Physikalisches Institut
Fakultät für Mathematik und Physik
Albert-Ludwigs-Universität Freiburg

Quantum Efficiency Seminar und Colloquium

RICCARDO SAPIENZA

Department of Physics, King's College London

Deep-subwavelength imaging of the modal dispersion of light

Central for modern nanophotonics is the interaction of a nano-sized light source with a rich and tailored optical mode, which is maximised only if the source is placed at large optical mode densities, as in the anti-nodes of a photonic crystal cavity mode or in the proximity of a metallic nanoantenna. Nanoscale mapping of the optical wave function is therefore of crucial importance to predict how energy is exchanged between matter and light.

I will discuss recent experiments on local density maps (LDOS) obtained by (i) Stochastic mapping of the Purcell effect in 3D random media[1], and (ii) Transient-dipole scanning microscopy, a combination of electron-beam scanning and optical spectroscopy, on 2D photonic membranes like photonic crystal cavities and random plasmonic films[1].

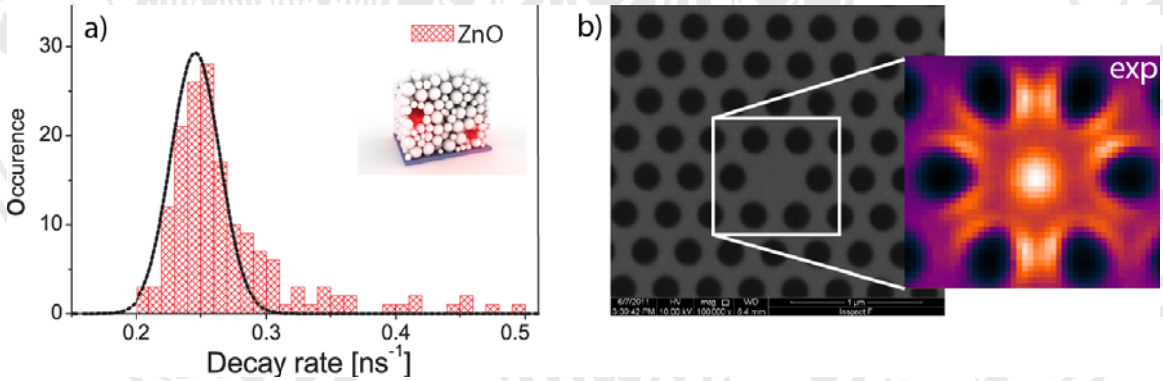

Figure: a) Long-tailed LDOS distribution measured in a ZnO random medium. b) 2D LDOS map measured by transient-dipole scanning microscopy

[1] Long-Tail Statistics of the Purcell Factor in Disordered Media Driven by Near-Field Interactions R. Sapienza, P. Bondareff, R. Pierrat, B. Habert, R. Carminati, and N. F. van Hulst, Phys. Rev. Lett. 106, 163902 (2011).
[1] Deep-subwavelength imaging of the modal dispersion of light, R. Sapienza et al. Submitted

Date: **Tuesday, July 10th, 2012 15:45 pm**
Location: **Lecture Hall 1, Hermann-Herder-Str. 3, Freiburg**

Contact: Andreas Buchleitner, Institute of Physics, Quantum Optics and Statistics
T +49 761 203 5821 F +49 761 203 5967 E buchleitner_office@physik.uni-freiburg.de
www.physik.uni-freiburg.de