

## **Nanophotonics materials and devices**

### **Abstract**

The increasing request for internet and advanced networking services as well as other high-end photonics applications put enormous requirements on versatile and high-performance optical components, in turn calling for new materials combinations, processing schemes and nanophotonic concepts. Here we review capabilities and developments at the KTH Electrum Laboratory with some examples related to telecommunication wavelength vertical-cavity surface-emitting lasers (VCSELs) and transistor-VCSELs, silicon-integrated photonic crystal nanomembrane and photonic bandedge VCSELs, and interband type-II quantum-dot long-wavelength infrared detectors for thermal imaging.

### **Bio**

Mattias Hammar received his MSc (1986) and PhD (1993) degrees from the Department of Physics, Royal Institute of Technology (KTH). From 2007 he is a Professor at the Department of Electronics at KTH and during his career he has also been affiliated with the Swedish Institute of Microelectronics, IBM Research Division and Zarlink Semiconductor. He has an extensive academic and industrial experience related to optoelectronic materials and devices, he has managed or been involved in several national and international projects within the photonics area, and he is Program Director for the International Master's program in Nanotechnology at KTH.