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Vortragsankündigung

- im Rahmen des UniCat-Kolloquiums -

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Es spricht: **Professor Achim Hartschuh, LMU München**

Zeit: **Donnerstag, 08. Januar 2009 17:15 Uhr**

Ort: **TU Berlin**
Institut für Festkörperphysik,
Hardenbergstr. 36
10623 Berlin
Raum EW 561 (Physik-Neubau)

Thema: **Exciton dynamics and localization in single carbon nanotubes**

Abstract: Optical excitation of semiconducting nanotubes generates excitons that determine nearly all light-based applications. We studied the decay dynamics, localization and transfer of excitons in single semiconducting nanotubes deposited on substrates using two complementary optical techniques. Exciton decay was monitored by time-resolved photoluminescence (PL) spectroscopy on a picosecond timescale. At room temperature the decay was found to be mono-exponential in most cases with lifetimes varying from 1 ps to 40 ps for nanotubes of the same chirality (n,m). To clarify the origin of the lifetime variations we studied the effects of the nanotube ends and defects.
Near-field PL and Raman imaging with a spatial resolution better than 15 nm was used to visualize the spatial extent of luminescent states along single carbon nanotubes. The PL intensity was found to decrease towards the nanotube ends on a length scale of few 10 nm probably caused by efficient non-radiative recombination at localized end states. We studied the local optical response of nanotubes to DNA-wrapping and inter-nanotube energy transfer.

Organisator: Prof. Dr. Janina Maultzsch (TUB)

Gäste sind herzlich willkommen!

Prof. Dr. Matthias Drieß
Sprecher des Exzellenz-Clusters UniCat