



GEORGI NADJAKOV INSTITUTE OF SOLID STATE PHYSICS



24th INTERNATIONAL SCHOOL ON CONDENSED MATTER PHYSICS

CONFERENCE PROGRAM

***“Functional Materials for Sustainable Innovation
and the Green Technology Transition:
From Processing to Applications”***

**August 30th – September 4th, 2026
Varna, Bulgaria**

PROGRAM

August 30th	(Sunday)
16:00-19:00	Registration
20:00	Get Together Party
August 31st	(Monday)
08:30-09:00	Registration
09:10-09:30	Opening Ceremony
09:30-11:00	Chair: Yordan Marinov
09:30-10:15	ALEŠ IGLIČ, “Attractive Interactions Between Like-charged Surfaces and Phagocytosis” Georgi Nadjakov Memorial Lecture
10:15-11:00	SAMO KRALJ, “Controlled Nanoparticle Targeting and Nanoparticle Assembling in Soft Matrices” Milko Borisov Memorial Lecture
11:00-11:30	Coffee break / Collective photo
11:30-12:50	Chair: Julia Genova
11:30-12:10	NATAŠA POKLAR ULRIH, “Archaeal Lipids as Building Blocks for Stable Functional Materials”
12:10-12:30	MAHA ZID, “Phase Behavior of Twist-bend Nematic Phase”
12:30-12:50	ELENA ANGELOVA, “Salt-dependent Stability and Structural Properties of Phosphatidylcholine Vesicles: a MARTINI Coarse-grained Molecular Dynamics Study”
12:50-16:00	Lunch break
16:00-18:00	Chair: Martin Ledinsky
16:00-16:40	PAUL MONTGOMERY, “UV Linnik Interferometer for UV-visible-NIR Local Spectroscopy of Materials... Challenges and Achievements”
16:40-17:20	SERGEI BARANOVSKII, “Charge Transport in Organic Semiconductors for Device Applications”
17:20-18:00	ADRIAN DINESCU, “Nano-scale Fabrication of 2D Material-based Devices”
18:00-18:30	Five minutes presentation of posters
September 1st	(Tuesday)
08:30-09:30	Registration
09:30-10:30	Chair: Peter Petrik
09:30-09:50	MARIA-GABRIELA ZHELEVA, “Comparative Theoretical Study of Envelope-Induced Trapping, Longitudinal Acceleration and Effective Adiabaticity in Hydrogen and Noble Gases”

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- 09:50-10:10 ALEXANDRA KOLEVA, “Laser-Induced Nuclear Reactions as a Potential Approach to Green Energy”
- 10:10-10:30 MARIAM SHEHADI, “Functionalization of Surfaces by Laser Induced Conductive Layers on Polyimide”
- 10:30-11:00 *Coffee break*
- 11:00-13:00 Chair: Sergei Baranovskii**
- 11:00-11:40 STEPHEN REYNOLDS, “Solar Photovoltaics: Status in the mid-2020s”
- 11:40-12:20 PETER PETRIK, “Combinatorial, Plasmonic and Related Process Monitoring Applications of Ellipsometry”
- 12:20-12:40 JAKUB HOLOVSKY, “ $\text{Li}_{1.66}\text{CuSn}_{3.33}\text{S}_8$ Thin-Film Prepared by Pulsed Laser Deposition as a Potential Photovoltaic Material”
- 12:40-13:00 ROBERT HLAVAC, “Simultaneous Time-Resolved Photoluminescence and Quantum Yield Measurement Using Random Fluctuating Light”
- 13:00-16:00 *Lunch break*
- 16:00-18:00 Chair: Albena Paskaleva**
- 16:00-16:40 MARTIN LEDINSKY, “Universal Formation Mechanism of Halide Perovskite Thin Films”
- 16:40-17:20 ERDEM ALACA, “Surface-Modified Silicon Nanowires as Chemiresistive Sensors”
- 17:20-17:40 KAREKIN ESMERYAN, “Effect of Alcohol Temperature on the Quality Profiling of Commercial and Homemade Beverages Using Metal-phenolic Film-coated Quartz Crystal Microbalances”
- 18:00-19:00 First poster session**
 (coffee and refreshment drinks)

September 2nd (Wednesday)

- 08:30-09:00 *Registration*
- 09:00-10:30 Chair: Veselin Donchev**
- 09:00-09:40 PHILIPPE VANDERBEMDEN, “Large-grain Bulk Superconductors Prepared by Single Direction Melt Growth (SDMG) Used as Efficient Materials to Trap or Shield Strong Magnetic Fields: How are Their Performance Affected by Time-varying Applied Fields?”
- 09:40-10:00 KRASTYO BUCHKOV, “High-Temperature Superconductivity: Four Decades of Exploration”
- 10:00-10:20 SCOTT WAITUKAITIS, “Adventitious Carbon Breaks Symmetry in Oxide Contact Electrification”
- 10:20-11:00 *Coffee break*
- 11:00-12:20 Chair: Paul Montgomery**
- 11:00-11:40 ALBENA PASKALEVA, “Materials and Structures for Neuromorphic Computing”

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11:40-12:20	NIKOLAY PETKOV, “Molecular Functionalization of Functional Semiconductor Devices for Chemical Sensing”
12:20-12:40	KRISTIYAN GROZDEV, “Development of a Methodology for the Control and Subsequent Optimization of the Actual Optical Thickness of a Multilayer Optical Coating”
12:40-16:00	<i>Lunch break</i>
16:00-17:20	Chair: Aleš Iglič
16:00-16:40	ALLA REZNIK, “Process-Gas Control of Amorphous versus Polycrystalline Growth in Ion-Assisted PVD PbO Photoconductive Films for X-ray Imaging”
16:40-17:00	MARIA LYUDMILOVA, “Photothermally Triggered Drug Release from Gold Nanorod-Liposomal Complexes: Toward Precision-Controlled Drug Delivery”
17:00-17:20	GEORGI TANKOVSKI, “Thermodynamic and Mechanical Evolution of Gelatin Biocomposites Under Varying Sweetener Ratios”
17:30-18:30	Second poster session (coffee and refreshment drinks)
20:00	<i>Farewell Dinner</i>

September 3rd (Thursday)

08:30-09:00	<i>Registration</i>
09:00-10:40	Chair: Yordan Marinov
09:00-09:40	DIMITER ALEXANDROV, “Experimental Proofs About Existence of Cold Nuclear Fusion in Solids” (Online)
09:40-10:00	GEORGE IVANOV, “Combination of Gravimetric and Electrochemical Signal Transduction in Chemical Sensors for PFOS Water Contaminant Detection”
10:00-10:20	ASEN DIMOV, “Langmuir and Langmuir-Blodgett Films from 20nm Sized Crystals of Metal-Organic Framework Material MIL-101(Cr)”
10:20-10:40	SIRVAN KHEZRI, “Ion Transport Mechanisms in Doped Garnet-Type Solid-State Electrolytes for Energy Storage Applications”
10:40-18:00	<i>Lunch break and Social event</i>

September 4th (Friday)

09:00-10:30	Chair: Nikolay Petkov
09:00-09:40	VERA MARINOVA, “2D Functional Materials for Next-Generation Optoelectronic and Photonic Devices”
09:40-10:20	VESELIN TONCHEV, “How many scales enter the description of the step bunches of Stoyanov”
10:20-11:00	DIMITRE DIMITROV, “ALD-grown Al-doped ZnO as a multifunctional ITO-free electrode for liquid crystal and PDLC devices”
11:00	Closing Ceremony

POSTER PRESENTATIONS

1. FIRST POSTER SESSION, September 1st (Tuesday)

- 1.1. S. BARANOVSKI, “Light-Induced Nucleation of Cesium”
- 1.2. M. STIFT, “Optical Characterization of Gold-Based SPR Chips by Spectroscopic Ellipsometry”
- 1.3. G. YANKOV, E. IORDANOVA, V. ATANASSOVA, “Modular System for Direct Air Capture of CO₂ Using Bioactive Membrane Modules”
- 1.4. M. ILIEVA, V. ATANASSOVA, “Multi-Element Analysis of Ceramic Artifacts from Northwestern and Southeastern Bulgaria by means of Inductively Coupled Plasma Optical Emission Spectrometry”
- 1.5. V. DONCHEV, “Optical investigation of epitaxial GaAs layers integrated on virtual Ge/c-Si substrates”
- 1.6. A. EUROSI, “Plasma-assisted Process for the Epitaxial Growth of III-V Materials and their Integration on epiGe/c-Si Virtual Substrates”
- 1.7. C. ZENG, “Numerical Investigation of Water-Overlayer-Induced Mueller-Matrix Variation in Plasmonic Au Nanostructures”
- 1.8. S. RAEISI, “In-situ spectroscopic ellipsometry study on the thermal stability of silk thin films”
- 1.9. G. SZÁNTÓ, “Finite-Element Study of Surface Roughness Effects in Spectroscopic Ellipsometry”
- 1.10. E. STOYANOVA, “Ellipsometric models for determination of depth dependent inhomogeneity in high-index thin layers”
- 1.11. G. VLADMIROV, “Optical Approach for Real-Time Detection of Microplastics In Aquatic Environments”
- 1.12. D. VASSILEV, “Photothermal Response of Plasmonic Nanoparticles: Characterization of Optical Absorption and Photothermal Conversion”
- 1.13. D. VASSILEV, “Surface Analysis of Sandblasted and Non-sandblasted 3D Printed CoCr alloy for dental applications”
- 1.14. A. TENEV, “Simulation and Elaboration of Chirped Dielectric Mirror for Femtosecond Laser Pulses at 1030 nm”
- 1.15. T. TENEV, “Spectrophotometric Determination of Thin Films Absorption in PVD Deposited Multilayer Resonant Structures”
- 1.16. T. ZAHARIEV, “Can We Control the Antenna-Effect in Luminescent Lanthanide Complexes, to Achieve Optimal Energy Conversion: Insights from Theoretical Modelling with Quantum Chemistry Methods”

2. SECOND POSTER SESSION, September 2nd (Wednesday)

- 2.1. E. KORUTCHEVA, “Urban Traffic for Energy Efficiency and Sustainability”
- 2.2. O. PIROUTEK, “Real-Time Insight into FAPbI₃ Crystallization Process”
- 2.3. H. SOLUNOV “Estimating the Width of the Relaxation Time Spectrum in Glass-Forming Liquids from Thermodynamics”
- 2.4. G. TANKOVSKI, “Influence of Sweetener Composition on the Electromagnetic and Optical Responses of Gelatin Matrices”
- 2.5. V. DULEV, “Investigation of Zinc Tin Oxide/Tin Sulfide Heterostructures for Efficient Thin-Film Solar Cells”
- 2.6. M. F. ASHRAF, “Structural, Magnetic, and Magnetocaloric Properties of Ti-Substituted GdMnO₃ Multiferroic Single Crystals”
- 2.7. Y. FEDCHENKO, “Probing the Capability of Metal-phenolic Film-coated Quartz Crystal Microbalances to Detect Sub-threshold Levels of Methanol as a Contaminant in Alcoholic Beverages”
- 2.8. T. STANCHEV, “Investigation of Charge Trapping Properties of HfO₂/Al₂O₃ Nanolaminated Dielectric Stacks”
- 2.9. D. SPASOV, “Effect of HfO₂/Al₂O₃ Charge Trapping Layer Structure on Memory Characteristics of Flash Cell Studied by TCAD”
- 2.10. E. HASAN, “Electrostatic Probe Diagnostics in Magnetized Plasmas”
- 2.11. V. VITKOVA, “Salt-dependent stability and structural properties of phosphatidylcholine vesicles: a MARTINI coarse-grained molecular dynamics study”
- 2.12. V. GEORGIEV, “Electrochemical Impedance Spectroscopy as a Quantitative Readout of Temporin-induced Membrane Perturbation”
- 2.13. A. GEORGIEV, “Analysis of the Efficiency of Partial Dealcoholization of Rosé Wine in Concentration Mode via Nanofiltration”
- 2.14. T. VLAKHOV, “Detection of Volatile Organic Compounds Using Impedance Spectroscopy with Phospholipid Langmuir–Blodgett Films”
- 2.15. M. LYUDMILOVA, “Biophysical Interactions of Ultrasmall Gold Nanoparticles with Archaeal Lipid-Based Biomimetic Membranes”