

Teemu Hakkarainen



Short bio

Teemu Hakkarainen is a Senior Research Fellow at the Institute of Advanced Study of Tampere University and the leader of the semiconductor nanostructure research at Optoelectronics Research Centre. His main expertise is in molecular beam epitaxy of III-V semiconductor nanomaterials, including nanowires, quantum wells, and quantum dots, and their applications in photonics technology. His recent research interests encompass development of 1.5 μm quantum light sources based on GaSb quantum dots as well as cryogenic optoelectronic devices for interfacing superconducting quantum processors.

Recent publications related to telecom wavelength quantum dots:

- Johannes Michl, Giora Peniakov, Andreas Pfenning, Joonas Hilska, Abhiroop Chellu, Andreas Bader, Mircea Guina, Sven Höfling, Teemu Hakkarainen, Tobias Huber-Loyola, "Strain-Free GaSb Quantum Dots as Single-Photon Sources in the Telecom S-Band", *Advanced Quantum Technologies* 6, 2370125 (2023).
- Lucie Leguay, Abhiroop Chellu, Joonas Hilska, Esperanza Luna, Andrei Schliwa, Mircea Guina, Teemu Hakkarainen, "Electronic structure of GaSb/AlGaSb quantum dots formed by filling droplet-etched nanoholes", preprint, arXiv:2308.15418 (2023).
- Abhiroop Chellu, Joonas Hilska, Jussi-Pekka Penttinen, Teemu Hakkarainen, "Highly uniform GaSb quantum dots with indirect–direct bandgap crossover at telecom range" *APL Materials* 9, 2021.
- Joonas Hilska, Abhiroop Chellu, Teemu Hakkarainen, "Nanohole etching in AlGaSb with gallium droplets", *Crystal Growth & Design* 21, 1917-1923 (2021).