



Seminarankündigung

**Dienstag, 06. Dezember 2011
17:15 Uhr**

WSI, Seminarraum S 101

“Fundamental quantum optical hybrid-systems for nanophotonics: Photons, plasmons & nano-diamonds”

An ultimate nanophotonic device consists of individual fundamental constituents, e.g., single quantum emitters coupled to optical nanostructures. In order to obtain functionality, the interaction of emitters and the electromagnetic field has to be enhanced significantly. Additionally, an efficient read-out and connection to the ‘macroscopic world’ is crucial. Resonant dielectric and plasmonic nanostructures can provide these tasks. Before developing large-scale fabrication approaches for such fundamental nanophotonic devices, a thorough study of precisely controlled model system is valuable to understand the underlying physics providing the novel functionality. In this talk I will discuss experiments where such model systems are assembled with the help of scanning probes. As single photon emitters we use nitrogen-vacancy (NV) centers in nanodiamonds which are particularly suitable for our approach since they are large enough (10nm-100nm) and optically stable even under ambient conditions at room temperature. We show coupling of these emitters to different nanophotonic structures, such as optical microresonators and plasmonic nanoantennas. Scaling to more complex devices and possible applications in quantum information, and quantum enhanced sensing will be discussed.

**Prof. Oliver Benson
Humboldt University Berlin
Germany**