



# **Seminarankündigung**

**Dienstag, 25. Juli 2017**

**14:00 Uhr**

**WSI, Seminarraum S 101**

## **“Accuracy, lateral resolution, and mechanistic details of optical printing of metallic nanoparticles”**

Optical printing holds great potential to enable the use of the vast variety of colloidal nanoparticles (NPs) in nano- and micro- devices and circuits. It allows the direct assembly of NPs, one by one, onto specific positions of solid surfaces with great flexibility of pattern design and no need of previous surface patterning. I will present systematic studies on the optical printing of Au and Ag nanoparticles addressing i) the printing accuracy using different laser powers and wavelengths, and ii) the printing lateral resolution under conditions of varying heat dissipation. Complementary studies of the printing times reveal the roles of Brownian and deterministic motion. Calculated trajectories of the NPs, taking into account the interplay between optical forces, electrostatic forces, thermophoretic flows, and Brownian motion, allowed us to rationalize the experimental results and gain a detailed insight into the mechanism of the printing process. A clear framework is laid out for future optimizations of optical printing and optical manipulation of NPs near substrates.

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