

# SCIENTIFIC PROGRAM



Wednesday, June 19, 2019

ARRIVAL OF PARTICIPANTS	08:00
MEETING OF SOLVERS OF THE PROJECT CEDAMNF, EXCHANGE OF EXPERIENCES WITH OTHERS PARTICIPANTS, DISCUSSION	08:30
REGISTRATION	11:00
LUNCH	11:30
OPENING CEREMONY	15:00
<hr/> PLENARY SESSION <i>Introductory lectures</i>	<hr/> 15:10

*Mauro Fanciulli, Jakub Schusser, Min-i Lee, Zakariae El Youbi, David Bresteau, Olivier Heckmann, Christine Richter, Thierry Ruchon, and Karol Hricovini*  
**Spin, Time and Angle-Resolved Photoemission Spectroscopy on WTe<sub>2</sub>**

*Jarmila Müllerová, Pavel Šutta, and Marie Netrvalová*  
**Thin Films against Multilayers of a-Si:H: Comparative Study on Optical Properties**

*Shih-Chun Tseng, Shang-Ru Wu, Hung-Yin Tsai, and Robert Andok*  
**Field Emission Characteristics of Multi-Walled Carbon Nanotubes with Double Gate Electrodes**

*František Dubecký, Dobroslav Kindl, Pavel Hubík, Matej Mičušík, Pavol Boháček, Bohumír Zařko, Enos Gombia, Jaroslav Kováč, and Vladimír Nečas*  
**Role of Contacts in Metal/Semi-Insulating GaAs/Metal Structures: Symmetrical Geometry**

*Ján Rusz*  
**Towards High Spatial Resolution Studies of Magnetism with Transmission Electron Microscopes**

COFFEE BREAK	16:30
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Session 1(A) <i>Physical properties, structural aspects of materials and their influencing, theory of physical properties, computational physics I.</i>	17:00
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*Irena Janotova, Alan Fos, Branislav Kunca, Dusan Janickovic, Peter Svec, Ugur Topal, Ivan Skorvanek, and Peter Svec Sr.*  
**Formation of Nanocrystalline Structure in Selected Rapidly Quenched Fe-Sn-B Based Alloys**

*Jozef Sitek, Dominika Holková, Július Dekan, Patrik Novák, Stanislav Sojak, and Jozef Dobrovodský*

**Influence of Cu Ion Implantation on Nanocrystalline Alloy of NANOMET**

*Elemír Ušák, Mariana Ušáková, Eva Branická, and Ján Lokaj*

**Structural and Magnetic Properties of Nickel-Zinc Ferrites Substituted by Terbium and Holmium**

*Mariana Ušáková, Elemír Ušák, Rastislav Dosoudil, and Ján Kruželák*

**Magnetic Elastomeric Composites Filled by Lithium Ferrites**

*Roman Szewczyk*

**Progress in Development of Jiles-Atherton Model of Magnetic Hysteresis**

*Peter Bokes*

**Models, Simulations and the Reality of the Temperature Rise in Oil-Filled Transformers**

SESSION 1(B)

*Scientific conference: Nuclear Engineering*

17:00

*Dávid Bednár, Martin Lištjak, Andrej Slimák, and Vladimír Nečas*

**Comparison of Different Build-Up Factor Calculations with Monte Carlo Simulations**

*Štefan Čerba, Branislav Vrban, Jakub Lüley, Filip Osuský, and Vladimír Nečas*

**Update of the SBJ\_V2019T XS Library for Multi-Group and Continuous-Energy MCNP Calculations of VVER Reactors**

*Gabriel Gálik, Vladimír Kutiš, Juraj Paulech, and Justín Murín*

**CFD Modeling of Transient Fluid-flow During LOCA Event in a VVER440/213 Reactor**

*Branislav Stríbrnský, Martin Petriska, and Róbert Hinca*

**Energy Calibration of Plastic Scintillator Detector**

*Mikuláš Vorobel, Branislav Vrban, Štefan Čerba, Jakub Lüley, Filip Osuský, and Vladimír Nečas*

**The Simplified Burnup Benchmark Based on the Novovoronezh NPP Fuel Assembly**

*Branislav Vrban, Jakub Lüley, Štefan Čerba, Filip Osuský, and Vladimír Nečas*

**The Measurement of Diffusion Length of Demi Water by Activation Method vs. Helium-3 Neutron Detector**

*Matúš Saro, Vladimír Kršjak, Martin Petriska, and Vladimír Slugeň*

**Sodium-22 Source Contribution Determination in Positron Annihilation Measurements Using GEANT4**

SHORT BREAK

*Juraj Paulech, Justín Murín, Vladimír Kutiš, and Gabriel Gálik*

**Analysis of FGM Actuator Structure Using New Multiphysical Finite Elements**

*Štefan Hardoň, Jozef Kúdelčík, Pavel Trnka, Pavel Totzauer, Jaroslav Hornak, and Ondrej Michal*

**The Influence of ZnO Nanoparticles on the Dielectric Properties of Epoxy Resin**

*Hava Can, Emel Özkök, Fedai İnanır, Ivan Skorvanek, Peter Svec Sr., and Uğur Topal*  
**Optimizing the Sensing Properties of Race-Rack Fluxgates as a Function of Core Layers**

*Magdaléna Kadlečiková, Juraj Breza, Karol Jesenák, Miroslav Mikolášek, Lubomír Vančo, Alena Grmanová, and Juraj Racko*

**Preparation of Fe-Impregnated Sepiolite Catalytic Layers for Synthesis of Carbon Nanotube Nanocomposites**

*Vladimír Kutiš, Juraj Paulech, Justín Murín, and Gabriel Gálik*

**Piezoelectric Finite Beam with LQR Control**

*Patrik Novák, Marián Janík, Milan Pavúk, and Miroslav Mikolášek*

**Investigation of Copper Oxide Thin Films for Photoelectrochemical Splitting of Water**

*Filip Chymo, Karol Fröhlich, Ivan Kundrať, Kristína Hušeková, Ladislav Harmatha, Juraj Racko, Juraj Breza, and Miroslav Mikolášek*

**Characterization of MIS Photoanode with a Thin SiO<sub>2</sub> Layer for Photoelectrochemical Water Splitting**

*Marek Veveričík, Peter Bury, Peter Kopčanský, Milan Timko, and Štefan Hardoň*  
**Investigation of External Field Influence on Structural Properties of Doped Nematics Using SAW Technique**

*Juraj Chlpík, Soňa Kotorová, Tomáš Váry, Vojtech Nádaždy, and Július Cirák*  
**Spectroscopic Ellipsometry of P3HT Layers Prepared by Spin Coating**

*Pavol Nemeč, Ivan Hotový, Robert Andok, and Ivan Kostič*

**Comparison of TiO<sub>2</sub> Active Area of Gas Sensors Enhanced by Annealing and RIE Etching**

*Justín Murín, Martin Minár, Peter Melek, Vladimír Goga, Vladimír Kutiš, and Juraj Paulech*

**Non-Linear Thermoelastic Analysis of the Nylon Actuator**

*Juraj Racko, Miroslav Mikolášek, Alena Grmanová, Peter Benko, Magdaléna Kadlečíková, Ladislav Harmatha, and Juraj Breza*

**A Model of Antiparallel Spontaneous and Piezoelectric Polarizations in AlGaN/GaN**

*Eva Branická, Mariana Ušáková, Elemír Ušák, Martin Šoka, and Edmund Dobročka*

**Effect of Eu Substitution on Magnetic Behavior of Spinel Nickel Ferrites**

*Beata Butvinová, Pavol Butvin, Peter Švec Sr., Irena Janotová, Dušan Janičkovič, and Igor Matko*

**Magnetic Properties of (Fe/Co)<sub>83</sub>(Sn/P)<sub>5</sub>B<sub>12</sub> RQ Ribbons**

*Ol'ga Fričová, and Mária Hutníková*

**Viscoelastic Behavior of Starch Plasticized with Urea and Glycerol**

*Piotr Gazda, Alicja Pelka, Anna Ostaszewska-Liżewska, and Michał Nowicki*

**Hysteretic GMI Behavior of Amorphous Materials in Low Magnetizing Fields**

*Anna Piorun, Paweł Piorun, Paweł Nowak, and Michał Nowicki*

**Design of Magnetic Induction Tomography Setup**

*Michał Nowicki, and Beata Lewandowska*

**Relative Seebeck Coefficient Differences Used for Metal Sorting**

*Ladislav Harmatha, Arpad Kosa, Jakub Drobny, Miroslav Mikolasek, Erik Svitac, Peter Benko, Ján Gregus, Silvia Bacová, Peter Zitto, and Lubica Stuchlikova*

**DLTS Study of Defect Distribution in Metal-Porous Silicon-Silicon Structures for Solar Application**

WELCOME PARTY

20:00-01:00

**Thursday, June 20, 2019**

BREAKFAST

07:00

SESSION 4(A) *New materials and structures, nanostructures and thin films, optical phenomena in materials, new principles in sensors and detection methods, applied optics.*

08:30

*Jozef Dobrovodský, Dušan Vaňa, Matúš Beňo, and Maximilián Strémy*  
**Parameters of Heavy Ion Elastic Recoil Detection Analysis (HI ERDA) ToF Telescope**

*Lenka Gajdosova, Dana Seyringer, Peter Gašo, Daniel Jandura, and Dušan Pudiš*  
**Design, Simulation and Technological Realization of Polymer Based 3D 1x4 Splitter**

*Stanislav Jurečka, Martin Králik, and Emil Pinčík*

**Microstructure and Optical Properties of Layers Formed by Anodic Etching of Silicon**

*Stefan Luby, and Jan Ivanco*

**Graphene-Based Sensors of NO<sub>2</sub>, H<sub>2</sub>, Acetone, and other Gases/Vapors: State of the Art and Realistic Outlook**

*Róbert Riedlmajer, Dušan Vaňa, and Marián Hazlinger*

**Hydrogen Depth Profile Determination of Materials by Elastic Recoil Detection Analysis**

SESSION 4(B) **International workshop:**

*Current Successes in the Photoemission and Electron Microscopy I.* 08:15

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**Acknowledgment.** All contributions in this workshop were supported by the project CEDAMNF, reg. no. CZ.02.1.01/0.0/0.0/15\_003/0000358, co-funded by the European Regional Development Fund (ERDF).

*Zdeněk Jansa, Lucie Prušáková, Fatima Alarab, Pavol Šutta, and Ján Minár*

**Structural Analysis of Ni-Doped SrTiO<sub>3</sub>: XRD Study**

*Rostislav Medlín, Pavol Šutta, and Petr Novák*

**XRD and Electron Diffraction Synergies for Textured Thin Films Structure Investigation**

*Jakub Schusser, Laurent Nicolai, Mauro Fanciulli, Min-i Lee, Zakariae El Youbi, Olivier Heckmann, Christine Richter, Karol Hricovini, and Ján Minár*

**Angle-Resolved Photoemission Calculations of WTe<sub>2</sub> Compared to Experiment**

*Fatima Alarab, Berengar Leikert, Laurent Nicolai, Lucie Prusakova, Pavol Sutta, Zdenek Jansa, Marie-Christine Richter, Ralph Claessen, Jan Minar, and Karol Hricovini*

**Controlling Fundamental Electronic Interactions in SrTiO<sub>3</sub> Thin Films by Ni Doping**

*Viera Skákalová, Semir Tulić, Thomas Waitz, Mária Čaplovičová, Marián Varga, Viliam Vretenár, Oleksandr Romanyuk, Alexander Kromka, and Bohuslav Rezek*

**Covalent Diamond–Graphite Bonding: Mechanism of Catalytic Transformation**

*Ondrej Sipr, Wilayat Khan, and Jan Minar*

**Density of States and X-Ray Absorption Spectra of Eu-Doped Sulphides**

*Miroslav Cieslar, Lucia Bajtošová, Michaela Poková, and Jozef Veselý*

**Automatic Methods in Crystallographic Analysis of Aluminum Materials**

COFFEE BREAK

10:00

*Norbert Tarjányi, Milan Uhrčík, Daniel Káčik, and Peter Palček*

**Photoelastic Response of Polycarbonate in NIR**

*Eylem Gülce Çoker, Hava Can, Selman Selvi, Peter Svec Sr, and Uğur Topal*

**Design of a DC Current Sensor Based on Fluxgate Principle**

*Jaroslav Hricko, René Hartánský, Robert Andok, and Ján Halgoš*

**Additive Manufacturing of a Force/Displacement Sensor Based on  
Electromagnetic Field Principle**

*Tomasz Charubin, Michał Nowicki, and Roman Szewczyk*

**Investigation of High Order Harmonic for Signal Extraction in Matteucci  
Effect Based Fluxgate Magnetic Sensors**

*Martin Králik, Stanislav Jurečka, and Emil Pinčík*

**Determination of Thickness of Electrochemically Etched Si Layers Passivated  
by Si<sub>3</sub>N<sub>4</sub> by Analysis of the Experimental Spectral Reflectance**

*Dana Seyringer, Lenka Gajdosova, Peter Gašo, and Dušan Pudiš*

**Design of Polymer Based 8-Channel, 100-GHz AWG Applying Various  
Photonics Tools**

*Matúš Vaňko, and Jarmila Müllerová*

**Numerical Examination of Structural Slow-Light Delays in Fiber Bragg  
Gratings of Varied Parameters**

*Johann Zehetner, Stephan Kasemann, and Stefan Partel*

**Micro and Nano Structured Oxide Features Made by Femtosecond  
Laser Ablation, Reactive Ion Etching and Lithography**

SESSION 5(B) *International workshop:*

*Current Successes in the Photoemission and Electron Microscopy II.* 10:30

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**Acknowledgment.** All contributions in this workshop were supported by the project CEDAMNF, reg. no. CZ.02.1.01/0.0/0.0/15\_003/0000358, co-funded by the European Regional Development Fund (ERDF).

*Sunil Wilfred DSouza, and Ján Minár*

**Electronic Structure and Angle-Resolved Photoemission Spectra of  
Antiferromagnetic Mn<sub>2</sub>Au(001) within the One-Step Model**

*Ján Minár, Laurent Nicolai, Daisuke Takegami, and Liu Hao Tjeng*

**Valence Band Hard X-Ray Photoelectron Spectroscopy on 3d Transition-Metal  
Oxides Containing Rare-Earth Element**

*Laurent Nicolai, Sunil Wilfred DSouza, Karol Hricovini, and Ján Minár*  
**Spin- and Angle-Resolved PhotoEmission Spectroscopy Laboratory: a Complete Experimental and Theoretical Analysis**

*Jan Duchon, Petr Vlcak, Jan Drahokoupil, Jaromir Kopecek, and Jan Manak*  
**TEM Characterization of a TiN/Ti(+N)/Ti Mixture Layer Formed by Nitrogen Ion Implantation into Titanium**

*Jan Bajer, Stefan Zaunschirm, Michaela Šlapáková, Bernhard Plank, Miroslav Cieslar, and Johann Kastner*  
**Nanoscale Kirkendall Effect on Central Macroseggregation in TRC Al 3003 Alloy**

*Jan Michalička, Zhijie Jiao, and Gary Was*  
**Novel STEM-EDX Analysis of Radiation-Induced Precipitates in a Self-Ion Irradiated Cold-Worked 316 Austenitic Stainless Steel Used for PWR Baffle-Bolts**

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SESSION 6(A) *Nuclear Science and Technology* 10:30

*Jarmila Degmová, Vladimír Kršjak, Matej Zlatar, Martin Petriska, Stanislav Sojak, and Jana Šimeg Veterníková*  
**Microstructural Properties of Unirradiated RPV Model Steels Revealed by Doppler Broadening Spectroscopy** 47

*Tomáš Iliř, Pavol Valko, Milan Držik, Marian Marton, Miroslav Behúl, and Marian Vojs*  
**On The Ultra-Fast Ion Induced Demagnetization in Thin Films** 47

*Andrea Šagátová, Bohumír Zařko, and Vladimír Nečas*  
**Influence of Holder Quality on Radiation Hardness of SI GaAs Detector** 48

*Bohumír Zařko, Ladislav Hrubčín, Pavol Boháček, Jozef Osvald, Andrea Šagátová, Mária Sekáčová, Eva Kováčová, and Vladimír Nečas*  
**Electrical Properties of Detector Schottky Diodes Based on 4H-SiC High Quality Epitaxial Layer** 49

*Stanislav Sojak, Vladimír Kršjak, Jarmila Degmová, Martin Petriska, and Vladimír Slugeň*  
**Characterization of Various Reactor Steels by Slow Positron Beam** 49

LUNCH 12:00

SOCIAL PROGRAMME 13:00

DINNER AND FRIENDSHIP PARTY 19:30 - 24:00

**Friday, June 21, 2019**

BREAKFAST	07:00
SESSION 7 (PLENARY)	09:00

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**Acknowledgment.** All contributions in this session were supported by the project CEDAMNF, reg. no. CZ.02.1.01/0.0/0.0/15\_003/0000358, co-funded by the European Regional Development Fund (ERDF).

*Mariana Klementova, Lukas Palatinus, Jörg Fritz, Ansgar Greshake, Richard Wirth, Vera Assis Fernandes, and Ludovic Ferrière*

**Application of Electron Diffraction Tomography: Donwilhelmsite - a New Mineral from the Moon**

*Dominik Kriegner, Gunther Springholz, Carsten Richter, Nicolas Pilet, Elisabeth Müller, Marie Capron, Helmut Berger, Václav Holý, J. Hugo Dil, and Juraj Krempaský*

**Ferroelectric Self-Poling in GeTe Crystals and Films**

*Laurent Nicolai, Ján Minár, Maria Christine Richter, Olivier Heckmann, Jean-Michel Mariote, Weimin Wang, Thiagarajan Balasubramanian, Mats Leandersson, Janusz Sadowski, Jürgen Braun, Hubert Ebert, Jonathan Denlinger, Ivana Vobornik, Jun Fujii, Pavol Šutta, Martin Gmitra, and Karol Hricovini*

**Topological States on InBi Crystal Surface**

CONCLUDING REMARKS	10:00
COFFEE BREAK	10:10
CHECK OUT AT THE HOTEL RECEPTION	11:00
LUNCH	11:30
DEPARTURE	13:00