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[*Invited Lecture*]

## **Electron-induced excitation and recombination of BeH<sup>+</sup> ions and isotopomers**

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**Abstract:** Cross sections and Maxwell rate coefficients for reactive collisions between electrons and Beryllium monohydride cations and isotopologues are computed using the Multichannel Quantum Defect Theory (MQDT). The key challenge in the use of beryllium as main chamber material for experimental and commercial fusion devices is to understand, predict and control the characteristics of the thermonuclear burning plasma. Due to its toxicity, few experimental data are currently available. In order to model and

diagnose the low-temperature edge plasmas, a complete database for electron-impact collision processes is required for molecular species containing beryllium and hydrogen. Significant fractions of the eroded beryllium will be transported towards the divertor and will form compounds with the fuel atoms, molecules and/or molecular ions. For the fusion plasma edge, extensive cross sections and rate coefficients have been produced for  $\text{BeH}^+$  (Niyonzima et al., 2017),  $\text{BeD}^+$  (Niyonzima et al., 2018) and  $\text{BeT}^+$  (Pop et al., 2021) cations. The isotopic effects demonstrates the quasi-independence of the rate coefficients on the isotopologue, if they are represented with respect to the vibrational energy of the target, at a given electron temperature.

New computations on extended energy/temperature range, up to 12 eV/30000 K, are ongoing.

## Reference

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