

IKZ-Colloquium Prof. Dr. Marc Eichhorn

Titel: Recent achievements in coherent solid-state (and fiber) sources in the 1.5-6 μm wavelength range

Abstract:

The short-wave (SWIR) and mid-wave (MWIR) infrared wavelength range is increasingly gaining interest for a large variety of applications which so far were still lacking suitable laser sources. Recent advances in different solid-state and fiber laser architectures based on rare-earth ions like erbium, thulium and holmium allow for significant increase in laser performance in this spectral range. Where nature does not provide for suitable laser transitions, nonlinear conversion of SWIR lasers allows for even more coverage of the MWIR wavelength range with substantial power and efficiency. Key for efficient operation are high-quality materials and components for these laser sources which in some cases, however, are far less commercially available, less optimized or have limiting power handling capability compared to those used in the VIS-to-NIR spectral range. The seminar talk will give an introduction into the fast evolving field of SWIR-to-MWIR solid-state and fiber sources and the recent achievements that could be obtained. Also material aspects for crystal growth and fiber manufacturing will be addressed.