TECHNISCHE UNIVERSITÄT CHEMNITZ

Institut für Physik
Physikalisches Kolloquium

Mittwoch, 29.01.2020, um 11:15 Uhr

Ort: Reichenhainer Str. 90;
Zentrales Hörsaal- und Seminargebäude,
Raum 2/N013

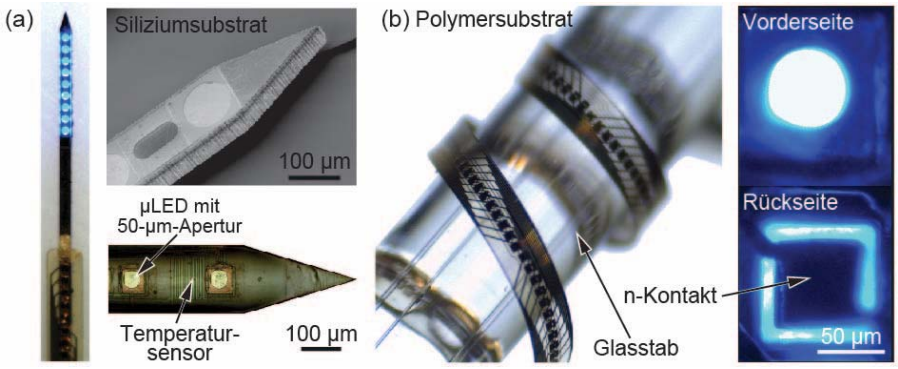
Dr. Patrick Ruther

University of Freiburg, Department of Microsystems Engineering (IMTEK)
Microsystem Materials Laboratory

MEMS tools based on integrated light sources for optogenetics

Over the past decade neuroscientific research has experienced a pronounced improvement with respect to the number of recording sites integrated on implantable neural probes. This increase in channel count is reflected only to a certain extent in the number of light sources integrated on MEMS-based tools used in optogenetics enabling a depth-dependent stimulation of tissue at minimal tissue damage.

The talk will discuss recent results on optical tool developments with integrated light sources. It will present devices based on light-emitting diodes (LEDs) implemented either as thin film LEDs or LED-chips as well as tools using laser diode chips. It will describe the key technologies used to realize these devices and their opto-electro-thermo-mechanical characterization. In vivo applications will be discussed used to stimulate neural tissue, the cochlea and isolated hearts. Among others, the talk will illustrate experiments to stimulate/inhibit cortical tissue, pace perfused mouse hearts and investigate the local temperature increase caused by the optoelectronic building blocks.



µLED-Arrays on (a) silicon-based and (b) flexible epoxide-based substrates comprising up to 144 µLEDs per optical probe.

Alle Zuhörer sind ab 11:00 zu Kaffee und Tee vor dem Hörsaal eingeladen.

Informationen zum Vortrag erteilt:
Prof. Dr. Ulrich T. Schwarz, Tel. 0371 531 30001

www.tu-chemnitz.de/physik