

Nano- and micro- technologies at VTT Technical Research Centre of Finland

Andrey V. Timofeev, Miika Soikkeli, Kestutis Grigoras, Sanna Arpiainen,
Markku Kainlauri, Andrey Shchepetov, Jouni Ahopelto and Mika Prunnila

VTT Technical Research Centre of Finland

e-mail: andrey.timofeev@vtt.fi

Major VTT technological R&D areas include nano- and micro- electronics, bio- and chemical processing, biofuels, wind and nuclear energy, applied materials and ICT for health and well-being. VTT microelectronics develops wide selection of sensors, actuators, RF, fluidic, and photonic microsystems in a productive pilot line on 6" wafers. Nanoelectronics technologies such as ALD, nano-imprinting, projection 0.35um i-line and ebeam lithographies are used to develop nano-structured materials and practical nano-systems on a small production scale. The applications include environmental sensing, electronic timing, telecommunication, and biomonitoring.

VTT nanotechnology R&D includes semi-/super- conducting devices, graphene biosensors, nanowire FETs, Si/SiO/SiN/AlO nano-membranes, THz and X-ray detectors and cameras, thermoelectrics, tunable UV to IR interferometers, MEMS, RF and mm-wave components, CMOS and BiCMOS processes, wide selection of techniques and materials available for microfabrication (ALD, DC and RF sputtering, CVD, ferro and piezoelectric thin films, wafer bonding, advanced micropackaging), SOI photonic waveguide circuits, advanced SQUID ROICs and sensitive MEG SQUID magnetometers. We present recent highlights of VTT nanotechnologies including novel graphene and nanomembrane based sensors and devices.