Ne^{9+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
Ne^{10+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th	458
Ne^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Ne^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Ne^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Na^{3+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
Na^{4+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
Na^{5+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
Na^{6+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
Na^{7+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
Na^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Na^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Na^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
Mg^{6+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp	457
Mg^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Mg^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Mg^{+} + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Mg^{+} + Si	Part. Beam-Matter inter.	10^{3} - 2x10^{4} MeV	Exp	464
Mg^{+} + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Al^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460
Al^{+} + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Al^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th	460

Al^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Al^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp	464
Al^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Si^+ + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Si^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Si^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Si^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp	464
Si^+ + Ni	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Si^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
P^+ + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
P^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp	464
S^{7+} + H_2	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
S^+ + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
S^+ + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Cl^{8+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{8+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{9+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{9+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{10+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{10+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{11+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{11+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{12+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{12+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{13+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{13+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{14+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{14+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{15+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{15+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{16+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{16+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th	469
Cl^{13+} + H_2	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Cl^{15+} + H_2	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Cl^+ + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Cl^+ + Al	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Cl^+ + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Cl^+ + Ni	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ar^+ + H_2	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp	466
Ar^+ + D_2	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp	466
Ar^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Ar^+ + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ar^+ + C	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
Ar^+ + N_2	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp	466
Ar^+ + Ne	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp	466
Ar^+ + Al	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Ar^+ + Al	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ar^+ + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ar^+ + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp	466
Ar^+ + Ni	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ar^+ + Ni	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
Ar^+ + Kr	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp	466
Ar^+ + Xe	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp	466
Ar^+ + Pt	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Ar^+ + Au	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Ar^+ + Au	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp	465
Cr^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470

Cr^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Cr^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Mn^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Mn^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Mn^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp	464
Fe^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Fe^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Fe^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp	464
Co^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Co^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Ni^+ + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{5+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{10+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{15+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{20+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{25+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{28+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^+ + C	Part. Beam-Matter inter.	0.0-0.5 MeV/u	Th	461
Ni^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Ni^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Ni^+ + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{5+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{10+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{15+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{20+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{25+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Ni^{28+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th	460
Cu^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Cu^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Zn^+ + C	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Br^{6+} + H_2	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Br^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Kr^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Kr^+ + Xe	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Kr^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
I^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T	470
Xe^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Xe^+ + Xe	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Xe^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Au^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Au^{69+} + Al	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Au^+ + Cu	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Au^{69+} + Au	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Au^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Pb^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Bi^+ + He	Part. Beam-Matter inter.	100-1000 MeV/u	Th	462
Bi^{82+} + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Bi^{82+} + Al	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Bi^+ + Si	Part. Beam-Matter inter.	100-1000 MeV/u	Th	462
Bi^{82+} + Cu	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Bi^+ + Cu	Part. Beam-Matter inter.	100-1000 MeV/u	Th	462
Bi^{82+} + Ag	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Bi^+ + Ag	Part. Beam-Matter inter.	100-1000 MeV/u	Th	462
Bi^{82+} + Au	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
Bi^+ + Au	Part. Beam-Matter inter.	100-1000 MeV/u	Th	462
Bi^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
perturbation$^+$ + C	Part. Beam-Matter inter.	0.0-0.5 MeV/u	Th	461

C_{60} + C	Part. Beam-Matter inter.	30-720 MeV	Th	452
C_{60} + Si	Part. Beam-Matter inter.	30-720 MeV	Th	452
U^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
U^+ + Be	Part. Beam-Matter inter.	100-1000 MeV/u	Th	462
U^+ + C	Part. Beam-Matter inter.	0.0-0.5 MeV/u	Th	461
U^+ + C	Part. Beam-Matter inter.	2-100 MeV	Th	473
U^+ + Al	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
U^+ + Al	Part. Beam-Matter inter.	100-1000 MeV/u	Th	462
U^+ + Ti	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
U^+ + Xe	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
U^+ + Au	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459
U^+ + Pb	Part. Beam-Matter inter.	100-1000 MeV/u	Th	462
U^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T	459

2.5 Interactions of Atomic Particles with Fields

e + H	Inter. of At. part. with Fields	50-100 eV	Th	503
e + He	Inter. of At. part. with Fields	9.5 eV	Th	492
e + He	Inter. of At. part. with Fields	0-16 eV	E/T	518
H + H	Inter. of At. part. with Fields	0-0.12 a.u.	Th	487
H + H	Inter. of At. part. with Fields	0-0.12 a.u.	Th	488
H	Inter. of At. part. with Fields		Th	490
H^+	Inter. of At. part. with Fields	10^4-10^7 T	Th	511
H	Inter. of At. part. with Fields		Exp	493
H	Inter. of At. part. with Fields	0-100 a.u.	Th	497
H	Inter. of At. part. with Fields		Th	476
H	Inter. of At. part. with Fields		Th	478
H	Inter. of At. part. with Fields		Th	479
H	Inter. of At. part. with Fields		Th	499
H_2	Inter. of At. part. with Fields	0-0.12 a.u.	Th	487
H_2	Inter. of At. part. with Fields	0-0.12 a.u.	Th	488
H_2^+	Inter. of At. part. with Fields	10^4-10^7 T	Th	511
H_2	Inter. of At. part. with Fields	0-0.1 a.u.	Th	519
H_2^+ + Al	Inter. of At. part. with Fields	3-5 a.u.	Th	480
H_2	Inter. of At. part. with Fields	760 μ m	Th	481
He	Inter. of At. part. with Fields		Th	490
He	Inter. of At. part. with Fields	1053 nm	Th	491
He	Inter. of At. part. with Fields	75 eV	Th	508
He	Inter. of At. part. with Fields		Th	494
He	Inter. of At. part. with Fields	2.9 x 10^{14} - 6.6 x 10^{14} W/cm^2	Th	482
He	Inter. of At. part. with Fields	667-447 nm	Exp	500
Li	Inter. of At. part. with Fields		Th	505
Li + Li	Inter. of At. part. with Fields	0-600 W/cm^2	Exp	484
Li	Inter. of At. part. with Fields		Th	476
Li^-	Inter. of At. part. with Fields	0.012-0.020 a.u.	Th	483
Be^{2+}	Inter. of At. part. with Fields	10,000-300,000 K	Th	520
CO	Inter. of At. part. with Fields	400 eV	Th	513
O^{3+}	Inter. of At. part. with Fields	40 Ry	Th	512
Ne	Inter. of At. part. with Fields	0.7-9.3 eV	Exp	506
Ne^{6+}	Inter. of At. part. with Fields	65 Ry	Th	509
Ne	Inter. of At. part. with Fields	0-100 a.u.	Th	497
Ne	Inter. of At. part. with Fields	800-400 nm	E/T	501
Na + Na	Inter. of At. part. with Fields	1-360 W/cm^2	Th	486
Mg^+	Inter. of At. part. with Fields		E/T	489

Mg^+	Inter. of At. part. with Fields		Exp	485
Si^+	Inter. of At. part. with Fields	16,000-20,000 K	Exp	496
S^{2+}	Inter. of At. part. with Fields	10,000-150,000 K	E/T	521
Ar + Ar	Inter. of At. part. with Fields	100-1000 K	Exp	498
Ar	Inter. of At. part. with Fields	800-400 nm	E/T	501
Ca^+	Inter. of At. part. with Fields		Exp	485
Co^{2+}	Inter. of At. part. with Fields	200 nm	Th	502
Zn^+	Inter. of At. part. with Fields		Exp	485
Ga + Ga	Inter. of At. part. with Fields		Exp	514
Kr	Inter. of At. part. with Fields	130-530 eV	Exp	507
Kr	Inter. of At. part. with Fields	800-400 nm	E/T	501
Rb	Inter. of At. part. with Fields	6286-6318 $\mathring{A}$	E/T	510
Rb + Rb	Inter. of At. part. with Fields	1-360 W/cm^2	Th	486
Sr^+	Inter. of At. part. with Fields		Exp	485
Xe	Inter. of At. part. with Fields	130-530 eV	Exp	507
Xe + Rb	Inter. of At. part. with Fields	433-473 Kelv	Exp	516
Cs	Inter. of At. part. with Fields	457 nm	Exp	504
Ba^+	Inter. of At. part. with Fields		Exp	485
Yb^+	Inter. of At. part. with Fields		Exp	485
Th	Inter. of At. part. with Fields	0-30 kV/cm	Exp	515
LiF^-	Inter. of At. part. with Fields		Th	477
OH + OH	Inter. of At. part. with Fields	1-100 μ K	Th	517
H Seq	Inter. of At. part. with Fields		Th	495

Chapter 3

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C	Transition probabil., Oscill. Strengths	Th

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C	Transition probabil., Oscill. Strengths	Th
O	Transition probabil., Oscill. Strengths	Th

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C, Z= 21-25	Transition probabil., Oscill. Strengths	Th

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Energy levels, radiative rates, and collision strengths for transitions in Fe XVII
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Atomic data and spectral line intensities for Fe XI
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Studies on E2 transition in the Na-like highly stripped ion Fe XVI
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Fe^{15+}	Transition probabil., Oscill. Strengths	Th

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C^{4+}	Transition probabil., Oscill. Strengths	Th
N^{5+}	Transition probabil., Oscill. Strengths	Th
O^{6+}	Transition probabil., Oscill. Strengths	Th
Ne^{8+}	Transition probabil., Oscill. Strengths	Th
Si^{12+}	Transition probabil., Oscill. Strengths	Th
Ar^{16+}	Transition probabil., Oscill. Strengths	Th

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Term values of Na-like iron group highly stripped ions using coupled-cluster theory
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Co^{16+}	Transition probabil., Oscill. Strengths	Th
Ni^{17+}	Transition probabil., Oscill. Strengths	Th

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Resonance energies, oscillator strengths and autoionization widths of the $1s$–$2p$ excitations from O IV low-lying states
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Spin-forbidden electric dipole transitions of highly ionized argon
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Ar^{11+}	Transition probabil., Oscill. Strengths	Th
Ar^{12+}	Transition probabil., Oscill. Strengths	Th
Ar^{13+}	Transition probabil., Oscill. Strengths	Th
Ar^{14+}	Transition probabil., Oscill. Strengths	Th
Ar^{15+}	Transition probabil., Oscill. Strengths	Th
Ar^{16+}	Transition probabil., Oscill. Strengths	Th

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Relativistic effects and systematic trends in electric quadrupole transition probabilities for Na-like ions
J. Phys. B 35, 3227-3241 (2002)

Na, Z= 14-36	Transition probabil., Oscill. Strengths	Th

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Experimental transition probabilities in N III, N IV and N V spectra
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N^{3+}	Transition probabil., Oscill. Strengths	Exp
N^{4+}	Transition probabil., Oscill. Strengths	Exp

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N^+	Transition probabil., Oscill. Strengths	Th

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Ne^{6+}	Transition probabil., Oscill. Strengths	Th

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Mixed configuration-interaction and many-body perturbation-theory calculations of energies and oscillator strengths of $J = 1$ odd states of neon
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Ne	Transition probabil., Oscill. Strengths	Th

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Na, Z= 19-55	Transition probabil., Oscill. Strengths	Th

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Kr^{26+}	Transition probabil., Oscill. Strengths	Th
Kr^{27+}	Transition probabil., Oscill. Strengths	Th

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Atomic data for resonance absorption lines. III. Wavelengths longward of the Lyman limit for the elements hydrogen to gallium
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H	Transition probabil., Oscill. Strengths	Th
Li	Transition probabil., Oscill. Strengths	Th
Be	Transition probabil., Oscill. Strengths	Th
Be^+	Transition probabil., Oscill. Strengths	Th

B	Transition probabil., Oscill. Strengths	Th
B^{+}	Transition probabil., Oscill. Strengths	Th
B^{2+}	Transition probabil., Oscill. Strengths	Th
C	Transition probabil., Oscill. Strengths	Th
C^{+}	Transition probabil., Oscill. Strengths	Th
C^{2+}	Transition probabil., Oscill. Strengths	Th
C^{3+}	Transition probabil., Oscill. Strengths	Th
N	Transition probabil., Oscill. Strengths	Th
N^{+}	Transition probabil., Oscill. Strengths	Th
N^{2+}	Transition probabil., Oscill. Strengths	Th
N^{3+}	Transition probabil., Oscill. Strengths	Th
N^{4+}	Transition probabil., Oscill. Strengths	Th
O	Transition probabil., Oscill. Strengths	Th
O^{2+}	Transition probabil., Oscill. Strengths	Th
O^{3+}	Transition probabil., Oscill. Strengths	Th
O^{4+}	Transition probabil., Oscill. Strengths	Th
O^{5+}	Transition probabil., Oscill. Strengths	Th
F	Transition probabil., Oscill. Strengths	Th
F^{3+}	Transition probabil., Oscill. Strengths	Th
F^{4+}	Transition probabil., Oscill. Strengths	Th
F^{5+}	Transition probabil., Oscill. Strengths	Th
Ne^{4+}	Transition probabil., Oscill. Strengths	Th
Ne^{5+}	Transition probabil., Oscill. Strengths	Th
Na	Transition probabil., Oscill. Strengths	Th
Mg	Transition probabil., Oscill. Strengths	Th
Mg^{+}	Transition probabil., Oscill. Strengths	Th
Al	Transition probabil., Oscill. Strengths	Th
Al^{+}	Transition probabil., Oscill. Strengths	Th
Al^{2+}	Transition probabil., Oscill. Strengths	Th
Si	Transition probabil., Oscill. Strengths	Th
Si^{+}	Transition probabil., Oscill. Strengths	Th
Si^{2+}	Transition probabil., Oscill. Strengths	Th
Si^{3+}	Transition probabil., Oscill. Strengths	Th
P	Transition probabil., Oscill. Strengths	Th
P^{+}	Transition probabil., Oscill. Strengths	Th
P^{2+}	Transition probabil., Oscill. Strengths	Th
P^{3+}	Transition probabil., Oscill. Strengths	Th
P^{4+}	Transition probabil., Oscill. Strengths	Th
S	Transition probabil., Oscill. Strengths	Th
S^{+}	Transition probabil., Oscill. Strengths	Th
S^{2+}	Transition probabil., Oscill. Strengths	Th
S^{3+}	Transition probabil., Oscill. Strengths	Th
S^{4+}	Transition probabil., Oscill. Strengths	Th
S^{5+}	Transition probabil., Oscill. Strengths	Th
Cl	Transition probabil., Oscill. Strengths	Th
Cl^{+}	Transition probabil., Oscill. Strengths	Th
Cl^{2+}	Transition probabil., Oscill. Strengths	Th
Cl^{3+}	Transition probabil., Oscill. Strengths	Th
Cl^{4+}	Transition probabil., Oscill. Strengths	Th
Cl^{5+}	Transition probabil., Oscill. Strengths	Th
Ar	Transition probabil., Oscill. Strengths	Th
Ar^{+}	Transition probabil., Oscill. Strengths	Th
Ar^{4+}	Transition probabil., Oscill. Strengths	Th
Ar^{5+}	Transition probabil., Oscill. Strengths	Th
K	Transition probabil., Oscill. Strengths	Th
Sc	Transition probabil., Oscill. Strengths	Th
Sc^{+}	Transition probabil., Oscill. Strengths	Th

Sc^{2+}	Transition probabil., Oscill. Strengths	Th
Ti	Transition probabil., Oscill. Strengths	Th
Ti^{+}	Transition probabil., Oscill. Strengths	Th
Ti^{2+}	Transition probabil., Oscill. Strengths	Th
V	Transition probabil., Oscill. Strengths	Th
V^{+}	Transition probabil., Oscill. Strengths	Th
V^{2+}	Transition probabil., Oscill. Strengths	Th
Cr	Transition probabil., Oscill. Strengths	Th
Cr^{+}	Transition probabil., Oscill. Strengths	Th
Cr^{2+}	Transition probabil., Oscill. Strengths	Th
Mn	Transition probabil., Oscill. Strengths	Th
Mn^{+}	Transition probabil., Oscill. Strengths	Th
Fe	Transition probabil., Oscill. Strengths	Th
Fe^{+}	Transition probabil., Oscill. Strengths	Th
Fe^{2+}	Transition probabil., Oscill. Strengths	Th
Co	Transition probabil., Oscill. Strengths	Th
Co^{+}	Transition probabil., Oscill. Strengths	Th
Co^{2+}	Transition probabil., Oscill. Strengths	Th
Ni	Transition probabil., Oscill. Strengths	Th
Ni^{+}	Transition probabil., Oscill. Strengths	Th
Cu	Transition probabil., Oscill. Strengths	Th
Cu^{+}	Transition probabil., Oscill. Strengths	Th
Zn	Transition probabil., Oscill. Strengths	Th
Zn^{+}	Transition probabil., Oscill. Strengths	Th
Ga	Transition probabil., Oscill. Strengths	Th
Ga^{+}	Transition probabil., Oscill. Strengths	Th
Ga^{2+}	Transition probabil., Oscill. Strengths	Th

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Experimental *f*-value and isotopic structure for the Ni I line blended with [O I] at 6300 Å
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Ni	Transition probabil., Oscill. Strengths	Exp

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Xe^{+}	Transition probabil., Oscill. Strengths	Th

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Be	Transition probabil., Oscill. Strengths	Th
Na	Transition probabil., Oscill. Strengths	Th
Mg	Transition probabil., Oscill. Strengths	Th
K	Transition probabil., Oscill. Strengths	Th
Ca	Transition probabil., Oscill. Strengths	Th
Rb	Transition probabil., Oscill. Strengths	Th
Sr	Transition probabil., Oscill. Strengths	Th

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Phys. Scr. 65, 40-45 (2002)

Xe^{7+}	Transition probabil., Oscill. Strengths	Th
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Xe^{9+}	Transition probabil., Oscill. Strengths	Th

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Al^{+}	Transition probabil., Oscill. Strengths	Th

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B	Transition probabil., Oscill. Strengths	Th

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Accurate atomic parameters for near-infrared spectral lines
Astron. Astrophys. 404, 749-762 (2003)

C	Transition probabil., Oscill. Strengths	Exp
Si	Transition probabil., Oscill. Strengths	Exp
Ca	Transition probabil., Oscill. Strengths	Exp
Ti	Transition probabil., Oscill. Strengths	Exp
Cr	Transition probabil., Oscill. Strengths	Exp
Fe	Transition probabil., Oscill. Strengths	Exp

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Modeling of iron K lines: Radiative and Auger decay data for Fe II–Fe IX
Astron. Astrophys. 410, 359-364 (2003)

Fe^{+}	Transition probabil., Oscill. Strengths	Th
Fe^{2+}	Transition probabil., Oscill. Strengths	Th
Fe^{3+}	Transition probabil., Oscill. Strengths	Th
Fe^{4+}	Transition probabil., Oscill. Strengths	Th
Fe^{5+}	Transition probabil., Oscill. Strengths	Th
Fe^{6+}	Transition probabil., Oscill. Strengths	Th
Fe^{7+}	Transition probabil., Oscill. Strengths	Th
Fe^{8+}	Transition probabil., Oscill. Strengths	Th

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N^{2+}	Transition probabil., Oscill. Strengths	Th
O^{3+}	Transition probabil., Oscill. Strengths	Th

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Fe^{+}	Transition probabil., Oscill. Strengths	Exp

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Energy levels and radiative rates for transitions in Ni XIII–Ni XVI
At. Data Nucl. Data Tables 85, 453-494 (2003)

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Ni^{13+}	Transition probabil., Oscill. Strengths	Th
Ni^{14+}	Transition probabil., Oscill. Strengths	Th
Ni^{15+}	Transition probabil., Oscill. Strengths	Th

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Fe^{13+}	Transition probabil., Oscill. Strengths	Exp

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Extended term analysis of Mo II
Phys. Scr. 67, 223-233 (2003)

Mo^{+}	Transition probabil., Oscill. Strengths	Th

49. 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, 1175-1184 (2003)

Fe^{19+}	Transition probabil., Oscill. Strengths	Th
Fe^{20+}	Transition probabil., Oscill. Strengths	Th
Fe^{21+}	Transition probabil., Oscill. Strengths	Th
Fe^{22+}	Transition probabil., Oscill. Strengths	Th
Fe^{23+}	Transition probabil., Oscill. Strengths	Th
Fe^{24+}	Transition probabil., Oscill. Strengths	Th

50. E. Charro, S. Lopez-Ferrero, I. Martin
Trends in E2 and M1 transition rates between $\mathbf{3p}_{3/2}$ and $\mathbf{3p}_{1/2}$ levels in $\mathbf{3}s^2\mathbf{3}p^k$ systems
Astron. Astrophys. 406, 741-749 (2003)

Al, Z= 21-80	Transition probabil., Oscill. Strengths	Th

51. 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, 789-801 (2003)

Fe^{16+}	Transition probabil., Oscill. Strengths	Th

52. A. K. Bhatia, E. Landi, H. E. Mason
Atomic data and spectral line intensities for Ni XXI
At. Data Nucl. Data Tables 83, 71-112 (2003)

Ni^{20+}	Transition probabil., Oscill. Strengths	Th

53. J.-L. Zeng, F.-T. Jin, G. Zhao, J.-M. Yuan
Temperature diagnostics for iron plasmas by means of transmission spectrum obtained by accurate atomic data
Chin. Phys. Lett. 20, 862-864 (2003)

Fe^{7+}	Transition probabil., Oscill. Strengths	Th

54. A. K. Bhatia, R. J. Thomas, E. Landi
Atomic data and spectral line intensities for Ne III
At. Data Nucl. Data Tables 83, 113-152 (2003)

Ne^{2+}	Transition probabil., Oscill. Strengths	Th

55. 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, 779-787 (2004)

Fe^{19+}	Transition probabil., Oscill. Strengths	Th

56. 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, 1525-1542 (2002)

O^{4+}	Transition probabil., Oscill. Strengths	Th

57. P. Bogdanovich, R. Karpuskiene, I. Martinson
Theoretical lifetimes for all states of five Cl X configurations
Nucl. Instrum. Methods Phys. Res. B 205, 70-73 (2003)

Cl^{9+}	Transition probabil., Oscill. Strengths	Th

58. 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, 87-92 (2003)

Ne, Z= 24-36	Transition probabil., Oscill. Strengths	Th

59. H. Ray
E2-transition probabilities for Ni XVIII
Astrophys. Space Sci. 283, 415-436 (2003)

Ni^{17+}	Transition probabil., Oscill. Strengths	Th

60. S. Zielinska, L. Bratasz, K. Dzierzega
Absolute transition rates for transitions from $5p^4(^3P)6p\ ^4P^\circ_{5/2}$, $^4P^\circ_{3/2}$, $^4D^\circ_{7/2}$, and $^2D^\circ_{5/2}$ levels of Xe II
Phys. Scr. 66, 454-457 (2002)

Xe^{+}	Transition probabil., Oscill. Strengths	Exp

61. P. Bogdanovich, R. Karpuskiene, I. Martinson
Ab initio **wavelengths and oscillator strengths for Cl X**
Phys. Scr. 67, 44-51 (2003)

Cl^{9+}	Transition probabil., Oscill. Strengths	Th

62. V. I. Azarov, W.-U L. Tchang-Brillet, J.-F. Wyart, F. G. Meijer
The third spectrum of tantalum (Ta III): Fine and hyperfine structure
Phys. Scr. 67, 190-207 (2003)

Ta^{2+}	Transition probabil., Oscill. Strengths	Th

63. R. Das, N. C. Deb, K. Roy, A. Z. Msezane
Fine-structure energy levels of Ni XVII and their lifetimes
Phys. Scr. 67, 401-406 (2003)

Ni^{16+}	Transition probabil., Oscill. Strengths	Th

64. A. Golly, A. Jazgara, T. Wujec
Measurements of transition probabilities of some C I and O I spectral lines in the near infrared
Phys. Scr. 67, 485-490 (2003)

C	Transition probabil., Oscill. Strengths	Exp
O	Transition probabil., Oscill. Strengths	Exp

65. K. Koc
Relativistic MR RCI calculation of energy levels and transition probabilities of the boron isoelectronic sequence
Phys. Scr. 67, 491-499 (2003)

Ne^{5+}	Transition probabil., Oscill. Strengths	Th
Na^{6+}	Transition probabil., Oscill. Strengths	Th
Mg^{7+}	Transition probabil., Oscill. Strengths	Th

66. X. Lu, J. Y. Zhong, Y. J. Li, J. Zhang
Numerical optimization of a picosecond pulse driven Ni-like Nb x-ray laser at 20.3 nm
Plasma Phys. 10, 2978-2982 (2003)

Ni^{13+}	Transition probabil., Oscill. Strengths	Th

67. N. W. Zheng, T. Wang
Theoretical calculation of transition probabilities in neutral fluorine
Spectrochimica Acta, Part B 58, 27-32 (2003)

F	Transition probabil., Oscill. Strengths	Th

68. N. W. Zheng, T. Wang
Transition probabilities for Ne II
Spectrochimica Acta, Part B 58, 1319-1324 (2003)

Ne^{+}	Transition probabil., Oscill. Strengths	Th

69. A. K. Bhatia, G. A. Doschek
Atomic data and spectral line intensities for Fe XVII
At. Data Nucl. Data Tables 85, 1-45 (2003)

Fe^{16+}	Transition probabil., Oscill. Strengths	Th

70. I. M. Savukov, W. R. Johnson, U. I. Safronova
Multipole (E1, M1, E2, M2) transition wavelengths and rates between states with $n \leq 6$ in helium-like carbon, nitrogen, oxygen, neon, silicon, and argon
At. Data Nucl. Data Tables 85, 83-167 (2003)

C^{4+}	Transition probabil., Oscill. Strengths	Th
N^{5+}	Transition probabil., Oscill. Strengths	Th
O^{6+}	Transition probabil., Oscill. Strengths	Th
Ne^{8+}	Transition probabil., Oscill. Strengths	Th
Si^{12+}	Transition probabil., Oscill. Strengths	Th
Ar^{16+}	Transition probabil., Oscill. Strengths	Th

71. F. Wang, B.-C. Gou, X. Wu, L.-H. Han
Energy, oscillator strength and hyperfine structure of the low-lying excited states for the Be-like system
Int. J. Mod. Phys. C 14, 549-560 (2003)

Be, Z= 4-10	Transition probabil., Oscill. Strengths	Th

72. S. S. Tayal
Strong term dependence of wavefunctions and series perturbations in singly ionized chlorine
J. Phys. B 36, 3239-3249 (2003)

Cl^{+}	Transition probabil., Oscill. Strengths	Th

73. J.-L. Zeng, F.-T. Jin, G. Zhao, J.-M. Yuan
The influence of core-valence electron correlations on the convergence of energy levels and oscillator strengths of ions with an open 3*d* shell using Fe VIII as an example
J. Phys. B 36, 3457-3465 (2003)

Fe^{7+}	Transition probabil., Oscill. Strengths	Th

74. L. Glowacki, J. Migdalek
Relativistic configuration-interaction oscillator strength calculations with *ab initio* model potential wavefunctions
J. Phys. B 36, 3629-3636 (2003)

Zn	Transition probabil., Oscill. Strengths	Th
Sr	Transition probabil., Oscill. Strengths	Th
Cd	Transition probabil., Oscill. Strengths	Th
Cd, Z= 49-56	Transition probabil., Oscill. Strengths	Th
Ba	Transition probabil., Oscill. Strengths	Th
Yb	Transition probabil., Oscill. Strengths	Th
W^{26+}	Transition probabil., Oscill. Strengths	Th
Hg	Transition probabil., Oscill. Strengths	Th
Hg, Z= 81-86	Transition probabil., Oscill. Strengths	Th

75. K. M. Aggarwal, F. P. Keenan
Electron impact excitation of S-like iron
Mon. Not. R. Astron. Soc. 338, 412-424 (2003)

Fe^{10+}	Transition probabil., Oscill. Strengths	Th

76. R. Kisielius, A. Hibbert, G. J. Ferland, M. E. Foord, S. J. Rose, P. A. M. van Hoof, F. P. Keenan
Inner-shell photoexcitation of Fe XV and Fe XVI
Mon. Not. R. Astron. Soc. 344, 696-706 (2003)

Fe^{14+}	Transition probabil., Oscill. Strengths	Th
Fe^{15+}	Transition probabil., Oscill. Strengths	Th

77. L. I. Podobedova, A. Musgrove, D. E. Kelleher, J. Reader, W. L. Wiese
Atomic spectral tables for the Chandra x-ray observatory. Part I. S VIII–S XIV
J. Phys. Chem. Ref. Data 32, 1367-1386 (2003)

S^{7+}	Transition probabil., Oscill. Strengths	Th
S^{8+}	Transition probabil., Oscill. Strengths	Th
S^{9+}	Transition probabil., Oscill. Strengths	Th
S^{10+}	Transition probabil., Oscill. Strengths	Th
S^{11+}	Transition probabil., Oscill. Strengths	Th
S^{12+}	Transition probabil., Oscill. Strengths	Th
S^{13+}	Transition probabil., Oscill. Strengths	Th

78. N. Singh, A. K. Singh, M. Mohan
Level energies and oscillator strengths in Ni(XII)
Can. J. Phys. 81, 861-867 (2003)

Ni^{11+}	Transition probabil., Oscill. Strengths	Th

79. A. K. Bhatia, E. Landi
Atomic data and spectral line intensities for Si VIII
At. Data Nucl. Data Tables 85, 317-376 (2003)

Si^{7+}	Transition probabil., Oscill. Strengths	Th

3.1.1 Atomic and Molecular Collisions

3.1.1.1 Photon Collisions

80. V. T. Davis, J. S. Thompson
Measurement of the electron affinity of thulium.
Phys. Rev. A 65, 010501 (2002)

hν + Tm$^-$	Photodetachment	1-1.3 eV	Exp

81. D. Chattarji, C. Sur
Angular correlation theory for double photoionization in a rare-gas atom.
Phys. Rev. A 65, 012702 (2002)

hν + Xe	Photoionization	94.5 eV	Th
nhν + Xe	Photoionization	94.5 eV	Th

82. F. Brumeister, S. L. Sorensen, O. Bjoerneholm, A. Nves de Brito, R. F. Fink, R. Feifel, I. Hjelte, K. Wiesner, A. Giertz, M. Baessler, C. Miron, H. Wang, M. N. Piancastelli, L. Kerlsson, S. Svensson
Nonadiabatic effects in photoelectron spectra of HCl and DCl. I. Experiment.
Phys. Rev. A 65, 012704 (2002)

hν + HCl	Photoionization	64 eV	Exp
hν + DCl	Photoionization	64 eV	Exp

83. L. M. Andersson, F. Burmeister, H. O. Karlsson, O. Goscinski
Nonadiabatic effects in the photoelectron spectra of HCl and DCl. II. Theory.
Phys. Rev. A 65, 012705 (2002)

hν + HCl	Photoionization	64 eV	Th
hν + DCl	Photoionization	64 eV	Th

84. H. Yamaoka, M. Oura, K. Kawatsura, T. Hayaishi, T. Sekioka, A. Agui, A. Yoshigoe, F. Koike
Photoionization of singly and doubly charged neon ions following inner-shell excitation.
Phys. Rev. A 65, 012709 (2002)

hν + Ne$^+$	Photoionization	841-863 eV	E/T
hν + Ne^{2+}	Photoionization	841-863 eV	E/T
hν + Ne^{3+}	Photoionization	841-863 eV	E/T

85. A. S. Kheifets, I. Bray
Frozen-core model of the double photoionization of beryllium.
Phys. Rev. A 65, 012710 (2002)

hν + Be	Photoionization	10-600 eV	Th
nhν + Be	Photoionization	10-600 eV	Th

86. E. Varoucha, N. A. Papadogiannis, D. Charalmbidis, A. Saenz, H. Schroeder, B. Witzel
Quantitative laser mass spectroscopy of sputtered versus evaporated metal atoms.
Phys. Rev. A 65, 012901 (2002)

hν + Mg	Photoionization	248.6 nm	E/T
hν + Zn	Photoionization	248.6 nm	E/T
hν + In	Photoionization	248.6 nm	E/T
nhν + Mg	Photoionization	248.6 nm	E/T
nhν + Zn	Photoionization	248.6 nm	E/T
nhν + In	Photoionization	248.6 nm	E/T

87. G. Duchateau, R. Gayet
Ionization of alkali-metal atoms by ultrashort laser pulses.
Phys. Rev. A 65, 013405 (2002)

hν + Na	Photoionization	800 nm	Th
hν + K	Photoionization	800 nm	Th
hν + Rb	Photoionization	800 nm	Th

88. H. P. Saha
Photoelectron angular distribution of 3s photoionization of atomic chlorine.
Phys. Rev. A 66, 010702 (2002)

hν + Cl	Photoionization	25-70 eV	Th

89. I. I. Fabrikant
Rescattering of photodetached electrons from a polar molecule in a static electric field: Spatial distribution.
Phys. Rev. A 66, 010703 (2002)

hν + LiF^-	Photodetachment		Th

90. D. Toffoli, M. Stener, P. Decleva
Photoionization of mercury: A relativistic time-dependent density-functional-theory approach.
Phys. Rev. A 66, 012501 (2002)

hν + Hg	Photoionization	10-300 eV	Th

91. R. Wehlitz, J. B. Bluett, S. B. Whitfield
Comparison of the double- to single-photoionization ratio of Li with He.
Phys. Rev. A 66, 012701 (2002)

hν + Li	Photoionization	81-110 eV	Exp

92. E. Kukk, J. Rius i Riu, M. Stankiewicz, P. A. Hatherly, P. Erman, E. Rachlew, P. Winiarczyk, M. Huttula, S. Aksela
Dissociation of deuteromethane following carbon 1s core ionization.
Phys. Rev. A 66, 012704 (2002)

hν + CH_4	Photodissociation	70-360 eV	E/T
hν + CH_4	Photoionization	70-360 eV	E/T
hν + CD_4	Photodissociation	70-360 eV	E/T
hν + CD_4	Photoionization	70-360 eV	E/T

93. D. J. Fatemi, L. A. Bloomfield
Photoelectron spectroscopy of sodium iodide clusters containing single hydroxyl ions or water molecules.
Phys. Rev. A 66, 013202 (2002)

hν + $Na_3I_3^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_4I_4^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_6I_6^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_2I_2NaOH^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_3I_3NaOH^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_3I_2NaOH^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_4I_3^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_4I_2NaOH^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_5I_3^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_4I_3NaOH^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_5I_4^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_3I_3H_2O^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_4I_4H_2O^-$	Photodetachment	2.33-3.49 eV	Exp
hν + $Na_6I_6H_2O^-$	Photodetachment	2.33-3.49 eV	Exp

94. E. S. Toma, H. G. Muller
Laser disintegration of Van der Waals clusters of carbon-containing molecules.
Phys. Rev. A 66, 013204 (2002)

hν + CO_2	Photodissociation		Exp
hν + CO_2	Photoionization		Exp
hν + C_3H_8	Photodissociation		Exp
hν + C_3H_8	Photoionization		Exp

95. E. S. Toma, H. G. Muller
X-ray emission after laser disintegration of clusters of carbon-containing molecules.
Phys. Rev. A 66, 013205 (2002)

hν + CO_2	Photodissociation		Exp
hν + CO_2	Photoionization		Exp
hν + C_3H_8	Photodissociation		Exp
hν + C_3H_8	Photoionization		Exp

96. E. Wells, M. J. DeWitt, R. R. Jones
Comparison of intense-field ionization of diatomic molecules and rare-gas atoms.
Phys. Rev. A 66, 013409 (2002)

hν + Ar	Photoionization	790-1365 nm	Exp
hν + Kr	Photoionization	790-1365 nm	Exp
hν + Xe	Photoionization	790-1365 nm	Exp
hν + H_2	Photoionization	790-1365 nm	Exp
hν + D_2	Photoionization	790-1365 nm	Exp
hν + CO	Photoionization	790-1365 nm	Exp
hν + N_2	Photoionization	790-1365 nm	Exp
hν + NO	Photoionization	790-1365 nm	Exp
hν + O_2	Photoionization	790-1365 nm	Exp
hν + F_2	Photoionization	790-1365 nm	Exp
hν + S_2	Photoionization	790-1365 nm	Exp
hν + SO	Photoionization	790-1365 nm	Exp

97. T. Nakajima, L. A. A. Nikolopoulos
Use of helium double ionization for autocorrelation of an xuv pulse.
Phys. Rev. A 66, 041402 (2002)

hν + He^+	Photoionization	39-54 eV	Th
2hν + He^+	Photoionization	39-54 eV	Th

98. A. G. Peele, C. T. Chantler, D. Paterson, P. J. McMahon, T.H.K. Irving, J.J.A. Lin, K. A. Nugent, A. N. Brunton, I. McNulty
Measurement of mass attenuation coefficients in air by application of detector linearity tests.
Phys. Rev. A 66, 042702 (2002)

hν + N_2	Total Absor., Scat.	1200-1950 eV	Exp
hν + Air	Total Absor., Scat.	1200-1950 eV	Exp

99. A. C. Mandal, D. Mitra, M. Sarkar, D. Bhattacharya
Differential elastic scattering cross sections of 22.1-keV x rays by elements in the range 22¡Z¡82.
Phys. Rev. A 66, 042705 (2002)

hν + Ti	Elastic Scattering	22.1 keV	Exp
hν + V	Elastic Scattering	22.1 keV	Exp
hν + Fe	Elastic Scattering	22.1 keV	Exp
hν + Ni	Elastic Scattering	22.1 keV	Exp
hν + Cu	Elastic Scattering	22.1 keV	Exp
hν + Zn	Elastic Scattering	22.1 keV	Exp
hν + Zr	Elastic Scattering	22.1 keV	Exp
hν + Nb	Elastic Scattering	22.1 keV	Exp
hν + Mo	Elastic Scattering	22.1 keV	Exp

hν + Pd	Elastic Scattering	22.1 keV	Exp
hν + Cd	Elastic Scattering	22.1 keV	Exp
hν + In	Elastic Scattering	22.1 keV	Exp
hν + Sn	Elastic Scattering	22.1 keV	Exp
hν + Sm	Elastic Scattering	22.1 keV	Exp
hν + Gd	Elastic Scattering	22.1 keV	Exp
hν + Dy	Elastic Scattering	22.1 keV	Exp
hν + Er	Elastic Scattering	22.1 keV	Exp
hν + Yb	Elastic Scattering	22.1 keV	Exp
hν + Au	Elastic Scattering	22.1 keV	Exp
hν + Pb	Elastic Scattering	22.1 keV	Exp

100. M. Kutzner, V. Maycock, J. Thorarinson, E. Pannwitz, J. A. Robertson
Relaxation effects in inner-shell photoionization of Mg, Ca, and Sr.
Phys. Rev. A 66, 042715 (2002)

hν + Mg	Photoionization	2-650 a.u.	Th
hν + Ca	Photoionization	2-650 a.u.	Th
hν + Sr	Photoionization	2-650 a.u.	Th

101. Z. Felfli, T. W. Gorczyca, N. C. Deb, A. Z. Msezane
Frame-transformation methods for open-shell systems: Photoabsorption of Ni^{14+}.
Phys. Rev. A 66, 042716 (2002)

hν + Ni^{14+}	Total Absor., Scat.	463-520 eV	Th
hν + Ni^{14+}	Photoexcitation	463-520 eV	Th
hν + Ni^{14+}	Photoionization	463-520 eV	Th

102. K. Harumiya, H. Kono, Y. Fujimura, I. Kawata, A. D. Bandrauk
Intense laser-field ionization of H_2 enhanced by two-electron dynamics.
Phys. Rev. A 66, 043403 (2002)

hν + H_2	Photoionization	760 μ m	Th

103. J. Chen, J. Liu, W. M. Zheng
Characteristic photoelectron spectra and angular distributions of single and double ionization.
Phys. Rev. A 66, 043410 (2002)

hν + He	Photoionization	2.9 x 10^{14} - 6.6 x 10^{14} W/cm^2	Th

104. D. A. Telnov, S.-I. Chu
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)

hν + Li^-	Photoionization	0.012-0.020 a.u.	Th

105. S. B. Whitfield, T. Myers, M. Bjelland, R. Wehlitz, J. Jimenez-Mier, P. Olalde-Velasco, M. O. Krause
Angular distributions of the atomic scandium 3d and 4s photoelectrons in the region of the 3p -¿ 3d giant resonance.
Phys. Rev. A 66, 060701 (2002)

hν + Sc	Photoionization	29-40 eV	Exp

106. A. J. Alexander
Interference between dissociating states in H_2O_2 and HOCl causes orientation of OH diatomic products.
Phys. Rev. A 66, 060702 (2002)

$h\nu$ + H_2O_2	Photodissociation	330-370 nm	Exp
$h\nu$ + HOCl	Photodissociation	330-370 nm	Exp

107. J. R. Lowell, T. Northup, B. M. Patterson, T. Takekoshi, R. J. Knize
Measurement of the photoionization cross section of the $5S_{1/2}$ state of rubidium.
Phys. Rev. A 66, 062704 (2002)

$h\nu$ + Rb	Photoionization	266 nm	Exp

108. A. M. Covington, A. Aguilar, I. R. Covington, M. F. Gharaibeh, G. Hinojosa, C. A. Shirley, R. A. Phaneuf, I. Alvarez, C. Cisneros, I. Dominguez-Lopez, M. M. Sant'Anna, A. S. Schlachter, B. M. McLaughlin, A. Dalgarno
Photoionization of Ne^+ using synchrotron radiation.
Phys. Rev. A 66, 062710 (2002)

$h\nu$ + Ne^+	Photoionization	40-70 eV	Exp

109. D. A. Telnov, S.-I. Chu
Angular distributions from two-photon detachment of H^- near ionization threshold: Laser-frequency and -intensity effects.
Phys. Rev. A 66, 063409 (2002)

$h\nu$ + H^-	Photodetachment	2.15 μ m	Th

110. C. C. Chirila, N. J. Kylstra, R. M. Potvliege, C. J. Joachain
Nondipole effects in photon emission by laser-driven ions.
Phys. Rev. A 66, 063411 (2002)

$h\nu$ + Li^{2+}	Fluorescence	800 nm	Th
$h\nu$ + Be^{3+}	Fluorescence	800 nm	Th
$h\nu$ + Ne^{6+}	Fluorescence	800 nm	Th

111. J. Nikkinen, H. Aksela, S. Heinasmaki, S. Fritzsche, E. Kukk, M. Huttula, S. Aksela
Anomalous $N_{4,5}P_1P_1$ Auger decay from the 4d photoionization states in atomic barium.
Phys. Rev. A 66, 064703 (2002)

$h\nu$ + Ba	Photoionization	138 eV	Th

112. V. T. Davis, J. S. Thompson
Measurement of the electron affinity of praseodymium.
J. Phys. B 35, L11 (2002)

$h\nu$ + Pr^-	Photodetachment	1064 nm	Exp

113. A. De Fanis, K. Nobusada, I. Hjelte, N. Saito, M. Kitajima, M. Okamoto, H. Tanaka, H. Yoshida, A. Hiraya, I. Koyano, M. N. Piancastelli, K. Ueda
Control of nuclear motion in the B $2b_2$ ionic state of water via an Auger resonant Raman process.
J. Phys. B 35, L23 (2002)

$h\nu$ + H_2O	Photoionization	535-537 eV	E/T

114. M. de Simone, M. Coreno, M. Alagia, R. Richter, K. C. Prince
Inner shell excitation spectroscopy of the tetrahedral molecules CX_4 (X=H, F, Cl).
J. Phys. B 35, 61 (2002)

$h\nu$ + CH_4	Total Absor., Scat.	200-710 eV	Exp
$h\nu$ + CF_4	Total Absor., Scat.	200-710 eV	Exp
$h\nu$ + CCl_4	Total Absor., Scat.	200-710 eV	Exp

115. T. Hayaishi, T. Matsui, H. Yoshii, A. Higurashi, E. Murakami, A. Yagishita, T. Aoto, T. Onuma, Y. Morioka
Post-collision interaction effects following 4p-shell ionization of Xe.
J. Phys. B 35, 141 (2002)

hν + Xe	Photoionization	138-152 eV	Exp

116. 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: time-reversed recombination of C^{3+} with electrons.
J. Phys. B 35, L137 (2002)

hν + C^{2+}	Photoionization	41-57; 48-49 eV	E/T

117. J. Prager, C. H. Keitel
Laser-induced nonsequential double ionization approaching the relativistic regime.
J. Phys. B 35, L167 (2002)

hν + He	Photoionization	1053 nm	Th

118. D.M.P. Holland, A. W. Potts, L. Karlsson, A. B. Trofimov, J. Schirmer
The influence of shape resonance phenomena on the valence shell photoionization dynamics of silicon tetrafluoride.
J. Phys. B 35, 1741 (2002)

hν + SiF_4	Photoionization	15-120 eV	E/T

119. H. Kjeldsen, P. Andersen, F. Folkmann, J. E. Hansen, M. Kitajima, T. Andersen
Experimental study of 4f wavefunction contraction: 4d-photoionization of low-charged ions of I, Xe, Cs and Ba.
J. Phys. B 35, 2845 (2002)

hν + I^-	Photodetachment	40-185 eV	Exp
hν + I^-	Photoionization	40-185 eV	Exp
hν + Cs^+	Photoionization	40-185 eV	Exp
hν + Ba^+	Photoionization	40-185 eV	Exp
hν + Ba^{2+}	Photoionization	40-185 eV	Exp

120. P. Bolognesi, L. Avaldi, D. R. Cooper, M. Coreno, R. Camilloni, G. C. King
High-resolution threshold photoelectron measurements of the Ne^+ $2p^4n\ell$ satellite states.
J. Phys. B 35, 2927 (2002)

hν + Ne	Photoionization	48-70 eV	Exp
hν + Ne^*	Photoionization	48-70 eV	Exp

121. S. V. Menon, J. P. Nibarger, G. N. Gibson
A framework for understanding molecular ionization in strong laser fields.
J. Phys. B 35, 2961 (2002)

hν + I_2	Photodissociation	800 nm	Exp
hν + I_2	Photoionization	800 nm	Exp

122. J. A. Ruiz, P. Erman, E. Rachlew-Kallne, J. Rius i Riu, M. Stankiewicz, L. Veseth
Neutral dissociation of superexcited states in carbon monoxide.
J. Phys. B 35, 2975 (2002)

hν + CO	Photodissociation	19-26 eV	E/T

123. L. Young, D. Yang, R. W. Runford
Optical production of metastable krypton.
J. Phys. B 35, 2895 (2002)

hν + Kr	Photoexcitation	124 nm; 819 nm	Exp

124. I. I. Bondar, V. V. Suran
The two-electron mechanism of the formation of doubly charged ions by the multiphoton ionization of Ba atoms with two-laser radiation.
J. Phys. B 35, 3391 (2002)

hν + Ba	Photoionization	8800-17,600 cm^{-1}	Exp
2hν + Ba	Photoionization	8800-17,600 cm^{-1}	Exp

125. A. Kodre, I. Arcon, J. Padeznik Gomilsek, R. Preseren, R. Frahm
Multielectron excitations in x-ray absorption spectra of Rb and Kr.
J. Phys. B 35, 3497 (2002)

hν + Kr	Photoexcitation	15.15-15.8 keV	Exp
hν + Rb	Photoexcitation	15.15-15.8 keV	Exp

126. M. Gavrilia
Atomic stabilization in superintense laser fields.
J. Phys. B 35, R147 (2002)

H	Photon Collisions	0-100 a.u.	Th
Ne	Photon Collisions	0-100 a.u.	Th

127. S. Motoki, J. Adachi, K. Ito, K. Ishii, K. Soejima, A. Yagishita, S. K. Semenov, N. A. Cherepkov
Complete photoionization experiment in the region of the $2\sigma_g$ -¿ σ_u shape resonance of the N_2 molecule.
J. Phys. B 35, 3801 (2002)

hν + N_2	Photoionization	40-70 eV	Exp

128. M. Oura, H. Yamaoka, K. Kawatsura, K. Takahiro, N. Takeshima, Y. Zou, R. Hutton, S. Ito, Y. Awaya, M. Terasawa, T. Sekioka, T. Mukoyama
Correlative multielectron processes in K-shell photoionization of Ca, Ti and V in the energy range of 8-35 keV.
J. Phys. B 35, 3847 (2002)

hν + Ca	Fluorescence	8-35 keV	Exp
hν + Ca	Photoionization	8-35 keV	Exp
hν + Ti	Fluorescence	8-35 keV	Exp
hν + Ti	Photoionization	8-35 keV	Exp
hν + V	Fluorescence	8-35 keV	Exp
hν + V	Photoionization	8-35 keV	Exp

129. M. Miyabe, C. Geppert, M. Oba, I. Wakaida, K. Wendt
Total angular momenta of even-parity autoionizing levels and odd-parity high-lying levels of atomic uranium.
J. Phys. B 35, 3065 (2002)

hν + U	Photoexcitation	530-660 nm	Exp
hν + U	Photoionization	530-660 nm	Exp

130. Ph. Wernet, A. Verweyen, J. Schulz, B. Sonntag, K. Godehusen, R. Mueller, P. Zimmermann, M. Martins
Combining high-resolution photoelectron spectroscopy and laser polarization for a study of the 4f and 5p photoionization of atomic thulium.
J. Phys. B 35, 3887 (2002)

hν + Tm	Photoionization	50-100 eV	Exp

131. M. Sommavilla, U. Hollenstein, G. M. Greetham, F. Merkt
High-resolution laser absorption spectroscopy in the extreme ultraviolet.
J. Phys. B 35, 3901 (2002)

hν + Ar	Photoexcitation	8-17 eV	Exp
hν + Ar	Photoionization	8-17 eV	Exp
hν + N_2	Photoexcitation	8-17 eV	Exp
hν + N_2	Photoionization	8-17 eV	Exp

132. Z. Felfli, N. C. Deb, D.S.F. Crothers, A. Z. Msezane
Angular distributions of electrons in photoionization of 3s subshell of atomic chlorine.
J. Phys. B 35, L419 (2002)

hν + Cl	Photoionization	22-80 eV	Th

133. R. Colle, S. Simonucci
Ab initio calculation of angular distribution patterns of resonant photo double-ionization in neon.
J. Phys. B 35, 4033 (2002)

hν + Ne	Photoionization	91.71-92.71 eV	Th

134. O. Zatsarinny, C. F. Fischer
Oscillator strengths for transitions to high-lying excited states of carbon.
J. Phys. B 35, 4669 (2002)

hν + C	Photoexcitation		Th

135. A. Y. Istomin, N. L. Manakov, A. F. Starace
Perturbative calculation of the triply differential cross section for photo-double-ionization of He.
J. Phys. B 35, L543 (2002)

hν + He	Photoionization	$I_1 + I_2 + 20$ eV	Th

136. M. Kaatharakis, N. Merlemis, A. Serafetinides, T. Efthimiopoulos
Four-wave mixing and parametric four-wave mixing near the 4P-4S transition of the potassium atom.
J. Phys. B 35, 4969 (2002)

hν + K	Fluorescence	766.35-766.80 nm	Exp
hν + K	Photoexcitation	766.35-766.80 nm	Exp

137. J.-I. Adachi, S. Motoki, N. A. Cherepkov, A. Yagishita
Characterization of σ_u shape resonance in the C 1s ionization continuum of CO_2 molecules.
J. Phys. B 35, 5023 (2002)

hν + CO_2	Photoionization	290-325 eV	Exp

138. J. Bauer
A generalization of the Keldysh-Faisal-Reiss model.
J. Phys. B 35, 5131 (2002)

hν + H	Photoionization	0.07-0.7 a.u.	Th

139. E. Biemont, G. Kohnen, P. Quinet
Transition probabilities in Gd III.
Astron. Astrophys. 393, 717 (2002)

hν + Gd^{2+}	Photoexcitation	3200-2030 $\AA$	Th

140. H. Hartman, A. Derkatch, M. P. Donnelly, T. Gull, A. Hibbert, S. Johansson, H. Lundberg, S. Mannervik, L.-O. Norlin, D. Rostohar, P. Royen, P. Schef
The FERRUM Project: Experimental transition probabilities of [Fe II] and astrophysical applications.
Astron. Astrophys. 397, 1143 (2003)

hν + Fe^{+}	Photoexcitation	5613-3175 $\AA$	E/T

141. A. G. Kochur, D. Petrini, E. P. da Silva
L-photoionization of atomic aluminium: production of Al II, Al III and Al IV UV lines.
Astron. Astrophys. 393, 1081 (2002)

hν + Al	Fluorescence	80-1000 eV	Th
hν + Al	Photoionization	80-1000 eV	Th

142. E. Biemont, H. P. Garnir, U. Litzen, K. Nielsen, P. Quinet, S. Svanberg, G. M. Wahlgren, Z. G. Zhang
Radiative lifetime and oscillator strength determinations in Sm III.
Astron. Astrophys. 399, 393 (2003)

hν + Sm^{2+}	Photoexcitation	324-290 nm	Exp

143. J. K. Lepson, P. Beiersdorfer, G. V. Brown, D. A. Liedahl, S. B. Utter, N. S. Brickhouse, A. K. Dupree, J. S. Kaastra, R. Mewr, S. M. Kahn
Emission lines of Fe VII-Fe X in the extreme ultraviolet region, 60-140 $\AA$.
Astrophys. J., Part 1 578, 648 (2002)

hν + Fe^{6+}	Photoexcitation	140-60 $\AA$	Exp
hν + Fe^{7+}	Photoexcitation	140-60 $\AA$	Exp
hν + Fe^{8+}	Photoexcitation	140-60 $\AA$	Exp
hν + Fe^{9+}	Photoexcitation	140-60 $\AA$	Exp

144. H. Ray
Studies on E2 transition in the Na-like highly stripped ion Fe XVI.
Astrophys. J., Part 1 579, 914 (2002)

hν + Fe	Photoexcitation	300,000-3,000,000 cm^{-1}	Th

145. A. K. Bhatia, E. Landi
Atomic data and spectral line intensities for Si VII.
Astrophys. J., Part 1 585, 587 (2003)

hν + Si^{6+}	Photoexcitation	15-75 Ry	Th

146. E. Charro, I. Martin
Intensities of E2 spectral lines in the astrophysically important ion Mg II.
Astrophys. J., Part 1 585, 1191 (2003)

hν + Mg^{+}	Photoexcitation	40,000-0 $\AA$	Th

147. Ch. Jungen, K. P. Huber, M. Jungen, G. Stark
The near-threshold absorption spectrum of N_2.
J. Chem. Phys. 118, 4517 (2003)

hν + N$_2$	Photoexcitation	118,720-125,425 cm^{-1}	Th

148. M. Koide, F. Koike, R. Wehlitz, M.-T. Huang, T. Nagata, J. C. Levin, S. Fritzsche, B. D. DePaola, S. Ohtani, Y. Azuma
New window resonances in the potassium 3s photoabsorption spectrum.
J. Phys. Soc. Jpn. 71, 1676 (2002)

hν + K	Total Absor., Scat.	35-41.5 eV	Exp

149. V. N. Sivkov, A. S. Vinogradov
The oscillator strength of the π_g shape resonance in the absorption K-spectrum of a nitrogen molecule.
Opt. Spectrosc. 93, 395 (2002)

hν + N$_2$	Total Absor., Scat.	277-1486 eV	Exp

150. K. R. Karim
Compton profiles of variously ionized carbon atoms with configurations $1s^m 2s^n 2p^q$.
Phys. Scr. 66, 234 (2002)

hν + C	Elastic Scattering		Th
hν + C^+	Elastic Scattering		Th
hν + C^{2+}	Elastic Scattering		Th
hν + C^{3+}	Elastic Scattering		Th

151. T. Jacob, D. Martin, F. Stietz, F. Trager, B. Fricke
Resonant laser-induced desorption of metal atoms: A fully relativistic density-functional theory study.
Phys. Rev. B 66, 233409 (2002)

hν + Na	Photoionization	0-3.5 eV	Th
hν + K	Photoionization	0-3.5 eV	Th

152. H. Rottke, C. Trump, M. Wittmann, G. Korn, W. Sandner, R. Moshammer, A. Dorn, C. D. Schroeter, D. Fischer, J. R. Crespo Lopez-Urrutia, P. Neumayer, J. Deipenwisch, C. Hoehr, B. Feuerstein, J. Ullrich
Coincident fragment detection in strong field photoionization and dissociation of H_2.
Phys. Rev. Lett. 89, 013001 (2002)

hν + H_2	Photodissociation	795 nm	Exp
hν + H_2	Photoionization	795 nm	Exp

153. A. Knapp, A. Kheifets, I. Bray, Th. Weber, A. L. Landers, S. Schoessler, T. Jahnke, J. Nickles, S. Kammer, O. Jagutzki, L. Ph. H. Schmidt, T. Osipov, J. Roesch, M. H. Prior, H. Schmidt-Boecking, C. L. Cocke, R. Doerner
Mechanisms of photo double ionization of helium by 530 eV photons.
Phys. Rev. Lett. 89, 033004 (2002)

hν + He	Photoionization	530 eV	Exp

154. T. Y. Shi, C. D. Lin
Double photoionization and transfer ionization of He: Shakeoff theory revisited.
Phys. Rev. Lett. 89, 163202 (2002)

hν + He	Photoionization		Th

155. A. A. Vasilyev, I. M. Savukov, M. S. Safronova, H. G. Berry
Measurement of the 6s-7p transition probabilities in atomic cesium and a revised value for the weak charge Q_w.
Phys. Rev. A 66, 020101 (2002)

hν + Cs	Photoexcitation	457 nm	Exp

156. E. Shigemasa, T. Gejo, M. Nagasono, T. Hatsui, N. Kosugi
Double and triple excitations near the K-shell ionization threshold of N_2 revealed by symmetry-resolved spectroscopy.
Phys. Rev. A 66, 022508 (2002)

hν + Ne	Photoexcitation	0.7-9.3 eV	Exp
hν + Ne	Photoionization	0.7-9.3 eV	Exp

157. G. Snell, B. Langer, A. T. Young, N. Berrah
Spin-polarization measurements of the krypton $M_{4,5}NN$ and xenon $N_{4,5}OO$ Auger electrons: Orientation and intrinsic parameters.
Phys. Rev. A 66, 022701 (2002)

hν + Kr	Photoexcitation	130-530 eV	Exp
hν + Kr	Photoionization	130-530 eV	Exp
hν + Xe	Photoexcitation	130-530 eV	Exp
hν + Xe	Photoionization	130-530 eV	Exp

158. S. K. Semenov, N. A. Cherepkov
Generalization of atomic random-phase-approximation method for diatomic molecules. II. N_2 K-shell photoionization.
Phys. Rev. A 66, 022708 (2002)

hν + N_2	Photoionization	410-460 eV	Th

159. H. W. van der Hart, C. H. Greene
Regularities and irregularities in partial photoionization cross sections of He.
Phys. Rev. A 66, 022710 (2002)

hν + He	Photoionization	75 eV	Th

160. J. Zeng, J. Yuan
Photoionization of Be-like neon (Ne VII) from the low-lying states: Energies, widths, branching ratios, and oscillator strengths of the 1s-2p resonances.
Phys. Rev. A 66, 022715 (2002)

hν + Ne^{6+}	Photon Collisions	65 Ry	Th
hν + Ne^{6+}	Photoionization	65 Ry	Th

161. I. Cacelli, A. Fioretti, C. Gabbanini, M. Mazzoni, M. Persico
Line-shape study of two-color–three-proton ionization of Rb atoms.
Phys. Rev. A 66, 023408 (2002)

hν + Rb	Photoionization	6286-6318 $\AA$	E/T
3hν + Rb	Photoionization	6286-6318 $\AA$	E/T

162. J. C. Lopez Vieyra, A. V. Turbiner
$H_3{}^{2+}$ molecular ion in a strong magnetic field: Triangular configuration.
Phys. Rev. A 66, 023409 (2002)

$H_2{}^+$ + H^+	Photon Collisions	10^4-10^7 T	Th

163. V. I. Korobov
Nonrelativistic ionization energy for the helium ground state.
Phys. Rev. A 66, 024501 (2002)

hν + He	Photon Collisions		Th
hν + He	Photoionization		Th

164. L. Labzowsky, D. Solovjev
Intensity distribution shift for the resonant photon scattering on the hydrogen atom.
Phys. Rev. A 66, 024503 (2002)

hν + H	Photon Collisions		Th
hν + H	Elastic Scattering		Th
hν + H	Fluorescence		Th

165. H. M. Nilsen, L. B. Madsen, J. P. Hansen
Ionization and excitation dynamics of H(1s) in short intense laser pulses. II.
Phys. Rev. A 66, 025402 (2002)

hν + H	Photoexcitation	1 a.u.	Th
hν + H	Photoionization	1 a.u.	Th

166. J. Zeng, J. Yuan
Resonance energies, oscillator strengths and autoionization widths of the 1s-2p excitations from O IV low-lying states.
J. Phys. B 35, 3041 (2002)

hν + O^{3+}	Photoexcitation	40 Ry	Th

167. K. Nobusada
A theoretical simulation of symmetry-resolved spectra for excitation to the $C1s^{-1}2\Pi_u$ Renner-Teller states in CO_2.
J. Phys. B 35, 3055 (2002)

hν + CO_2	Photon Collisions		Th

168. K. Furuya, A. Matsuo, T. Ogawa
The production of CO^+(A $^2\Pi$) from dissociative ionization of CO_2: a fragment ion-photon coincidence spectroscopic investigation.
J. Phys. B 35, 3077 (2002)

hν + CO_2	Photodissociation	120 eV	Exp
hν + CO_2	Photoionization	120 eV	Exp

169. K. Pachucki
The complete $m\alpha^6$ contribution to the helium 2 ^3P_J energy.
J. Phys. B 35, 3087 (2002)

hν + He	Photoionization		Th

170. A. V. Golovin, N. A. Cherepkov
Angular distributions of photoelectrons from K-shells of a fixed-in-space CO molecule calculated by the multiple scattering Xα method.
J. Phys. B 35, 3191 (2002)

hν + CO	Photoionization	400 eV	Th

171. S. A. Novikov, A. N. Hopersky
Two-photon knocking-out of two electrons of the $1s^2$-shell of the neon atom.
J. Phys. B 35, L339 (2002)

hν + Ne	Total Absor., Scat.	840-1015 eV	Th

172. R. Diez Muino, D. Rolles, F. J. Garcia de Abajo, C. S. Fadley, M. A. Van Hove
Angular distributions of electrons photoemitted from core levels of oriented diatomic molecules: multiple scattering theory in non-spherical potentials.
J. Phys. B 35, L359 (2002)

hν + CO	Photoionization	10-21 eV	Th
hν + N_2	Photoionization	10-21 eV	Th

173. A. A. Willis, E. Sokell, T. W. Gorczyca, W. Feng, M. Wiedenhoeft, S. E. Canton, N. Berrah
Importance of spin-orbit interactions for the He 2lnl' states revealed by a novel use of angle-resolved photoelectron spectroscopy.
J. Phys. B 35, L367 (2002)

hν + He	Photoionization	64.5-65.5 eV	E/T

174. H. Kjeldsen, F. Folkmann, F. Innocenti, L. Zuin, J. E. Hansen
Observation and interpretation of the metastable $3p^6 3d$ Ca^+ ion spectrum in the 3p excitation region.
J. Phys. B 35, L375 (2002)

hν + Ca^+	Photoionization	28-30.5 eV	Exp

175. I. Bray, D. V. Fursa, A. S. Kheifets, A. T. Stelbovics
Electrons and photons colliding with atoms: development and application of the convergent close-coupling method.
J. Phys. B 35, R117 (2002)

hν + He	Photon Collisions		Th

176. P. Lablanquie, S. Sheinerman, F. Penent, R. I. Hall, M. Ahmad, T. Aoto, Y. Hikosaka, K. Ito
Photoemission of threshold electrons in the vicinity of the xenon 4d hole: dynamics of Auger decay.
J. Phys. B 35, 3265 (2002)

hν + Xe	Photoexcitation	64-120 eV	E/T
hν + Xe	Photoionization	64-120 eV	E/T

177. M. Kitajima, M. Okamoto, M. Hoshino, H. Tanaka, S. Fritzsche, N. M. Kabachnik, I. P. Sazhina, Y. Shimizu, K. Ueda
Experimental and theoretical study of the Auger cascade following 4d -¿ 6p photoexcitation in Xe.
J. Phys. B 35, 3327 (2002)

hν + Xe	Photoexcitation	65.11 eV	Exp
hν + Xe	Photoionization	65.11 eV	Exp

178. K. Kawatsura, H. Yamaoka, M. Oura, T. Hayaishi, T. Sekioka, A. Agui, A. Yoshigoe, F. Koike
The 1s-2p resonance photoionization measurement of O^+ ions in comparison with an isoelectronic species Ne^{3+}.
J. Phys. B 35, 4147 (2002)

hν + O^+	Photoionization	525-540 eV	Th
hν + Ne^{3+}	Photoionization	525-540 eV	Th

179. O. Zatsarinny, T. W. Gorczyca, C. F. Fischer
Photodetachment of He^- 1s2s2p $^4P^0$ in the region of the 1s threshold.
J. Phys. B 35, 4161 (2002)

hν + He^-	Photodetachment	38-52 eV	Th

180. A. B. Borisov, X. Song, F. Frigeni, Y. Dai, Y. Koshman, W. A. Schroeder, J. Davis, K. Boyer, C. K. Rhodes
Ultraviolet-infrared wavelength scalings for strong field induced L-shell emissions from Kr and Xe clusters.
J. Phys. B 35, L461 (2002)

hν + Kr	Photoexcitation	800-248 nm	Exp
hν + Xe	Photoexcitation	800-248 nm	Exp

181. V. S. Lebedev, L. P. Presnyakov
Photodissociation from a manifold of rovibrational states and free-free absorption by a diatomic molecule.
J. Phys. B 35, 4347 (2002)

hν + H_2^+	Total Absor., Scat.	0-25 eV	Th
hν + H_2^+	Photodissociation	0-25 eV	Th
hν + H_2^+	Free-Free Transition	0-25 eV	Th

182. M. Kato, K. Kameta, T. Odagiri, N. Kouchi, Y. Hatano
Single-hole one-electron superexcited states and doubly excited states of methane in the vacuum ultraviolet range as studied by dispersed fluorescence spectroscopy.
J. Phys. B 35, 4383 (2002)

hν + CH_4	Fluorescence	10-40 eV	Exp

183. G. Oehrwall, M. M. Sant'Anna, W. C. Stolte, I. Dominguez-Lopez, L.T.N. Dang, A. S. Schlachter, D. W. Lindle
Anion and cation formation following core-level photoexcitation of CO_2.
J. Phys. B 35, 4543 (2002)

hν + CO_2	Photodissociation	285-570 eV	Exp
hν + CO_2	Elastic Scattering	285-570 eV	Exp
hν + CO_2	Photoionization	285-570 eV	Exp

184. L. Feng, H. W. van der Hart
Double photoionization of doubly exited helium.
Phys. Rev. A 66, 031402 (2002)

hν + He	Photoionization	0.8-5.5 a.u.	Th
hν + He^*	Photoionization	0.8-5.5 a.u.	Th

185. K. Okada, H. Yoshida, Y. Senba, K. Kamimori, Y. Tamenori, H. Ohashi, K. Ueda, T. Ibuki
Angle-resolved ion-yield measurements of CO_2 in the O 1s to Rydberg excitation region.
Phys. Rev. A 66, 032503 (2002)

hν + CO_2	Photodissociation	538-541.5 eV	Exp

186. C. Sur, D. Chattarji
Angular correlation theory for double photoionization in a rare-gas atom: Ionization by polarized photons.
Phys. Rev. A 66, 032711 (2002)

hν + Xe	Photoionization	94.5 eV	Th

187. G. Hinojosa, A. M. Covington, R. A. Phaneuf, M. M. Sant'Anna, R. Hernandez, I. R. Covington, I. Dominguez, J. D. Bozek, A. S. Schlachter, I. Alvarez, C. Cisneros
Formation of long-lived CO^{2+} via photoionization of CO^+.
Phys. Rev. A 66, 032718 (2002)

hν + CO^+	Photoionization	25-45 eV	Exp

188. M. Vogel, K. Hansen, A. Herlert, L. Schweikhard
Multisequential photofragmentation of size-selected gold cluster ions.
Phys. Rev. A 66, 033201 (2002)

hν + Au_{17}^+	Total Absor., Scat.	3-15 eV	Exp
hν + Au_{17}^+	Photodissociation	3-15 eV	Exp
hν + Au_{18}^+	Total Absor., Scat.	3-15 eV	Exp
hν + Au_{18}^+	Photodissociation	3-15 eV	Exp
hν + Au_{19}^+	Total Absor., Scat.	3-15 eV	Exp
hν + Au_{19}^+	Photodissociation	3-15 eV	Exp
hν + Au_{20}^+	Total Absor., Scat.	3-15 eV	Exp
hν + Au_{20}^+	Photodissociation	3-15 eV	Exp
hν + Au_{21}^+	Total Absor., Scat.	3-15 eV	Exp
hν + Au_{21}^+	Photodissociation	3-15 eV	Exp

189. K. Mishima, M. Hayashi, J. Yi, S. H. Lin, L. Selzle, E. W. Schlag
Generalization of Keldysh's theory.
Phys. Rev. A 66, 033401 (2002)

hν + H	Photoionization	3000-248 nm	Th
hν + N_2	Photoionization	3000-248 nm	Th

190. X. M. Tong, Z. X. Zhao, C. D. Lin
Theory of molecular tunneling ionization.
Phys. Rev. A 66, 033402 (2002)

hν + Ar	Photoionization	10^{13}-10^{15} W/cm^2	Th
hν + Kr	Photoionization	10^{13}-10^{15} W/cm^2	Th
hν + Xe	Photoionization	10^{13}-10^{15} W/cm^2	Th
hν + H_2	Photoionization	10^{13}-10^{15} W/cm^2	Th
hν + H_2^+	Photoionization	10^{13}-10^{15} W/cm^2	Th

$h\nu$ + D_2	Photoionization	10^{13}-10^{15} W/cm^2	Th
$h\nu$ + CO	Photoionization	10^{13}-10^{15} W/cm^2	Th
$h\nu$ + N_2	Photoionization	10^{13}-10^{15} W/cm^2	Th
$h\nu$ + NO	Photoionization	10^{13}-10^{15} W/cm^2	Th
$h\nu$ + O_2	Photoionization	10^{13}-10^{15} W/cm^2	Th
$h\nu$ + F_2	Photoionization	10^{13}-10^{15} W/cm^2	Th
$h\nu$ + S_2	Photoionization	10^{13}-10^{15} W/cm^2	Th
$h\nu$ + SO	Photoionization	10^{13}-10^{15} W/cm^2	Th

191. M. Lein, J. P. Marangos, P. L. Knight
Electron diffraction in above-threshold ionization of molecules.
Phys. Rev. A 66, 051404 (2002)

$h\nu$ + H_2	Photoionization	780 nm	E/T

192. C. Bahrim, U. Thumm, A. A. Khuskivadze, I. I. Fabrikant
Near-threshold photodetachment of heavy alkali-metal anions.
Phys. Rev. A 66, 052712 (2002)

$h\nu$ + Rb^-	Photodetachment	0.001-0.06 eV	Th
$h\nu$ + Cs^-	Photodetachment	0.001-0.06 eV	Th
$h\nu$ + Fr^-	Photodetachment	0.001-0.06 eV	Th

193. J. L. Sanz-Vicario, E. Lindroth, N. Brandefelt
Photodetachment of negative helium ions below and above the 1s ionization threshold: A complex scaled configuration-interaction approach.
Phys. Rev. A 66, 052713 (2002)

$h\nu$ + He^-	Photodetachment	0-5 eV	E/T

194. M. Sukharev, E. Charron, A. Suzor-Weiner
Quantum control of double ionization of calcium.
Phys. Rev. A 66, 053407 (2002)

$h\nu$ + Ca	Photoionization	1.55 eV	E/T

195. K. Mishima, M. Hayashi, J. Yi, S. H. Lin, H. L. Selzle, E. W. Schlag
Theoretical studies of the long-range Coulomb potential effect on photoionization by strong lasers.
Phys. Rev. A 66, 053408 (2002)

$h\nu$ + H	Photoionization	10 μ m	Th

196. A. Kondorskiy, H. Nakamura
Photodissociation of H_2^+ and HD^+ in an intense laser field.
Phys. Rev. A 66, 053412 (2002)

$h\nu$ + H_2^+	Photodissociation	392-785 nm	E/T
$h\nu$ + HD^+	Photodissociation	392-785 nm	E/T

197. J. Lambert, M. W. Noel, T. F. Gallagher, J. Chen, C. H. Nam
Ion momentum distributions for He single and double ionization in strong laser fields.
Phys. Rev. A 66, 053415 (2002)

$h\nu$ + He	Photoionization	800 nm	E/T
$h\nu$ + Li	Photoexcitation	800 nm	E/T
$h\nu$ + Li^*	Photoexcitation	800 nm	E/T

198. A. Krug, A. Buchleitner
Microwave ionization of alkali-metal Rydberg states in a realistic numerical experiment.
Phys. Rev. A 66, 053416 (2002)

hν + Li	Photoionization	36 GHz	E/T

199. D. L. Hansen, W. C. Stolte, O. Hemmers, R. Guillemin, D. W. Lindle
Anion formation moderated by post-collision interaction following core-level photoexcitation of CO.
J. Phys. B 35, L381 (2002)

hν + CO	Photodissociation	295-545 eV	E/T
hν + CO	Photoexcitation	295-545 eV	E/T

200. H. Kjeldsen, B. Kristensen, F. Folkmann, T. Andersen
Measurements of the absolute photoionization cross section of Fe^+ ions from 15.8 to 180 eV.
J. Phys. B 35, 3655 (2002)

hν + Fe^+	Photoionization	15.8-180 eV	E/T

201. D. P. Seccombe, S. A. Collins, T. J. Reddish, P. Selles, L. Malegat, A. K. Kazansky, A. Huetz
Photodouble ionization differential cross sections for D_2 with various electron energy sharing conditions.
J. Phys. B 35, 3767 (2002)

hν + H_2	Photoionization	76 eV	E/T

202. A. Knapp, M. Walter, Th. Weber, A. L. Landers, S. Schoessler, T. Jahnke, M. Schoeffler, J. Nickles, S. Kammer, O. Jagutzki, L.Ph.H. Schmidt, T. Osipov, J. Roesch, M. H. Prior, H. Schmidt-Boecking, C. L. Cocke, J. Feagin, R. Doerner
Energy sharing and asymmetry parameters for photo double ionization of helium 100 eV above threshold in single-particle and Jacobi coordinates.
J. Phys. B 35, L521 (2002)

hν + He	Photoionization	179 eV	E/T

203. J. Zhang, W. Zhang, Z. Xu, X. Li, P. Fu, D.-S. Guo, R. R. Freeman
The calculation of photoelectron angular distributions with jet-like structure from scattering theory.
J. Phys. B 35, 4809 (2002)

hν + Xe	Photoionization	800 nm	E/T

204. A. Cionga, M. Fifirig, F. Ehlotzky
Circular dichroism in the two-colour two-photon ionization of hydrogen.
J. Phys. B 35, 4875 (2002)

hν + H_2	Photoionization	1-1.55 eV	Th
nhν + H_2	Photoionization	1-1.55 eV	Th

205. K. M. Aggarwal, F. P. Keenan, A. Z. Msezane
Oscillator strengths for transitions in C-like ions between K XIV and Mn XX.
Astron. Astrophys. 401, 377 (2003)

hν + K^{13+}	Photoexcitation	0-65 Ry	Th
hν + Sc^{15+}	Photoexcitation	0-65 Ry	Th
hν + Ti^{16+}	Photoexcitation	0-65 Ry	Th
hν + V^{17+}	Photoexcitation	0-65 Ry	Th
hν + Cr^{18+}	Photoexcitation	0-65 Ry	Th
hν + Mn^{19+}	Photoexcitation	0-65 Ry	Th

206. P. Beiersdorfer, E. Traebert, E. H. Pinnington
Experimental transition rate of the green coronal line of Fe XIV.
Astrophys. J., Part 1 587, 836 (2003)

hν + Fe^{13+}	Photoexcitation	5303 $\AA$	Exp

3.1.1.2 Electron Collisions

207. D. Strasser, J. Levin, H. B. Pedersen, O. Heber, A. Wolf, D. Schwalm, D. Zaijfman
Branching ratios in the dissociative recombination of polyatomic ions: The H_3^+ case.
Phys. Rev. A 65, 010702 (2002)

e + H_3^+	Dissociation	0.001-30 eV	E/T
e + H_3^+	Recombination	0.001-30 eV	E/T

208. M. S. Pindzola
Line-emission cross section for Fe^{23+}.
Phys. Rev. A 65, 014701 (2002)

e + Fe^{23+}	Recombination	800-1600 eV	Th
e + Fe^{23+}	Excitation	800-1600 eV	Th

209. M. Tokman, N. Ekloew, P. Glans, E. Lindroth, R. Schuch, G. Gwinner, D. Schwalm, A. Wolf, A. Hoffknecht, A. Mueller, S. Schippers
Dielectronic recombination resonances in F^{6+}.
Phys. Rev. A 66, 012703 (2002)

e + F^{6+}	Recombination	0.003-0.6 eV	E/T

210. P. L. Bartlett, A. T. Stelbovics
Calculation of electron-impact total-ionization cross sections.
Phys. Rev. A 66, 012707 (2002)

e + Ne	Ionization	7-3000 eV	Th
e + Si	Ionization	7-3000 eV	Th
e + P	Ionization	7-3000 eV	Th
e + S	Ionization	7-3000 eV	Th
e + Ar	Ionization	7-3000 eV	Th
e + Ge	Ionization	7-3000 eV	Th
e + As	Ionization	7-3000 eV	Th
e + Se	Ionization	7-3000 eV	Th
e + Kr	Ionization	7-3000 eV	Th
e + Sn	Ionization	7-3000 eV	Th
e + Sb	Ionization	7-3000 eV	Th
e + Te	Ionization	7-3000 eV	Th
e + Xe	Ionization	7-3000 eV	Th

211. Y.-K. Kim, J.-P. Desclaux
Ionization of carbon, nitrogen, and oxygen by electron impact.
Phys. Rev. A 66, 0127080 (2002)

e + C	Excitation	12-5000 eV	Th
e + C	Ionization	12-5000 eV	Th
e + N	Excitation	12-5000 eV	Th
e + N	Ionization	12-5000 eV	Th
e + O	Excitation	12-5000 eV	Th
e + O	Ionization	12-5000 eV	Th

212. J. G. Childers, N.L.S. Martin
Investigation of complex ionization amplitudes in xenon by (e,2e) spectroscopy.
Phys. Rev. A 66, 012709 (2002)

e + Xe	Angular Scattering	150 eV	E/T
e + Xe	Ionization	150 eV	E/T

213. P. F. Weck, O. A. Fojon, B. Joulakian, C. R. Stia, J. Hanssen, R. D. Rivarola
Two-center continuum approximation with correct boundary conditions for single-electron emission in e^- + H_2 collisions.
Phys. Rev. A 66, 012711 (2002)

e + H_2	Angular Scattering	2000-4168 eV	Th
e + H_2	Ionization	2000-4168 eV	Th

214. V. V. Flambaum, A. A. Gribakina, G. F. Gribakin, C. Harabati
Electron recombination with multicharged ions via chaotic many-electron states.
Phys. Rev. A 66, 012713 (2002)

e + Au^{25+}	Recombination	10^{-6}-1 eV	Th

215. M.-T. Huang, L. Zhang, S. Hasegawa, S. H. Southworth, L. Young
Measurement of the electron-impact double-to-single ionization ratio using trapped lithium.
Phys. Rev. A 66, 012715 (2002)

e + Li	Ionization	200-1500 eV	Exp

216. J. Colgan, M. S. Pindzola, F. Robicheaux
Fourier transform method of calculating total cross sections using the time-dependent close-coupling theory.
Phys. Rev. A 66, 012718 (2002)

e + Li^{2+}	Ionization	140-1000 eV	Th

217. M.-T. Lee, I. Iga, L. M. Brescansin, L. E. Machado, F.B.C. Machado
Theoretical study on electron-free-radical scattering: An application to CF.
Phys. Rev. A 66, 012720 (2002)

e + CF	Elastic Scattering	1-500 eV	Th
e + CF	Angular Scattering	1-500 eV	Th
e + CF	Excitation	1-500 eV	Th

218. C. Szmytkowski, S. Kwitnewski, P. Mozejko, E. Ptasinska-Denga
Low-energy electron-hexafluoropropene (C_3F_6) scattering.
Phys. Rev. A 66, 014701 (2002)

e + C_3F_8	Elastic Scattering	0.5-30 eV	Exp
e + C_3F_6	Elastic Scattering	0.5-30 eV	Exp

219. H. L. Zhang, D. H. Sampson
Resonance contributions to collision strengths for transitions between magnetic sublevels in highly charged ions by impact with an electron beam.
Phys. Rev. A 66, 042704 (2002)

e + O^{6+}	Recombination	43.5-517 Ry	Th
e + O^{6+}	Excitation	43.5-517 Ry	Th
e + Fe^{24+}	Recombination	43.5-517 Ry	Th
e + Fe^{24+}	Excitation	43.5-517 Ry	Th

220. G. K. James, D. Dziczek, J. A. Slevin, I. Bray
Polarization of Lyman-β radiation from atomic hydrogen excited by electron impact from near-threshold energy to 1000 eV.
Phys. Rev. A 66, 042710 (2002)

e + H	Excitation	15-1000 eV	Exp

221. A. E. Klasnikov, A. N. Artemyev, T. Beier, J. Eichler, V. M. Shabaev, V. A. Yerokhin
Spin-flip process in radiative recombination of an electron with H- and Li-like uranium.
Phys. Rev. A 66, 042711 (2002)

e + U^{89+}	Angular Scattering	5-2000 keV	Th
e + U^{89+}	Recombination	5-2000 keV	Th
e + U^{91+}	Angular Scattering	5-2000 keV	Th
e + U^{91+}	Recombination	5-2000 keV	Th

222. O. Mauron, J.-Cl. Dousse
Double KL ionization in Al, Ca, and Co targets bombarded by low-energy electrons.
Phys. Rev. A 66, 042713 (2002)

e + Al	Ionization	1.5-20 keV	Exp
e + Ca	Ionization	1.5-20 keV	Exp
e + Co	Ionization	1.5-20 keV	Exp

223. Z.-S. Yuan, L.-F. Zhu, X.-J. Liu, Z.-P. Zhong, W.-B. Li, H.-D. Cheng, K.-Z. Xu
Fast-electron-impact study on excitations of 4p, 4s, and 3d electrons of krypton.
Phys. Rev. A 66, 062701 (2002)

e + Kr	Excitation	0-100 eV	E/T

224. K. Houfek, M. Cizek, J. Horacek
Calculation of rate constants for dissociative attachment of low-energy electrons to hydrogen halides HCl, HBr, and HI and their deuterated analogs.
Phys. Rev. A 66, 062702 (2002)

e + HBr	Attachment	0-2 eV	Th
e + HBr	Dissociation	0-2 eV	Th
e + DBr	Attachment	0-2 eV	Th
e + DBr	Dissociation	0-2 eV	Th
e + HCl	Attachment	0-2 eV	Th
e + HCl	Dissociation	0-2 eV	Th
e + HI	Attachment	0-2 eV	Th
e + HI	Dissociation	0-2 eV	Th
e + DCl	Attachment	0-2 eV	Th
e + DCl	Dissociation	0-2 eV	Th
e + DI	Attachment	0-2 eV	Th
e + DI	Dissociation	0-2 eV	Th

225. M.-T. Lee, M. F. Lima, A.M.C. Sobrinhoh, I. Iga
Theoretical study on electron-free radical collisions: An application to SiH and SiF.
Phys. Rev. A 66, 062703 (2002)

e + SiH	Elastic Scattering	1-500 eV	Th
e + SiH	Angular Scattering	1-500 eV	Th
e + SiH	Total Scattering	1-500 eV	Th
e + SiF	Elastic Scattering	1-500 eV	Th
e + SiF	Angular Scattering	1-500 eV	Th
e + SiF	Total Scattering	1-500 eV	Th

226. S. J. Brotton, P. McKenna, G. Gribakin, I. D. Williams
Angular distribution for the elastic scattering of electrons from Ar^+ ($3s^2 3p^5\ ^2P$) above the first inelastic threshold.
Phys. Rev. A 66, 062706 (2002)

e + Ar^+	Elastic Scattering	16 eV	Exp
e + Ar^+	Angular Scattering	16 eV	Exp

227. J. Colgan, M. S. Pindzola
Time-dependent close-coupling studies of the electron-impact ionization of excited-state helium.
Phys. Rev. A 66, 062707 (2002)

e + He	Ionization	0-190 eV	Th
e + He^*	Ionization	0-190 eV	Th

228. X.-F. Jia
Structure in differential cross sections for electron-impact ionization of Li^+ ($1s^2$) in the coplanar equal-energy-sharing geometry.
Phys. Rev. A 66, 062708 (2002)

e + Li^+	Angular Scattering	135.6 eV	Th
e + Li^+	Ionization	135.6 eV	Th

229. S. Jones, D. H. Madison
Slow convergence of the Born approximation for electron-atom ionization.
Phys. Rev. A 66, 062711 (2002)

e + H	Angular Scattering	0.25-64 keV	Th
e + H	Ionization	0.25-64 keV	Th

230. A. K. Bhatia
Electron-He^+ elastic scattering.
Phys. Rev. A 66, 064702 (2002)

e + He^+	Elastic Scattering	0.4-1.4 a.u.	Th

231. A. S. Kheifets, I. Bray, J. Berakdar, C. Dal Cappello
Comparative theoretical study of (e,3e) on helium: Coulomb-waves versus close-coupling approach.
J. Phys. B 35, L15 (2002)

e + He	Angular Scattering	1 keV	Th
e + He	Ionization	1 keV	Th

232. M. Allan, O. Moreira
Excitation of the symmetric and antisymmetric stretch vibrations of H_2O by electron impact.
J. Phys. B 35, L37 (2002)

e + H_2O	Angular Scattering	0.05-6 eV	E/T
e + H_2O	Excitation	0.05-6 eV	E/T

233. S. Segui, M. Dingfelder, J. M. Fernandez-Varea, F. Salvat
The structure of the Bethe ridge. Relativistic Born and impulse approximations.
J. Phys. B 35, 33 (2002)

e + Ne	Ionization	1000-10^8 a.u.	Th

234. Y. Khajuria, L. Q. Chen, X. J. Chen, K. Z. Xu
The triple differential cross sections of ionic targets in the coplanar to perpendicular plane geometry.
J. Phys. B 35, 93 (2002)

e + Li^+	Angular Scattering	60-116 eV	Th
e + Li^+	Ionization	60-116 eV	Th
e + Cu^+	Angular Scattering	60-116 eV	Th
e + Cu^+	Ionization	60-116 eV	Th
e + Rb^+	Angular Scattering	60-116 eV	Th
e + Rb^+	Ionization	60-116 eV	Th
e + Ag^+	Angular Scattering	60-116 eV	Th
e + Ag^+	Ionization	60-116 eV	Th
e + Cs^+	Angular Scattering	60-116 eV	Th
e + Cs^+	Ionization	60-116 eV	Th

235. 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: time-reversed recombination of C^{3+} with electrons.
J. Phys. B 35, L137 (2002)

e + C^{3+}	Recombination	41-57; 48-49 eV	E/T

236. J. H. Macek, N. B. Avdonina
Lassettre's theorem for excitation of ions by charged particle impact.
J. Phys. B 35, 1775 (2002)

e + Zn^{+}	Excitation	0-50 keV	Th

237. B. G. Lindsay, R. Rejoub, R. F. Stebbings
Comment on 'Asymptotic behaviour of the total cross section for double ionization of helium-like ions by electrons.'
J. Phys. B 35, 1795 (2002)

e + He	Ionization	1-4 keV	Exp

238. L. W. Garland, A. Jaron, J. Z. Kaminski, R. M. Potvliege
Off-shell effects in laser-assisted electron scattering at low frequency.
J. Phys. B 35, 2861 (2002)

e + He	Elastic Scattering	9.5 eV	Th

239. T. Nishimura, F. A. Gianturco
Vibrational excitations of CH_4 by electron impact: a close-coupling treatment.
J. Phys. B 35, 2873 (2002)

e + CH_4	Excitation	0.1-12 eV	Th

240. K. Bartschat, A. Dasgupta, J. L. Giuliani
Electron-impact excitation of molybdenum from the $(4d^5 5s)a^7S$ ground state.
J. Phys. B 35, 2899 (2002)

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

241. A. Florescu, O. I. Obolensky, R. H. Pratt
Structures in low-energy classical bremsstrahlung.
J. Phys. B 35, 2911 (2002)

e + Al	Bremsstrahlung	1-10,000 eV	Th
e + Al	Angular Scattering	1-10,000 eV	Th

242. B. Gstir, S. Denifl, G. Hanel, M. Ruemmele, T. Fiegele, P. Cicman, M. Stano, S. Matejcik, P. Scheier, K. Becker, A. Stamatovic, T. D. Maerk
Electron impact multiple ionization of neon, argon and xenon atoms close to threshold: appearance energies and Wannier exponents.
J. Phys. B 35, 2993 (2002)

e + Ne	Ionization	8-425 eV	Exp
e + Ar	Ionization	8-425 eV	Exp
e + Xe	Ionization	8-425 eV	Exp

243. F. Delahaye, A. K. Pradhan
Electron impact excitation of helium-like oxygen up to n = 4 levels including radiation damping.
J. Phys. B 35, 3377 (2002)

e + O^{6+}	Excitation	41-49 Ry	Th

244. M. J. Hussey, A. J. Murray
Low energy (e, 2e) differential cross-section measurements on the $3\sigma_g$ and $1\pi_u$ molecular orbitals of N_2.
J. Phys. B 35, 3399 (2002)

e + N_2	Angular Scattering	25.6-76.7 eV	Exp
e + N_2	Ionization	25.6-76.7 eV	Exp

245. C. A. Ramsbottom, M. P. Scott, K. L. Bell, F. P. Keenan, B. M. McLaughlin, A. G. Sunderland, V. M. Burke, C. J. Noble, P. G. Burke
Electron impact excitation of the iron peak element Fe II.
J. Phys. B 35, 3451 (2002)

e + Fe^{+}	Excitation	0.1-0.5 Ry	Th

246. A. N. Grum-Grzhimailo, K. Bartschat
Near-threshold electron-impact excitation of 5p^{5}6s states in Xe: an R-matrix study.
J. Phys. B 35, 3479 (2002)

e + Xe	Angular Scattering	8.3-10.5 eV	Th
e + Xe	Excitation	8.3-10.5 eV	Th
e + Xe*	Angular Scattering	8.3-10.5 eV	Th
e + Xe*	Excitation	8.3-10.5 eV	Th

247. M. A. Green, T. Maddern, M. J. Brunger, L. Campbell, D. C. Cartwright, W. R. Newell, P.J.O. Peubner
Differential cross sections for electron impact excitation of the Herzberg pseudocontinuum of molecular oxygen.
J. Phys. B 35, 3793 (2002)

e + O$_2$	Angular Scattering	9-20 eV	Exp
e + O$_2$	Excitation	9-20 eV	Exp

248. M. Piwinski, D. Dziczek, R. Srivastava, M. Gradziel, S. Chwirot
Electron-photon polarization correlation study of the 5^{1}P$_1$ state of Cd atoms excited by electron impact.
J. Phys. B 35, 3821 (2002)

e + Cd	Angular Scattering	100 eV	Exp
e + Cd	Fluorescence	100 eV	Exp
e + Cd	Excitation	100 eV	Exp

249. H. L. Zhang, S. Cherkani-Hassani, C. Belenger, M. Duponchelle, M. Khouilid, E. M. Oualim, P. Defrance
Electron impact ionization of argon ions (q = 4-11).
J. Phys. B 35, 3829 (2002)

e + Ar^{4+}	Ionization	70-4000 eV	Exp
e + Ar^{5+}	Ionization	70-4000 eV	Exp
e + Ar^{6+}	Ionization	70-4000 eV	Exp
e + Ar^{7+}	Ionization	70-4000 eV	Exp
e + Ar^{8+}	Ionization	70-4000 eV	Exp
e + Ar^{9+}	Ionization	70-4000 eV	Exp
e + Ar^{10+}	Ionization	70-4000 eV	Exp
e + Ar^{11+}	Ionization	70-4000 eV	Exp

250. M. Kampp, C. T. Whelan, H.R.J. Walters
On the electron impact ionization of multi-charged ions: a theoretical investigation of relativistic effects.
J. Phys. B 35, 3923 (2002)

e + Ag^{46+}	Ionization	300-500 keV	Th
e + U^{91+}	Ionization	300-500 keV	Th

251. A. Faure, J. Tennyson
Electron-impact rotational excitation of symmetric-top molecular ions.
J. Phys. B 35, 3945 (2002)

e + H_3^+	Excitation	0.01-5 eV	Th
e + H_3O^+	Excitation	0.01-5 eV	Th
e + D_3^+	Excitation	0.01-5 eV	Th
e + D_3O^+	Excitation	0.01-5 eV	Th

252. M. Szluniska, P. Van Reeth, G. Laricchia
Empirical scaling of positron- and electron-impact ionization cross sections.
J. Phys. B 35, 4059 (2002)

e + H	Ionization	5-1000 eV	E/T
e + He	Ionization	5-1000 eV	E/T
e + C	Ionization	5-1000 eV	E/T
e + N	Ionization	5-1000 eV	E/T
e + O	Ionization	5-1000 eV	E/T
e + F	Ionization	5-1000 eV	E/T
e + Ne	Ionization	5-1000 eV	E/T
e + Ar	Ionization	5-1000 eV	E/T
e + Kr	Ionization	5-1000 eV	E/T
e + Xe	Ionization	5-1000 eV	E/T
e + perturbation	Ionization	5-1000 eV	E/T

253. I. Torres, R. Martinez, F. Castano
Electron-impact dissociative ionization of the CH_3F molecule.
J. Phys. B 35, 4113 (2002)

e + CH_3F	Dissociation	8-85 eV	Exp
e + CH_3F	Ionization	8-85 eV	Exp

254. P. Akther, W. M. Johnstone, A.A.A. El-Zein, L. Campbell, P.J.O. Teubner, M. J. Brunger, W. R. Newell
Differential electron scattering from the (010) excited vibrational mode of N_2O.
J. Phys. B 35, L481 (2002)

e + N_2O	Elastic Scattering	2.5 eV	Exp
e + N_2O	Angular Scattering	2.5 eV	Exp
e + N_2O	Excitation	2.5 eV	Exp
e + N_2O^*	Elastic Scattering	2.5 eV	Exp
e + N_2O^*	Angular Scattering	2.5 eV	Exp
e + N_2O^*	Excitation	2.5 eV	Exp

255. M. B. Shapochkin
Full polarization beam experiment.
J. Phys. B 35, 4583 (2002)

e + Mg^+	Excitation	4-300 eV	Exp
e + Ba^+	Excitation	4-300 eV	Exp

256. G. Garcia, J. L. de Pablos, F. Blanco, A. Williart
Total and elastic electron scattering cross sections from Xe at intermediate and high energies.
J. Phys. B 35, 4657 (2002)

e + Ne	Elastic Scattering	300-10,000 eV	Exp
e + Ne	Angular Scattering	300-10,000 eV	Exp
e + Ar	Elastic Scattering	300-10,000 eV	Exp
e + Ar	Angular Scattering	300-10,000 eV	Exp
e + Kr	Elastic Scattering	300-10,000 eV	Exp
e + Kr	Angular Scattering	300-10,000 eV	Exp
e + Xe	Elastic Scattering	300-10,000 eV	Exp
e + Xe	Angular Scattering	300-10,000 eV	Exp

257. O. Zatsarinny, C. F. Fischer
Oscillator strengths for transitions to high-lying excited states of carbon.
J. Phys. B 35, 4669 (2002)

e + C	Excitation		Th

258. S. Denifl, B. Gstir, G. Hanel, L. Feketeova, S. Matejcik, K. Becker, A. Stamatovic, P. Scheier, T. D. Maerk
Multiple ionization of helium and krypton by electron impact close to threshold: appearance energies and Wannier exponents.
J. Phys. B 35, 4685 (2002)

e + He	Ionization	8-330 eV	Exp
e + Kr	Ionization	8-330 eV	Exp

259. J. Wrkich, D. Mathews, I. Kanik, S. Trajmar, M. A. Khakoo
Differential cross-sections for the electron impact excitation of the B $^1\Sigma_u{}^+$, c $^3\Pi_u$, a $^3\Sigma_g{}^+$, C $^1\Pi_u$, E, F $^1\Sigma_g{}^+$ and e $^3\Sigma_u{}^+$ states of molecular hydrogen.
J. Phys. B 35, 4695 (2002)

e + H_2	Angular Scattering	17.5-30 eV	Exp
e + H_2	Excitation	17.5-30 eV	Exp

260. K. N. Joshipura, B. K. Antony, M. Vinodkumar
Erratum: Electron scattering and ionization of ozone, O_2 and O_4 molecules.
J. Phys. B 35, 4757 (2002)

e + O_2	Elastic Scattering	100 eV	Exp
e + O_2	Excitation	100 eV	Exp
e + O_2	Ionization	100 eV	Exp
e + O_3	Elastic Scattering	100 eV	Exp
e + O_3	Excitation	100 eV	Exp
e + O_3	Ionization	100 eV	Exp

261. K. A. Kouzakov, Yu. V. Popov
An interplay between momentum distortion and electronic correlation in symmetric (e,3-1e) reactions.
J. Phys. B 35, L537 (2002)

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

262. E. Joucoski, M.H.F. Bettega
Elastic scattering of low-energy electrons by carbon, silicon, germanium and tin tetrahalides.
J. Phys. B 35, 4953 (2002)

e + $SnCl_4$	Elastic Scattering	5-40 eV	Th
e + $SnCl_4$	Angular Scattering	5-40 eV	Th
e + CBr_4	Elastic Scattering	5-40 eV	Th
e + CBr_4	Angular Scattering	5-40 eV	Th
e + CI_4	Elastic Scattering	5-40 eV	Th
e + CI_4	Angular Scattering	5-40 eV	Th
e + $GeBr_4$	Elastic Scattering	5-40 eV	Th
e + $GeBr_4$	Angular Scattering	5-40 eV	Th
e + GeI_4	Elastic Scattering	5-40 eV	Th
e + GeI_4	Angular Scattering	5-40 eV	Th
e + $SnBr_4$	Elastic Scattering	5-40 eV	Th
e + $SnBr_4$	Angular Scattering	5-40 eV	Th
e + SnI_4	Elastic Scattering	5-40 eV	Th
e + SnI_4	Angular Scattering	5-40 eV	Th

263. K. Bartschat, A. N. Grum-Grzhimailo
Vector (e, e'γ) correlations in ionization-excitation of He by electron impact.
J. Phys. B 35, 5035 (2002)

e + He	Angular Scattering	50-200 eV	Th
e + He	Excitation	50-200 eV	Th
e + He	Ionization	50-200 eV	Th

264. H. Watanabe, F. J. Currell, H. Kuramoto, S. Ohtani, B. E. O'Rourke, X. M. Tong
Electron impact ionization of hydrogen-like molybdenum ions.
J. Phys. B 35, 5095 (2002)

e + Mo^{41+}	Ionization	494-79.6 keV	Exp

265. D. A. Biava, K. Bartschat, H. P. Saha, D. H. Madison
Accuracy of local exchange in the calculation of continuum wavefunctions.
J. Phys. B 35, 5121 (2002)

e + Ar	Ionization	2-113.5 eV	Th

266. P. J. Storey, C. J. Zeippen, M. Le Dourneuf
Atomic data from the IRON project. LI. Electron impact excitation of Fe IX.
Astron. Astrophys. 394, 753 (2002)

e + Fe^{8+}	Excitation	3-16 Ry	Th

267. K. M. Aggarwal, F. P. Keenan
Effective collision strengths for transitions in Fe XI.
Astron. Astrophys. 399, 799 (2003)

e + Fe^{10+}	Excitation	10-100 Ry	Th

268. A. K. Bhatia, E. Landi
Atomic data and spectral line intensities for Si VII.
Astrophys. J., Part 1 585, 587 (2003)

e + Si^{6+}	Excitation	15-75 Ry	Th

269. L. K. Jha, B. N. Roy
Electron impact single and double ionization of magnesium.
Eur. Phys. J. D 20, 5 (2002)

e + Mg	Ionization	10-675 eV	Th

270. R. Rejoub, B. G. Lindsay, R. F. Stebbings
Electron-impact ionization of the methyl halides.
J. Chem. Phys. 117, 6450 (2002)

e + CH_3I	Ionization	0-1000 eV	Exp
e + CH_3Cl	Ionization	0-1000 eV	Exp
e + CH_3Br	Ionization	0-1000 eV	Exp
e + CH_3F	Ionization	0-1000 eV	Exp

271. R. Basner, M. Schmidt, K. Becker
Absolute total and partial cross sections for the electron impact ionization of diborane (B_2H_6).
J. Chem. Phys. 118, 2153 (2003)

e + B_2H_6	Ionization	0-200 eV	Exp

272. Y. Itikawa
Cross sections for electron collisions with carbon dioxide.
J. Phys. Chem. Ref. Data 31, 749 (2002)

e + CO_2	Electron Collisions		E/T

273. A. C. Roy, R. Dey, B. Najjari
Singly differential cross-section for electron impact ionization of helium.
Nucl. Instrum. Methods Phys. Res. B 197, 175 (2002)

e + He	Angular Scattering	50-100 eV	Th
e + He	Ionization	50-100 eV	Th

274. Yu. M. Smirnov
Excitation of even triplet levels of YII in the e-Y collisions.
Opt. Spectrosc. 93, 351 (2002)

e + Y	Excitation	0-200 eV	Exp
e + Y	Ionization	0-200 eV	Exp

275. M. Bhattacharya, B. Malakar, S. Sarkar
Scattering of electron by hydrogen atom in the presence of two laser fields.
Phys. Scr. 66, 208 (2002)

e + H	Elastic Scattering	50-100 eV	Th
e + H	Angular Scattering	50-100 eV	Th

276. L. K. Jha
Electron impact double ionization of singly charged positive ions.
Phys. Scr. 66, 228 (2002)

e + C^+	Ionization	60-2000 eV	Th
e + N^+	Ionization	60-2000 eV	Th
e + O^+	Ionization	60-2000 eV	Th
e + Ne^+	Ionization	60-2000 eV	Th

277. G. P. Gupta, A. Z. Msezane
Excitation energies, oscillator strengths and lifetimes in doubly ionised phosphorus.
Phys. Scr. 66, 354 (2002)

e + P^{2+}	Excitation		Th

278. B. Pokrzywka
Electron induced collisional population decay rates for levels of $3p^5 4s$ and $3p^5 4p$ manifolds of ArI in plasmas.
Phys. Scr. 66, 437 (2002)

e + Ar	Excitation	10-20 eV	Th

279. C. Heerlein, G. Zwicknagel, C. Toepffer
Radiative recombination enhancement of bare ions in storage rings with electron cooling.
Phys. Rev. Lett. 89, 083202 (2002)

e + Si^{14+}	Recombination		E/T

280. I. Bray
Close-coupling approach to Coulomb three-body problems.
Phys. Rev. Lett. 89, 273201 (2002)

e + H	Angular Scattering	17.6 eV	Th
e + H	Ionization	17.6 eV	Th

281. G. Baum, N. Pavlovic, B. Roth, K. Bartschat, Y. Fang, I. Bray
Detailed experimental and theoretical study of elastic scattering at intermediate energies in the electron-cesium system.
Phys. Rev. A 66, 022705 (2002)

e + Cs	Elastic Scattering	4-25 eV	E/T

282. P. V. Johnson, P. W. Zetner, D. Fursa, I. Bray
Orientation dependence of inelastic scattering from the laser-excited (.6s6p $^1\mathbf{P}_1$) state of barium.
Phys. Rev. A 66, 022707 (2002)

e + Ba	Angular Scattering	20 eV	E/T
e + Ba	Total Scattering	20 eV	E/T
e + Ba	Excitation	20 eV	E/T

283. G. B. Poparic, M. D. Vicic, D. S. Belic
Differential cross sections at 0deg **and 180**deg **for electron-impact excitation of the E $^3\Sigma_g{}^+$ state of $\mathbf{N}_2$.**
Phys. Rev. A 66, 022711 (2002)

e + $\mathbf{N}_2$	Excitation	11.94 eV	Exp

284. W. Shi, T. Bartsch, C. Boehme, C. Brandau, A. Hoffknecht, H. Knopp, S. Schippers, A. Mueller, C. Kozhuharov, K. Beckert, F. Bosch, B. Franzke, P. H. Mokler, F. Nolden, M. Steck, Th. Stoehlker, Z. Stachura
Rate enhancement in the recombination of $\mathbf{Bi}^{80+}$ ions with electrons.
Phys. Rev. A 66, 022718 (2002)

e + $\mathbf{Bi}^{80+}$	Recombination	10^{-5}-10 eV	Exp

285. T. Mohamed, D. Nikolic, E. Lindroth, S. Madzunkov, M. Fogle, M. Tokman, R. Schuch
Dielectronic recombination of lithiumlike beryllium: A theoretical and experimental investigation.
Phys. Rev. A 66, 022719 (2002)

e + $\mathbf{Be}^+$	Recombination	0-5 eV	Exp

286. V. I. Korobov
Nonrelativistic ionization energy for the helium ground state.
Phys. Rev. A 66, 024501 (2002)

e + He	Ionization		Th
e + He	Electron Collisions		Th

287. M. P. Scott, T. Stitt, N. S. Scott, P. G. Burke
On the single differential cross section for electron impact ionization of atomic hydrogen near threshold.
J. Phys. B 35, L323 (2002)

e + H	Ionization	17.6 eV	Th

288. K. Pachucki
The complete $m\alpha^6$ contribution to the helium 2 $^3\mathbf{P}_J$ energy.
J. Phys. B 35, 3087 (2002)

e + He	Ionization		Th

289. G. D. Meneses, R.E.H. Clark, J. Abdallah Jr., G. Csanak
Cross sections for the excitation of 3s,3p,3d,4p, and 4s manifolds in e-Ne collisions.
J. Phys. B 35, 3119 (2002)

e + Ne	Excitation	20-100 eV	Th

290. I. Bray, D. V. Fursa, A. S. Kheifets, A. T. Stelbovics
Electrons and photons colliding with atoms: development and application of the convergent close-coupling method.
J. Phys. B 35, R117 (2002)

e + H	Electron Collisions		Th
e + Mg	Electron Collisions		Th
e + Ca	Electron Collisions		Th
e + Sr	Electron Collisions		Th
e + Ba	Electron Collisions		Th

291. R. K. Singh, R. Hippler, R. Shanker
Ejected electron-ion coincidence measurements of multiple ionization of argon by 10-24 keV electron impact.
J. Phys. B 35, 3243 (2002)

e + Ar	Ionization	10-24 keV	Exp

292. M. Kitajima, M. Okamoto, K. Sunohara, H. Tanaka, H. Cho, S. Samukawa, S. Eden, N. J. Mason
Low-energy electron impact elastic and inelastic scattering from CF_3I.
J. Phys. B 35, 3257 (2002)

e + CF_3I	Elastic Scattering	1.5-60 eV	Exp
e + CF_3I	Angular Scattering	1.5-60 eV	Exp
e + CF_3I	Excitation	1.5-60 eV	Exp

293. K. N. Joshipura, B. K. Antony, M. Vinodkumar
Electron scattering and ionization of ozone, O_2 and O_4 molecules.
J. Phys. B 35, 4211 (2002)

e + O	Angular Scattering	10-3000 eV	Th
e + O	Ionization	10-3000 eV	Th
e + O_2	Angular Scattering	10-3000 eV	Th
e + O_2	Ionization	10-3000 eV	Th
e + O_3	Angular Scattering	10-3000 eV	Th
e + O_3	Ionization	10-3000 eV	Th
e + O_4	Angular Scattering	10-3000 eV	Th
e + O_4	Ionization	10-3000 eV	Th

294. W. Kedzierski
S(^{1}S) production following electron impact on CS_2.
J. Phys. B 35, 4401 (2002)

e + CS_2	Dissociation	0-400 eV	Exp

295. C. Herting, G. F. Hanne, K. Bartschat, A. N. Grum-Grzhimailo, K. Muktavat, R. Srivastava, A. D. Stauffer
Orientation propensities in spin-resolved electron-impact excitation of mercury.
J. Phys. B 35, 4439 (2002)

e + Hg	Angular Scattering	8-15 eV	E/T
e + Hg	Excitation	8-15 eV	E/T

296. T. T. Gien
Accurate calculation of phase shifts for electron-He^+ collisions.
J. Phys. B 35, 4475 (2002)

e + He^+	Elastic Scattering	0.2-2.88 Ry	Th

297. N. Andersen, K. Bartschat
Search for relativistic effects in electron-impact S -¿ P excitation of heavy alkali atoms: polarization, alignment and orientation in Cs.
J. Phys. B 35, 4507 (2002)

e + Cs	Angular Scattering	10 eV	Th
e + Cs	Excitation	10 eV	Th

298. S. S. Tayal
Importance of coupling to the continuum for electron-impact excitation of atomic oxygen.
Phys. Rev. A 66, 030701 (2002)

e + O	Excitation	10-100 eV	Th

299. G. H. Dunn, D. S. Belic, C. Cisneros, D. H. Crandall, R. A. Falke, D. Gregory
Absolute emission cross sections for electron-impact excitation of the 3p-3s transition in Al^{2+}.
Phys. Rev. A 66, 032706 (2002)

e + Al^{2+}	Fluorescence	6-1000 eV	Exp
e + Al^{2+}	Excitation	6-1000 eV	Exp

300. M. E. Bannister, H. F. Krause, N. Djuric, D. B. Popovic, G. H. Dunn, Y.-S. Chung, A.C.H. Smith
Merged-beam measurements of electron-impact excitation of Al^{2+} (3s ^{2}S -¿ 3p ^{2}P).
Phys. Rev. A 66, 032707 (2002)

e + Al^{2+}	Excitation	6.25-7.1 eV	Exp

301. F. Manero, F. Blanco, G. Garcia
Electron-scattering cross sections of fluoromethanes in the energy range from 0.1 to 10 keV.
Phys. Rev. A 66, 032713 (2002)

e + CF_4	Elastic Scattering	0.1-10 keV	E/T
e + CF_4	Angular Scattering	0.1-10 keV	E/T
e + CF_4	Excitation	0.1-10 keV	E/T
e + CF_4	Ionization	0.1-10 keV	E/T
e + CH_2F_2	Elastic Scattering	0.1-10 keV	E/T
e + CH_2F_2	Angular Scattering	0.1-10 keV	E/T
e + CH_2F_2	Excitation	0.1-10 keV	E/T
e + CH_2F_2	Ionization	0.1-10 keV	E/T
e + CH_3F	Elastic Scattering	0.1-10 keV	E/T
e + CH_3F	Angular Scattering	0.1-10 keV	E/T
e + CH_3F	Excitation	0.1-10 keV	E/T
e + CH_3F	Ionization	0.1-10 keV	E/T
e + CF_3H	Elastic Scattering	0.1-10 keV	E/T
e + CF_3H	Angular Scattering	0.1-10 keV	E/T
e + CF_3H	Excitation	0.1-10 keV	E/T
e + CF_3H	Ionization	0.1-10 keV	E/T

302. Y. Nakano, M. Hoshino, M. Kitajima, H. Tanaka, M. Kimura
Low-energy electron scattering from C_3H_4 isomers: Differential cross sections for elastic scattering and vibrational excitation.
Phys. Rev. A 66, 032714 (2002)

e + C_3H_4	Elastic Scattering	1.5-100 eV	E/T
e + C_3H_4	Angular Scattering	1.5-100 eV	E/T
e + C_3H_4	Excitation	1.5-100 eV	E/T

303. R. Thomas, S. Rosen, F. Hellberg, A. Derkatch, M. Larsson, S. Datz, R. Dixon, J. van der Zande
Investigating the three-body fragmentation dynamics of water via dissociative recombination and theoretical modeling calculations.
Phys. Rev. A 66, 032715 (2002)

e + H_2O^+	Dissociation	0-0.1 meV	E/T
e + H_2O^+	Recombination	0-0.1 meV	E/T

304. D. Strasser, L. Lammich, H. Kreckel, S. Krohn, M. Lange, A. Naaman, D. Schwalm, A. Wolf, D. Zajfman
Breakup dynamics and the isotope effect in H_3^+ and D_3^+ dissociative recombination.
Phys. Rev. A 66, 032719 (2002)

e + H_2^+	Dissociation	0-0.1 meV	Exp
e + H_2^+	Recombination	0-0.1 meV	Exp
e + D_3^+	Dissociation	0-0.1 meV	Exp
e + D_3^+	Recombination	0-0.1 meV	Exp

305. S. D. Loch, M. S. Pindzola, C. P. Ballance, D. C. Griffin, D. M. Mitnik, N. R. Badnell, M. G. O'Mullane, H. P. Summers, A. D. Whiteford
Electron-impact ionization of all ionization stages of krypton.
Phys. Rev. A 66, 052708 (2002)

e + Kr	Ionization	0-5000 eV	E/T
e + Kr^+	Ionization	0-5000 eV	E/T
e + Kr^{2+}	Ionization	0-5000 eV	E/T
e + Kr^{3+}	Ionization	0-5000 eV	E/T
e + Kr^{4+}	Ionization	0-5000 eV	E/T
e + Kr^{5+}	Ionization	0-5000 eV	E/T
e + Kr^{6+}	Ionization	0-5000 eV	E/T
e + Kr^{7+}	Ionization	0-5000 eV	E/T
e + Kr^{8+}	Ionization	0-5000 eV	E/T
e + Kr^{9+}	Ionization	0-5000 eV	E/T
e + Kr^{10+}	Ionization	0-5000 eV	E/T
e + Kr^{11+}	Ionization	0-5000 eV	E/T
e + Kr^{12+}	Ionization	0-5000 eV	E/T
e + Kr^{13+}	Ionization	0-5000 eV	E/T
e + Kr^{14+}	Ionization	0-5000 eV	E/T
e + Kr^{15+}	Ionization	0-5000 eV	E/T
e + Kr^{16+}	Ionization	0-5000 eV	E/T
e + Kr^{17+}	Ionization	0-5000 eV	E/T
e + Kr^{18+}	Ionization	0-5000 eV	E/T
e + Kr^{19+}	Ionization	0-5000 eV	E/T
e + Kr^{20+}	Ionization	0-5000 eV	E/T
e + Kr^{21+}	Ionization	0-5000 eV	E/T
e + Kr^{22+}	Ionization	0-5000 eV	E/T
e + Kr^{23+}	Ionization	0-5000 eV	E/T
e + Kr^{24+}	Ionization	0-5000 eV	E/T
e + Kr^{25+}	Ionization	0-5000 eV	E/T
e + Kr^{26+}	Ionization	0-5000 eV	E/T
e + Kr^{27+}	Ionization	0-5000 eV	E/T
e + Kr^{28+}	Ionization	0-5000 eV	E/T
e + Kr^{29+}	Ionization	0-5000 eV	E/T
e + Kr^{30+}	Ionization	0-5000 eV	E/T
e + Kr^{31+}	Ionization	0-5000 eV	E/T
e + Kr^{32+}	Ionization	0-5000 eV	E/T
e + Kr^{33+}	Ionization	0-5000 eV	E/T
e + Kr^{34+}	Ionization	0-5000 eV	E/T
e + Kr^{35+}	Ionization	0-5000 eV	E/T

306. Z. Papp, C.-Y. Hu
Electron-hydrogen scattering in the Faddeev-Merkuriev integral-equation approach.
Phys. Rev. A 66, 052714 (2002)

e + H	Elastic Scattering	0-1 Ry	Th
e + H	Angular Scattering	0-1 Ry	Th

307. M. H. Chen
Dielectronic recombination for oxygenlike ions relevant to astrophysical applications.
Phys. Rev. A 66, 052715 (2002)

e + Mg^{4+}	Recombination	0.001-10,000 eV	E/T
e + Si^{6+}	Recombination	0.001-10,000 eV	E/T
e + S^{8+}	Recombination	0.001-10,000 eV	E/T
e + Fe^{18+}	Recombination	0.001-10,000 eV	E/T

308. W. M. Ariyasinghe, D. Powers
Total electron scattering cross sections of CH_4, C_2H_2, C_2H_4, and C_2H_6 in the energy range 200-1400 eV.
Phys. Rev. A 66, 052716 (2002)

e + CH_4	Elastic Scattering	200-1400 eV	E/T
e + CH_4	Angular Scattering	200-1400 eV	E/T
e + C_2H_2	Elastic Scattering	200-1400 eV	E/T
e + C_2H_2	Angular Scattering	200-1400 eV	E/T
e + C_2H_4	Elastic Scattering	200-1400 eV	E/T
e + C_2H_4	Angular Scattering	200-1400 eV	E/T
e + C_2H_6	Elastic Scattering	200-1400 eV	E/T
e + C_2H_6	Angular Scattering	200-1400 eV	E/T

309. A. B. Rocha, C. E. Bielschowsky
Contributions to the generalized oscillator strength for the inner-shell C 1s -¿ 3sσ_g transition in CO_2 from the vibronic coupling mechanisms.
Phys. Rev. A 66, 052720 (2002)

e + CO_2	Excitation	0-65 K^2(a.u.)^2	E/T

310. M. Allan
Vibrational structures in electron-CO_2 scattering below the $^2\Pi_u$ shape resonance.
J. Phys. B 35, L387 (2002)

e + CO_2	Elastic Scattering	0.4-0.9 eV	Exp
e + CO_2	Excitation	0.4-0.9 eV	Exp

311. A. Le Padellec, G. F. Collins, H. Danared, A. Kaellberg, F. Hellberg, A. Neau, K. Fritioff, D. Hanstorp, M. Larsson
Relative cross sections for the electron impact single detachment on Li^-.
J. Phys. B 35, 3669 (2002)

e + Li^-	Detachment	1-100 eV	E/T

312. A. D. Whiteford, N. R. Badnell, C. P. Ballance, S. D. Loch, M. G. O'Mullane, H. P. Summers
Excitation of Ar^{15+} and Fe^{23+} for diagnostic application to fusion and astrophysical plasmas.
J. Phys. B 35, 3729 (2002)

e + Ar^{15+}	Excitation	5x10^4-10^9 K	Th
e + Fe^{23+}	Excitation	5x10^4-10^9 K	Th

313. K. Bartschat
Convergent R-matrix with pseudostates calculations for electron-impact ionization of the n=2 states in helium.
J. Phys. B 35, L527 (2002)

e + He	Ionization	0-60 eV	E/T

314. S. Geltman
A close-coupling approach to laser-assisted electron-atom scattering.
J. Phys. B 35, 4787 (2002)

e + He	Elastic Scattering	0-16 eV	E/T
e + He	Angular Scattering	0-16 eV	E/T

315. K. Muktavat, R. Srivastava, A. D. Stauffer
Electron excitation of the ^{1,3}D states of calcium and strontium.
J. Phys. B 35, 4797 (2002)

e + Ca	Angular Scattering	20-40 eV	Th
e + Ca	Excitation	20-40 eV	Th
e + Sr	Angular Scattering	20-40 eV	Th
e + Sr	Excitation	20-40 eV	Th

316. G. Woeste, G. Wunner, C. J. Noble, A. G. Sunderland, V. M. Burke, P. G. Burke
Electron-impact excitation of the iron peak element Fe V.
J. Phys. B 35, 4847 (2002)

e + Fe^{4+}	Excitation	$5x10^3$-10^6 K	Th

317. M. R. Went, R. P. McEachran, B. Lohmann, W. R. MacGillivray
Spin asymmetries for elastic scattering in krypton at intermediate energies.
J. Phys. B 35, 4885 (2002)

e + Kr	Elastic Scattering	20-200 eV	E/T

318. B. G. Lindsay, R. Rejoub, R. F. Stebbings
Absolute cross sections for electron-impact ionization of N_2O, H_2S, and CS_2 from threshold to 1000 eV.
J. Chem. Phys. 118, 5894 (2003)

e + N_2O	Ionization	0-1000 eV	Exp
e + CS_2	Ionization	0-1000 eV	Exp
e + H_2S	Ionization	0-1000 eV	Exp

3.1.1.3 Heavy Particles Collisions

319. L. F. Errea, A. Macias, L. Mendez, I. Rabadan, A. Riera
Limit of the vibrational sudden approximation for H^+ + H_2 collisions.
Phys. Rev. A 65, 010701 (2002)

H^+ + H_2	Charge Transfer	50-2000 eV	Th

320. H. Merabet, R. Bruch, J. Hanni, A. L. Godunov, J. H. McGuire
Simultaneous ionization-excitation of helium to He^+ (2p) magnetic sublevels by proton impact.
Phys. Rev. A 65, 010703 (2002)

H^+ + He	Excitation	100-900 KeV/u	E/T
H^+ + He	Ionization	100-900 KeV/u	E/T

321. B. Siegmann, U. Werner, R. Mann, Z. Kaliman, N. M. Kabachnik, H. O. Lutz
Orientation dependence of multiple ionization of diatomic molecules in collisions with fast highly charged ions.
Phys. Rev. A 65, 010704 (2002)

Xe^{18+} + N_2	Total Scattering	5.9 MeV/u	E/T
Xe^{18+} + N_2	Ionization	5.9 MeV/u	E/T
Xe^{43+} + N_2	Total Scattering	5.9 MeV/u	E/T
Xe^{43+} + N_2	Ionization	5.9 MeV/u	E/T

322. M. Bouledroua, A. Dalgarno, R. Cote
Diffusion and excitation transfer of excited alkali-metal atoms.
Phys. Rev. A 65, 012701 (2002)

Na + Na	Elastic Scattering	0.000001-0.01 a.u.	Th
Na + Na	Excitation	0.000001-0.01 a.u.	Th

323. Z. Kaliman, N. Orlic, N. M. Kabachnik, H. O. Lutz
Theoretical study of orientation effects in multiple ionization of molecules by fast ion impact.
Phys. Rev. A 65, 012708 (2002)

He^{2+} + CO	Total Scattering	0.1-20 MeV	Th
He^{2+} + CO	Ionization	0.1-20 MeV	Th
He^{2+} + CO_2	Total Scattering	0.1-20 MeV	Th
He^{2+} + CO_2	Ionization	0.1-20 MeV	Th
He^{2+} + N_2	Total Scattering	0.1-20 MeV	Th
He^{2+} + N_2	Ionization	0.1-20 MeV	Th
He^{2+} + F_2	Total Scattering	0.1-20 MeV	Th
He^{2+} + F_2	Ionization	0.1-20 MeV	Th

324. E. Y. Sidky, C. D. Lin
Total cross-section calculations on proton-impact ionization of hydrogen.
Phys. Rev. A 65, 012711 (2002)

H^+ + H	Charge Transfer	25-100 keV	Th
H^+ + H	Excitation	25-100 keV	Th
H^+ + H	Ionization	25-100 keV	Th

325. R. B. Krems, A. Dalgarno
Shape resonances and nonadiabatic dynamics in O(^3P_J)+He collisions at cold and ultracold temperatures.
Phys. Rev. A 66, 012702 (2002)

O + He	De-excitation	10^{-6}-100 cm^{-1}; 10^{-4}-1 K	Th
O + He	Elastic Scattering	10^{-6}-100 cm^{-1}; 10^{-4}-1 K	Th

326. H.-K. Chung, A. Dalgarno
Diffusion of hydrogen atoms in helium gas and helium atoms in hydrogen gas.
Phys. Rev. A 66, 012712 (2002)

H + He	Elastic Scattering	10^{-7}-10^{-2} eV; 0-1000 K	Th
H + He	Interaction Potentials	10^{-7}-10^{-2} eV; 0-1000 K	Th

327. M. Chassid, M. Horbatsch
Electron emission characteristics in p-H(1s) collisions from numerical solutions of the time-dependent Schroedinger equation.
Phys. Rev. A 66, 012714 (2002)

H^+ + H	Total Scattering	50-60 keV	Th
H^+ + H	Ionization	50-60 keV	Th

328. C. Mueller, A. B. Voitkiv, N. Gruen
Electron loss from heavy heliumlike projectiles in ultrarelativistic collisions with many-electron atomic targets.
Phys. Rev. A 66, 012716 (2002)

Kr^{34+} + Kr	Ionization	150 GeV/u	Th
Kr^{34+} + Xe	Ionization	150 GeV/u	Th
Kr^{34+} + Au	Ionization	150 GeV/u	Th
Xe^{52+} + Kr	Ionization	150 GeV/u	Th
Xe^{52+} + Xe	Ionization	150 GeV/u	Th
Xe^{52+} + Au	Ionization	150 GeV/u	Th
Pb^{80+} + Kr	Ionization	150 GeV/u	Th
Pb^{80+} + Xe	Ionization	150 GeV/u	Th
Pb^{80+} + Au	Ionization	150 GeV/u	Th

329. J. S. Cohen, R. L. Martin, L. A. Collins
Chemi-ionization of mercury atoms: Potential curves and estimates of the total ionization cross sections.
Phys. Rev. A 66, 012717 (2002)

Hg + Hg	Association	100-1000 K	Th
Hg + Hg	Ionization	100-1000 K	Th
Hg + Hg^+	Interaction Potentials	100-1000 K	Th
Hg^* + Hg^*	Association	100-1000 K	Th
Hg^* + Hg^*	Ionization	100-1000 K	Th

330. J. Bernard, R. Bredy, S. Martin, L. Chen, J. Desequelles, M. C. Buchet-Poulizac
Core dependence of electron emission in slow collisions of highly charged ions (Ar^{16+}, Kr^{16+}, Xe^{16+}) with C_{60}.
Phys. Rev. A 66, 013209 (2002)

Ar^{16+} + C_{60}	Charge Transfer	2 keV/u	Exp
Kr^{16+} + C_{60}	Charge Transfer	2 keV/u	Exp
Xe^{16+} + C_{60}	Charge Transfer	2 keV/u	Exp

331. O. Allard, A. Pashov, H. Knoeckel, E. Tiemann
Ground-state potential of the Ca dimer from Fourier-transform spectroscopy.
Phys. Rev. A 66, 042503 (2002)

Ca + Ca	Interaction Potentials		Exp

332. K. Enomoto, K. Hirano, M. Kumakura, Y. Takahashi, T. Yabuzaki
Emission spectra of Cs-He excimers in cold helium gas.
Phys. Rev. A 66, 042505 (2002)

Cs + He	Line Broadening	1.3-100 K	E/T
Cs + He	Interaction Potentials	1.3-100 K	E/T
Cs^* + He	Line Broadening	1.3-100 K	E/T
Cs^* + He	Interaction Potentials	1.3-100 K	E/T

333. P. Joubert, P.N.M. Hoang, L. Bonamy, D. Robert
Speed-dependent line-shape model analysis from molecular-dynamics simulations: The collisional confinement narrowing regime.
Phys. Rev. A 66, 042508 (2002)

H_2 + He	Line Broadening	300 K	Th
H_2 + Ne	Line Broadening	300 K	Th
H_2 + Ar	Line Broadening	300 K	Th
H_2 + H_2	Line Broadening	300 K	Th
H_2 + N_2	Line Broadening	300 K	Th

334. T. G. Lee, H. Nguyen, X. Flechard, B. D. DePaola, C. D. Lin
Differential charge-transfer cross sections for Na^+ with Rb collisions at low energies.
Phys. Rev. A 66, 042701 (2002)

Na^+ + Rb	Charge Transfer	2-7 keV	E/T
Na^+ + Rb	Total Scattering	2-7 keV	E/T

335. T. Stoecklin, A. Voronin, J. C. Rayez
Vibrational quenching of N_2(v=1, j_{rot}=j) by ^{3}He: Surface and close-coupling calculations at very low energy.
Phys. Rev. A 66, 042703 (2002)

N_2 + He	De-excitation	10^{-6}-2000 cm^{-1}	Th
$N_2{}^*$ + He	De-excitation	10^{-6}-2000 cm^{-1}	Th

336. J. Sucher
Higher-order poles and mass-shell singularities in electron-hydrogen scattering.
Phys. Rev. A 66, 042706 (2002)

e + H	Elastic Scattering		Th

337. S. Zou, L. Pichl, M. Kimura, T. Kato
Total and differential cross-section calculations for proton-impact ionization of hydrogen at low energies.
Phys. Rev. A 66, 042707 (2002)

H^+ + H	Total Scattering	0.1-10 keV/amu	Th
H^+ + H	Ionization	0.1-10 keV/amu	Th

338. A. A. Khuskivadze, M. I. Chibisov, I. I. Fabrikant
Adiabatic energy levels and electric dipole moments of Rydberg states of Rb_2 and Cs_2 dimers.
Phys. Rev. A 66, 042709 (2002)

Rb + Rb	Interaction Potentials		Th
Cs + Cs	Interaction Potentials		Th

339. R. Cabrera-Trujillo, Y. Oehrn, E. Deumens, J. R. Sabin, B. G. Lindsay
Theoretical and experimental studies of the H^+-N_2 system: Differential cross sections for direct and charge-transfer scattering at kilo-electron-volt energies.
Phys. Rev. A 66, 042712 (2002)

H^+ + N_2	Charge Transfer	0.5-5 keV	E/T
H^+ + N_2	Total Scattering	0.5-5 keV	E/T

340. M. Zamkov, E. P. Benis, P. Richard, T. G. Lee, T.J.M. Zouros
Triple electron capture in fast 0.5-1.1 MeV/u C^{6+} on Ar collisions.
Phys. Rev. A 66, 042714 (2002)

C^{6+} + Ar	Charge Transfer	0.5-1.1 MeV/amu	Exp

341. P. S. Krstic
Inelastic processes from vibrationally excited states in slow H^+ + H_2 collisions: Excitations and charge transfer.
Phys. Rev. A 66, 042717 (2002)

H^+ + H_2	Charge Transfer	0-10 eV	Th
H^+ + H_2	Excitation	0-10 eV	Th
H_2^+ + H	Charge Transfer	0-10 eV	Th
H_2^+ + H	Excitation	0-10 eV	Th

342. S. Morita, N. Matsuda, N. Toshima, K. Hino
Ionization of stabilized helium atoms by proton and antiproton impacts.
Phys. Rev. A 66, 042719 (2002)

H^+ + He	Total Scattering	100-3000 keV/amu	Th
H^+ + He	Ionization	100-3000 keV/amu	Th

343. A. Watanabe, C. M. Dutta, P. Nordlander, M. Kimura, A. Dalgarno
Charge-transfer cross sections for radiative charge transfer in Na + H^+ and K + H^+ collisions at very low energies.
Phys. Rev. A 66, 044701 (2002)

H^+ + Na	Charge Transfer	0-8 eV	Th
H^+ + K	Charge Transfer	0-8 eV	Th

344. Y. Singh, L. C. Tribedi
M-subshell x-ray production cross sections of Au induced by highly charged F, C, and Li ions and protons: A large enhancement in the M_3 fluorescence yield.
Phys. Rev. A 66, 062709 (2002)

H^+ + Au	Ionization	20-102 MeV	Exp
He^{2+} + Au	Ionization	20-102 MeV	Exp
Li^{3+} + Au	Ionization	20-102 MeV	Exp
C^{5+} + Au	Ionization	20-102 MeV	Exp
F^{7+} + Au	Ionization	20-102 MeV	Exp
F^{8+} + Au	Ionization	20-102 MeV	Exp

345. S. Martin, L. Chen, R. Bredy, J. Bernard, M. C. Buchet-Poulizac, A. Allouche, J. Desequelles
Emission of singly and doubly charged light fragments from $C_{60}{}^{r+}$ (r=4-9) in Xe^{25+} -C_{60} collisions.
Phys. Rev. A 66, 063201 (2002)

Xe^{25+} + C_{60}	Dissociation	100 keV	Exp
Xe^{25+} + C_{60}	Ionization	100 keV	Exp

346. P. I. Borel, C. J. Erickson, D. K. Walter
Magnetic decoupling of Rb spin relaxation in H_2 buffer gas.
Phys. Rev. A 66, 063410 (2002)

Rb + H_2	Heavy Particle Collisions	400-500 Kelv	Exp

347. M. Rigazio, V. Kharchenko, A. Dalgarno
X-ray emission spectra induced by hydrogenic ions in charge transfer collisions.
Phys. Rev. A 66, 064701 (2002)

Ne^{10+} + He	Charge Transfer	0.009-3 keV/u	Th
Ne^{10+} + He	Fluorescence	0.009-3 keV/u	Th
Ne^{10+} + Ne	Charge Transfer	0.009-3 keV/u	Th
Ne^{10+} + Ne	Fluorescence	0.009-3 keV/u	Th
Ne^{10+} + H_2	Charge Transfer	0.009-3 keV/u	Th
Ne^{10+} + H_2	Fluorescence	0.009-3 keV/u	Th
Ne^{10+} + H_2O	Charge Transfer	0.009-3 keV/u	Th
Ne^{10+} + H_2O	Fluorescence	0.009-3 keV/u	Th
Ne^{10+} + CO_2	Charge Transfer	0.009-3 keV/u	Th
Ne^{10+} + CO_2	Fluorescence	0.009-3 keV/u	Th

348. S. Segui, M. Dingfelder, J. M. Fernandez-Varea, F. Salvat
The structure of the Bethe ridge. Relativistic Born and impulse approximations.
J. Phys. B 35, 33 (2002)

H^+ + Ne	Ionization	1000-10^8 a.u.	Th
H^+ + Au	Ionization	1000-10^8 a.u.	Th

349. A. Bultel, P. Vervisch
The Hornbeck-Molnar process in argon.
J. Phys. B 35, 111 (2002)

Ar + Ar	Association	0.06-2 eV; 300-1800 K	Th
Ar^* + Ar	Association	0.06-2 eV; 300-1800 K	Th

350. J. Fiol, R. O. Barrachina, V. D. Rodriguez
Cusp formation in the single-particle momentum distributions of three-body continuum states.
J. Phys. B 35, 149 (2002)

H^+ + He	Total Scattering	100-1600 keV	Th
H^+ + He	Ionization	100-1600 keV	Th

351. E. Paul-Kwiek
Generalization of Grawert parameters – quantum close-coupling calculations for Ba (6s6p, $^3P_2$ ¡- $^1P_1$) + Ar inelastic collision.
J. Phys. B 35, 175 (2002)

Ba + Ar	Interaction Potentials	0-0.5 eV	Th
Ba + Ar	Total Scattering	0-0.5 eV	Th
Ba + Ar	Excitation	0-0.5 eV	Th

352. M. Schulz, R. Moshammer, A. N. Perumal, J. Ullrich
Triply differential single-ionization cross sections in fast ion-atom collisions at large perturbation.
J. Phys. B 35, L161 (2002)

Au^{53+} + He	Total Scattering	3.6 MeV/u	E/T
Au^{53+} + He	Ionization	3.6 MeV/u	E/T

353. R. Bruch, H. Wang, A. L. Godunov, P. B. Ivanov, V. A. Schipakov, H. Merabet
Zero-degree target electron spectroscopy: autoionizing resonances of helium excited by fast H^+, He^+ and He^{2+} impact.
J. Phys. B 35, 1617 (2002)

H^+ + He	Total Scattering	100-1500 keV	E/T
H^+ + He	Ionization	100-1500 keV	E/T
He^+ + He	Total Scattering	100-1500 keV	E/T
He^+ + He	Ionization	100-1500 keV	E/T
He^{2+} + He	Total Scattering	100-1500 keV	E/T
He^{2+} + He	Ionization	100-1500 keV	E/T

354. I. Roeggen, H. R. Skullerud, T. H. Lovaas, D. K. Dysthe
The Li^+-H_2 system in a rigid-rotor approximation: potential energy surface and transport coefficients.
J. Phys. B 35, 1707 (2002)

Li^+ + H_2	Elastic Scattering	0.01-10 eV	E/T
Li^+ + H_2	Excitation	0.01-10 eV	E/T

355. M. E. Galassi, P. N. Abufager, A. E. Martinez, R. D. Rivarola, P. D. Fainstein
The continuum distorted wave eikonal initial state model for transfer ionization in H^+, He^{2+} + He collisions.
J. Phys. B 35, 1727 (2002)

H^+ + He	Charge Transfer	100-500 keV/u	Th
H^+ + He	Ionization	100-500 keV/u	Th
He^{2+} + He	Charge Transfer	100-500 keV/u	Th
He^{2+} + He	Ionization	100-500 keV/u	Th

356. J. Fiol, R. E. Olson
Three-body dynamics in hydrogen ionization by fast highly charged particles.
J. Phys. B 35, 1759 (2002)

C^{6+} + H	Total Scattering	3.6 MeV/u	Th
C^{6+} + H	Ionization	3.6 MeV/u	Th
Au^{53+} + H	Total Scattering	3.6 MeV/u	Th
Au^{53+} + H	Ionization	3.6 MeV/u	Th

357. J. A. Ruiz, P. Erman, E. Rachlew-Kallne, J. Rius i Riu, M. Stankiewicz, L. Veseth
Neutral dissociation of superexcited states in carbon monoxide.
J. Phys. B 35, 2975 (2002)

C + O	Interaction Potentials	19-26 eV	E/T

358. D. Banas, J. Braziewicz, M. Pajek, J. Semaniak, T. Czyzewski, I. Fijal, M. Jaskola, W. Kretschmer, T. Mukoyama, D. Trautmann
The role of multiple ionization and subshell coupling effects in L-shell ionization of Au by oxygen ions.
J. Phys. B 35, 3421 (2002)

O^{3+} + Au	Ionization	0.4-2.2 MeV/amu	Exp
O^{4+} + Au	Ionization	0.4-2.2 MeV/amu	Exp
O^{5+} + Au	Ionization	0.4-2.2 MeV/amu	Exp
O^{6+} + Au	Ionization	0.4-2.2 MeV/amu	Exp

359. P. J. Salas
Mechanisms for continuous control of Lyman-α emission in alkaline-proton collisions.
J. Phys. B 35, 3443 (2002)

H^+ + Li	Charge Transfer	0.01-10 keV	Th
H^+ + Li^*	Charge Transfer	0.01-10 keV	Th
H^+ + Na	Charge Transfer	0.01-10 keV	Th
H^+ + Na^*	Charge Transfer	0.01-10 keV	Th

360. E. G. Cavalcanti, G. M. Sigaud, E. C. Montenegro, M. M. Sant'Anna, H. Schmidt-Boecking
Post-collisional effects in multiple ionization of neon by protons.
J. Phys. B 35, 3937 (2002)

H^+ + Ne	Ionization	0.75-3.5 MeV	Exp

361. M.S.A. El Kader
The depolarized interaction-induced light scattering spectrum and ground state potential curve of gaseous argon.
J. Phys. B 35, 4021 (2002)

Ar + Ar	Elastic Scattering	100-1000 K	Exp
Ar + Ar	Interaction Potentials	100-1000 K	Exp

362. G. Laurent, P. D. Fainstein, M. E. Galassi, R. D. Rivarola, L. Adoui, A. Cassimi
Orientation and interference effects in single ionization of H_2 by fast ions.
J. Phys. B 35, L495 (2002)

C^{6+} + H_2	Total Scattering	13.7 MeV/amu	Th
C^{6+} + H_2	Ionization	13.7 MeV/amu	Th

363. J. R. Vazquez de Aldana, L. Roso
Numerical simulations of 1 GeV/nucleon U^{92+} impact against atomic hydrogen.
J. Phys. B 35, 4719 (2002)

U^{92+} + H	Total Scattering	1 GeV/amu	Th
U^{92+} + H	Ionization	1 GeV/amu	Th

364. D. Nehari, F. Brouillard, J. Jureta, X. Urbain
Associative ionization in the collision of H(1s) with H(3s) and D(1s) with D(3s).
J. Phys. B 35, 4733 (2002)

H + H	Association	0.006-3.6 eV	Exp
H + H	Ionization	0.006-3.6 eV	Exp
H + H^*	Association	0.006-3.6 eV	Exp
H + H^*	Ionization	0.006-3.6 eV	Exp
D + D	Association	0.006-3.6 eV	Exp
D + D	Ionization	0.006-3.6 eV	Exp
D + D^*	Association	0.006-3.6 eV	Exp
D + D^*	Ionization	0.006-3.6 eV	Exp

365. A. Reinkoester, B. Siegmann, U. Werner, B. A. Huber, H. O. Lutz
Multi-fragmentation of C_{60} after collisions with Ar^{2+} ions.
J. Phys. B 35, 4989 (2002)

$Ar^+ + C_{60}$	Dissociation	0.04-0.95 a.u.	Exp
$Ar^+ + C_{60}$	Ionization	0.04-0.95 a.u.	Exp
$Ar^{2+} + C_{60}$	Dissociation	0.04-0.95 a.u.	Exp
$Ar^{2+} + C_{60}$	Ionization	0.04-0.95 a.u.	Exp
$Ar^{3+} + C_{60}$	Dissociation	0.04-0.95 a.u.	Exp
$Ar^{3+} + C_{60}$	Ionization	0.04-0.95 a.u.	Exp

366. M. Stoll, T. Koehler
Inelastic diffraction and spectroscopy of very weakly bound clusters.
J. Phys. B 35, 4999 (2002)

$H_2 + D_2$	Interaction Potentials	2-15 $\AA$	Th
$D_2 + D_2$	Interaction Potentials	2-15 $\AA$	Th

367. M. I. Chibisov, R. K. Janev, X. Urbain, F. Brouillard
Electron capture and excitation in slow H^+ + He*(n) collisions.
J. Phys. B 35, 5081 (2002)

H^+ + He	Charge Transfer	$2x10^6$ - $1.3x10^8$ cm/s	Th
H^+ + He	Excitation	$2x10^6$ - $1.3x10^8$ cm/s	Th
$H^+ + He^*$	Charge Transfer	$2x10^6$ - $1.3x10^8$ cm/s	Th
$H^+ + He^*$	Excitation	$2x10^6$ - $1.3x10^8$ cm/s	Th

368. M. Korek, A. R. Allouche, S. N. Abdul Al
Potential curves and rovibrational energies for electronic states of the molecular ion KCs^+.
Can. J. Phys. 80, 1025 (2002)

Cs^+ + K	Interaction Potentials		Th

369. H. Szichman, R. Baer
A five-dimensional quantum mechanical study of the H + CH_4 -¿ H_2 l+ CH_3 reaction.
J. Chem. Phys. 117, 7614 (2002)

H + CH_4	Interchange reaction	0.1-1.0 eV	Th

370. B. Maiti, C. Kalyanaraman, A. N. Panda, N. Sathyamurthy
Reaction probabilities and reaction cross sections for three-dimensional He + H_2^+ (v) collisions: A time-dependent quantum mechanical study.
J. Chem. Phys. 117, 9719 (2002)

He + H_2^+	Interchange reaction	1.0 eV	Th

371. S. D. Le Picard, P. Honvault, B. Bussery-Honvault, A. Canosa, S. Laube, J.-M. Launay, B. Rowe, D. Chastaing, I. R. Sims
Experimental and theoretical study of intramultiplet transitions in collisions of C(^{3}P) and Si(^{3}P) with He.
J. Chem. Phys. 117, 10109 (2002)

C + He	Interaction Potentials	10-500 K	E/T
C + He	Excitation	10-500 K	E/T
Si + He	Interaction Potentials	10-500 K	E/T
Si + He	Excitation	10-500 K	E/T

372. L. Pichl, Y. Li, H.-P. Liebermann, R. J. Buenker, M. Kimura
Charge transfer for the ground state O^+ (^{4}S) ion in collisions with H_2 molecules.
J. Chem. Phys. 118, 4872 (2003)

$O^+ + H_2$	Charge Transfer	0.001-10 keV/u	Th

373. M. J. Baldwin, R. P. Doerner, R. Causey, S. C. Luckhardt, R. W. Conn
Recombination of deuterium atoms on the surface of molten Li and LiD.
J. Nucl. Mater. 306, 15 (2002)

H + H	Association	300 Kelv	Exp
D + D	Association	300 Kelv	Exp

374. A. Ceballos, E. Garcia, A. Lagana
Quasiclassical rate coefficients for the H_2 + H_2 reaction and dissociation.
J. Phys. Chem. Ref. Data 31, 371 (2002)

H_2 + H_2	Dissociation	1000-4000 Kelv	Th
H_2 + H_2	Interchange reaction	1000-4000 Kelv	Th
H_2 + H_2	Energy Transfer	1000-4000 Kelv	Th

375. W. Liu, G. Imbriani, L. Buchmann, A. A. Chen, J. M. D'Auria, A. D'Onofrio, S. Engel, L. Gialanella, U. Greife, D. Hunter
Charge state studies of low energy heavy ions passing through hydrogen and helium gas.
Nucl. Instrum. Methods Phys. Res. A 496, 198 (2003)

O^+ + He	Charge Transfer	0.138-0.875 MeV	Exp
O^+ + He	Ionization	0.138-0.875 MeV	Exp
O^+ + H_2	Charge Transfer	0.138-0.875 MeV	Exp
O^+ + H_2	Ionization	0.138-0.875 MeV	Exp
O^{2+} + He	Charge Transfer	0.138-0.875 MeV	Exp
O^{2+} + He	Ionization	0.138-0.875 MeV	Exp
O^{2+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
O^{2+} + H_2	Ionization	0.138-0.875 MeV	Exp
O^{3+} + He	Charge Transfer	0.138-0.875 MeV	Exp
O^{3+} + He	Ionization	0.138-0.875 MeV	Exp
O^{3+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
O^{3+} + H_2	Ionization	0.138-0.875 MeV	Exp
O^{4+} + He	Charge Transfer	0.138-0.875 MeV	Exp
O^{4+} + He	Ionization	0.138-0.875 MeV	Exp
O^{4+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
O^{4+} + H_2	Ionization	0.138-0.875 MeV	Exp
O^{5+} + He	Charge Transfer	0.138-0.875 MeV	Exp
O^{5+} + He	Ionization	0.138-0.875 MeV	Exp
O^{5+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
O^{5+} + H_2	Ionization	0.138-0.875 MeV	Exp
O^{6+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
O^{6+} + H_2	Ionization	0.138-0.875 MeV	Exp
O^{7+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
O^{7+} + H_2	Ionization	0.138-0.875 MeV	Exp
O^{8+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
O^{8+} + H_2	Ionization	0.138-0.875 MeV	Exp
Na^{2+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Na^{2+} + H_2	Ionization	0.138-0.875 MeV	Exp
Na^{3+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Na^{3+} + H_2	Ionization	0.138-0.875 MeV	Exp
Na^{4+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Na^{4+} + H_2	Ionization	0.138-0.875 MeV	Exp
Na^{5+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Na^{5+} + H_2	Ionization	0.138-0.875 MeV	Exp
Na^{6+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Na^{6+} + H_2	Ionization	0.138-0.875 MeV	Exp
Na^{7+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Na^{7+} + H_2	Ionization	0.138-0.875 MeV	Exp
Na^{8+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Na^{8+} + H_2	Ionization	0.138-0.875 MeV	Exp
Na^{9+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Na^{9+} + H_2	Ionization	0.138-0.875 MeV	Exp

Mg^{4+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Mg^{4+} + H_2	Ionization	0.138-0.875 MeV	Exp
Mg^{5+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Mg^{5+} + H_2	Ionization	0.138-0.875 MeV	Exp
Mg^{6+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Mg^{6+} + H_2	Ionization	0.138-0.875 MeV	Exp
Mg^{7+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Mg^{7+} + H_2	Ionization	0.138-0.875 MeV	Exp
Mg^{8+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Mg^{8+} + H_2	Ionization	0.138-0.875 MeV	Exp
Mg^{9+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Mg^{9+} + H_2	Ionization	0.138-0.875 MeV	Exp
Mg^{10+} + H_2	Charge Transfer	0.138-0.875 MeV	Exp
Mg^{10+} + H_2	Ionization	0.138-0.875 MeV	Exp

376. H. Geissel, H. Weick, C. Scheidenberger, R. Bimbot, D. Gardes
Experimental studies of heavy-ion slowing down in matter.
Nucl. Instrum. Methods Phys. Res. B 195, 3 (2002)

Au^+ + C	Charge Transfer	1-1000 MeV/u	E/T
Au^+ + C	Ionization	1-1000 MeV/u	E/T
Au^+ + Ni	Charge Transfer	1-1000 MeV/u	E/T
Au^+ + Ni	Ionization	1-1000 MeV/u	E/T
Au^+ + Cu	Charge Transfer	1-1000 MeV/u	E/T
Au^+ + Cu	Ionization	1-1000 MeV/u	E/T
Au^+ + Au	Charge Transfer	1-1000 MeV/u	E/T
Au^+ + Au	Ionization	1-1000 MeV/u	E/T
Bi^+ + C	Charge Transfer	1-1000 MeV/u	E/T
Bi^+ + C	Ionization	1-1000 MeV/u	E/T
Bi^+ + Ni	Charge Transfer	1-1000 MeV/u	E/T
Bi^+ + Ni	Ionization	1-1000 MeV/u	E/T
Bi^+ + Cu	Charge Transfer	1-1000 MeV/u	E/T
Bi^+ + Cu	Ionization	1-1000 MeV/u	E/T
Bi^+ + Au	Charge Transfer	1-1000 MeV/u	E/T
Bi^+ + Au	Ionization	1-1000 MeV/u	E/T

377. D. Banas, M. Pajek, J. Semaniak, J. Braziewicz, A. Kubala-Kukus, U. Majewska, T. Czyzewski, M. Jaskola, W. Kretschmer, T. Mukoyama, D. Trautmann
Multiple ionization effects in low-resolution X-ray spectra induced by energetic heavy ions.
Nucl. Instrum. Methods Phys. Res. B 195, 233 (2002)

H^+ + Au	Ionization	0.5-300 MeV	E/T
O^+ + Au	Ionization	0.5-300 MeV	E/T
O^+ + Bi	Ionization	0.5-300 MeV	E/T
O^+ + Th	Ionization	0.5-300 MeV	E/T
O^+ + U	Ionization	0.5-300 MeV	E/T
Si^{6+} + Au	Ionization	0.5-300 MeV	E/T
Si^{6+} + Bi	Ionization	0.5-300 MeV	E/T
Si^{6+} + Th	Ionization	0.5-300 MeV	E/T
Si^{6+} + U	Ionization	0.5-300 MeV	E/T
S^+ + Ta	Ionization	0.5-300 MeV	E/T
S^+ + Os	Ionization	0.5-300 MeV	E/T
S^+ + Au	Ionization	0.5-300 MeV	E/T
S^+ + Bi	Ionization	0.5-300 MeV	E/T
S^+ + Th	Ionization	0.5-300 MeV	E/T
S^+ + U	Ionization	0.5-300 MeV	E/T

378. A. T. Hasan, T. J. Gray
Formation of N and N_2 recoil ions from the bombardment of N_2 gas by a 19 MeV F^{4+} beam.
Nucl. Instrum. Methods Phys. Res. B 198, 1 (2002)

F^{4+} + N_2	Dissociation	19 MeV	Exp
F^{4+} + N_2	Elastic Scattering	19 MeV	Exp

379. M. J. Ozafran, M. E. Debray, R. Eusebi, A. J. Kreiner, M. E. Vazquez, A. Burlon, P. Stoliar
K X-ray production induced by ^{12}C on several elements.
Nucl. Instrum. Methods Phys. Res. B 201, 317 (2003)

C^+ + Al	Ionization	14-50 MeV	Exp
C^+ + Si	Ionization	14-50 MeV	Exp
C^+ + S	Ionization	14-50 MeV	Exp
C^+ + Cl	Ionization	14-50 MeV	Exp
C^+ + K	Ionization	14-50 MeV	Exp
C^+ + Ca	Ionization	14-50 MeV	Exp
C^+ + Ti	Ionization	14-50 MeV	Exp
C^+ + Cr	Ionization	14-50 MeV	Exp
C^+ + Fe	Ionization	14-50 MeV	Exp
C^+ + Cu	Ionization	14-50 MeV	Exp

380. R. Das, S. Sahoo, N. C. Sil, K. Roy
Electron emission induced by collisional ionization of Ne by p, p^- and alpha particles.
Phys. Scr. 66, 222 (2002)

H^+ + Ne	Ionization	10-4000 keV	Th
He^{2+} + Ne	Ionization	10-4000 keV	Th

381. H. T. Schmidt, A. Fardi, R. Schuch, S. H. Schwartz, H. Zettergren, H. Cederquist, L. Bagge, H. Danared, A. Kaellberg, J. Jensen, K.-G. Rensfelt, V. Mergel, L. Schmidt, H. Schmidt-Boecking, C. L. Cocke
Double-to-single target ionization ratio for electron capture in fast p-He collisions.
Phys. Rev. Lett. 89, 163201 (2002)

H^+ + He	Charge Transfer	2.5-4.5 MeV	Exp
H^+ + He	Ionization	2.5-4.5 MeV	Exp

382. D. H. Zhang, D. Xie, M. Yang, S.-Y. Lee
State-to-state integral cross section for the H + H_2O -¿ H_2 + OH abstraction reaction.
Phys. Rev. Lett. 89, 283203 (2002)

H + H_2O	Interchange reaction	0.8-1.6 eV	Th

383. A. Ramos, G. Tejeda, J. M. Fernandez, S. Montero
Rotational-translational state-to-state collisional rate constants of N_2 at low temperature (3¡T¡16 K).
Phys. Rev. A 66, 022702 (2002)

N_2 + N_2	Energy Transfer	3-16 K	Exp

384. R. Cabrera-Trujillo, J. R. Sabin, E. Deumens, Y. Oehrn
Stopping cross sections for N^{4+} -¿ H at low projectile velocity.
Phys. Rev. A 66, 022706 (2002)

N^{4+} + H	Charge Transfer	1-2500 eV/u	Th
N^{4+} + H	Total Scattering	1-2500 eV/u	Th
N^{4+} + H	Excitation	1-2500 eV/u	Th
N^{4+} + H	Ionization	1-2500 eV/u	Th

385. F. B. Yousif
Total cross section for the dissociative excitation of He_2^+ molecular ions in collision with He.
Phys. Rev. A 66, 022709 (2002)

He_2^+ + He	Dissociation	4-10 keV	Th
He_2^+ + He	Charge Transfer	4-10 keV	Th
He_2^+ + He	Energy Transfer	4-10 keV	Th
He_2^+ + He	Excitation	4-10 keV	Th

386. G. Hinojosa, F. B. Yousif, C. Cisneros, I. Alvarez
Ion-formation total cross sections from dissociative collisions of vibrationally relaxed H_3^+, D_3^+, and HD_2^+ molecular ions with He.
Phys. Rev. A 66, 022712 (2002)

H_3^+ + He	Dissociation	3-9.8 keV	Exp
H_3^+ + He	Energy Transfer	3-9.8 keV	Exp
HD_2^+ + He	Dissociation	3-9.8 keV	Exp
HD_2^+ + He	Energy Transfer	3-9.8 keV	Exp
D_3^+ + He	Dissociation	3-9.8 keV	Exp
D_3^+ + He	Energy Transfer	3-9.8 keV	Exp

387. A. M. Frolov
Structures and properties of the ground states in H_2^+-like adiabatic ions.
J. Phys. B 35, L331 (2002)

H + H^+	Heavy Particle Collisions	Th
H + H^+	Interaction Potentials	Th
H + D^+	Heavy Particle Collisions	Th
H + D^+	Interaction Potentials	Th
H^+ + H	Heavy Particle Collisions	Th
H^+ + H	Interaction Potentials	Th
D^+ + D	Heavy Particle Collisions	Th
D^+ + D	Interaction Potentials	Th

388. J. G. Wang, A. R. Turner, D. L. Cooper, D. R. Schultz, M. J. Rakovic, W. Fritsch, P. C. Stancil, B. Zygelman
Electron capture in collisions of S^{4+} with helium.
J. Phys. B 35, 3137 (2002)

S^{4+} + He	Charge Transfer	10^{-3}-10^7 eV/u	E/T

389. R. O. Barrachina, C. Courbin
Cusp formation in classical trajectory Monte Carlo calculations of ion-impact ionization collisions.
J. Phys. B 35, 3157 (2002)

H^+ + H	Ionization	100 keV	Th

390. Y. Itoh
Measurements of state-selective differential cross sections for the one-electron capture process in the O^{2+}-He system at E_{lab} = 30, 40 and 50 eV.
J. Phys. B 35, 3217 (2002)

O^{2+} + He	Charge Transfer	30-50 eV	Exp

391. S. Kita, T. Nakamura, A. Watanabe, N. Shimakura
One- and two-electron excitations in large angle scattering of Li^+ ions from He atoms.
J. Phys. B 35, L351 (2002)

Li^+ + He	Elastic Scattering	500-1500 eV	E/T
Li^+ + He	Total Scattering	500-1500 eV	E/T
Li^+ + He	Excitation	500-1500 eV	E/T

392. D. H. Madison, M. Schulz, S. Jones, M. Foster, R. Moshammer, J. Ullrich
Comparison of theoretical and absolute experimental fully differential cross sections for ion-atom impact ionization.
J. Phys. B 35, 3297 (2002)

$\mathbf{C^{6+} + He}$	Total Scattering	100 MeV/u	E/T
$\mathbf{C^{6+} + He}$	Ionization	100 MeV/u	E/T

393. L. Nagy, L. Kocbach, K. Pora, J. P. Hansen
Interference effects in the ionization of H_2 by fast charged projectiles.
J. Phys. B 35, L453 (2002)

$\mathbf{Kr^{34+} + H_2}$	Ionization	60 MeV/u	Th

394. E. A. Naji, T. Nzeyimana, X. Urbain, A. Le Padellec
Merged beam study of the associative ionization $O^- + D^+/O^+ + D^-$ and $C^+ + D^-$.
J. Phys. B 35, 4325 (2002)

$\mathbf{H^+ + O^-}$	Association	0.01-10 eV	Exp
$\mathbf{H^+ + O^-}$	Ionization	0.01-10 eV	Exp
$\mathbf{C^+ + H^-}$	Association	0.01-10 eV	Exp
$\mathbf{C^+ + H^-}$	Ionization	0.01-10 eV	Exp
$\mathbf{C^+ + D^-}$	Association	0.01-10 eV	Exp
$\mathbf{C^+ + D^-}$	Ionization	0.01-10 eV	Exp
$\mathbf{O^+ + H^-}$	Association	0.01-10 eV	Exp
$\mathbf{O^+ + H^-}$	Ionization	0.01-10 eV	Exp
$\mathbf{O^+ + D^-}$	Association	0.01-10 eV	Exp
$\mathbf{O^+ + D^-}$	Ionization	0.01-10 eV	Exp
$\mathbf{D^+ + O^-}$	Association	0.01-10 eV	Exp
$\mathbf{D^+ + O^-}$	Ionization	0.01-10 eV	Exp

395. D. M. Kearns, R. W. McCullough, H. B. Gilbody
Experimental study of the collision mechanisms involved in one-electron capture by slow N^{5+} ions in atomic and molecular hydrogen.
J. Phys. B 35, 4335 (2002)

$\mathbf{N^{5+} + H}$	Charge Transfer	214-857 eV/u	Exp
$\mathbf{N^{5+} + H_2}$	Charge Transfer	214-857 eV/u	Exp

396. J. de Vries, R. Hoekstra, R. Morgenstern, T. Schlathoelter
C^{q+}-induced excitation and fragmentation of uracil: effects of the projectile electronic structure.
J. Phys. B 35, 4373 (2002)

$\mathbf{C^+ + C_4H_4N_2O_2}$	Dissociation	2-120 keV	Exp
$\mathbf{C^+ + C_4H_4N_2O_2}$	Excitation	2-120 keV	Exp
$\mathbf{C^{3+} + C_4H_4N_2O_2}$	Dissociation	2-120 keV	Exp
$\mathbf{C^{3+} + C_4H_4N_2O_2}$	Excitation	2-120 keV	Exp
$\mathbf{C^{4+} + C_4H_4N_2O_2}$	Dissociation	2-120 keV	Exp
$\mathbf{C^{4+} + C_4H_4N_2O_2}$	Excitation	2-120 keV	Exp
$\mathbf{C^{5+} + C_4H_4N_2O_2}$	Dissociation	2-120 keV	Exp
$\mathbf{C^{5+} + C_4H_4N_2O_2}$	Excitation	2-120 keV	Exp
$\mathbf{C^{6+} + C_4H_4N_2O_2}$	Dissociation	2-120 keV	Exp
$\mathbf{C^{6+} + C_4H_4N_2O_2}$	Excitation	2-120 keV	Exp

397. S. M. Harper, W.-P. Hu, S. D. Price
Imaging the electron transfer reaction of Ne^{2+} with Ar using position-sensitive coincidence spectroscopy.
J. Phys. B 35, 4409 (2002)

$\mathbf{Ne^{2+} + Ar}$	Charge Transfer	4-14 eV	Exp
$\mathbf{Ne^{2+} + Ar}$	Total Scattering	4-14 eV	Exp

398. M. van der Poel, C. V. Nielsen, M. Rybaltover, S. E. Nielsen, M. Machholm, N. Andersen
Atomic scattering in the diffraction limit: electron transfer in keV Li^+-Na(3s,3p) collisions.
J. Phys. B 35, 4491 (2002)

Li^+ + Na	Charge Transfer	2.7-24 keV	Exp
Li^+ + Na	Total Scattering	2.7-24 keV	Exp

399. R. V. Krems, D. Zgid, G. Chalasinski, J. Klos, A. Dalgarno
Possibility of buffer-gas cooling of paramagnetic carbon to ultracold temperatures.
Phys. Rev. A 66, 030702 (2002)

C + He	De-excitation	10^{-5}-1 Kelv	Th
C + He	Elastic Scattering	10^{-5}-1 Kelv	Th

400. X. Zhang, S. Wu, W. Jin, G. Li, F. Lu, J. Tang, F. Yang
Experimental study of single-electron-detachment cross sections for 8-30-keV Cu^- in collisions with noble gases.
Phys. Rev. A 66, 032702 (2002)

He + Cu^-	Ionization	8-30 keV	Exp
Ne + Cu^-	Ionization	8-30 keV	Exp
Ar + Cu^-	Ionization	8-30 keV	Exp
Cu^- + He	Detachment	8-30 keV	Exp
Cu^- + He	Ionization	8-30 keV	Exp
Cu^- + Ne	Detachment	8-30 keV	Exp
Cu^- + Ne	Ionization	8-30 keV	Exp
Cu^- + Ar	Detachment	8-30 keV	Exp
Cu^- + Ar	Ionization	8-30 keV	Exp

401. M. A. Gearba, R. A. Komara, S. R. Lundeen, W. G. Sturrus, C. W. Fehrenbach, B. D. DePaola, X. Flechard
Stark-induced x-ray emission from high Rydberg states of H-like and He-like silicon ions.
Phys. Rev. A 66, 032705 (2002)

S^{13+} + Rb	Charge Transfer	1 keV/q	Exp
S^{13+} + Rb	Fluorescence	1 keV/q	Exp
S^{13+} + Rb*	Charge Transfer	1 keV/q	Exp
S^{13+} + Rb*	Fluorescence	1 keV/q	Exp
S^{14+} + Rb	Charge Transfer	1 keV/q	Exp
S^{14+} + Rb	Fluorescence	1 keV/q	Exp
S^{14+} + Rb*	Charge Transfer	1 keV/q	Exp
S^{14+} + Rb*	Fluorescence	1 keV/q	Exp

402. H. Zettergren, H. T. Schmidt, H. Cederquist, J. Jensen, S. Tomita, P. Hvelplund, H. Lebius, B. A. Huber
Static over-the-barrier model for electron transfer between metallic spherical objects.
Phys. Rev. A 66, 032710 (2002)

C^{2+} + C_{60}	Charge Transfer	0.1 v_0	Th
C^{3+} + C_{60}	Charge Transfer	0.1 v_0	Th
C^{4+} + C_{60}	Charge Transfer	0.1 v_0	Th
C^{5+} + C_{60}	Charge Transfer	0.1 v_0	Th
$C_{60}{}^{2+}$ + C_{60}	Charge Transfer	0.1 v_0	Th
$C_{60}{}^{3+}$ + C_{60}	Charge Transfer	0.1 v_0	Th
$C_{60}{}^{4+}$ + C_{60}	Charge Transfer	0.1 v_0	Th
$C_{60}{}^{5+}$ + C_{60}	Charge Transfer	0.1 v_0	Th

403. M. S. Pindzola
Proton-impact excitation of laser-excited lithium atoms.
Phys. Rev. A 66, 032716 (2002)

H^+ + Li	Excitation	15-50 keV	Th

404. B. Siegmann, U. Werner, Z. Kaliman, Z. Roller-Lutz, N. M. Kabachnik, H. O. Lutz
Multiple ionization of diatomic molecules in collisions with 50-300-keV hydrogen and helium ions.
Phys. Rev. A 66, 052701 (2002)

H^+ + CO	Ionization	50-300 keV	Exp
H^+ + N_2	Ionization	50-300 keV	Exp
H^+ + NO	Ionization	50-300 keV	Exp
H^+ + O_2	Ionization	50-300 keV	Exp
He^+ + CO	Ionization	50-300 keV	Exp
He^+ + N_2	Ionization	50-300 keV	Exp
He^+ + NO	Ionization	50-300 keV	Exp
He^+ + O_2	Ionization	50-300 keV	Exp
D^+ + CO	Ionization	50-300 keV	Exp
D^+ + N_2	Ionization	50-300 keV	Exp
D^+ + NO	Ionization	50-300 keV	Exp
D^+ + O_2	Ionization	50-300 keV	Exp

405. M. E. Galassi, R. D. Rivarola, P. D. Fainstein, N. Stolterfoht
Young-type interference patterns in electron emission spectra produced by impact of swift ions on H_2 molecules.
Phys. Rev. A 66, 052705 (2002)

Kr^{34+} + H_2	Ionization	60 MeV/u	E/T

406. S. Bliman, R. Bruch, M. Cornille, A. Langereis, J. Nordgren
Case study of the Ar^{9+} - He collision system at low velocity.
Phys. Rev. A 66, 052707 (2002)

Ar^{9+} + He	Charge Transfer	2.25 keV/u	Exp

407. Y.-Y. Jau, N. N. Kuzma, W. Happer
High-field measurement of the ^{129}Xe-Rb spin-exchange rate due to binary collisions.
Phys. Rev. A 66, 052710 (2002)

Xe + Rb	De-excitation	433-473 Kelv	Exp
Xe + Rb	Excitation	433-473 Kelv	Exp

408. M. F. Ciappina, S. Otranto, C. R. Garibotti
Correlated eikonal initial state in ion-atom collisions.
Phys. Rev. A 66, 052711 (2002)

H^+ + He	Ionization	1.5 MeV/u	E/T
F^{9+} + He	Ionization	1.5 MeV/u	E/T

409. A. Zerarka, Y. Boumedjane, J. Hans
Inverted potential by the phase-integral method: He-Na elastic scattering.
Phys. Rev. A 66, 052717 (2002)

He + Na	Elastic Scattering	Th
He + Na	Interaction Potentials	Th

410. A. V. Avdeenkov, J. L. Bohn
Collisional dynamics of ultracold OH molecules in an electrostatic field.
Phys. Rev. A 66, 052718 (2002)

OH + OH	Interaction Potentials	1-100 μ K	Th
OH + OH	Total Scattering	1-100 μ K	Th

411. T. Kirchner, M. Horbatsch, H. J. Luedde
Time-dependent independent-particle model calculation of multiple capture and ionization processes in p-Ar, p(overbar)-Ar, and He^{2+}-Ar collisions.
Phys. Rev. A 66, 052719 (2002)

H^+ + Ar	Charge Transfer	5-1000 keV/u	E/T
H^+ + Ar	Ionization	5-1000 keV/u	E/T
He^{2+} + Ar	Charge Transfer	5-1000 keV/u	E/T
He^{2+} + Ar	Ionization	5-1000 keV/u	E/T

412. B. Siegmann, U. Werner, H. O. Lutz, R. Mann
Complete Coulomb fragmentation of CO_2 in collisions with 5.9 MeV U^{-1} Xe^{18+} and Xe^{43+}.
J. Phys. B 35, 3755 (2002)

Xe^{18+} + CO_2	Dissociation	5.9 MeV/u	E/T
Xe^{18+} + CO_2	Ionization	5.9 MeV/u	E/T
Xe^{43+} + CO_2	Dissociation	5.9 MeV/u	E/T
Xe^{43+} + CO_2	Ionization	5.9 MeV/u	E/T

3.1.2 Surface Interactions

413. M. Vos
Observing atom motion by electron-atom Compton scattering.
Phys. Rev. A 65, 012703 (2002)

e + C	Surface Interactions	25 keV	Exp
e + Cu	Surface Interactions	25 keV	Exp

414. C. s. Campos, M.A.Z. Vasconcellos, X. Llovet, F. Salvat
Measurements of L-shell x-ray production cross sections of W, Pt, and Au by 10-30 keV electrons.
Phys. Rev. A 66, 012719 (2002)

e + W	Surface Interactions	10-30 keV	Exp
e + Pt	Surface Interactions	10-30 keV	Exp
e + Au	Surface Interactions	10-30 keV	Exp

415. H. Gnasner
Formation of gas-phase oxygen-carbon $OC_n{}^{2-}$ dianions by sputtering.
Phys. Rev. A 66, 013203 (2002)

Cs^+ + C	Sputtering	14.5 keV	Exp

416. H. Jouin, F. A. Gutierrez, C. Harel
Erratum: Surface-plasmon-assisted electron-capture mechanism in low-energy He^+ (1s)-Al(111) collisions [Phys. Rev. A 63, 052901 (2001)].
Phys. Rev. A 66, 019901 (2002)

He^+ + Al	Neutraliz., Ioniz., Dissoc.	2 keV	Th

417. M. J. Baldwin, R. P. Doerner, R. Causey, S. C. Luckhardt, R. W. Conn
Recombination of deuterium atoms on the surface of molten Li and LiD.
J. Nucl. Mater. 306, 15 (2002)

D + D + Li	Trapping, Detrapping	300 Kelv	Exp
D + D + DLi	Trapping, Detrapping	300 Kelv	Exp

418. H. Iwakiri, K. Morishita, N. Yoshida
Effects of helium bombardment on the deuterium behavior in tungsten.
J. Nucl. Mater. 307-311, 135 (2002)

H_2^+ + W	Trapping, Detrapping	8 keV	Exp
D_2^+ + W	Trapping, Detrapping	8 keV	Exp

419. M. Poon, R. G. Macaulay-Newcombe, J. W. Davis, A. A. Haasz
Flux dependence of deuterium retention in single crystal tungsten.
J. Nucl. Mater. 307-311, 723 (2002)

H_3^+ + W	Trapping, Detrapping	1.5 keV	Exp
D_3^+ + W	Trapping, Detrapping	1.5 keV	Exp

420. M. Matsuyama, T. Murai, K. Yoshida, K. Watanabe, H. Iwakiri, N. Yoshida
Studies on retention of tritium implanted into tungsten by β-ray-induced X-ray spectrometry.
J. Nucl. Mater. 307-311, 729 (2002)

H^+ + W	Trapping, Detrapping	1.0 keV	Exp
T^+ + W	Trapping, Detrapping	1.0 keV	Exp

421. B. M. Oliver, T. J. Venhaus, R. A. Causey, F. A. Garner, S. A. Maloy
Hydrogen release from 800 MeV proton-irradiated tungsten.
J. Nucl. Mater. 307-311, 1418 (2002)

H^+ + W	Trapping, Detrapping	800 MeV	Exp

422. E. Rabaglino, J. P. Hiernaut, C. Ronchi, F. Scaffidi-Argentina
Helium and tritium kinetics in irradiated beryllium pebbles.
J. Nucl. Mater. 307-311, 1424 (2002)

H^+ + Be	Trapping, Detrapping	0.1 MeV	Exp
He^+ + Be	Trapping, Detrapping	0.1 MeV	Exp
T^+ + Be	Trapping, Detrapping	0.1 MeV	Exp

423. K. Morita, H. Suzuki, K. Soda, H. Iwahara, H. Nakamura, T. Hayasi, M. Nishi
Exchange of tritium implanted into oxide ceramics for protium by exposure to air vapors at room temperature.
J. Nucl. Mater. 307-311, 1461 (2002)

H_2^+ + SrCeYb	Desorption	1 keV	Exp
H_2^+ + SrCeYb	Trapping, Detrapping	1 keV	Exp
T_2^+ + SrCeYb	Desorption	1 keV	Exp
T_2^+ + SrCeYb	Trapping, Detrapping	1 keV	Exp

424. H. Atsumi
Hydrogen bulk retention in graphite and kinetics of diffusion.
J. Nucl. Mater. 307-311, 1466 (2002)

H_2 + C	Trapping, Detrapping	300 Kelv	Exp

425. R. Ishida, T. Shibahara, T. Tanabe
Application of electron stimulated desorption for hydrogen removal from graphite.
J. Nucl. Mater. 307-311, 1502 (2002)

e + H_2^+ + C	Desorption	400-1200 eV; 1 KeV; 673 Kelv	Exp
e + D_2 + C	Desorption	400-1200 eV; 1 KeV; 673 Kelv	Exp
H_2 + C	Adsorption, Desorption	400-1200 eV; 1 KeV; 673 Kelv	Exp

426. S. Nagata, B. Tsuchiya, T. Sugawara, N. Ohtsu, T. Shikama
Helium and hydrogen trapping in W and Mo single-crystals irradiated by He ions.
J. Nucl. Mater. 307-311, 1513 (2002)

He + Mo	Trapping, Detrapping	300 Kelv	Exp
He + W	Trapping, Detrapping	300 Kelv	Exp
H_2 + Mo	Trapping, Detrapping	300 Kelv	Exp
H_2 + W	Trapping, Detrapping	300 Kelv	Exp

427. A. Hassanein
Hydrogen and helium entrapment in flowing liquid metal plasma-facing surfaces.
J. Nucl. Mater. 307-311, 1517 (2002)

H + Li	Trapping, Detrapping		Th
He + Li	Trapping, Detrapping		Th

428. A.Y.K. Chen, J. W. Davis, A. A. Haasz
Water formation in graphite and boron-doped graphite under simultaneous O^+ and H^+ irradiation.
J. Nucl. Mater. 312, 16 (2003)

H^+ + C	Chemical Reactions	0.7-3.0 keV	Exp
O^+ + C	Chemical Reactions	0.7-3.0 keV	Exp

429. F. Zielinski, J. M. Costantini, J. Haussy, F. Durbin
Helium depth profiling in tantalum after ion implantation and high-temperature annealing.
J. Nucl. Mater. 312, 141 (2003)

He^+ + Ta	Trapping, Detrapping	3.4-4.0 MeV	E/T

430. A. Barna, M. Menyhard, G. Zsolt, N. Q. Khanh, A. Zalar, P. Panjan
Relative sputter rate measured in Cu/Co multilayer using Ar^+ ion bombardment at grazing angle of incidence.
J. Vac. Sci. Technol. A 21, 196 (2002)

Ar^+ + Co	Sputtering	1 keV	Exp
Ar^+ + Cu	Sputtering	1 keV	Exp

431. K. Ohya
Monte Carlo simulation of heavy ion induced kinetic electron emission from an Al surface.
Nucl. Instrum. Methods Phys. Res. B 195, 281 (2002)

Ne^+ + Al	Reflection	10-50 keV	Th
Ne^+ + Al	Second. Elect. Emission	10-50 keV	Th
Ne^+ + Al	Sputtering	10-50 keV	Th
Al^+ + Al	Reflection	10-50 keV	Th
Al^+ + Al	Second. Elect. Emission	10-50 keV	Th
Al^+ + Al	Sputtering	10-50 keV	Th
Ar^+ + Al	Reflection	10-50 keV	Th
Ar^+ + Al	Second. Elect. Emission	10-50 keV	Th
Ar^+ + Al	Sputtering	10-50 keV	Th
Kr^+ + Al	Reflection	10-50 keV	Th
Kr^+ + Al	Second. Elect. Emission	10-50 keV	Th
Kr^+ + Al	Sputtering	10-50 keV	Th
Xe^+ + Al	Reflection	10-50 keV	Th
Xe^+ + Al	Second. Elect. Emission	10-50 keV	Th
Xe^+ + Al	Sputtering	10-50 keV	Th

432. V. I. Shulga
The density and binding effects in sputtering by ions of widely varying masses.
Nucl. Instrum. Methods Phys. Res. B 195, 291 (2002)

Ne^+ + Ge	Sputtering	0.1-100 keV	Th
Ar^+ + Fe	Sputtering	0.1-100 keV	Th
Ar^+ + Ge	Sputtering	0.1-100 keV	Th
Ar^+ + perturbation	Sputtering	0.1-100 keV	Th
Xe^+ + Fe	Sputtering	0.1-100 keV	Th
Xe^+ + Ge	Sputtering	0.1-100 keV	Th
Xe^+ + Pt	Sputtering	0.1-100 keV	Th
Xe^+ + perturbation	Sputtering	0.1-100 keV	Th

433. G. Ecke, R. Kosiba, V. Kharlamov, Y. Trushin, J. Pezoldt
The estimation of sputtering yields for SiC and Si.
Nucl. Instrum. Methods Phys. Res. B 196, 39 (2002)

Ne^+ + Si	Sputtering	0.5-5.0 keV	Th
Ne^+ + SiC	Sputtering	0.5-5.0 keV	Th
Ar^+ + Si	Sputtering	0.5-5.0 keV	Th
Ar^+ + SiC	Sputtering	0.5-5.0 keV	Th
Xe^+ + Si	Sputtering	0.5-5.0 keV	Th
Xe^+ + SiC	Sputtering	0.5-5.0 keV	Th

434. J. Krasa, L. Laska, M. P. Stockli, C. W. Fehrenbach
Electron yield from Be-Cu induced by highly charged Xe^{q+} ions.
Nucl. Instrum. Methods Phys. Res. B 196, 61 (2002)

Cu^{9+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Cu^{9+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{8+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{8+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{9+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{9+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{10+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{10+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{12+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{12+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{14+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{14+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{16+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{16+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{18+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{18+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{20+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{20+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{22+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{22+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{24+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{24+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{26+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{26+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{28+} + Cu	Second. Elect. Emission	40-4000 keV	Exp
Xe^{28+} + BeCu	Second. Elect. Emission	40-4000 keV	Exp

435. F. F. Umarov, N. N. Bazarbaev, L. B. Kudryashova, N. M. Krylov
On mechanism of low-energy heavy ions scattering on a target surface with small atomic mass.
Nucl. Instrum. Methods Phys. Res. B 196, 155 (2002)

Cs^+ + Al	Reflection	10-500 eV	Exp
Cs^+ + Si	Reflection	10-500 eV	Exp
Cs^+ + Ni	Reflection	10-500 eV	Exp

436. C. S. Lee, Y. H. Chen, Y. C. Liu
The hydrogen radiation induced by OH_2^+ and H_3^+ ion bombardment.
Nucl. Instrum. Methods Phys. Res. B 198, 37 (2002)

H_3^+ + Al	Reflection	10-20 keV	Exp
OH_2^+ + Al	Reflection	10-20 keV	Exp

437. O. Benka, M. Steinbatz
Temperature dependence of the electron and ion induced electron emission yield of Al, Cu and Ag.
Nucl. Instrum. Methods Phys. Res. B 201, 396 (2003)

H^+ + Al	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
H^+ + Cu	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
H^+ + Ag	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
He^{2+} + Al	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
He^{2+} + Cu	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
He^{2+} + Ag	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
O^{3+} + Al	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
O^{3+} + Cu	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
O^{3+} + Ag	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
e + Al	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
e + Cu	Second. Elect. Emission	3 keV; 2-6 MeV	Exp
e + Ag	Second. Elect. Emission	3 keV; 2-6 MeV	Exp

438. P.A.W. van der Heide, M. S. Lim, S. S. Perry, J. Bennett
A systematic study of the surface roughening and sputter rate variations occurring during SIMS ultrashallow depth profile analysis of Si with Cs^+.
Nucl. Instrum. Methods Phys. Res. B 201, 413 (2003)

Cs^+ + Si	Sputtering	0.25-5.0 keV	Exp

439. S. F. Belykh, V. V. Palitsin, A. Adraiens, F. Adams
Effect of projectile parameters on charge state formation of sputtered atoms.
Phys. Rev. B 66, 195309 (2002)

Al^- + Si	Sputtering	4.5-18 keV	Exp
Au^- + Si	Sputtering	4.5-18 keV	Exp
Al_2^- + Si	Sputtering	4.5-18 keV	Exp

440. T. Jacob, D. Martin, F. Stietz, F. Trager, B. Fricke
Resonant laser-induced desorption of metal atoms: A fully relativistic density-functional theory study.
Phys. Rev. B 66, 233409 (2002)

hν + Na	Desorption	0-3.5 eV	Th
hν + K	Desorption	0-3.5 eV	Th

441. H. Winter
Collisions of atoms and ions with surfaces under grazing incidence.
Phys. Rep. 367, 387 (2002)

442. B. Bahrim, U. Thumm
Electron transfer and orbital hybridization in slow collisions between excited hydrogen atoms and aluminum surfaces.
Surf. Sci. 521, 84 (2002)

H + Al	Surface Interactions	Th
H + Al	Neutraliz., Ioniz., Dissoc.	Th

443. Q. Wu, B. V. Yakshinskiy, T. E. Madey
Adsorption and decomposition of H_2S on UO_2(001).
Surf. Sci. 523, 1 (2003)

H_2S + UO_2	Adsorption, Desorption	300 Kelv	Exp

444. J. M. Gottfried, N. Elghobashi, S.L.M. Schroeder, K. Christmann
Oxidation of gold by oxygen-ion sputtering.
Surf. Sci. 523, 89 (2003)

O^+ + Au	Chemical Reactions	1-5 keV	Exp
$O_2{}^+$ + Au	Chemical Reactions	1-5 keV	Exp

445. G. V. Benemanskaya, D. V. Daineka, G. E. Frank-Kamenetskaya
Changes in electronic and adsorption properties under Cs adsorption on GaAs(100) in the transition from As-rich to Ga-rich surface.
Surf. Sci. 523, 211 (2003)

Cs + GaAs	Adsorption, Desorption	300 Kelv	Exp

446. M. Okada, M. Nakamura, K. Moritani, T. Kasai
Dissociative adsorption of hydrogen on thin Au films grown on Ir111.
Surf. Sci. 523, 218 (2003)

H_2 + Au	Adsorption, Desorption	300 Kelv	Exp
H_2 + Au	Neutraliz., Ioniz., Dissoc.	300 Kelv	Exp
D_2 + Au	Adsorption, Desorption	300 Kelv	Exp
D_2 + Au	Neutraliz., Ioniz., Dissoc.	300 Kelv	Exp

447. M. P. Lozano
Ion-induced desorption yield measurements from copper and aluminium.
Vacuum 67, 339 (2002)

Ar^+ + H_2 + Al	Desorption	3-7 keV	Exp
Ar^+ + H_2 + Cu	Desorption	3-7 keV	Exp
Ar^+ + CH_4 + Al	Desorption	3-7 keV	Exp
Ar^+ + CH_4 + Cu	Desorption	3-7 keV	Exp
Ar^+ + CO + Al	Desorption	3-7 keV	Exp
Ar^+ + CO + Cu	Desorption	3-7 keV	Exp
Ar^+ + CO_2 + Al	Desorption	3-7 keV	Exp
Ar^+ + CO_2 + Cu	Desorption	3-7 keV	Exp
Ar^+ + C_2H_6 + Al	Desorption	3-7 keV	Exp
Ar^+ + C_2H_6 + Cu	Desorption	3-7 keV	Exp

448. V. Baglin, I. R. Collins, O. Groebner, C. Gruenhagel, B. Jenninger
Molecular desorption by synchrotron radiation and sticking coefficient at cryogenic temperatures for H_2, CH_4, CO and CO_2.
Vacuum 67, 421 (2002)

H_2 + Cu	Adsorption, Desorption	300 Kelv	Exp
CH_4 + Cu	Adsorption, Desorption	300 Kelv	Exp
CO + Cu	Adsorption, Desorption	300 Kelv	Exp
CO_2 + Cu	Adsorption, Desorption	300 Kelv	Exp

449. J. J. Czyzewski, J. Krajniak
Efficiency of the secondary emission from a (001) Ag surface.
Vacuum 68, 297 (2002)

e + Ag	Second. Elect. Emission	160-600 eV	Exp

450. H. Winter, S. Lederer, K. Maass, A. Mertens, F. Aumayr, HP. Winter
Statistics of electron and exciton production for grazing impact of keV hydrogen atoms on a LiF(001) surface.
J. Phys. B 35, 3315 (2002)

H + LiF	Reflection	1-6 keV	Exp
H + LiF	Second. Elect. Emission	1-6 keV	Exp

3.1.3 Particle Beam-Matter Interactions

451. I. Nagy
Fast heavy particles in a correlated fermion system: An estimation for the Barkas effect.
Phys. Rev. A 65, 014901 (2002)

H^+ + Si	Part. Beam-Matter inter.	5-11 a.u.	Th

452. E. Nardi, Z. Zinamon, T. A. Tombrello, N. M. Tanushev
Simulation of the interaction of high-energy C_{60} cluster ions with amorphous targets.
Phys. Rev. A 66, 013201 (2002)

C_{60} + C	Part. Beam-Matter inter.	30-720 MeV	Th
C_{60} + Si	Part. Beam-Matter inter.	30-720 MeV	Th

453. G.-Q. Wang, Y.-H. Song, Y.-N. Wang, Z. L. Miskovic
Influence of a laser field on Coulomb explosions and stopping power for swift molecular ions interacting with solids.
Phys. Rev. A 66, 042901 (2002)

H_2^+ + Al	Part. Beam-Matter inter.	3-5 a.u.	Th

454. C. C. Montanari, J. E. Miraglia, N. R. Arista
Dynamics of solid inner-shell electrons in collisions with bare and dressed swift ions.
Phys. Rev. A 66, 042902 (2002)

H^+ + Al	Part. Beam-Matter inter.	0-20 a.u.	Th
H^+ + Si	Part. Beam-Matter inter.	0-20 a.u.	Th
H^+ + Cu	Part. Beam-Matter inter.	0-20 a.u.	Th
He^+ + Al	Part. Beam-Matter inter.	0-20 a.u.	Th

455. R. Ishida, T. Shibahara, T. Tanabe
Application of electron stimulated desorption for hydrogen removal from graphite.
J. Nucl. Mater. 307-311, 1502 (2002)

H_2^+ + C	Part. Beam-Matter inter.	400-1200 eV; 1 KeV; 673 Kelv	Exp

456. F. Zielinski, J. M. Costantini, J. Haussy, F. Durbin
Helium depth profiling in tantalum after ion implantation and high-temperature annealing.
J. Nucl. Mater. 312, 141 (2003)

He^+ + Ta	Part. Beam-Matter inter.	3.4-4.0 MeV	E/T

457. W. Liu, G. Imbriani, L. Buchmann, A. A. Chen, J. M. D'Auria, A. D'Onofrio, S. Engel, L. Gialanella, U. Greife, D. Hunter
Charge state studies of low energy heavy ions passing through hydrogen and helium gas.
Nucl. Instrum. Methods Phys. Res. A 496, 198 (2003)

N^{4+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
O^{2+} + He	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
O^{2+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
O^{3+} + He	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
O^{3+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
O^{4+} + He	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
O^{4+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
O^{5+} + He	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
O^{5+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp

Na^{3+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
Na^{4+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
Na^{5+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
Na^{6+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
Na^{7+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp
Mg^{6+} + H_2	Part. Beam-Matter inter.	0.138-0.875 MeV	Exp

458. P. L. Grande, G. Schiwietz
The unitary convolution approximation for heavy ions.
Nucl. Instrum. Methods Phys. Res. B 195, 55 (2002)

H + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
H^+ + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
He + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
He^+ + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
Li^{2+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
Li^{3+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
C^{4+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
C^{5+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
C^{6+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
O^+ + Al	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
O^+ + Si	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
O^{5+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
O^{6+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
O^{7+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
O^{8+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
Ne^{6+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
Ne^{7+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
Ne^{8+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
Ne^{9+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th
Ne^{10+} + C	Part. Beam-Matter inter.	10^{-3}-10^{2} MeV	Th

459. H. Geissel, H. Weick, C. Scheidenberger, R. Bimbot, D. Gardes
Experimental studies of heavy-ion slowing down in matter.
Nucl. Instrum. Methods Phys. Res. B 195, 3 (2002)

He^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
C^+ + Pb	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
O^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
O^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
S^{7+} + H_2	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Cl^{13+} + H_2	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Cl^{15+} + H_2	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Ar^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Ar^+ + Al	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Ar^+ + Pt	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Ar^+ + Au	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Zn^+ + C	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Br^{6+} + H_2	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Kr^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Kr^+ + Xe	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Kr^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Xe^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Xe^+ + Xe	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Xe^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Au^+ + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Au^+ + Cu	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Au^+ + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Au^{69+} + Al	Part. Beam-Matter inter.	1-1000 MeV/u	E/T

Au^{69+} + Au	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Pb^{+} + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Bi^{+} + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Bi^{82+} + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Bi^{82+} + Al	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Bi^{82+} + Cu	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Bi^{82+} + Ag	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
Bi^{82+} + Au	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
U^{+} + Be	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
U^{+} + Al	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
U^{+} + Ti	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
U^{+} + Xe	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
U^{+} + Au	Part. Beam-Matter inter.	1-1000 MeV/u	E/T
U^{+} + perturbation	Part. Beam-Matter inter.	1-1000 MeV/u	E/T

460. P. Sigmund, A. Schinner

Binary theory of electronic stopping.

Nucl. Instrum. Methods Phys. Res. B 195, 64 (2002)

Li^{+} + He	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Li^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Li^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Li^{+} + Si	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Be^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
B^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
B^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
B^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
C^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
C^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
C^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
C^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
N^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
N^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
N^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
N^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
O^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
O^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
O^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
O^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
F^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
F^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Ne^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Ne^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Ne^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Na^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Mg^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Al^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Al^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Si^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Si^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
P^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
S^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
S^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Cl^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Cl^{+} + Al	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Cl^{+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Cl^{+} + Ni	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th
Ar^{+} + C	Part. Beam-Matter inter.	10^{-3}-10^{3} MeV	Th

Ar^+ + Al	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ar^+ + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ar^+ + Ni	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^+ + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^+ + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{5+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{5+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{10+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{10+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{15+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{15+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{20+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{20+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{25+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{25+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{28+} + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th
Ni^{28+} + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV	Th

461. N. R. Arista
Energy loss of ions in solids: Non-linear calculations for slow and swift ions.
Nucl. Instrum. Methods Phys. Res. B 195, 91 (2002)

C^+ + C	Part. Beam-Matter inter.	0.0-0.5 MeV/u	Th
Ni^+ + C	Part. Beam-Matter inter.	0.0-0.5 MeV/u	Th
U^+ + C	Part. Beam-Matter inter.	0.0-0.5 MeV/u	Th
perturbation$^+$ + C	Part. Beam-Matter inter.	0.0-0.5 MeV/u	Th

462. A. H. Sorensen
Stopping of relativistic hydrogen- and heliumlike heavy ions.
Nucl. Instrum. Methods Phys. Res. B 195, 106 (2002)

Bi^+ + He	Part. Beam-Matter inter.	100-1000 MeV/u	Th
Bi^+ + Si	Part. Beam-Matter inter.	100-1000 MeV/u	Th
Bi^+ + Cu	Part. Beam-Matter inter.	100-1000 MeV/u	Th
Bi^+ + Ag	Part. Beam-Matter inter.	100-1000 MeV/u	Th
Bi^+ + Au	Part. Beam-Matter inter.	100-1000 MeV/u	Th
U^+ + Be	Part. Beam-Matter inter.	100-1000 MeV/u	Th
U^+ + Al	Part. Beam-Matter inter.	100-1000 MeV/u	Th
U^+ + Pb	Part. Beam-Matter inter.	100-1000 MeV/u	Th

463. L. G. Glazov
Frozen-charge stopping of ions in the Bethe regime.
Nucl. Instrum. Methods Phys. Res. B 195, 118 (2002)

He^+ + C	Part. Beam-Matter inter.	32-170 MeV	Th
Li^+ + C	Part. Beam-Matter inter.	32-170 MeV	Th
C^+ + C	Part. Beam-Matter inter.	32-170 MeV	Th
O^+ + C	Part. Beam-Matter inter.	32-170 MeV	Th

464. H. J. Whitlow, H. Timmers, R. G. Elliman, T.D.M. Weijers, Y. Zhang, D. J. O'Connor
Measurement and uncertainties of energy loss in silicon over a wide Z_1 range using time of flight detector telescopes.
Nucl. Instrum. Methods Phys. Res. B 193, 133 (2002)

Li^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
Be^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
B^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
C^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
N^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
O^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp

F^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
Na^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
Mg^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
Al^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
Si^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
P^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
Mn^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp
Fe^+ + Si	Part. Beam-Matter inter.	10^3 - 2x10^4 MeV	Exp

465. W. H. Trzaska, V. Lyapin, T. Alanko, M. Mutterer, J. Raisanen, G. Tjurin, M. Wojdyr
New approach to energy loss measurements.
Nucl. Instrum. Methods Phys. Res. B 195, 147 (2002)

H^+ + C	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
H^+ + Ni	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
H^+ + Au	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
He^{2+} + C	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
He^{2+} + Ni	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
He^{2+} + Au	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
O^+ + C	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
O^+ + Ni	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
O^+ + Au	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
Ar^+ + C	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
Ar^+ + Ni	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp
Ar^+ + Au	Part. Beam-Matter inter.	0.1-10^3 MeV/u	Exp

466. H. Paul, A. Schinner
An empirical approach to the stopping power of solids and gases for ions from $_3$Li to $_{18}$Ar – Part II.
Nucl. Instrum. Methods Phys. Res. B 195, 166 (2002)

He^{2+} + perturbation	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp
O^+ + C	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp
Ar^+ + Ne	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp
Ar^+ + Ar	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp
Ar^+ + Kr	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp
Ar^+ + Xe	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp
Ar^+ + H_2	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp
Ar^+ + D_2	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp
Ar^+ + N_2	Part. Beam-Matter inter.	10^{-3}-10^3 MeV/u	Exp

467. H. Ogawa, I. Katayama, Y. Haruyama, M. Saito, K. Yoshida, M. Tosaki, I. Sugai
Energy losses and straggling of light ions transmitted through thin carbon foils.
Nucl. Instrum. Methods Phys. Res. B 195, 175 (2002)

He^+ + C	Part. Beam-Matter inter.	10 MeV/u	Exp
He^{2+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
Li^{2+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
Li^{3+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
C^{4+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
C^{5+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
C^{6+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
O^{5+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
O^{6+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
O^{7+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp
O^{8+} + C	Part. Beam-Matter inter.	10 MeV/u	Exp

468. L. G. Glazov, P. Sigmund, A. Schinner
Statistics of heavy-ion stopping.
Nucl. Instrum. Methods Phys. Res. B 195, 183 (2002)

O^{6+} + C	Part. Beam-Matter inter.	3 MeV/u	Th
O^{7+} + C	Part. Beam-Matter inter.	3 MeV/u	Th
O^{8+} + C	Part. Beam-Matter inter.	3 MeV/u	Th

469. G. Maynard, C. Deutsch, K. Dimitriou, K. Katsonis, M. Sarrazin
Evaluation of the energy deposition profile for swift heavy ions in dense plasmas.
Nucl. Instrum. Methods Phys. Res. B 195, 188 (2002)

Cl^{8+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{8+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{9+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{9+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{10+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{10+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{11+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{11+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{12+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{12+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{13+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{13+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{14+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{14+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{15+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{15+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{16+} + H	Part. Beam-Matter inter.	1.5 MeV/u	Th
Cl^{16+} + H^+	Part. Beam-Matter inter.	1.5 MeV/u	Th

470. Y. Zhang
High-precision measurement of electronic stopping powers for heavy ions using high-resolution time-of-flight spectrometry.
Nucl. Instrum. Methods Phys. Res. B 196, 1 (2002)

Li^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Be^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Be^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Be^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
B^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
C^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
C^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
C^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
N^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
N^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
N^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
O^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
O^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
O^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
F^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Na^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Mg^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Mg^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Mg^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Al^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Al^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Al^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Si^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Si^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Si^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Cr^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Cr^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T

Cr^+ + Au	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Mn^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Mn^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Fe^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Fe^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Co^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Co^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Ni^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Ni^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Cu^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Cu^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
Br^+ + C	Part. Beam-Matter inter.	0-2000 keV/amu	E/T
I^+ + Al	Part. Beam-Matter inter.	0-2000 keV/amu	E/T

471. C. Pascual-Izarra, M. Bianconi, G. Lulli, C. Summonte
Stopping power of SiO_2 for 0.2-3.0 MeV He ions.
Nucl. Instrum. Methods Phys. Res. B 196, 209 (2002)

He^+ + SiO_2	Part. Beam-Matter inter.	200-3000 keV	Exp

472. X.-J. Liu, Y. Xia, F. Li, M. Ying, M. Zhao, B. Huang, C. Li, Y. Liu
Electronic stopping powers of molybdenum metal for ^{19}F ions at low velocity.
Nucl. Instrum. Methods Phys. Res. B 197, 17 (2002)

F^+ + Mo	Part. Beam-Matter inter.	80-350 keV	Exp

473. G. Amsel, G. Battistig, A. L'Hoir
Small angle multiple scattering of fast ions, physics, stochastic theory and numerical calculations.
Nucl. Instrum. Methods Phys. Res. B 201, 325 (2003)

H^+ + Fe	Part. Beam-Matter inter.	2-100 MeV	Th
He^{2+} + Si	Part. Beam-Matter inter.	2-100 MeV	Th
C^+ + Si	Part. Beam-Matter inter.	2-100 MeV	Th
U^+ + C	Part. Beam-Matter inter.	2-100 MeV	Th

474. R. Cabrera-Trujillo, J. R. Sabin, E. Deumens, Y. Oehrn
Stopping cross sections for N^{4+} -¿ H at low projectile velocity.
Phys. Rev. A 66, 022706 (2002)

N^{4+} + H	Part. Beam-Matter inter.	1-2500 eV/u	Th

475. J. E. Miraglia, M. S. Gravielle
Surface dielectric functions of a free-electron gas.
Phys. Rev. A 66, 032901 (2002)

H^+ + Al	Part. Beam-Matter inter.	1-700 keV	Th

3.1.4 Interactions of Atomic Particles with Fields

476. S. Sahoo, Y. K. Ho
Resonance of hydrogen and lithium atoms in parallel magnetic and electric fields.
Phys. Rev. A 65, 015403 (2002)

H	Inter. of At. part. with Fields	Th
Li	Inter. of At. part. with Fields	Th

477. I. I. Fabrikant
Rescattering of photodetached electrons from a polar molecule in a static electric field: Spatial distribution.
Phys. Rev. A 66, 010703 (2002)

LiF^-	Inter. of At. part. with Fields		Th

478. R. Shakeshaft
Representation of a complex Green function on a real basis: Series representation.
Phys. Rev. A 66, 012506 (2002)

H	Inter. of At. part. with Fields		Th

479. M. Nurhuda, A. Suda, K. Midorikawa
Ionization-induced high-order nonlinear susceptibility.
Phys. Rev. A 66, 041802 (2002)

H	Inter. of At. part. with Fields		Th

480. G.-Q. Wang, Y.-H. Song, Y.-N. Wang, Z. L. Miskovic
Influence of a laser field on Coulomb explosions and stopping power for swift molecular ions interacting with solids.
Phys. Rev. A 66, 042901 (2002)

H_2^+ + Al	Inter. of At. part. with Fields	3-5 a.u.	Th

481. K. Harumiya, H. Kono, Y. Fujimura, I. Kawata, A. D. Bandrauk
Intense laser-field ionization of H_2 enhanced by two-electron dynamics.
Phys. Rev. A 66, 043403 (2002)

H_2	Inter. of At. part. with Fields	760 μ m	Th

482. J. Chen, J. Liu, W. M. Zheng
Characteristic photoelectron spectra and angular distributions of single and double ionization.
Phys. Rev. A 66, 043410 (2002)

He	Inter. of At. part. with Fields	2.9 x 10^{14} - 6.6 x 10^{14} W/cm^2	Th

483. D. A. Telnov, S.-I. Chu
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)

Li^-	Inter. of At. part. with Fields	0.012-0.020 a.u.	Th

484. U. Schloeder, C. Silber, T. Deuschle, C. Zimmermann
Saturation in heteronuclear photoassociation of $^6Li^7Li$.
Phys. Rev. A 66, 061403 (2002)

Li + Li	Inter. of At. part. with Fields	0-600 W/cm^2	Exp

485. T. Hasegawa, T. Shimizu
Resonant oscillation modes of sympathetically cooled ions in a radio-frequency trap.
Phys. Rev. A 66, 063404 (2002)

Mg^+	Inter. of At. part. with Fields		Exp
Ca^+	Inter. of At. part. with Fields		Exp
Zn^+	Inter. of At. part. with Fields		Exp
Sr^+	Inter. of At. part. with Fields		Exp
Ba^+	Inter. of At. part. with Fields		Exp
Yb^+	Inter. of At. part. with Fields		Exp

486. A. Simoni, P. S. Julienne, E. Tiesinga, C. J. Williams
Intensity effects in ultracold photoassociation line shapes.
Phys. Rev. A 66, 063406 (2002)

Na + Na	Inter. of At. part. with Fields	1-360 W/cm^2	Th
Rb + Rb	Inter. of At. part. with Fields	1-360 W/cm^2	Th

487. A. Saenz
Behavior of molecular hydrogen exposed to strong dc, ac, or low-frequency laser fields. I. Bond softening and enhanced ionization.
Phys. Rev. A 66, 063407 (2002)

H + H	Inter. of At. part. with Fields	0-0.12 a.u.	Th
H_2	Inter. of At. part. with Fields	0-0.12 a.u.	Th

488. A. Saenz
Behavior of molecular hydrogen exposed to strong dc, ac, or low-frequency laser fields. II. Comparison of ab initio and Ammosov-Delone-Krainov rates.
Phys. Rev. A 66, 063408 (2002)

H + H	Inter. of At. part. with Fields	0-0.12 a.u.	Th
H_2	Inter. of At. part. with Fields	0-0.12 a.u.	Th

489. X. Zhao, V. L. Ryjkov, H. A. Schuessler
Parametric excitations of trapped ions in a linear rf ion trap.
Phys. Rev. A 66, 063414 (2002)

Mg^+	Inter. of At. part. with Fields		E/T

490. J. Rao, D. Delande, K. T. Taylor
Quantum manifestations of scattering orbits in the scaled spectrum of a non-hydrogenic atom in crossed fields.
J. Phys. B 35, L1 (2002)

H	Inter. of At. part. with Fields		Th
He	Inter. of At. part. with Fields		Th

491. J. Prager, C. H. Keitel
Laser-induced nonsequential double ionization approaching the relativistic regime.
J. Phys. B 35, L167 (2002)

He	Inter. of At. part. with Fields	1053 nm	Th

492. L. W. Garland, A. Jaron, J. Z. Kaminski, R. M. Potvliege
Off-shell effects in laser-assisted electron scattering at low frequency.
J. Phys. B 35, 2861 (2002)

e + He	Inter. of At. part. with Fields	9.5 eV	Th

493. S. Buescher, Th. Wrubel, S. Ferri, H.-J. Kunze
The Stark width and shift of the hydrogen Hα line.
J. Phys. B 35, 2889 (2002)

H	Inter. of At. part. with Fields		Exp

494. R. Drozdowski, M. Busch, G. von Oppen
Electric-field singlet-triplet anticrossings of the 1snd configurations of ^{3}He atoms.
J. Phys. B 35, 2949 (2002)

He	Inter. of At. part. with Fields		Th

495. N. Milosevic, V. P. Krainov, T. Brabec
Relativistic theory of tunnel ionization.
J. Phys. B 35, 3515 (2002)

H Seq	Inter. of At. part. with Fields		Th

496. V. R. Gonzalez, J. A. Aparicio, J. A. del Val, S. Mar
Stark broadening and shift measurements of visible Si II lines.
J. Phys. B 35, 3557 (2002)

Si^+	Inter. of At. part. with Fields	16,000-20,000 K	Exp

497. M. Gavrilia
Atomic stabilization in superintense laser fields.
J. Phys. B 35, R147 (2002)

H	Inter. of At. part. with Fields	0-100 a.u.	Th
Ne	Inter. of At. part. with Fields	0-100 a.u.	Th

498. M.S.A. El Kader
The depolarized interaction-induced light scattering spectrum and ground state potential curve of gaseous argon.
J. Phys. B 35, 4021 (2002)

Ar + Ar	Inter. of At. part. with Fields	100-1000 K	Exp

499. F. Robicheaux, E. Oks, A. L. Parker, T. Uzer
Multiphoton ionization of hydrogen in parallel microwave and static fields: quantal and classical simulations.
J. Phys. B 35, 4613 (2002)

H	Inter. of At. part. with Fields		Th

500. V. Milosavljevic, S. Djenize
Ion contribution to the astrophysical important 447.15, 587.56, and 667.82 nm He I spectral lines broadening.
Astron. Astrophys. 393, 721 (2002)

He	Inter. of At. part. with Fields	667-447 nm	Exp

501. V. Milosavljevic, S. Djenize
Ion contribution to the prominent Ne I, Ar I and Kr I spectral line broadening.
Astron. Astrophys. 398, 1179 (2003)

Ne	Inter. of At. part. with Fields	800-400 nm	E/T
Ar	Inter. of At. part. with Fields	800-400 nm	E/T
Kr	Inter. of At. part. with Fields	800-400 nm	E/T

502. D. Tankosic, L. C. Popovic, M. S. Dimitrijevic
The electron-impact broadening parameters for Co III spectral lines.
Astron. Astrophys. 399, 795 (2003)

Co^{2+}	Inter. of At. part. with Fields	200 nm	Th

503. M. Bhattacharya, B. Malakar, S. Sarkar
Scattering of electron by hydrogen atom in the presence of two laser fields.
Phys. Scr. 66, 208 (2002)

e + H	Inter. of At. part. with Fields	50-100 eV	Th

504. A. A. Vasilyev, I. M. Savukov, M. S. Safronova, H. G. Berry
Measurement of the 6s-7p transition probabilities in atomic cesium and a revised value for the weak charge Q_w.
Phys. Rev. A 66, 020101 (2002)

Cs	Inter. of At. part. with Fields	457 nm	Exp

505. Z.-C. Yan
Relativistic corrections to the Zeeman effect of lithium and lithiumlike ions in the 2^2P_J and 3^2P_J states.
Phys. Rev. A 66, 022502 (2002)

Li	Inter. of At. part. with Fields		Th

506. E. Shigemasa, T. Gejo, M. Nagasono, T. Hatsui, N. Kosugi
Double and triple excitations near the K-shell ionization threshold of N_2 revealed by symmetry-resolved spectroscopy.
Phys. Rev. A 66, 022508 (2002)

Ne	Inter. of At. part. with Fields	0.7-9.3 eV	Exp

507. G. Snell, B. Langer, A. T. Young, N. Berrah
Spin-polarization measurements of the krypton $M_{4,5}NN$ and xenon $N_{4,5}OO$ Auger electrons: Orientation and intrinsic parameters.
Phys. Rev. A 66, 022701 (2002)

Kr	Inter. of At. part. with Fields	130-530 eV	Exp
Xe	Inter. of At. part. with Fields	130-530 eV	Exp

508. H. W. van der Hart, C. H. Greene
Regularities and irregularities in partial photoionization cross sections of He.
Phys. Rev. A 66, 022710 (2002)

He	Inter. of At. part. with Fields	75 eV	Th

509. J. Zeng, J. Yuan
Photoionization of Be-like neon (Ne VII) from the low-lying states: Energies, widths, branching ratios, and oscillator strengths of the 1s-2p resonances.
Phys. Rev. A 66, 022715 (2002)

Ne^{6+}	Inter. of At. part. with Fields	65 Ry	Th

510. I. Cacelli, A. Fioretti, C. Gabbanini, M. Mazzoni, M. Persico
Line-shape study of two-color–three-proton ionization of Rb atoms.
Phys. Rev. A 66, 023408 (2002)

Rb	Inter. of At. part. with Fields	6286-6318 $\AA$	E/T

511. J. C. Lopez Vieyra, A. V. Turbiner
$H_3{}^{2+}$ molecular ion in a strong magnetic field: Triangular configuration.
Phys. Rev. A 66, 023409 (2002)

H^+	Inter. of At. part. with Fields	10^4-10^7 T	Th
$H_2{}^+$	Inter. of At. part. with Fields	10^4-10^7 T	Th

512. J. Zeng, J. Yuan
Resonance energies, oscillator strengths and autoionization widths of the 1s-2p excitations from O IV low-lying states.
J. Phys. B 35, 3041 (2002)

O^{3+}	Inter. of At. part. with Fields	40 Ry	Th

513. A. V. Golovin, N. A. Cherepkov
Angular distributions of photoelectrons from K-shells of a fixed-in-space CO molecule calculated by the multiple scattering Xα method.
J. Phys. B 35, 3191 (2002)

CO	Inter. of At. part. with Fields	400 eV	Th

514. S. Barsanti, P. Bicchi
Atomic population redistributions in a dense Ga vapour proceeding via energy pooling ionization induced by resonant laser-assisted collisions.
J. Phys. B 35, 4553 (2002)

Ga + Ga	Inter. of At. part. with Fields		Exp

515. S. C. Doret, P. D. Friedberg, A. J. Speck, D. S. Richardson, P. K. Majumder
Measurement of the Stark shift within the $6P_{1/2}$ 378-nm transition in atomic thallium.
Phys. Rev. A 66, 052504 (2002)

Th	Inter. of At. part. with Fields	0-30 kV/cm	Exp

516. Y.-Y. Jau, N. N. Kuzma, W. Happer
High-field measurement of the ^{129}Xe-Rb spin-exchange rate due to binary collisions.
Phys. Rev. A 66, 052710 (2002)

Xe + Rb	Inter. of At. part. with Fields	433-473 Kelv	Exp

517. A. V. Avdeenkov, J. L. Bohn
Collisional dynamics of ultracold OH molecules in an electrostatic field.
Phys. Rev. A 66, 052718 (2002)

OH + OH	Inter. of At. part. with Fields	1-100 μ K	Th

518. S. Geltman
A close-coupling approach to laser-assisted electron-atom scattering.
J. Phys. B 35, 4787 (2002)

e + He	Inter. of At. part. with Fields	0-16 eV	E/T

519. A. Saenz
Electronically excited states of molecular hydrogen exposed to strong direct current, alternative current, or low-frequency laser fields.
J. Phys. B 35, 4829 (2002)

H_2	Inter. of At. part. with Fields	0-0.1 a.u.	Th

520. M. S. Dimitrijevic, M. Dacic, Z. Cvetkovic, S. Sahal-Brechot
Stark broadening of spectral lines of multicharged ions of astrophysical interest. XXIII. Be III.
Astron. Astrophys. 400, 791 (2003)

Be^{2+}	Inter. of At. part. with Fields	10,000-300,000 K	Th

521. A. Sreckovic, M. S. Dimitrijevic, S. Djenize, S. Bukvic
Stark broadening parameters in the S III spectrum.
Astron. Astrophys. 400, 1155 (2003)

S^{2+}	Inter. of At. part. with Fields	10,000-150,000 K	E/T

AUTHOR INDEX