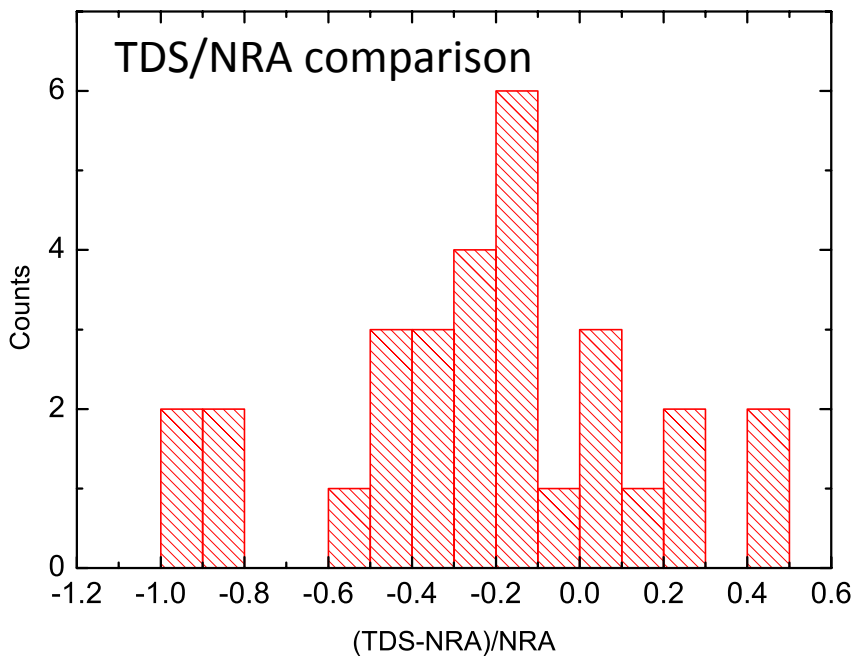


IAEA TDS RRE experiments

Summary and Outlook

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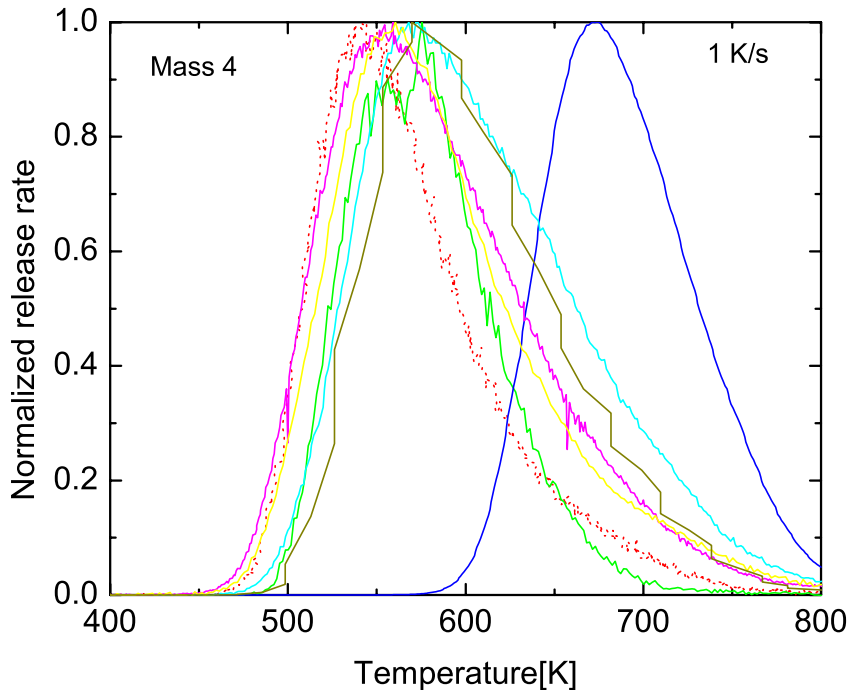


A) Outlook/Goal:

To seek quantitative explanations for the observed discrepancies.

worst case: we make no progress and can not explain

→ But even in this case, one can show the distribution of various systems and this will be valuable information on its own regarding TDS systems in general or TDS as an analytical method.



best case: we can explain all discrepancies. Therefore, we can use this information gained to provide a recommended guideline or practice to perform quantitative TDS work. Perhaps modeling work can also build on this (e.g. TMAP simulations incorporating pressure change)

→ **Impactful** - will be valuable to both experimentalists and modelers and have the potential to impact a wider community in other fields using TDS or RGA.

→To proceed or accomplish the above we need further information

Therefore we will query the following in a **standardized questionnaire** that will be distributed to participants in the near future.

The questionnaire consists broadly of the following categories (which substitutes as possible reasons for the observed discrepancies):

- 1) Background
- 2) Temperature
- 3) Pumping speed
- 4) Q-mass linearity
- 5) Calibration leak

B) Regarding the release of TDS data

- Submitted excel files uploaded or made available
- Discussion underway to setup interface and upload on IAEA servers to improve usability.

C) Further characterization of calibration samples (TBD)

- Since we have “fixed” the kinetic parameters, in principle if we characterize it further it could become a “standard”
- Mechanical properties – density, etc
- Kinetic H-trap properties (has potential to connect the modeling RRE and provide benchmark data)
- Microstructure properties (texture, nano-voids, etc)
- Workload can be distributed among participants (Microscopy etc., i.e. not just IPP)

Notes



Overview of goals of exercise

- Distribute **standard** calibration samples to all participants (IPP)
- ✓ **Absolute calibration for retention**
 - Identification of systematic errors → service to the community/practitioner
- ❑ **Provide input for the modeling efforts**
 - Benchmark data, inform the modeler of unsaid experimental artifacts
- ❑ **Further our understanding underpinning TDS desorption curve analysis**
 - Service to a wider community than participants
 - Recommend guideline for curve fitting process
- ❑ **Consequences for analysis for neutrons irradiated samples**
 - Interpreting high temperature release peaks where additional experimental artifacts exist – more system outgassing, water signals, etc.
- ❑ **Distillation of the understanding of the knowledge gained**
 - IAEA mid term/ final reports
 - Publication (TBD)