

Noble metal sputter deposition on nanostructured polymer templates

Vacuum deposition of functional thin films has applications in numerous fields ranging from structural materials to solar cells, sensors, catalysis and medicine. Time-resolved X-ray scattering under high-speed industrial conditions in combination with spectroscopic methods provide ultimate insights to answer crucial questions about structure-property relationships. This knowledge is essential for the known understanding and design of next-generation nanomaterials with specific properties. Reference: Schwartzkopf et al., Nanoscale Horiz., 2021,6, 132-138 <https://doi.org/10.1039/D0NH00538J>

Indico rendering error

Could not include image: [403] Error fetching image

In this summer student project, you will:

- Fabricate metal-polymer thin film nanocomposites for optical applications (20%)
- Perform noble metal co-deposition on nanostructured polymer templates (20%)
- Characterize thin film morphology using X-rays and AFM (20%)
- Correlate thin film nanostructures to optical properties using Ellipsometry and UV-Vis spectroscopy (20%)
- Perform acquisition, analysis and simulation of X-ray and optical data (20%)

This summer student project will be mainly performed on-site at Deutsches Elektronen-Synchrotron (DESY), Hamburg.

Contact:

Dr. Matthias Schwartzkopf, DESY Hamburg; matthias.schwartzkopf@desy.de

M.Sc. Yusuf Bulut, DESY, Hamburg; yusuf.bulut@desy.de

Prof. Dr. Stephan V. Roth, DESY, Hamburg; stephan.roth@desy.de

Field

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

DESY Place

Hamburg

DESY Division

FS

DESY Group

FS-PET-D P03

Special Qualifications:

Primary author: SCHWARTZKOPF, Matthias (FS-PETRA-D (FS-PET-D Fachgruppe P03))

Co-authors: ROTH, Stephan (FS-PE (FS-PE Fachgruppe P03)); BULUT, Yusuf (FS-PETRA-D (FS-PET-D Fachgruppe P03))