



Halbleiter-Nanophotonik

SFB 787

Einladung

Es spricht: **Prof. Dr. Arnab Bhattacharya**
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Zeit: **Freitag, 19. Mai 2016, 10:30 Uhr**

Ort: **Technische Universität Berlin
Institut für Festkörperphysik
Hardenbergstraße 36, 10623 Berlin
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Thema: **„GaN and GaP based nanowires: from growth mechanisms to device structures“**

Abstract:

Semiconductor nanowires (NWs) provide a versatile platform for studying fundamental science as well as for novel device design concepts with new functionalities. Tailoring the properties of nanostructures via control of the synthesis process is critical, I will illustrate this with two examples of III-V nanowires – GaN and GaP – that have been the focus of our recent research.

While GaN NWs grown using various techniques have been extensively studied for nanoscale photonic and electronic devices, there are however very few investigations on the basic mechanism of GaN NW growth. We have investigated the growth of nickel-catalyzed GaN NWs, where a comprehensive characterization of the length-diameter dependence and catalyst tip composition provides insights into the growth mechanism. We believe that Ni-catalyzed GaN NW growth proceeds by a vapour-solid growth mechanism rather than the more common vapour-liquid-solid process. We also fabricate single nanowire resonator structures for measurements of electro-mechanical properties.

The other material system studied is GaP, which has a zinc-blende crystal structure with an indirect bandgap in the bulk. In nanowires, the wurtzite phase can however be stabilized, and is supposed to have a direct band-gap, though theoretical studies and the very few experimental results till date are inconclusive. We have grown wurtzite GaP and AlGaP/GaP core-shell NWs and are performing extensive studies on the luminescence from such nanostructures.

Gäste sind herzlich willkommen!
Prof. Dr. M. Kneissl