

DEPARTMENT OF MICROELECTRONICS

<http://www.kme.elf.stuba.sk/kme/>

Head of Department

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I. STAFF

Professors	Prof. Ing. Juraj Breza, PhD., Prof. Ing. Otto Csabay, DrSc. (Professor emeritus), Prof. Ing. Daniel Donoval, DrSc., Prof. Ing. Daniela Ďuračková, PhD., Prof. Ing. Jaroslav Kováč, PhD., Prof. Ing. Viera Stopjaková, PhD., Prof. RNDr. Vladimír Tvarožek, PhD., Prof. Ing. František Uherek, PhD.
Associate Professors	Doc. Ing. Ladislav Harmatha, PhD., Doc. Ing. Ivan Hotový, DrSc., Doc. Ing. Ján Janík, PhD., Doc. Ing. Ján Jakabovič, PhD., Doc. Ing. Peter Kordoš, DrSc., Doc. Ing. Jozef Liday, PhD., Doc. Ing. Róbert Redhammer, PhD., Doc. Ing. Rudolf Srnánek, PhD., Doc. Ing. Ľubica Stuchlíková, PhD., Doc. Ing. Alexander Šatka, PhD., Doc. Ing. Martin Tomáška, PhD., Doc. Ing. Marian Veselý, PhD., Doc. Ing. Milan Žiška, PhD.
Assistant Professors	Ing. Fedor Mika, PhD., Ing. Erik Vavrinský, PhD.
Senior Scientists	Ing. Dalibor Búč, PhD., Ing. Magdaléna Kadlečíková, PhD., Ing. Juraj Racko, PhD., Ing. Jaroslava Škriniarová, PhD., Doc. Ing. Bedřich Weber, PhD.
Scientific Workers	Ing. Peter Benko, PhD., Ing. Aleš Chvála, PhD., Ing. Soňa Flickyngerová, PhD., Ing. Martin Florovič, PhD., Ing. Jaroslav Kováč, jr., PhD., Ing. Alexander Kromka, PhD., Ing. Libor Majer, PhD., Ing. Marián Marton, PhD., Ing. Ivan Novotný, PhD., RNDr. Vlastimil Řeháček, PhD., Ing. Marian Vojs, PhD.
Research Workers	Ing. Juraj Brenkuš, Ing. Lenka Gajdošová, RNDr. Alena Grmanová, Ing. Milan Kempný, Ing. Juraj Marek, Ing. Miroslav Mikolášek, Ing. Olga Valentová, Ing. Peter Vogrinčič
Technical Staff	Božena Harmathová, Jozef Ivan, Jozef Král
PhD. Students	Ing. Daniel Arbet, Ing. Jana Benkovská, Ing. Tomáš Brath, Ing. Martin Daříček, Ing. Martin Donoval, Ing. Pavol Gašpierik, Ing. Gábor Gyepes, Ing. Juraj Hotový, Ing. Peter Horňák, Ing. Tibor Ižák, Ing. Peter Kalianko, Ing. Ondrej Kádár, Ing. Ivan Košč, Ing. Mário Kotlár, Ing. Mário Krajmer, Ing. Radovan Kurinec, Ing. Filip Lazišťan, Ing. Jozef Mihálov, Ing. Martin Mišun, Ing. Marián Molnár, Ing. Lukáš Nagy, Ing. Michal Nemeč, Ing. Martin Predanocy, Ing. Juraj Priesol, Ing. Patrik Príbytný, Ing. Karol Rendek, Ing. Jakub Rybár, Ing. Vladimír Sedlák, Ing. Ľubomír Sládek, Ing. Ján Šebok, Ing. Roman Šramatý, Ing. Peter Telek, Ing. Marián Varga, Ing. Roman Záluský

II. EQUIPMENT

II.1 Teaching and Research Laboratories

- Laboratory of Thin Films I
- Laboratory of Thin Films II
- Laboratory of Semiconductor Structures
- Laboratory of Optoelectronics

- Laboratory of Surface Analysis
- Laboratory of Electronic Devices
- Laboratory of Electrophysical Measurements
- Laboratory of Computer Analysis
- Laboratory of Microelectronic Devices Diagnostics
- Laboratory of Material for Electronics
- Laboratory of Electronic Devices
- Laboratory of Semiconductor Structures
- Laboratory of Sensor Systems and Microsystems
- Laboratory of Thin Film Sensors
- Laboratory of Vacuum Technique and Electronics
- Laboratory of IC Design
- Laboratory of Raman Spectroscopy
- Laboratory of Vacuum Technology I
- Laboratory of Vacuum Technology II
- Laboratory of Chemical Processes I
- Laboratory of Chemical Processes II
- Laboratory of Optoelectronic Device Technology
- Laboratory of Deposition Technology
- Laboratory of Plasma Processes
- Laboratory of Microwave Electronics
- Laboratory of Digital Signal Processing
- Laboratory of Optical Measurements
- Laboratory of Sensors and Security Technique
- Laboratory of Microlithography
- Laboratory of Biochemical Sensors
- Laboratory of ICs
- Laboratory of Digital Circuits
- Laboratory of Semiconductor Structure and IC Design
- Laboratory of IC Design and Testing
- Laboratory of Nanostructures and Electronic Devices Characterisation
- Laboratory of Electronic Measurements

II.2 Special Measuring Instruments and Computers

- Computer Controlled System for I-V and C-V Measurements and Analysis (from 20 to 400 K)
- QDLTS Time Domain Spectrometer
- DL8000 Digital Deep Level Transient Spectrometer ACCENT
- Microwave Network Analyzer HP 8408 S + HP83421A Lightwave Source (20 GHz)
- Microwave Network Analyzer (40 GHz) Agilent E8363 B (temperature range: RT – 400K)
 - RFOV measurements
- Semiconductor Parameter Analyzer, Agilent 4155C
- Arbitrary Function Generator TEKTRONIX AFG3252 (240 MHz, 2 channel)
- Digital Oscilloscope TEKTRONIX TDS20225
- DSA 8200 Digital Serial Analyser - Sampling Oscilloscope with TDR Module
- Digital Pulse Generator DTG5334
- SUSS Manual Prober PM5, SUSS MicroTec, Test Systems
- Experimental System for Low-frequency Noise Measurement
- Micromanipulators with Nanotips for Measurement and Testing of Electronic Devices, and Manipulation of Micro-/nano-objects
- AFM, Park XE-100
- Raman Spectrometer (ISA-Jobin Yvon-Dilor-Horiba)
- X-ray Photoelectron Spectrometer (VG Microtech)
- Spectroscopic Ellipsometer Angstrom Advanced PHE 102
- Surface Profiler Dektak 150 (Veeco)
- Talystep S112 Profilometer
- Auger Electron Spectrometer (Varian) equipped with EX 05 VG ion gun

- Mask Aligner Suss KSM MJB 3HP
- Compact Plasma System - PECVD, Plasmalab80Plus, Oxford Instruments Plasma Technology
- Modular Cluster System – RIE, PlasmalabSystem100, Oxford Instruments Plasma Technology
- Sputter Etcher XNE-01 (Secon)
- Sputtering Unit Perkin-Elmer Ultek/Randex 2400/8L
- Vacuum System B55.3 Hochvakuum Dresden with magnetron sputtering sources
- Arc Discharge Reactor for CNT Growth (home made)
- CVD Reactor for CNT Growth (home made)
- RTA - Rapid Thermal Annealing (home made)
- Contact Angle Measurement System (home made)
- Equipment for Emission Measurements (home made)
- Leak Detector, SmartTest
- XILINX and ALTERA (xiClone) Systems - boards and SW, Development Kits, Xilinx ISE6.3i
- VisualDSP++ SHARC Processor Development Tools, ADSP-21364 and ADSP-TS201S Evaluation Kits, Analog Devices donation
- MC9S08LC60/36 Demonstration Board + complete CodeWarrior Development Studio for HC08 and HC12, FreeScale donation
- Sonnet – Planar Structures Electromagnetic Simulator, University licence

Design Tools-via EUROPRACTICE

- Synopsys TCAD Sentaurus A_2007.12
- Synopsys Analog Simulation and Modelling (HSpice)
- Cadence IC Package
- Mentor Graphics Full Suite
- Dolphin Integration Smash HDL & SLED

Design Kits:

- AMS 0.35 μm
- TSMC 90 nm

Running on:

- IBMx3400 Quad Core E5335 server (Linux), Workstations SunBlade 1000, 2 pc Sun Ultra 10 (all Solaris), HP Proliant ML 370 - HP ML370G5 QC E5420 (Linux), and 21 PCs Core Duo/Quad (WinXP/Linux)

III. TEACHING

III.1 Undergraduate Study (Bc.)

Subject, semester, hours per week for lectures and for seminars or practical exercises, name of the lecturer.

Logic Systems (two weeks part)	(1st sem., 4-1h)	F. Mika
Materials for Electronics	(3rd sem., 3-2h)	D. Donoval
Electronics (dist. study)	(3rd sem., 3-2h)	L. Stuchlíková
Electronic Devices and Circuits	(3rd sem., 3-2h)	R. Redhammer
Design and Reliability of IC and Systems	(3rd sem., 3-2h)	D. Ďuračková, V. Stopjaková
Electronic Systems	(3rd sem., 3-2h)	M. Žiška
Optoelectronics and Laser Technique	(4th sem., 2-2h)	F. Uherek
Electronic Devices	(4th sem., 2-2h)	L. Stuchlíková
Quality Management	(4th sem., 2-1h)	M. Žiška
Systems for Objects Security and Safety	(4th sem., 3-2h)	V. Tvarožek, I. Hotový

Optoelectronics	(5 th sem., 3-2h)	F. Uherek
Microelectronics	(5 th sem., 2-2h)	D. Donoval, J. Breza
Sensor Systems for Automobiles	(5 th sem., 2-2h)	V. Tvarožek
Electronic Circuits	(5 th sem., 3-2h)	F. Mika
Electronic Devices and Circuits	(5 th sem., 3-2h)	R. Redhammer
Quality Management	(5 th sem., 2-1h)	M. Žiška
Bachelor Project 1	(5 th sem., 0-4h)	F. Uherek
Principles of IC Design	(6 th sem., 2-2h)	D. Ďuračková
Digital and Pulse Circuits	(6 th sem., 3-2h)	F. Mika
Sensorics	(6 th sem., 2-2h)	V. Tvarožek
Bachelor Project 2	(6 th sem., 0-8h)	F. Uherek

III.2 Graduate Study (Ing.)

Team Project	(1st sem., 0-6h)	F. Uherek, L. Stuchlíková
Computer Circuit Analysis	(1st sem., 2-2h)	M. Tomáška
CAD of Electronic Devices	(1st sem., 2-2h)	D. Donoval
Electronic Measurement of Devices and Systems	(1st sem., 2-2h)	A. Šatka
Programmable ICs	(1st sem., 2-2h)	J. Jakabovič
Scientific Communication	(1st or 2nd sem., 1-0h)	F. Uherek, D. Donoval, J. Breza
Vacuum Electronics and Technique	(1st sem., 2-1h)	M. Veselý
Analog IC Design	(1st sem., 2-1h)	D. Ďuračková
Diploma Project 1	(2nd sem., 0-6h)	D. Donoval
Computer Aided IC Design	(2nd sem., 3-2h)	V. Stopjaková
Applied Optoelectronics and Lasers	(2nd sem., 3-2h)	J. Kováč, F. Uherek
Nanoelectronics	(2nd sem., 3-2h)	R. Redhammer
Industrial Electronics	(2nd sem., 3-2h)	A. Šatka
Structures of IC	(2nd sem., 2-2h)	M. Žiška
DSP Circuits and Methods	(2nd sem., 2-1h)	A. Šatka
Optical Communication Systems	(2nd sem., 2-1h)	F. Uherek
Diploma Project 2	(3rd sem., 0-6h)	D. Donoval
Sensor Microsystems	(3rd sem., 2-2h)	V. Tvarožek
Diagnostics of Integrated Circuits and Systems	(3rd sem., 2-2h)	V. Stopjaková
Spectroscopic Methods of Analysis and Inspection of Matter	(3rd sem., 3-1h)	J. Breza

RF Circuit Design	1 sem., 2-1h)	M. Tomáška
Physical Electronics of Solids	1 sem., 2-1h)	M. Veselý
Superconductor Electronics	1 sem., 2-1h)	J. Breza
Microsystems Technology	1 sem., 2-1h)	I. Hotový
Integrated Optoelectronics	1 sem., 2-1h)	J. Kováč
Diploma Project 3	1 sem., 0-8h)	D. Donoval

IV. RESEARCH PROJECTS

National Centres of Excellence

- **SMART** - Support of Centre of Excellence for Smart Technologies, Systems and Services, No. NFP26240120023 (2009-2010), coordinator: R. Redhammer
- **SMART 2** – Support of Centre of Excellence for Smart Technologies, Systems and Services:II, No. AŠF EÚ MŠ SR, ITMS 26240120029 (2010-2012), coordinator: R. Redhammer
- **NanoNet** – Centre of Excellence for Design, Preparation and Diagnostics of Nanostructures for Electronics and Photonics, No. AŠF EÚ MŠ SR, ITMS 26240120010 (2009-2011), coordinator: F. Uherek
- **NanoNet 2** – Centre of Excellence for Design, Preparation and Diagnostics of Nanostructures for Electronics and Photonics 2, No. AŠF EÚ MŠ SR, ITMS: 26240120018 (2010-2012), coordinator: F. Uherek
- **CENAMOST** – Centre of Excellence Nano-Microelectronic, Optoelectronic and Sensoric Technologies, No. APVV VVCE-0049-07 (2008–2010), coordinator: D. Donoval

National R&D and Educational Projects within Ministry of Education (MŠ SR) and Development and Research Agency (APVV) Actions

- Cooperation Center for the Transfer of Innovative Technologies from Research to Industry, No. APVV SUSPP-0008-09 (2009-2013), coordinator: F. Uherek
- Study of Diamond and Diamond-like Carbon Properties for Electrochemical and Bio-sensoric Applications, No. APVV LPP-0094-09 (2009-2012), coordinator: V. Tvarožek
- Biocompatible Thin Films for Medical Application, No. APVV LPP-0149-09 (2009-2012), coordinator: M. Veselý
- Characterization Of Electrical Properties of HEMT and MOSFET Transistors on AlGa_N(InAlN)/Ga_N Heterostructures Supported By 2/3-D Modelling and Simulation, No. APVV LPP-0195-09 (2009-2012), coordinator: D. Donoval
- Advanced Parametric Test Methods for the Reliability Enhancement of Mixed-Signal Integrated Circuits and Systems, No. VEGA 1/0285/09 (2009-2012), coordinator: V. Stopjaková
- Development of Special Methods of Characterization and Diagnostics of Advanced Semiconductor Micro-/Nano-Structures and Devices, No. VEGA 1/0716/09 (2009-2012), coordinator: A. Šatka
- Electro-Physical Properties and Technological Issues of Si, Ga_N and ZnO Semiconductor Materials and Structures for a New Generation of Electronic Devices and Circuits, No. VEGA 1/0507/09 (2009-2012), coordinator: L. Harmatha
- Development and Characterization of Advanced Nano-Dimensional Structures Based on Compound and Organic Semiconductors for Applications in Microelectronics and Photonics, No. VEGA 1/0689/09 (2009-2012), coordinator: J. Kováč
- Design, Research and Preparation of Advanced Electronic Systems to Be Used to Improve Quality Of Life, No. APVV VMSP-P-0127-09 (2009-2011), coordinator: D. Donoval
- Nanostructured Thin Film Systems for MEMS Sensor Applications, No. VEGA 1/0553/09 (2009-2011), coordinator: I. Hotový

- Advanced MEMS Chemical Sensors for Extreme Conditions, No. APVV-0655-07 (2008 – 2011), coordinator: T. Lalinský, IEE SAS, local coordinator: I. Hotový
- Thin Films of Transparent Conductive Oxides for Photovoltaic Solar Cells, No. VEGA 1/0220/09 (2009-2011), coordinator: V. Tvarožek
- Nanotechnologies - Synthesis Of Carbon Nanotubes and Nanocomposites on Natural Catalysts, No. VEGA 1/0746/09 (2009-2011), coordinator: M. Kadlečíková
- Modelling and Simulation of Electrical Properties of Structures Based on Wide Band Gap semiconductors, No. VEGA 1/0601/10 (2010-2011), coordinator: J. Racko
- Optimized Ohmic Contacts to p-GaN, Contribution to Quantitative Auger Analysis of Group III Nitrides, No. VEGA 1/0779/10 (2010-2011), coordinator: J. Liday
- New Architecture of Neurochips and their Application as the Neuroimplants, No. VEGA 1/0693/08 (2008-2010), coordinator: D. Ďuračková
- Educational and Training Support of Soft Skills for Undergraduate Students of FEI and FIIT STU, No. KEGA 3/7413/09 (2009-2011), coordinator: M. Žiška
- Research of Growth and Doping of D- and DLC Layers for Electronic Applications, No. APVV LPP-0246-06 (2006-2010), coordinator: M. Veselý
- Preparation of Carbon Nanotubes and Study of Electronic Devices Based on Carbon Nanotubes Networks, No. APVV-0628-06 (2007–2010), coordinator: V. Skákalová, PhD., Danubia NanoTech, local coordinator: M. Veselý
- Advanced Opto and Microelectronic Devices Based on Organic Materials, ADOPMOD, No. APVV-0290-06 (2007–2010), coordinator: J. Kováč
- Metal-Insulator-Metal Structures for Nanoscale DRAM Memories, No. APVV-0133-07 (2008-2010), coordinator: K. Fröhlich, IEE SAS, local coordinator: L. Harmatha
- Diamond Electrodes for Electrochemical Applications, No. APVV-0548-07 (2008-2010), coordinator: M. Veselý
- Design, Preparation and Characterization of High Speed Power Electronic Devices Based on Submicron Semiconductor Structures Supported by 2/3-D Modelling and Simulation, No. VEGA 1/0742/08 (2008-2010), coordinator: D. Donoval
- Field Emission from Carbon Nanotubes, No. VEGA 1/0807/08 (2008-2010), coordinator: J. Janík
- Nanocrystalline Diamond Doping Mechanism Investigation, No. VEGA 1/0857/08 (2008-2010), coordinator: R. Redhammer

V. COOPERATION

V.1 Cooperation in Slovakia

- International Laser Centre, Bratislava
- Institute of Electrical Engineering, Slovak Academy of Sciences, Bratislava
- Institute of Physics, Slovak Academy of Sciences, Bratislava
- Institute of Informatics, Slovak Academy of Sciences, Bratislava
- Research Institute for Welding, Bratislava
- Semikron, Vrbové
- Applied Precision, Bratislava
- LOX Technologies, Piešťany
- University of Žilina, Žilina
- Danubia NanoTech, Bratislava
- Bratislava Development Center (BDC), ON Semiconductor, Bratislava
- AudioAsics a.s., Bratislava

V.2 International Cooperation

- Czech Technical University, Department of Microelectronics, Prague, Czech Republic
- Technical University of Brno, Department of Microelectronics, Czech Republic
- West Bohemian University, New Technology Center, Pilsen, Czech Republic
- IMEC Leuven, Belgium

- STMicroelectronics Italy.
- Infineon Technologies, Germany
- Johannes Kepler Universität Linz, Linz, Austria
- Technical University Ilmenau, Germany
- Hungarian Academy of Sciences Budapest, Hungary
- Universität Leipzig, Fakultät für Physik und Geowissenschaften, Fakultät für Chemie und Mineralogie, Leipzig, Germany
- Technical University Vienna, Austria
- Technical University Munich, Germany
- Institute of Scientific Instruments, Czech Academy of Sciences, Brno, Czech Republic
- University of Athens, Department of Physics, Greece
- Regensburg University, Germany
- Institut für Schicht- und Ionen Technik Jülich, Germany
- Faculty of Microsystem Electronics and Photonics, Wrocław University of Technology, Poland
- Institute of Solid State Physics, Technical University Graz, Graz, Austria
- Physikalisches Institut, Universität Würzburg, Germany
- Imperial College, Department of Materials, London, UK
- Istituto per la Microelettronica ed i Microsistemi CNR, Lecce, Italy
- Umweltsensortechnik GmbH, Geschwenda, Germany
- City University of Hong Kong, Hong Kong, China
- Technische Universität, Bergakademie Freiberg, Institut für Theoretische Physik, Freiberg, Germany
- National Hellenic Research Foundation, Theoretical and Physical Chemistry Institute, Athens, Greece
- Photeon Technologies GmbH, Bregenz, Austria
- Eberhard Karls Universität, Institut für Angewandte Physik, Tübingen, Germany
- Institute of Physics, Czech Academy of Sciences, Prague, Czech Republic
- Institute of Nuclear Sciences, Laboratory for Atomic Physics, Belgrade, Serbia
- Lanzhou University, Lanzhou, China

V.3 International Scientific Projects

Projects within the 7th EC Framework Program and ENIAC JU

- **ENIAC-END** - 'Models, Solutions, Methods and Tools for Energy-Aware Design', ENIAC JU No. 120214 (2010-2014). Coordinator: STMicroelectronics Italy. Local coordinator: D. Donoval
- **ENIAC-MAS** - 'Nanoelectronics for Mobile Ambient Assisted Living (AAL) Systems', ENIAC JU No. 120228 (2010-2013). Coordinator: Dr. W. Dettmann, Infineon Technologies, Germany. Local coordinator: V. Stopjaková
- **IDESA-2** – 'Implementation of Widespread IC Design Skills in Advanced Deep Submicron Technologies at European Academia', FP7-ICT-CSA No. 246906, (2009-2012). Coordinator: Dr. Bart De Mey, IMEC, Leuven, Belgium. Local coordinator: V. Stopjaková
- **EURO-DOTS** - 'European Doctoral Training Support in Micro/Nano-Electronics', FP7-ICT-2009-5 No. 257051, (2010-2012). Coordinator: Prof. H. E. Maes, IMEC, Leuven, Belgium. Local coordinator: D. Donoval
- **MORGaN** - 'Materials for Robust Gallium Nitride', FP7-NMP-2007-LARGE-1 No. 214610 (2008-2011). Coordinator: Dr. S. Delage, Alcatel Thales, France. Local coordinator: J. Kováč
- **EDIGRA** – 'European Dimension for Graduates in Technology Fields for Slovak Graduates', Lifelong Learning Programme / Leonardo da Vinci (2008-2010). Coordinator: M. Veselý

Projects within the bilateral co-operation Slovakia – Germany

- Preparation and Characterization of Nanostructures Mixing Metal Oxides for Gas Detection DAAD 2009/I (2009-2010). Cooperating institution: Technische Universität Ilmenau, Fakultät für Elektrotechnik und Informationstechnik. Local coordinator: I. Hotový

- Growth and Characterization of Advanced Organic Semiconductor Structures for Application in Organic Electronic DAAD 2009 (2009-2010). Cooperating institution: Universität Tübingen, Institut für Angewandte Physik. Local coordinator: J. Kováč

Projects within the bilateral co-operation Slovakia – Czech Republic

- METACARBON - Investigation of Electrical and Optical Properties of Nanodiamond and Diamond-like Carbon Thin Films, APVV CK-CZ-0139-09 (2010-2011). Cooperating institution: Institute of Physics, CAS Prague. Coordinators: Z. Remeš (IP CAS), M. Veselý
- Materials and Components for Protection of Environment, ZČU-OZP (2006-2011). Cooperating institution: West Bohemian University, Pilsen. Coordinators: P. Šutta (WBU), V. Tvarožek

Projects within the bilateral co-operation Slovakia – Italy

- NANOMIXSENS - Nanostructured Mixing Metal Oxides for MEMS Gas Sensors, APVV SK-IT-0030-08 (2009-2011). Cooperating institution: Italian National Council of Research, Institute for Microelectronics and Microsystems. Coordinators: S. Capone (INCR), I. Hotový

Projects within the bilateral co-operation Slovakia – Poland

- MICROHET - Technology and Characterization of Advanced Semiconductor Heterostructures for Micro and Optoelectronic Devices, APVV SK-PL-0017-09 (2010-2011). Cooperating institution: Wrocław University of Technology. Coordinators: M. Tlaczala (PWR-TUW), J. Kováč

Projects within the bilateral co-operation Slovakia – Serbia

- DOSUZOFI - Doping and Surface Modification of Zinc-oxide Thin Films, APVV SK-SRB 0012-09 (2010-2011). Cooperating institution: VINCA Institute of Nuclear Sciences, Laboratory for Atomic Physics, Belgrade. Coordinators: M. Milosavljević, (VINCA), V. Tvarožek

Projects within the bilateral co-operation Slovakia – China

- Fabrication of Infrared Sensitive Organic Field Effect Transistors, (2010-2011). Cooperating institution: Lanzhou University. Coordinators: Yingquan Peng, (LU), J. Jakabovič

Project within the bilateral co-operation Slovakia – Austria

- Characterization of Advanced Materials for Novel Technologies, No. 2010-05-15-0001 Austrian and Slovak Scientific and Educational Cooperation (2010-2011). Cooperating institution: JKU Linz. Coordinators: C. Simbrunner (JKU), J. Breza

VI. THESES

VI.1 Masters Theses

Masters theses supervised at the Department of Microelectronics. The names of supervisors are in brackets.

- [1] Ďurmek, L.: Ignition Systems of Automobile Combustion Engine (F. Mika)
- [2] Fekete, T.: The Construction, Controlling and Testing of the V6 TFSI Hybrid Engine in the Manufacturing Process (F. Uherek)
- [3] Guldán, M.: Optoelectronic Devices Spectral Characteristics Measurement and Data Evaluation (J. Kováč)
- [4] Holásek, M.: Model Design and Electric Properties Simulations of InAlN/GaN HEMT (J. Marek)
- [5] Igaz, D.: Model of a Photonic Sensor for Monitoring Glucose Levels (F. Uherek)
- [6] Jarošková, S.: GaN Processing by Wet Chemical Etching (J. Škriniarová)
- [7] Jurkovič, M.: MOS Structure Diagnostics by Means of Conductance Technique (L. Harmatha)
- [8] Kalma, J.: Microstrip Antenna Array (P. Hajach)
- [9] Kikta, P.: Equipment Design for Testing Absorption Properties of Materials (V. Goga)
- [10] Klinovský, M.: Photonic Devices for Optical Communication Systems (F. Uherek)
- [11] Kotlár, M.: Arc Discharge Reactor for Growth of Carbon Nanotubes (M. Marton)
- [12] Kubiš, P.: Development of a Thin Film Packaging Process of Organic Solar Cells by Thermal Evaporation of Oxides (J. Jakabovič)
- [13] Kunzo, P.: Gas Sensor Based on Carbon-Polymer Composites (A. Šatka)
- [14] Lukáč, V.: Data Storage Devices as a Part of eLearning (Ľ. Stuchlíková)

- [15] Lupták, R.: Progressive Materials for Photonic Elements (F. Uherek)
- [16] Matúš M.: Analysis of Errors at GPS Navigation Systems (M. Minárik)
- [17] Matušková, B.: Detection of Crystallographic Defects in Semiconductor Material GaP Using Wet Chemical Etching (J. Škriniarová)
- [18] Molnár, M.: Simulation of Selected Electronic Properties of HEMT Based on GaN-Al_xGa_{1-x}N Heterostructures (J. Racko)
- [19] Packa, M.: Software Analyzer for Can Systems (M. Rakús)
- [20] Priesol, J.: Monte Carlo Simulation of Electron Beam Interaction With Semiconductor Structures (A. Šatka)
- [21] Rybár, J.: Multimedia in Electronics (L. Stuchlíková)
- [22] Sedlák, V.: Creation of Simulator in the Microsoft Visual Studio to Analyze Neural Networks (D. Ďuračková)
- [23] Ščepka T.: AFM and its Use in Studying the Surfaces of the Semiconductors A₃B₅ (J. Škriniarová)
- [24] Srnová M.: Microprocessor System for Measurement of Signals from a Raster System (A. Šatka)

VI.2 PhD Theses

- [1] Flickyngrová, S.: Sputtering of Transparent Conducting Thin Films Based on ZnO (V. Tvarožek)
- [2] Haščík, Š.: Dry Plasma Etching and Microstructure Patterning for Microelectronic and Microsensor Applications (I. Hotový)
- [3] Kuruc, M.: Application of Spreading Resistance Profiling for Semiconductor Technological Processes Monitoring (L. Hulényi)
- [4] Majer, L.: Contribution to Design and Implementation of RF Integrated Circuits in CMOS Technology (V. Stopjaková)
- [5] Malík, P.: Contribution to Forward and Backward MDCT Algorithms and Design of Highly Scalable Hardware Architecture to Accelerate MDCT Computation (D. Ďuračková)
- [6] Pavlov, J.: Investigation of Selected Factors Influence on Diamond Layer Quality and its Adhesion to Cutting Tool (J. Janík)
- [7] Raschman, E.: The Digital Design of CNN for Pattern Recognition (D. Ďuračková)

VII. OTHER ACTIVITIES

Conferences organised/co-organised by the Department of Microelectronics:

- **ASDAM 2010** – The 8th International Conference on Advanced Semiconductor Devices and Microsystems, Smolenice, Slovakia, 25th – 27th October, 2010 (www.kme.elf.stuba.sk/asdam). Head of organising committee: Prof. D. Donoval
- **JVC 13**, The 13th Joint Vacuum Conference, Štrbské Pleso, Slovakia, 20th – 24th June, 2010, (<http://www.jvc13.stuba.sk/>), organised by Slovak Vacuum Society in cooperation with the Department of Microelectronics, Head of organising committee: Assoc. Prof. M. Veselý

EUROPRACTICE membership of the University is managed by the Department (responsible: M. Veselý)

Other activities:

- Member of 'Education and Training Coordination Board' and 'Scientific Community Council' of ENIAC JU, (D. Donoval)
- Member of 'Steering Committee of European Workshop in Microelectronics Education' EWME (D. Donoval)
- Member of European Technology Platform PHOTONICS21, Education Working Group WG7 (F. Uherek)
- Alternate Councillor of IUVESTA (M. Veselý)
- Opening of the National Centre for Electron Microscopy in France, Rouen, 2-4 November, 2010, invited participant (M. Veselý)
- Member of the Slovak Research and Development Agency (APVV) Boards for FP7 and International R&D Cooperation (M. Veselý)

- Member of the Slovak Research and Development Agency (APVV) Boards, Working Group of Technical Sciences (M. Žiška)
- National Expert for CEEPUS Program (M. Veselý)
- Head of Office for European Union Programs at Faculty of EE&IT (M. Veselý)
- Teaching a course of 'Vacuum Science, Materials for Vacuum and Clean Rooms' at TU Ilmenau, 5 – 19 December, 2010 (M. Veselý)

VIII. PUBLICATIONS

VIII.1 Journals

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