

CAMT Seminar

“Non-equilibrium dynamics in low-temperature plasmas”

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Date: October 8, 2015 (Thu) 14:00-15:00

Location: Main Conference Room (1st floor), Bldg. A12
Center for Atomic and Molecular Technologies (CAMT)
(A12 棟 1 階会議室)

Low-temperature plasmas are characterized by strong deviations from thermodynamic equilibrium. This relates to the distribution functions of the charged particles as well as to the population of excited states in atoms or molecules. This talk will focus on the population of highly excited Rydberg states and metastable states in the afterglow of pulsed discharges. Examples will be given (a) at low pressure (Pa regime) in Argon and (b) close to atmospheric pressure in Helium. While in the former case only atomic states are involved, in the latter case excimer states are dominating. Information on the dynamics of the system is retrieved from temporally resolved emission spectroscopy, microwave interferometry, ion energy analysis, Thomson scattering, and diode laser absorption spectroscopy. A detailed model of the physics is developed for the low pressure case which agrees very well with the experimental data. Molecular dynamics and three-body collisions make the high pressure case even more complex. Here a qualitative picture of the main reaction channels is proposed.

(Host: Satoshi Hamaguchi Ext:7913)