Research Center for Microsystems and Nanotechnology at Kaunas University of Technology - www.microsys.ktu.lt

There is no national nanotechnology initiative in Lithuania. In 2003, however, nanotechnology was appointed by the Government as one of RTD priorities and approved a new "RTD priorities programme" to be funded by the Lithuanian State Science and Education Foundation. The allocation of money (for prioritized RTD areas projects) was substantially increased from previous years to approx. 2.3 million of Euros per year and up to €300-350.000/ per project for a three year period. The first call for the national research projects in nanoscience and nanotechnology was lunched in 2003 and 2 projects were selected for funding.

Several research institutions are involved in nanoscience research in Lithuania, but the institution with the mission to act as a Center of Excellence in nanoscience and nanotechnology the ***Research Centre for Microsystems and Nanotechnology (RSMN)*** at Kaunas University of Technology was established in 1999.

The ***RSMN*** is funded by the University programs, Lithuanian State Science and Education Foundation and international research projects. A five year research plan was approved and the three main focuses of the research plan are: **1.** Underlying nanoscience of molecular structures. Instrumentation and scanning probe microscopy will be developed and these tools will be applied to the study of placement and manipulation of molecular structures. **2.** The engineering and processing of nanoscale materials. **3.** The dissemination of new knowledge. This area is very important to increase the general understanding of nanotechnology and nanoscience in the society. RSCM work with Lithuanian TV to increase the general awareness and understanding of nanotechnology in Lithuania.

Main activity of RSMN: Theoreticalstudies and experimental technologies in nanoinstrumentation, nanomaterials and nanostructures, with main ***areas of expertise***: Scanning probe microscopy (AFM, SNOM); nanopositioning; porphyrin based nanostructures and sensors; sol-gel nanostructured ferroelectric thin films for sensors and actuators; SPM in liquids and cells micro/nanomechanics.

Main projects: ◆Functional nanostructures and molecular mechanisms (Lithuanian Science Foundation); ◆Nanostructured ferroelectric thin films: technology and applications (Lithuanian-Germany bilateral agreement); ◆AFM based Nanoscale Dielectric Relaxation Spectroscopy (US NSF); ◆The impact of nanoparticles on health and the environment (FP6). The Lithuanian Nanoscience and Nanotechnology Network *Coordinator: Prof.* ***Valentinas Snitka,*** *email* **vsnitka@ktu.lt**,
web: **http://www.cordis.lu/nanotechnology/src/networks.htm**.

The Lithuanian Nanoscience and Nanotechnology Network was basically established through the initiative of Research Center for Microsystems and Nanotechnology in 1999 as a result of collaborations between several institutions. The main reason for starting the network was the need to shear the infrastructure for nanoscience, especialy the scanning probe microscopy equipment and to facilitate participation in international research projects. The Network is financed through volunteer work and participating institutions. Among the different projects in the network are bilateral projects with the University in Kiel, funded by Ministry of Science and Education on the basis of bilateral Lithuanian-Germany agreements, project with the Pennsylvania State University, funded by NSF and FP6 projects.

Partners of the network:◆ Vilnius University; ◆ Vytautas Magnus University; ◆ University of Agriculture; ◆ Institute of Semiconductors Physics; ◆ FESTO and KATRA companies;

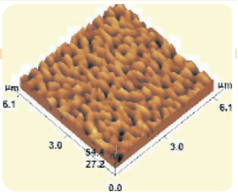
Professor Valentinas Snitka;

He is a ***Director*** and ***Principal Scientist*** of the ***Research Center for Microsystems and Nanotechnology (RSMN)*** at Kaunas University of Technology. He is educated by Kaunas University of Technology (PhD in electronics) in 1975 and Moscow Institute of Electronics (Dr.Sc in control systems) in 1991. He initiated and established ***Research center for Microsystems and Nanotechnology at KTU*** in 1999 and coordinate the Lithuanian Nanoscience and Nanotechnology network which was created to stimulate the collaboration on emerging technologies development and transfer into Lithuania. V. Snitka was a chairman of the first Microsystems and nanotechnology conference in the Baltic region (Vilnius, 1999), organized by NEXUS (European Network of Excellence in Multifunctional Microsystems). He is a member of Scientific Committee of the biennial Nordic-Baltic workshop on Scanning Probe Microscopy. He has conducted and supervised many R&D work in the field of microelectronics and microsystems technology, application of ultrasound for precision engineering, Surface Acoustic Wave devices and sensor technology. He has background in: technology transfer, knowledge management, RTD and innovation policy, and he sits on various European Union advisory committees on strategic and future issues. He is a member of European Union Scientific and Technical Research Committee (CREST), EU 6th Framework programme NMP (Priority 3) committee member, representative of Lithuanian's Science and Education Minister at European Commission DG Research, member of advisory committee for science and education to Lithuanian Prime Minister.

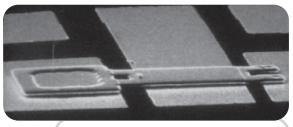
In 2004 he was awarded a US National Academy of Sciences fellowship for the collaborative research project "AFM based Nanoscale Dielectric Relaxation Spectroscopy" with Polymer Nanostructures Lab., Pensylvania State University. He is also research associate to International Center for Knowledge Economy and Management at Vilnius University, expert to UN Economic Commission for Europe. His current research is oriented to Dynamic Scanning Probe Microscopy methods and instrumentation, cell imaging and manipulation by SPM, nanopositioning systems (piezoactuators, ultrasonic motors, nanoresolution displacement sensors), nanostructured materials and molecular mechanisms and social dimension of nanotechnology.

Institute of Physical Electronics of Kaunas University of Technology (www.fei.lt)

Brief description of the institute: Institute of Physical Electronics of Kaunas University of Technology ***(www.fei.lt)*** was founded in 1994 after reorganization of self-supporting Scientific Center of Semiconductor Microelectronics "Microlira" of Kaunas Institute of Radio Measurement Technique. In 2003 Institute was reorganized into the independent Institute, having the status of University Institute. Functions of the founder were entrusted to Kaunas University of Technology. ***Main research activities include*** nanotechnology (thin films, surface engineering, application of ion and plasma methods for formation of nanostructures and nanomaterials) and optical document security (microoptical elements, interference filters, development of new materials and structures). ***Currently, IPE is employed*** in the development of polymeric nanocomposites, nanoimprint lithography for system polymer-semiconductor, analysis of the diffusive and mirror reflection of normal and tangential displacements of microobjects, ion beam synthesis of carbon nanostructures, formation and investigations of high power microelectromechanical switches. Institute is funded by National Science Programme "Formation and research of surface nanometric structures and thin layers interactions". IPE takes part in "Eureka" project E!2776-FACTORY INCAF "Applying of new coatings in forming processes", Science programme "Gillibert" "Mechanical properties of thin films", Nordic Energy Research Program "Formation of itrium stabilized zirconium oxide coatings by plasma spraying", NATO Science Programme-Cooperative Science and Technology "Nano-structured functional coatings for optical and lubricating applications". Institute is one of the main organisers of International Conference-School "Advanced materials and technologies", which every year takes place in Palanga, Lithuania.



25% PS-75% PMMA nanostructured polymer bend on crystalline silicon (100) substrate



Microelectromechanical switch made at IPE

Curriculum Vitae of prof. Sigitas Tamulevicius:
Prof. Sigitas TAMULEVICIUS is the Director of the Institute of Physical Electronics (IPE) ot the Kaunas University of Technology, Lithuania. The fields of research are: thin films, vacuum and plasma technologies, optical measurements, surface and interface phenomena, solid oxide fuel cells. Prof. Tamulevicius has experience in international projects, such as: Eureka INCAF project, Giliber project "Mechanical properties of thin films", Nordic Energy Research Programme and support actions, being the organiser of the annual International Conference- School "Advanced materials and technologies". He is an Expert member of the Lithuanian Academy of Sciences, Head of the research group "Ion induced phenomena in the heterostructures", Winner of the National Award for Science for 2001, Chairman of the qualification Commission for Education and Research in Materials Science at Kaunas University of Technology, Member of the European Materials Research Society, Peer reviewer of Institute of Physics and IOP Publishing Ltd (UK) and FP5 and FP6.

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