



Elektrotechnisches Kolloquium

der Bergischen Universität Wuppertal

Die Fakultät für Elektrotechnik, Informationstechnik und Medientechnik lädt zur Teilnahme an folgender Vortragsveranstaltung mit anschließender Diskussion ein:

Light-Controlled Nanostructuring of Plasmonic Metasurfaces

Es spricht M. Sc. Ivan Shutsko

Lehrstuhl für Lehrstuhl für Großflächige Optoelektronik
Prof. Dr.-Ing. Patrick Görrn

Inhalt (auf Englisch):

This colloquium will present the work on disorder engineering in plasmonic metasurfaces achieved through light-controlled deposition of nanoparticles. A novel bottom-up method will be demonstrated that enables the creation of narrow tunable features within the reciprocal space by precisely manipulating growth parameters and illuminating light properties. These tunable features provide control over the optical properties of the plasmonic metasurfaces.

Key research findings demonstrate that plasmonic metasurfaces fabricated in darkness exhibit broad hyperuniform features within the reciprocal space. Under light illumination anisotropic hyperuniformity can be induced. Narrow characteristic features inside the reciprocal space are achieved under plasmon polaritons excitation. These features reveal inherent sensitivity to electromagnetic environment variations, enabling the development of refractometry plasmonic sensors with exceptional performance. Further investigations of nanoparticle growth under surface plasmon excitation in ultra-thin films yield simultaneous excitation of short-range and long-range surface plasmon polariton modes. This insight promises improved sensor performance in detecting subtle analyte changes near the surface. Nanoparticles grown directly on dielectric resonators or waveguides form well-ordered plasmonic chains, suggesting the fabrication of hybrid optical structures for enhanced dielectric-plasmonic interaction.

Termin: 10.01.2024, 14 Uhr

Ort: Bergische Universität Wuppertal
Campus Freudenberg, Seminarraum FG 1.01