



Halbleiter-Nanophotonik

SFB 787

Einladung

Es spricht: **Humberto Foronda**

Materials Department, University of California, USA

Zeit: **Montag, 22. Mai 2016, 10:00 Uhr**

Ort: **Technische Universität Berlin
Institut für Festkörperphysik
Hardenbergstraße 36, 10623 Berlin
Raum EW 431**

Thema: **„Analysis of Vegard’s Law for lattice Matching $\text{In}_x\text{Al}_{1-x}\text{N}$ to GaN by Metalorganic Chemical Vapor Deposition”**

Abstract:

Coherent $\text{In}_x\text{Al}_{1-x}\text{N}$ ($x = 0.15$ to $x = 0.28$) films were grown by metalorganic chemical vapor deposition on GaN templates to investigate if the films obey Vegard’s Law by comparing the film stress-thickness product from wafer curvature before and after $\text{In}_x\text{Al}_{1-x}\text{N}$ deposition. Additionally, we investigate the curvature of free standing (0001) oriented HVPE grown GaN substrates and demonstrate that their curvature is consistent with a compressive to tensile stress gradient (bottom to top) present in the substrates. The In composition and film thickness were verified using atom probe tomography and high-resolution x-ray diffraction, respectively. *Ex-situ* curvature measurements were performed to analyze the curvature before and after the $\text{In}_x\text{Al}_{1-x}\text{N}$ deposition. At $\sim\text{In}_{0.18}\text{Al}_{0.82}\text{N}$, no change in curvature was observed following InAlN deposition; confirming that films of this composition are latticed matched to GaN, obeying Vegard’s law. The relaxed a_0 - and c_0 - lattice parameters of $\text{In}_x\text{Al}_{1-x}\text{N}$ were experimentally determined and are in agreement with lattice parameters predicted by Vegard’s law.

Gäste sind herzlich willkommen!

Prof. Dr. M. Kneissl