MICRONOVA

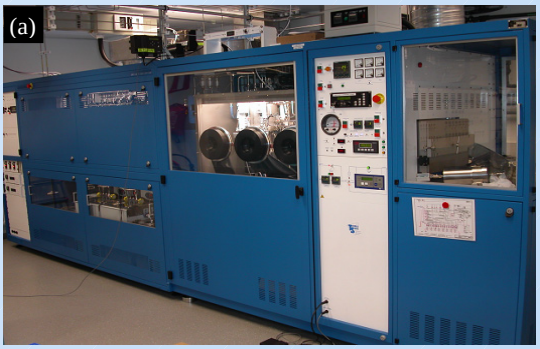
CENTRE FOR NANO- AND MICROTECHNOLOGIES

Optoelectronics Laboratory

(http://atomi.hut.fi/)

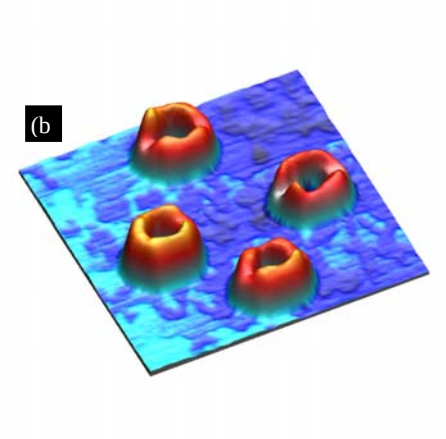
Optoelectronics Laboratory consists of two research groups: Nanotechnology group (professor Harri Lipsanen) and Optoelectronics group (docent Markku Sopanen). The research personnel includes 2 postdocs and 14 PhD students.

Research in the laboratory is focused on the studies of semiconductor nanostructures for optoelectronic and electronic devices. Fabrication, characterisation and processing of the structures are performed to investigate new applications. Specific areas of interest include fabrication of novel materials, self-assembled quantum dots, microcavities and photonic crystals. Innovative concepts for nanotechnology are presently developed.



The laboratory has clean room processing facilities including two metalorganic vapour phase epitaxy systems, and separate installations for characterization including optical spectroscopy, X-ray diffraction and atomic force microscopy.

For additional information, please contact Prof. Harri Lipsanen, harri.lipsanen@tkk.fi.



Examples of research topics:

(a) Metalorganic vapour phase epitaxy reactor for the fabrication of semiconductor nanostructures in the clean room.

(b) Self-assembled InAs nanorings, height is 8 nm (by AFM).

(c) Two superb-quality single quantum dots exposed by soft lithography (by AFM).

(d) Self-assembled polystyrene colloids in hexagonal lattice (by SEM).

(e) Development of novel GaN-based blue and UV emitters. Optimisation of initial GaN nanoisland growth on sapphire (by TEM), testing of LED wafer and packaged device.

(f) Novel x-ray pixel detector prototype based on germanium and gallium arsenide.

(g) Photonic crystal waveguide and mirror etched in silicon.