Contribution ID: **33** Type: **On-site project**

Colloidal lithography for plasmonic particles

Duration: 6 weeks (1 week to get knowledge about the lab setups and the process of colloidal lithography; 3 weeks for mask preparation with variation of colloids (size, shape etc.) for further materials deposition (Au-Ag, Au-Cu, Ag-Cu by spin-coating and sputtering) to find optimal controlled way to produced plasmon particles; 2 weeks to characterize the samples with optical microscopy, AFM, SEM, EDX and X-rays diffraction measurements).

Short description: Heterostructure metal clusters, such as Ag-Au particles, attract huge scientific interest due to their unique and tunable size- and composition-dependent optical and electrical properties. Morphology of the interface between two materials inside the nanoscale particle has a high influence on properties of the final device, e.g. by tuning the plasmon resonance. We are aiming to optimize exciting recipes by modulating of deposition parameters and preparation conditions to be able to fully control shape, size and particle distribution. A key aspect is a mask preparation where metallic particles will be deposited and form the final structure. Prepared mask will be used for preparation of plasmonic Au-Ag, Au-Cu, Ag-Cu core-shell particles and characterized by small/wide-angle X-ray scattering with high spatial resolution (nanoSAXS/WAXS), atomic force microscopy (AFM) and scanning electron microscopy (SEM).

Field

A1: Solid-state physics and nanoscience (application oriented)

DESY Place

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Special Qualifications:

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