

## DF 12: Nano- and microstructured dielectrics

Time: Wednesday 12:25–12:45

Location: EB 107

DF 12.1 Wed 12:25 EB 107

**Fiber based optical microcavities for spectroscopy of nanoscale systems** — •DAVID HUNGER<sup>1,2</sup>, HANNO KAUPP<sup>1,2</sup>, MATTHIAS MADER<sup>1,2</sup>, CHRISTIAN DEUTSCH<sup>1,3</sup>, JAKOB REICHEL<sup>3</sup>, and THEODOR W. HÄNSCH<sup>1,2</sup> — <sup>1</sup>Ludwig-Maximilians-Universität München, Deutschland — <sup>2</sup>Max-Planck Institut für Quantenoptik, Garching, Deutschland — <sup>3</sup>Laboratoire Kastler Brossel, E.N.S, Paris, Frankreich

We introduce fiber-based Fabry-Perot optical microcavities [1] as a versatile tool to study the optical properties of individual nanoscale

solid state systems. This type of cavity benefits from full tunability, free space access to cavity modes, a mode volume on the order of a few tens of wavelengths cubed, and optical quality factors exceeding  $10^6$ . In our experiments we want to use these exceptional properties to study nanoscale systems with high sensitivity and to realize strong light-matter interactions.

We show first experimental results on absorption spectroscopy of individual gold nanoparticles and report first steps towards the observation of cavity enhanced emission of NV color centers in diamond.

[1] Hunger, Reichel *et al.*, NJP **12**, 065038 (2010)