TECHNISCHE UNIVERSITÄT
IN DER KULTURHAUPTSTADT EUROPAS
CHEMNITZ

Institut für Physik
Physikalisches Kolloquium

Urheber: Jan Hosan

Donnerstag, 09.07.2026, 15:30 Uhr

Ort: Reichenhainer Str. 90;
Zentrales Hörsaal- und Seminargebäude, Raum C10.013

Dr.-Ing. Jana Hartmann

Institut für Halbleitertechnik
TU Braunschweig

Nitrides for photonic devices in quantum technologies

In the Nitride Technology Center (NTC) in Braunschweig/Hannover we are developing Nitride based photonic devices for several applications like optical neuromorphic computing or quantum computing based on trapped ions. For cooling and read-out of the quantum state of trapped Ca+, Sr+ and Yb+ ions, blue/UV laser light with linewidths below 2 MHz is required. At the same time a miniaturisation of the light sources is essential for scaling of quantum computing in the future. This is where the NTC comes into play: We are developing GaN based laser diodes to achieve highly compact laser sources and include a distributed feedback to reduce their linewidth. These so-called DFB laser diodes already demonstrated side mode suppression ratios larger than 20 dB at 454 nm. For further reduction of the linewidth we are planning to use self-injection locking by integrated photonics. Therefore we are developing AlN integrated photonics which are especially interesting because of their transparency in the blue and UV. With the AlN/sapphire platform that we fabricated within the NTC we could already show reasonable low propagation losses of 8.5 dB/cm at 459 nm as well as electrooptical tuning of the resonance wavelength.

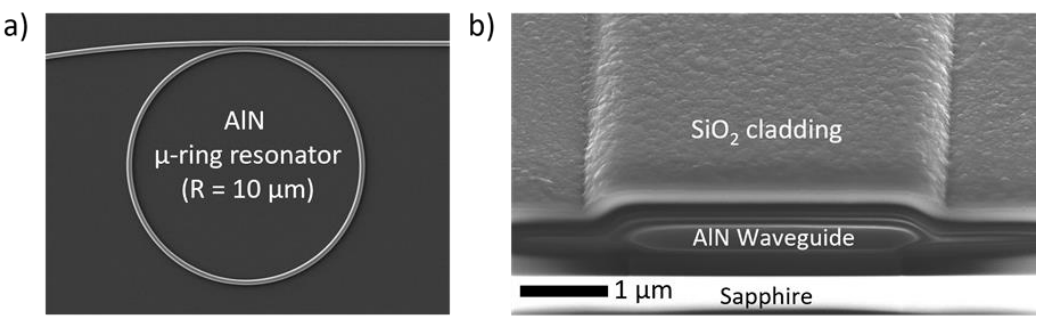

Figure 1: AlN integrated photonics with a) a bus waveguide and a µ-ring resonator and b) with polished facets of the tapered AlN waveguide for Butt-Coupling

Alle Zuhörer sind ab 15:15 Uhr zum Kaffee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:
Prof. Dr. Ulrich T. Schwarz, Tel.: 531 30001

www.tu-chemnitz.de/physik