TECHNISCHE UNIVERSITÄT CHEMNITZ

PHYSIKALISCHES KOLLOQUIUM

Mittwoch, 13.11.2013, um **17:15 Uhr**

Ort: Reichenhainer Str. 90; Neues Hörsaalgebäude, Raum: 2/N013

Prof. Dr. Robert Brunner

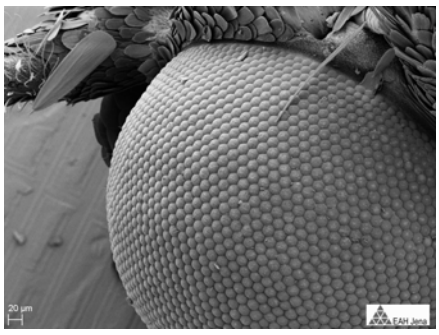
Fachhochschule Jena

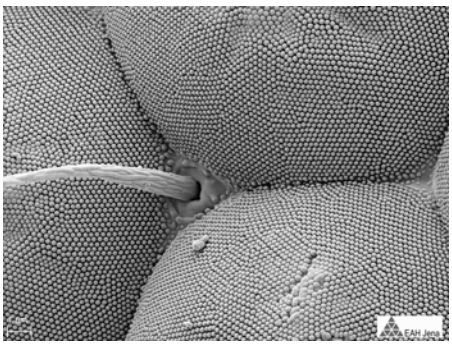
Spying nature! Micro- and nano-structured optics to imitate natural models

In nature, micro- and nanostructured optical components have been evolved over millions of years and show a widespread distribution as micro-lenses or diffractive and sub-wavelength structures in manifold biological systems.

Here I want to discuss the advantages and challenges to transfer the concepts based on the nature models to increase the performance of high-end optical devices. The technical applications target on beam shaping and imaging optical systems. Especially I discuss the application of sophisticated statistical micro-lens arrays and diffractive structures in different fields such as lithography and inspection or for the use in medical instruments.

In more detail I focus on anti-reflection coatings which are commonly used to suppress reflection of light from the surface of optical components in the visible range. An innovative approach for the fast and cost-efficient fabrication of highly UV transmissive, anti-reflective optical interfaces is presented, which is based on self-assembled gold nanoparticles.





Scanning electron microscopy images of the compound eye of a night active insect. The left figure shows the whole eye composed of hexagonally arranged facets. In a further magnified view (right figure) the sub-wavelength periodic anti-reflective structures become visible.

Alle Zuhörer sind ab 17:00 Uhr zum Kaffee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt PD Dr. Heidemarie Schmidt, Tel.: 0371 531 32481