Halbleiter-Nanophotonik

SFB 787

Einladung

Es spricht: **Prof. Ulrich Schwarz**

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Zeit: **Mittwoch, 21. Januar 2015, 10:15 Uhr**

Ort: **Technische Universität Berlin**
Institut für Festkörperphysik
Hardenbergstraße 36, 10623 Berlin
Raum EW 561

Thema: **„Micro-LEDs for Applications in Optogenetics"**

Abstract:

In the emerging field of Optogenetics, nerve cells are made sensitive to light, to allow selective stimulation of nerve pulses by light pulses. This technology is used as tool in fundamental neuroscience to explore the mechanisms active in the brain, and to new medical devices which may allow deaf people to hear or blind people to see. In an interdisciplinary approach we develop a new class of optical probes (»optrodes«) by direct integration of tiny light-emitting diodes with edge lengths of a few ten micrometers (µLED) with micro-engineered probes. The actual device is small enough to fit into the cochlea (the innear ear) of a rodent. This device will be able to stimulate nerve cells in the cochlea in order to generate a hearing sensation excited by light pulses, potentially with a much higher frequency resolution than conventional CIs. In this development, we employ our experience with high power LEDs, now standard in solid-state-lighting, with experience in fabrication of neuro-sensors based on an integration of metal lines with flexible polymers. In particular the thin-film LED is the key enabling technology for the miniaturization of the optical probes.

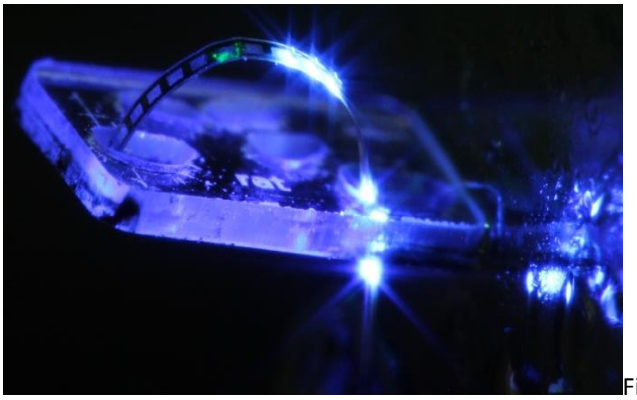

Fig: Array of blue micro-LEDs on a flexible substrate. This prototype of an optical cochlea implant fits the size of the cochlea of a rat.

Gäste sind herzlich willkommen!

Prof. Dr. M. Kneissl