



Einladung

- Es spricht: **Åsa Haglund**
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- Zeit: **Mittwoch, 27. Januar 2016, 10:15Uhr**
- Ort: Technische Universität Berlin
Institut für Festkörperphysik
Hardenbergstraße 36, 10623 Berlin
Raum EW 561
- Thema: "GaN- and GaAs-based VCSEL research at
Chalmers University of Technology"

Abstract:

The Vertical-Cavity Surface-Emitting Laser (VCSEL) is an established optical source in the infrared for short-distance optical communication links, computer mice and industrial heating. Its high power efficiency, easy integration into two-dimensional arrays, and low-cost manufacturing also make this type of semiconductor laser suitable for application in areas such as high-resolution printing, bio-medical applications and general lighting. However, these applications require emission wavelengths in the blue-UV, which can be achieved by using GaN-based instead of GaAs-based materials. In this talk, the research on GaAs- and GaN-based VCSELs at Chalmers University of Technology will be summarized. The GaAs-VCSEL results include single mode and polarization stable VCSELs, multi-wavelength VCSEL arrays using high contrast gratings, and high-speed VCSELs. The GaN-based VCSEL research has been more focused on the different building blocks of the laser. We will highlight our work on combined transverse current and optical mode confinement, where we show that many structures used for current confinement so far result in unintentionally optically anti-guided resonators. Such resonators can have a very high optical loss, easily doubling the threshold gain for lasing. We will also present an alternative to the use of distributed Bragg reflectors as high-reflectivity mirrors, namely TiO₂/air high contrast gratings (HCGs). Fabricated HCGs of this type show a high reflectivity (>95%) over a 25 nm wavelength span.

Gäste sind herzlich willkommen!

Prof. Kneissl und Dr. T. Wernicke