Halbleiter-Nanophotonik

SFB 787

Einladung

Es spricht: **Martin Elborg**
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Thema: **„Droplet epitaxy quantum dots and dilute N GaAs quantum structures for Intermediate Band Solar Cell research"**

Abstract:

Quantum structures with their unique properties offer new possibilities to overcome current limitations of optoelectronic devices. E.g. the proposed concept of the Intermediate Band Solar Cell (IBSC) promises photovoltaic conversion efficiencies largely exceeding the Shockley-Queisser limit of standard solar cells. In an IBSC an additional photocurrent is generated by two-step absorption of sub-band gap energy photons exciting electrons from valance band to conduction band via intermediate energy states, while the high open-circuit voltage of the largest band gap material is maintained. The incorporation of quantum dots (QDs) is one way to achieve such energy states located in the forbidden band gap of semiconductors. In this talk, I will introduce my current research on IBSC using Droplet Epitaxy QDs and dilute N GaAs quantum structures. Droplet Epitaxy GaAs QDs, which are grown from self-assembled Ga droplets crystallized by As, provide a high-crystal quality model system for the study of IBSC physics. The growth of GaNAs/AlGaAs quantum structures is studied to achieve deeply confined energy states with transition energies tunable for efficient use of the solar spectrum.

Gäste sind herzlich willkommen!
Prof. Dr. D. Bimberg