Abstract Submitted
for the GEC16 Meeting of
The American Physical Society

Measurement of a comprehensive plasma parameter set in low pressure H_2 discharges for extended benchmarking of CR models STEFAN BRIEFI, AG Experimentelle Plasmaphysik, Universitaet Augsburg, 86135 Augsburg, URSEL FANTZ, Max-Planck-Institut fuer Plasmaphysik, Boltzmannstrae 2, 85748 Garching — In low pressure hydrogen discharges a variety of particles is present: besides electrons, the neutral species H_2 and H, the molecular ions H_2^+ and H_3^+ as well as protons and H^-. For a detailed assessment of the individual reactions occurring in those discharges, knowledge about the particular particle densities and temperatures is inevitable. An extensive determination of these plasma parameters has been carried out in a planar ICP in order to conduct an extended benchmark of collisional radiative models for atomic and molecular hydrogen as well as a benchmark of a dissociation model. As diagnostic methods energy resolved ion mass spectrometry has been applied for determining the ion densities and absolutely calibrated optical and VUV emission spectroscopy for measuring atomic and molecular emissivities as well as the density ratio of atomic to molecular hydrogen. A spatially movable Langmuir probe has been used for measuring the profiles of the electron temperature, density and the EEDF. Results are going to be presented for a variation of RF power and pressure.

Stefan Briefi
AG Experimentelle Plasmaphysik, Universitaet Augsburg

Date submitted: 07 Jun 2016 Electronic form version 1.4