Summary of MOD2/A+M and goals for future

Martin O'Mullane

D Tskhakaya, L Scarlett, K D Laswon

Presentations

4 presentations under the MOD2/A+M strand

- Update on atomic data for H and W – and some modelling developments particularly at low-Te for H recombination.
  M O'Mullane
- PIC modelling of W prompt deposition – identification of missing fundamental data which significantly affects the results.
  D Tskhakaya
- Update on MCCC calculation and database – lots of progress and desire for prioritization of new data.
  L Scarlett
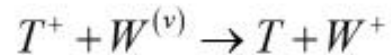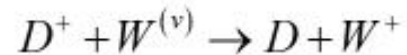- Why does the measured Lyman series on JET not match CR models?
  K Lawson

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Principal needs for W sputtering modelling

Charge-exchange CS or rates

$$D^+ + W^{(v)} \rightarrow D + W^+$$
$$T^+ + W^{(v)} \rightarrow T + W^+$$

Effective ionization rates

$$e + W \rightarrow e + W^{(v)} ... \rightarrow 2e + W^+$$

TM meeting on CR properties of W and H, IAEA, 28-Nov - 1 Dec 2023

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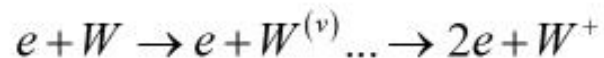
Future goals

Data and models are intertwined

- Ensure advances in both feed back to the other.
- Make better use of GNAMPP WG2 to assemble and assess data – sub-groups for atomic and molecular work?
- The ITER re-base has de-prioritized Be and emphasised B. But data for Be is still of interest to benchmark ongoing and post-mortem analysis of JET results.
- Metastable nature of the low stages of tungsten, $W^0 - W^{5+}$ should be modelled. Metastable-resolved ionization data for W^{3+} is available from Lanzhou group. Do we need to go higher?
- Do other machines see a discrepancy in Lyman series?
- Contact non-fusion engaged data producers – charge exchange calculations may be a fruitful area.
- W^0 ionization is still a priority.
- Can we add uncertainty quantification to the fundamental data.

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