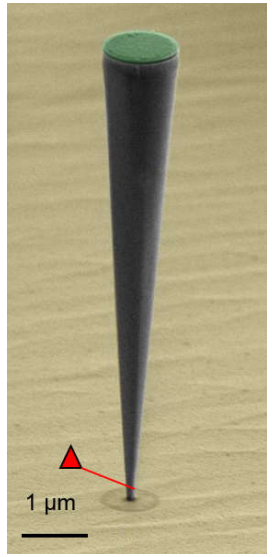
UNIKASSEL VERSITÄT

Physikalisches Kolloquium

Thursday, 19.01.2017, 17:15, HS 100
Reception with coffee & cookies 16:45

Prof. Jean-Michel Gérard, Institute for Nanoscience and Cryogenics, Pheliqs, CEA and Grenoble Alpes University , France:

Photonic Trumpets: an attractive novel resource for quantum optics and optomechanics



Abstract
Over the last twenty years, optical microcavities and photonic crystals have been widely used in combination with quantum dots (QD) so as to realize quantum optics experiments and develop a novel class of optoelectronic devices based on CQED effects. I will highlight in this lecture the original assets of another class of photonic microstructures, the photonic wires, in this context. I will present the Photonic Trumpet formed by a high-index single-mode waveguide and a conical tapering. Nearly perfect single mode spontaneous emission (including polarization control) and low-divergence Gaussian radiation pattern are demonstrated for a single quantum dot embedded in a Photonic Trumpet, enabling the demonstration of a record-high efficiency single photon source. Thanks to the broadband character of photonic wires, we demonstrate the spectral tuning of this source over a wide band without efficiency loss. Photonic trumpets constitute also high quality mechanical resonators. I will show that the additional strain induced by trumpet vibrations induces large modifications of the QD bandgap, and will discuss the original properties and application prospects of this novel hybrid optomechanical system.

All of you interested in physics are cordially invited!

Contact: PD Dr. Mohamed Benyoucef, Technical Physics, More Information: uni-kassel.de/go/physikalisches_kolloquium