Preface

During 2016, the Institute of Optoelectronics continued its successful research in the fields of vertical-cavity surface-emitting lasers (VCSELs), GaN-based optoelectronics, and semiconductor disk lasers.

The VCSELs and Optical Interconnects Group has been prolific in the electro-thermal and optical modeling of VCSELs and the fabrication and analysis of novel VCSEL structures. Optically controlled current confinement has been accomplished with integrated phototransistors and a new world record of 45 GHz was established for the reversible thermal tuning range of the birefringence splitting in single-mode VCSELs. On July 1st, results from VCSEL research were presented to distinguished guests during a boat trip with MS Sonnenkönigin on Lake Constance as part of the 66th Lindau Nobel Laureate Meeting. In late September, the *Highlights of Physics* event sponsored by the Federal Ministry of Education and Research (BMBF) and the German Physical Society (DPG) took place in Ulm and attracted more than 60.000 visitors. For five days the VCSEL Group hosted a very-well-received exhibition booth on "Microlasers in everyday life" next to majestic Ulm Minster.

In 2016, the sensor activities in the GaN group have been strengthened by two new Ph.D. students. One of them participates in our DFG-funded inter-faculty Graduate School "PulmoSense" (Micro- and Nano-Scale Sensors for the Lung) involving groups from engineering, physics, chemistry, and medicine of Ulm University. Our studies towards AlGaN-based heterostructures for deep-UV LEDs have been successfully continued. First boron-containing AlGaN layers have been grown which may help to reduce strain-related problems in such devices. These activities have been assisted by Tomáš Hubáček, a guest scientist from the Czech Academy of Science, who joined our Institute for about 6 months.

In the High-Power Semiconductor Laser Group, 23 mW of ultraviolet laser emission at a wavelength of 327 nm has been achieved in a semiconductor disk laser system using a sum frequency mixing of the fundamental wavelength of 982 nm and the frequency-doubled second-harmonic radiation at 491 nm.

A snapshot of several Ph.D. students of our Institute working in the cleanroom was selected for the title page of the Annual Report of Ulm University 2015 (DOI 10.18725/OPARU-4188) that was published in Oct. 2016. Finally we are very happy to welcome Irene Lamparter in our team of technicians, who is reviving the much-needed mechanical workshop of the Institute.

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