International Laser Centre
Ilkovicova 3, 812 19 Bratislava ,Slovak Republic
Tel.: +421 (2) 654 21 575 Fax: +421 (2) 654 23 244
E-mail: ilc@ilc.sk **url**: http://www.ilc.sk

The International Laser Centre (ILC) is an interdisciplinary organisation, focused on training, research and development in the areas of progressive methods and technologies of photonics, and their application in various fields and on various levels of national and international cooperation.

The mission of the ILC is to create local conditions for high level interdisciplinary and international scientific work in particular field of interest. The organisational culture is based on the following core values: high professionality, interdisciplinary approach, sharing technology and ideas, international collaboration.

Main objectives of the ILC are:

- providing the platform for technology transfer and creating contacts among scientists, engineers and other specialists sharing interest in the field of photonics
- presentation of scientific and technical results, development of information network with a possibility of international multimedial connection to related institutions
- development and application of the high-class equipment for critical laser technologies
- stimulation scientific and technical cooperation, joint participation in the international scientific programs and grants
- solving of actual scientific and technological projects
- organisation of special education and training courses, as well as solving of research projects will be held in association with other institutions in Slovakia and other countries
- organisation of training and courses, co-ordination with universities in gradual and postgradual education in the mentioned field of interest, training of the highly-qualified researchers and engineers based on the advanced learning technologies
- organisation of the international conferences, symposia and technical exhibitions
- consulting and information services, market and technology monitoring, preparing of a relation database in the fields of lasers and optoelectronics, optical diagnostics, related instrumentation and software in co-operation with associated institutions
- photonics technologies for solid state science and material analysis
- industry oriented non-contact metrology, rapid prototyping
- photonics technologies for biomedicine
- computer visualisation and analysis of complex datasets
- technology transfer (local industrial partners, technical park for Universities)

Laboratory of Rapid Prototyping and Reverse Engineering
Laser stereolithograph LS 250 [NICTL Shatura] using LGK 30 He/Cd laser, filled with Renshape/Cibatool SL 5170 epoxy resin, default layer thickness 0.1 mm.

The International Laser Centre was established by the Ministry of Education of Slovak Republic in January 1997. The decision on the establishment was aiming to build up an excellent research centre with laboratories equipped with up-to-date technology in field of advanced laser and optoelectronic technologies. This will help Slovakia to create the optimal conditions for upgrade of education in the field at the universities, to grow active international co-operation, to accelerate and improve the preparation and requalification of specialists in field of advanced laser and optoelectronic technologies, stimulation of application the laser technique and technology, advanced optoelectronics and photonics in various areas of industry.

Department of Microelectronics, Faculty of Electrical Engineering and Information Technology, Bratislava

http://www.kme.elf.stuba.sk/kme/, Daniel.Donoval@stuba.sk

For 45 years from its foundation the MD FEI STU Bratislava has been accepted as the internationally acknowledge R&D center. The complex activities comprise microelectronics (IC design, new methodologies of testing), sensorics, optoelectronics with deep understanding of physics and technology of semiconductor structures, devices, high vacuum technology and analysis with a huge support of modeling and simulation.

The teachers and researchers of the department are contributing considerably to the educational process and its developmant by the implemantation of new-knowledge in the curiculla with micorelectronics orientation in undergraduate, postgraduate and PhD study. Very important feature of the educational process is the frequent involvement of students in individual projects to solve some partial problems of research projects at the department. There are 18 teachers, more than 20 researchers and about 20 PhD students at the department. Among them there are 6 professors, 15 associated professors, 3 staff members have the DrSc. (Doctor of Science) degree and 29 have PhD. degree. This represents a large intelectual potential with relatively good laboratories and experimental set-up forming a very good enviroment for intensive participation of the department in R&D grants.

In the premises of the department there are complex laboratories for measurement of electrical characteristics and parameters extraction of semiconductor structures and devices using the I-V, I-T, C-V, C-t, DLTS, noise measurement and their modifications. Within the unique laboratories of the department may be included SEM with implemented EBIC and FREBIC modes, the laboratory of μRaman spectrometry, AES and XPS. Some new physical models for simulation of electrical properties and characterization of the non-standard effects of metal-semiconductor interfaces were developed. 2/3D process and device simulations (ISE-TCAD) of electrical characteristics and parameters extraction of parazitic properties of selected structures with particular interest to power devices and smart power IC is frequently used. Benefiting from the participation of MD FEI STU in the EU supported project EUROPRACTICE the staff members have access to the utilization of newest versions of desing and simulation tools CADENCE, SYNOPSYS and HSPICE for automated desing, simulation and verification of the properties of designed structures.

About 10 -11 research grants and 4-5 applied research projects supported by the Ministry of Education of Slovak Government, more than 10 research projects funded internationally, from them more then 6 supported by the EU and NATO are solved yearly at the department. The staff members published yearly about 30 papers in scientific journals and about 80-100 contributions in conference proceedings particularly international in English. The application of obtained results for the industrial exploitation is incerased and research grants were solved on contract bases with national and international comparnics in the year 2005.

In the last years two that the efficiency of R&D work has increased. Another positive aspect is high number of young experts – PhD students who together with the senior staff numbers guarantee the successful solution of complex advanced R&D tasks. The intensive collaboration with the MCL Bratislava, research institutes of SAV and international collaboration will allow to use the complementary methods and processes as well as the expertise of collaborating institutions for project solutions.

The MD FEI STU plays an important role in technology transfer towards the local industrial entities. Within the framework of the EU programs the department was established as the National Contract Point for Microelectronics and Signal Processing and National Contract Point for Sensorics and Microsystems technology. The department plays an active role in establishing the Nanoelectronics Centre and Network of Excellence in Slovakia and professors of the department represents Slovakia in European technology platforms ENIAC and EPOSS (Prof. Donoval) and PHOTONICS 21 (Prof. Uherek). The department staff members organized many workshops, seminars and training for representatives of the industry.

The publication of this page is supported by the ***MINOS-EURONET*** project (EC Contract No 015704)