



International Conference

“Advanced Materials and Technologies” (ICAMT 2025)

----- PROGRAM BOOK -----

15-17 OCTOBER 2025
Tbilisi, Georgia

ORGANIZING COMMITTEE

Ekaterine Sanaia -Chair (Georgia)

Eduard Monaico – Co-chair (Moldova)

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The key areas include:

- ✓ Advanced semiconducting materials: technology & research
- ✓ Photoelectric and thermoelectric devices;
- ✓ Nanomaterials: technology & research;
- ✓ Ionizing radiation detectors;
- ✓ Cryogenic techniques and Superconducting materials: technology & research;
- ✓ Polymer and metal-ceramic composite materials;
- ✓ Multifunctional materials in biomedicine & medical technologies;
- ✓ Modern methods for structural study of materials;
- ✓ Advanced materials.
- ✓ Nuclear Security and Safety

REGISTRATION

9:00 – 10:00 AM, 15 October,

Hotel Hilton Garden Inn

(Address: Chavchavadze 64a, Tbilisi)

OPENING OF THE CONFERENCE AND PLENARY SESSION

10:00 AM, 15 October,

Hotel Hilton Garden Inn

(Address: Chavchavadze 64a, Tbilisi)

ORAL AND POSTER SESSIONS

10:00 AM, 16-17 October,

Hotel Hilton Garden Inn

(Address: Chavchavadze 64a, Tbilisi)

ATTENTION

Each participant is allocated 15 minutes for their presentation, followed by 5 minutes for questions and answers. The order of presentations may be subject to change, and participants will be notified accordingly.

For the poster session, participants must set up their posters on the designated boards prior to the session's commencement.

15th October

9⁰⁰- 10⁰⁰

Registration

10⁰⁰-12⁰⁰

Opening of the jubilee session dedicated to the Institute 80th anniversary and welcoming speech

Director of Ilia Vekua Sukhumi Institute of Physics and Technology – **Ekaterine Sanaia**

Minister of Defence of Georgia - **Irakli Chikovani**

The chair of the Education, Science and Youth Affairs Committee - **Mariam Lashkhi**

Minister of Education, Science and Youth– **Givi Mikanadze**

Director of State Military Scientific-Technical Center “DELTA” – **David Akhvlediani**

Head of the government of the Autonomous Republic of Abkhazia- **Giorgi Jincharadze**

President of the National Academy of Sciences of Georgia — **Roin Metreveli**

Director General of the Shota Rustaveli National Science Foundation of Georgia- **Teimuraz Dochviri**

Senior Program Manager at the International Science and Technology Center — **Samal Assainova**

Jubilee Greetings

12⁰⁰-13⁰⁰

Lunch

Plenary Session

Chairman: Valeria Harabagiu; Lidia Ghimpu

13⁰⁰-13³⁰

Valeria Harabagiu

Polymeric Materials: in Search of a Balance Between Utility and Environmental Concerns

13 ³⁰ -14 ⁰⁰	<p style="text-align: center;">Eduard Monaico</p> <p style="text-align: center;">Nanotechnology Research in the Republic of Moldova: The Role of the Technical University of Moldova</p>
14 ⁰⁰ -14 ³⁰	<p style="text-align: center;">Tatiana Prikhna</p> <p style="text-align: center;">Mechanical Properties Study and Ablation Tests of Hot Pressed and Manufactured under High Pressure Ultrahightemperature HfB₂ and HfB₂-SiC ceramics</p>
14 ³⁰ -15 ⁰⁰	<p style="text-align: center;">Marino Lavorgna</p> <p style="text-align: center;">Next-Generation Polymer Composites Based on Emerging 2D Materials</p>
15 ⁰⁰ -17 ⁰⁰	Coffee Break
	Poster Session

16th October

Oral Session

Meeting room 1

Meeting room 2

Chairman:

David Hayrapetyan; Vadim Morari

Chairman:

Fernand D S Marquis; Tatiana Prikhna

Time

Author

Time

Author

10⁰⁰-10²⁰

Vadim Morari
Optical Investigation of ZnPc and CuPc in Formic Acid

10⁰⁰-10²⁰

Arend Nijhuis
Development of Large Current, High Magnetic Field High Temperature Superconductors for Fusion magnets

10²⁰-10⁴⁰

Kuanysh Nazarov
Development of Neutron Instruments at the WWR-K Research Reactor

10²⁰-10⁴⁰

Alexander Shengelaya
Ultrafast Synthesis and Sintering of Functional Oxide Materials by Light Irradiation

10⁴⁰-11⁰⁰

David Hayrapetyan
Laser-Driven Control of Optical and Electronic Properties in Quantum Dots

10⁴⁰-11⁰⁰

Tatiana Prikhna
Critical Current Density of GdBCO Coated Conductors Oxygenation under High Pressure - High Temperature Conditions

11⁰⁰-11²⁰

Coffee Break

11²⁰-11⁴⁰

Harald Glöckler
ITE | Enabling Excellent Science

11²⁰-11⁴⁰

Ioseb Metskhvarishvili
Influence of Oxygen Pressure on Phase Formation of Tl-based Polycrystalline and Coated Superconductors

11⁴⁰-12⁰⁰

Paata Kervalishvili
Solid State Fuel Based on Si and C Nano-Pico Particles

11⁴⁰-12⁰⁰

Fernand D S Marquis
The Impact of Transformative Materials on Energy, Environment, Health and Sustainable Development

12 ⁰⁰ -12 ²⁰	Avtandil Sichinava Development and Research of Semiconductor Detectors of Thermal Neutrons and other Ionizing Radiation	12 ⁰⁰ -12 ²⁰	Davit Surmanidze The in-situ Polymerisation Method to Advanced Tl-1223 phase HTS Materials
12 ²⁰ -12 ⁴⁰	Zaza Melikishvili An Efficient and Maximally Simple Optical Device for Multi-junction Photovoltaic Elements	12 ²⁰ -12 ⁴⁰	Amiran Tchankvetadze Formation of BCCO Precursors via Organometallic Routes Using Ba, Ca, and Cu 2-Ethylhexanoate for the Synthesis of Tl-based Coated Superconductors
12 ⁴⁰ -14 ⁰⁰	LUNCH		
Chairman: Martina Schenkel; Ozan Coban		Chairman: Tamara Potlog; Arend Nijhuis	
14 ⁰⁰ -14 ²⁰	Vladimer Tsitsishvili Porous Structure of Modified Natural Zeolites	14 ⁰⁰ -14 ²⁰	Tamara Potlog Room-Temperature Phosphorescence ZnPc(COOH) ₄ /Ch/MgO System
14 ²⁰ -14 ⁴⁰	Tornike Odishvili Static Atomic Charges in Boron Planar Clusters B _n (n = 1 – 20)	14 ²⁰ -14 ⁴⁰	Alexander Jishiashvili Ammonium Chloride Assisted Synthesis of ZnO Nanomaterials
14 ⁴⁰ -15 ⁰⁰	Ozan Coban Effect of Ceramic Composite Nanopowders on Waste Water Treatment	14 ⁴⁰ -15 ⁰⁰	Natia Jalagonia Study of Carbon Nanotube/PDMS Polymer Nanocomposites

15 ⁰⁰ -15 ²⁰	Coffee break		
15 ²⁰ -15 ⁴⁰	Martina Schenkel Automation and AI for Advanced Electron Microscopy	15 ²⁰ -15 ⁴⁰	Magda Metskhvarishvili Studying of the Shape Memory and Superelastic Effects into the Nickel Free Titanium Alloys for Using in a Wide Temperature Range
15 ⁴⁰ -16 ⁰⁰	Nikoloz Chikhradze Explosion Fabrication of High Entropy Alloys in Fe-W/WC-Al-Ti-Ni-B-C System	15 ⁴⁰ -16 ⁰⁰	Tamar Bzhalava Resonance Scattering Spectra Analysis of Core-Shell Structured Particles
16 ⁰⁰ -16 ²⁰	Marina Kipiani Innovative magnetron reactor for forming monodisperse nanomaterials	16 ⁰⁰ -16 ²⁰	Mariami Kurkhashvili In Vivo Diagnostics Modeling: - Determination of Dye Concentration Using a Spectroscopic - Statistical Method

17th October

Oral Session

Meeting room 1		Meeting room 2	
Chairman: Marino Lavorgna; Victor Suman		Chairman: Elvira Ibragimova; Ion Lungu	
Time	Author	Time	Author
10 ⁰⁰ -10 ²⁰	Otar Kemularia UAV Detection and Tracking Device based on Novel Spectroscopic System	10 ⁰⁰ -10 ²⁰	Giorgi Nabakhtiani Decommissioning Small Facilities (Preparation of Dismantling of the Installation Containing Radioactive Sources)
10 ²⁰ -10 ⁴⁰	Vako Marchilashvili Development of Optical Spectroscopic Methods for Biomedical Diagnostics	10 ²⁰ -10 ⁴⁰	Elvira Ibragimova Superconductivity and Magnetism of Metal Coated GdBaCuO Tapes Exposed to Accelerated Proton and Electron Beams
10 ⁴⁰ -11 ⁰⁰	George Maisuradze The influence of Ozonated Water on Some Components in Wine Materials of Saperavi from Ancient Region of Georgia – Bolnisi.	10 ⁴⁰ -11 ⁰⁰	Nugzar Khidasheli Wear Behavior Martensitic-Bainitic-Ductile Iron During Different Dry Sliding Speeds
11 ⁰⁰ -11 ³⁰	Coffee break		
11 ³⁰ -13 ⁰⁰	Closing of the Conference		

POSTER SESSION

1. **E. A. Olevsky**. Sintering Science: From Historical Foundations to Emerging Manufacturing Frontiers.
2. **M. S. Torikachvili**. Superconductivity in ZrTe₂- and ZrTe₃-Based Compounds.
3. **M.Avaliani, G. Todradze, E. Shapakidze, V. Chagelishvili, G. Kipiani, M. Chankashvili**. On the Possibilities of Applications of New Inorganic Polymer – Double Condensed Cyclooctaphosphate of Potassium-gallium.
4. **K. Sarajishvili, Sh.Kekutia, J.Markhulia, V.Mikelashvili, N.Barbakadze, T.Korkia, I.Jinikashvili, L. Dolidze, R.Tsiskarishvili**. Comparative Characterization of Graphene Oxides Obtained from Flake Graphite and Graphite Foil.
5. **M.Donadze, D. Gogoli, N.Makhaldiani, Sh.Zurabishvili, M.Gabrighidze, J.Shengelia, V.Tediashvili**. Electrochemical Synthesis and Corrosion Resistance of Zn@Al₂O₃ Composite Coatings.
6. **G. Papava, I. Chitrekashvili, Z.Lomtadze, R. Liparteliani, N.Gelashvili, N. Khotenashvili, I. Chachava**. A Method for Obtaining Polymer Nitrogen Fertilizers of Prolonged Action Containing a Functional Group
7. **R. Gigauri, R. Sakandelidze, L. Khvichia**. Introduction of Nanocomposites into Medical Technologies.
8. **I. Chitrekashvili, G.Papava, N. Dokhturishvili, E. Gavashelidze, M.Gurgenishvili, K. Archvadze**. Synthesis of Properties of Epoxy-Resol Copolymers.
9. **N.I. Khachidze T.I Khachidze** Ways to Improve Mercury-Sensitive Thin Films Adhesion to the Substrate.
10. **Z. Kushitashvili, A. Bibilashvili, Z. Jibuti, Z. Kapanadze**. Optical Properties of GaN Synthesized by UV Stimulated Magnetron Sputtering Technology.
11. **E. Markarashvili, L. Kalatozishvili, L. Londaridze, I. Esartia, D. Otiashvili**. Ecologically Friendly New Composite Materials.

12. **N.Ponjavidze, K.Chubinidze, A. Chanishvili, S.Petriashvili, G.Petriashvili.** Electrically Tunable Doubled-Wavelength Laser Emission in Dye-Doped Photonic Cholesteric Liquid Crystal.
13. **L. Tabatadze, D. Gventsadze, D. Iremashvili, M.Mtchedlishvili, I. Botchorishvili, S.Dvali, L. Gventsadze.** Structural Study of Biocomposites Developed on the Basis of Secondary Polypropylene and Waste of Nut-bearing Plants, Using Modern Instrumental Methods.
14. **M. Tigishvili, L Natsvlishvili, L.Sanikidze, T.Abashidze, S.Sikharulidze, L.Dzhangidze, N. Dolidze, M. Melikyan, A. Mikirtichyan.** On the Mechanism of Photoresponse Occurrence in the Wavelength Range of 1.6-2.2 μm in Silicon Photodetectors.
15. **G. Tsintskaladze, M. Zautashvili, M. Dzagania, N.Pirtshkalava, G. Antia, A.Chkonია, T.Kordzakhia, T.Sharashenidze.** Investigation of the Structure of Anionic Nanoporous Materials by IR Spectroscopy.
16. **T. Kuchukhidze, A. Khvadagiani, L. Kalatozishvili, N. Darakhvelidze, T.Archvadze, N. Jalagonia.** Synthesis and Characterization of Multifunctional Alumina-Based Composites with Various Additives.
17. **K.Barbakadze, Z. Isakadze, A. Kutsia, I. Tabatadze, M.Rekhviashvili, M. Chikhradze.** Thermoelectric Generator Based on SiGe Alloys.
18. **S. Baslayici, M. Bugdayci.** Photocatalytic Activities of Borides on the Antibiotic Wastes.
19. **L.Ghimpu, V.Suman, I. Gutu, I.Tigoianu, A. Airinei.** Theoretical Study of Zinc Tetracarboxy-Phthalocyanine: Geometry Optimization and UV-VIS Properties.
20. **I. Lungu, S. Robu, T. Potlog, L.Ghimpu, V.Suman, I.Tigoianu, A.Airinei.** Photophysics of Chitosan-Iron Oxide Nanoparticle Composites.

21. **V.Suman, V.Morari, I.Lungu, E.Stratulat, L.Ghimpu, T.Potlog, I.Tigoianu, A.Airinei.** Zinc Phthalocyanine Functionalized with Au-Chitosan Nanoparticles.
22. **N. Ponjavidze, A. Chanishvili, K. Chubinidze, G. Petriashvili, S. Tavzarashvili, Z. Wardosanidze, Ts. Zurabishvili.** Lasing From Liquid Crystal Layer with Nonuniform Thickness.
23. **V.Morari, Rusu V. Emil, L.Ghimpu.** Effect of Zn:Sn Stoichiometry on the Morphological and Electrical Properties of Aerosol Deposited ZnSnO Films.
24. **L. Kalatozishvili, T. Kuchukhidze, N. Darakhvelidze, T.Archuadze, B. Khvitia, N. Jalagonia.** Electrical Properties of CNT/Polystyrene Composites.
25. **T. Gutsul, I. Rastimesina, A. Sibaev, I. Belotercovschii, D.Caraghenov, V. Suman.** Intrinsic Peroxidase-like Activity of MgFe₂O₄/PVP Nanocomposites and Their Application in the Colorimetric Detection of H₂O₂.
26. **I. Rastimesina, T. Gutsul, O. Postolachi, D. Indoitu, A.Sibaev, V. Suman.** Assessment of DDTs Decontamination in Polluted Soil by Magnetite and Zerovalent Iron Nanoparticles.
27. **N. Darakhvelidze, Z. Kovziridze, T. Cheishvili, N.Nizharadze, G. Tabatadze, M. Mshvildadze, M. Balakhashvili, V. Qinqladze.** Multifunctional Nanocomposite in the B₄C-SiC-Si-Al-Al₂O₃ – Carbon Fiber System.
28. **M. Barabashko, R. Basnukaeva, A.Krivchikov.** Ne Cryocrystals: Prediction of Thermal Expansion based on the Correlation with Heat Capacity.
29. **A. Nikolaeva, L. Konopko, T. Huber, Gh. Para, I. Ghergishan.** Electrical Transport Properties of Single-crystal Bi_{1-x}Sb_x Micro- and Nanowires in Semimetal and Semiconductor States.
30. **L. Konopko, A. Nikolaeva, T. Huber, D. Shiversky.** Transverse Thermoelectric Effect in Glass-coated Bi-Sn Microwires and Bi Films for Practical Application.

31. **R. Kotsilkova, V. Georgiev, T. Batakliiev, E. Ivanov.** Graphene-based Nanocomposite Filament for 3D&4D printing: Manufacturing, Properties and Shape Memory Effects.
32. **V.Bregadze, E.Gelagutashvili, T.Giorgadze, I. Khutsishvili** Possibilities of Using Cu(II) Ions in Oncology: The Role of PAMAM Dendrimers and NIR Radiation.
33. **E.V. Lutsenko.** Molecular Beam Epitaxy of III-nitrides for Power, Microwave and Optoelectronics.
34. **A. Bibilashvili, Z. Kushitashvili, L. Jangidze, S. Sikharulidze, G.Skhiladze.** Gallium Oxide Based Memory Switching Device.
35. **N.Khuchua, A.Tutunjyan, I.Gogorishvili, T.Sakharova, R.Melkadze, N.Dolidze, M.Melikyan, L.Sanikidze, L.Natsvlishvili.** Effect of Concentration Profile Correction in InGaAs/InP Heterostructure on the Capacitance and Leakage Currents of PIN Mesa Photodiodes.
36. **T. Sakharova, G. Peradze, L. Sanikidze, V. Osipov, E. Lutsenko.** UV Photodiode Integrated on Power-Oriented AlGaIn/GaN HEMT Structure.
37. **R.Melkadze, G.Bokuchava, A.Sichinava, T.Makalatia, T.Khelashvili, L.Natsvlishvili, A.Iashvili.** Semiconductor Detectors for Neutron- and γ -Radiation.
38. **Ts.Gagnidze, Zh.Qebadze, R.Chagelishvili, R.Ugreliidze.** Study of Cathode Materials in Electrolytic Purification of Quarry and Industrial Wastewater from Heavy Metal Ions.
39. **L. Sekhniashvili.** An Additional Diagnostic Sensor System for Hemodialysis Machines.
40. **T. Revishvili, B. Dolidze, Z. Andghuladze, E. Gobronidze** Inverter Technology in Green Tea Production.
41. **L.Jibuti, Z.Jibuti, A.Bibilashvili, T.Sakharova, N.Dolidze.** Photostimulated Diffusion of P and B in Si from Phosphosilicate and Borosilicate Glasses.

42. **K.Shamatava, A.Sichinava, M.Kadaria, R.Abramishvili.** Influence of Monocrystalline Germanium on the Physical-Mechanical Properties of Indentation-Induced Phase Transitions in Silicon.
43. **G. Tsvitshivadze, L. Shatakishvili, G. Kekelidze, L.Akhalbedashvili.** Applied Research of Using Ozone Generator in Viticulture instead of Pesticides.
44. **P.A.Mantashyan, E.S.Hakobyan, G.A.Mantashian, D.B. Hayrapetyan.** Singlet-Triplet Splitting and Mollow Triplet Dynamics in Impurity-doped Core/shell Singlet-Triplet splitting and Mollow Triplet Dynamics in Impurity-doped Core/shell Quantum Dots.
45. **G.Zakharov, Z.Asalmazashvili, M.Chikhradze, G.Urushadze** Innovative Devices for Obtaining Materials and Products by the SHS Metallurgy Method.
46. **I. Kurashvili, G.Chubinidze, D.Mkheidze, M. Kadaria, N. Gogolashvili, E.Sanaia, G.Darsavelidze.** Effect of Alpha Particle Irradiation on the Physical-Mechanical Properties of Monocrystalline $\text{Si}_{1-x}\text{Ge}_x$ ($x \leq 0.02$) Alloys.
47. **G.Zakharov, A.Khivadagiani, Z.Asalmazashvili, E.Sanaia, M.Chikhradze, D.Jishiashvili, W.Gabunia, G.Mikaberidze, D.Kvashkvadze.** Synthesis of Organic-Inorganic Materials.
48. **D.Iremadze, M.Kochaishvili, V.Zivzivadze, M. Iremadze** Obtaining New Composition Porous Materials by Self-Propagating High-Temperature Synthesis.
49. **T.Berberahvili, P.Kervalishvili.** Ferromagnetic Nanosystems and Magnetically Activated ATP Reactions.
50. **Z.Asalmazashvili, G.Zakharov, M.Chikhradze, N.Asalmazashvili, G.Mikaberidze, A.Khivadagiani.** Some Peculiarities of Obtaining Gradient Materials with High Interlayer Adhesion, Structural Features and Phase Composition Based on Ceramic and Metal-Ceramic Systems by SHS Compaction Technology.
51. **B.Kotia.** To the kinetics of quantum dissipative systems: quantum Brownian particle motion and low temperature polaron mobility problem.

52. Kwun Nam Hui, Huixian Xie

Fast-Charging Phosphorus Anodes Enabled by Fluorinated Weakly Solvated Electrolytes.

We sincerely thank you for being a part of the

International Conference on

“ADVANCED MATERIALS AND TECHNOLOGIES”

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