

Low energy ionization, charge transfer and reactive collisions for ion source and edge plasma chemistry

Xavier URBAIN

Université Catholique de Louvain

A review of our recent measurements in merged- and crossed-beam geometry will be given. We shall discuss the adverse role of mutual neutralization in volume negative hydrogen production on the basis of our latest kinetic energy release measurements. The interest of low- to medium energy collisions for the interpretation of molecule-assisted recombination will be stressed, together with the problematics of plasma detachment by nitrogen and deuterium puffing. Quantitative metastable helium production, as demonstrated in a recent electron-impact ionization experiment, should allow us to measure cross sections at play in pure or mixed helium plasmas. Helium dimer and helium hydride ions may also enter the composition of edge plasmas, and preliminary results on electron-impact dissociation of the dimer will be presented.