



# Quantum Efficiency Seminar und Colloquium

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## Excitation and charge transfer in (doped) helium nanodroplets

Helium nanodroplets are used in many laboratories as nanoscale matrices for spectroscopy of embedded atoms, molecules and clusters. The spectra of the dopants are mostly weakly perturbed and highly resolved owing to the low temperature (0.4 K), the superfluid state, and the chemical inertness of the helium droplet environment.

In the present experiments we excite or ionize helium nanodroplets using synchrotron radiation and study secondary ionization of dopant atoms as a function of their position in the helium droplet interior or on the droplet surface. Upon helium ionization, the positive charge migrates towards the droplet center by resonant charge hopping. There it localizes by charge transfer ionization of the dopants that are also localized in the droplet interior. In contrast, helium excitations tend to migrate to the droplet surface where they decay by ionization of surface bound dopants in a Penning-type process.

**Date:** Tuesday, December 4th, 2012 14:15 pm  
**Location:** Lecture Hall 1, Hermann-Herder-Str. 3, Freiburg

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