CFEL SCIENCE

SEMINAR

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CFEL – Building 99, seminar room III (ground floor)

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Recombination in Low Temperature Plasma Environment

Plasma afterglow provides an ideal environment to study the recombination of positive ions with electrons. Fairly low degree of ionization means that the collisions of charged particles with neutral buffer helium gas are very frequent and thus providing very fast thermalization of both ions and electrons. However, presence of third particles in plasma (ie. neutrals and electrons) can significantly enhance the overall recombination and ternary processes has to be taken into the account.

I will present the results of recombination studies of Ar^+ and H_3^+ ions at the temperature range of 50- 340 K. They were measured in two experimental setups – Cryogenic Flowing Afterglow with Langmuir Probe (Cryo-FALP II) and Stationary Afterglow with Cavity Ring Down Spectrometer (SA-CRDS). In the latter, both nuclear spin modifications of H_3^+ ion can be monitored *in situ.* Moreover, using para- enriched H_2 precursor gas we can obtain the recombination rate coefficient for pure para- and ortho- H_3^+, which are of great importance for the chemistry of cold interstellar matter.

Host: Daniel Horke / CFEL Molecular Physics Seminar