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## **【810】 SWIR optically pumped semiconductor lasers**

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Vertical-emitting, optically pumped semiconductor lasers (OPSL) are known for their high-power performance and excellent beam quality, primarily developed using the GaAs material system which restricts emission to the near-infrared. Our research focuses on extending OPSL into the short-wave-infrared (SWIR) region by employing the GaSb material system through molecular beam epitaxy. We achieved significant advancements in continuous wave operation through enhanced backside-cooling, refined gain characterization, and the first GaSb-based membrane-external cavity surface emitting laser. Additionally, we investigated SESAM modelocked emitters, integrated gain and absorber on single chips, and demonstrated dual-comb operation through spatial multiplexing. These developments mark substantial progress in the field of OPSL, expanding their utility in broader spectral applications.

**Authors:** Mr GAULKE, Marco (Department of Physics, ETH Zürich, 8093 Zürich, Switzerland); Mr SCHUCHTER, Maximilian C. (Department of Physics, ETH Zürich, 8093 Zürich, Switzerland. Optoelectronics Research Centre, Physics Unit, Faculty of Engineering and Natural Sciences, Tampere University, P.O. Box 692, FIN-33104, Tampere, Finland); Mr HUWYLER, Nicolas (Department of Physics, ETH Zürich, 8093 Zürich, Switzerland); Mr GOLLING, Matthias (Department of Physics, ETH Zürich, 8093 Zürich, Switzerland); KELLER, Ursula (Department of Physics, ETH Zürich, 8093 Zürich, Switzerland)

**Presenter:** Mr GAULKE, Marco (Department of Physics, ETH Zürich, 8093 Zürich, Switzerland)

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