Berliner Physikalisches Kolloquium

im Magnus-Haus, Am Kupfergraben 7, 10117 Berlin

Eine gemeinsame Veranstaltung der Physikalischen Gesellschaft zu Berlin e.V.,
der Freien Universität Berlin, der Humboldt-Universität zu Berlin,
der Technischen Universität Berlin und der Universität Potsdam
– gefördert durch die Wilhelm und Else Heraeus-Stiftung –

Am Donnerstag, dem **3. Dezember 2020, um 18:30 Uhr**

spricht

Prof. Dr. Isabelle Staude

Institut für Festkörperphysik, Friedrich-Schiller-Universität, Jena

über das Thema

„Active semiconductor metasurfaces“

Moderation: Oliver Benson, Physikalische Gesellschaft zu Berlin

Metasurfaces composed of designed semiconductor nanoresonators arranged in a plane offer unique opportunities for controlling the properties of light fields. Such metasurfaces can e.g. impose a spatially variant phase shift onto an incident light field, thereby providing control over its wave front with high transmittance efficiency. However, most semiconductor metasurfaces realized so far were passive and linear, and their optical response was permanently encoded into the structure during fabrication. Recently, a growing amount of research is concentrating on active metasurfaces, specifically on the integration of emitters and optical nonlinearities into dielectric and semiconductor metasurfaces, and on obtaining dynamic control of their optical response.

This talk will provide an overview of our recent advances in nonlinear, tunable and light-emitting semiconductor metasurfaces. In particular, we have studied spontaneous emission and nonlinear frequency generation from metasurfaces based on various material platforms. Our results show that both the directional, spectral and/or polarization properties of the spontaneously emitted or generated second harmonic light can be tailored by the metasurface design. For dynamic tuning of the metasurface response, one approach is to integrate the semiconductor metasurfaces into nematic-liquid-crystal cells. Based on this approach, we recently experimentally realized a transparent metasurface display with high tuning contrast in the visible.

Auch zu lesen im Internet: http://www.pgzb.tu-berlin.de/