IKBFU
IMMANUEL KANT
BALTIC FEDERAL
UNIVERSITY

НАУЧНО-ОБРАЗОВАТЕЛЬНЫЙ МАТЕМАТИЧЕСКИЙ ЦЕНТР • ИМЕНИ С. В. КОВАЛЕВСКОЙ •

2231 десятилетие науки и технологий

ЭМТИОН

"НАУКА"
Центр Технического Сопровождения

Smart Materials & Biomedical Applications
IKBFU Research and Education Center

priority2030^
leaders are made, not born

IBCM 2025

VI International Baltic Conference on Magnetism

2025

Programme

17-21 August 2025
Kaliningrad, Russia

IBCM 2025
VI International Baltic Conference on Magnetism

Organized by
Research and Education Center
"Smart Materials and Biomedical Applications"
IImmanuel Kant Baltic Federal University,
Kaliningrad, Russia

Main topics

Magnetism and Magnetic Materials

- Fundamental magnetism
- Magnetism of nano- and microstructures
- Smart multiferroic materials
- Magnetism and Biomedical applications
- Magnetism and Ecology

Magneto-optical Phenomena and Devices

- Magneto-optical effects
- Magnetism of nano- and microstructures
- Ultrafast magneto-optics
- Magnonics and spintronics
- Advanced photonics materials and devices (magneto-photonic crystals, NPs, waveguides)

Additive Technologies and Smart Composites

- Advanced Additive Manufacturing Techniques for Smart Composites
- Smart and functional composites
- Applications (biomedical implants, wearable electronics, sensorics)
- Future Trends: Sustainability, AI, and Hybrid Systems (recyclable composites, AI-driven design, IoT-enabled adaptive systems)

2D materials for high-tech and environmental applications

- Synthesis and production of 2D materials
- Magnetic MAX-phases: synthesis and production
- 2D materials for liquid and gas purification
- 2D materials for sensors
- 2D materials for high-tech industrial applications

Special Section: Mathematical modeling & Digital Twins in Magnetism

- Multiphysics Modeling of Smart Magnetic Materials
- Digital Twins of Magnetic Nano- and microstructures
- Simulations of Magnetization Dynamics
- Hybrid Methods (FEM, FDTD) for Modeling Smart Magnetic Systems

Biomaterial science applications

- Biocompatibility of materials: features of testing on biological objects
- Materials in 3D bioprinting
- Biophotonics: emission, detection of optical radiation in biological objects

Organizers

Chair

Assoc. Prof., Dr. Valeria Rodionova
Immanuel Kant Baltic Federal University
E-mail: VVRodionova@kantiana.ru

Conference secretary

Mr. Pavel Vorontsov
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Program committee

Prof. Alexander Granovsky
Lomonosov Moscow State University

Prof. Larissa Panina
National University of Science and Technology MISiS

Prof. Yuriy Raikher
Institute of Continuous Media Mechanics UB RAS

Local program committee:

- Dr. Katerina Levada
- Dr. Victor Belyaev
- Dr. Alexander Omelyanchik
- Dr. Kurban Magomedov
- Dr. Petr Ershov
- Dr. Christina Gritsenko
- Mrs. Valeria Kolesnikova

Welcome at IBCM-25!

REC SM&BA

The Research and Education Center "Smart Materials and Biomedical Applications" (REC SM&BA) was established in 2020 and grew out of the Laboratory of Novel Magnetic Materials established in 2013.

Laboratories:

Laboratory of Nano- and Micromagnetism

Laboratory of Plasmonic and Magneto-Optical Nanostructures

Laboratory of Smart Polymer Composites

Laboratory of Biomaterials

Laboratory of Functional Nanomaterials and Computational Design

REC "Smart Materials and Biomedical Applications"

✓2 wise Professors

✓14 hardworking PostDocs

✓4 outstanding PhD candidates

✓10 bright PhD students

✓25 curious students

✓30 wonderful former members, forming wide collaboration network

Immanuel Kant Baltic Federal University

Immanuel Kant Baltic Federal University:

- 951–1000 in QS World University Rankings 2025
- 24th best Russian university according to hh.ru
- The largest University of the Kaliningrad region
- 4 Education-Science Clusters
- 12 000+ Students
- 30+ Scientific directions
- International students from 51 countries

Priority 2030 program:

IKBFU, among the top 20 participants in Russia's *«Priority 2030»* program, receives 462.5 million rubles to ensure the participation of the university in the socio-economic development of the Kaliningrad region and integrate most of its programs with industry needs by 2030.

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The world-class Kantiana Neocampus:

Since 2023 IKBFU is working on a state-of-the-art campus, uniting modern learning spaces, green technology, and vibrant community life. Neocampus will bring together 15,000 students and 300 scientists, set new standards for sustainability, and become a hub for urban and academic growth in the region.

Sofya Kovalevskaya Mathematical Research Center:

Created to advance mathematical education and research in the region, the *«Sofya Kovalevskaya North-West Mathematical Research Center»* unites leading experts and innovative programs. Established in 2021, it promotes collaboration, academic mobility, and the popularization of mathematics across the Northwestern Federal District.

НАУЧНО-ОБРАЗОВАТЕЛЬНЫЙ МАТЕМАТИЧЕСКИЙ ЦЕНТР • ИМЕНИ С. В. КОВАЛЕВСКОЙ •

Educational programs in Physics

Together with the Undergraduate and Graduate School of Nanotechnology and Engineering, the Research and Education Center “Smart Materials and Biomedical Applications” provides supervision of several bachelor and PhD programs at the Immanuel Kant Baltic Federal University.

Objective focuses of education in the School:

- Biomedical and industrial applications
- Neurotechnologies
- Engine production for the space industry
- Solar power engineering
- Electronics and microelectronics

School of Nanotechnology and Engineering

Educational focus of the School:

- Fundamental physics
- Material science
- Engineering

Education Features:

- Real student projects
- Problem-based learning
- "Start-up as a diploma"
- Science-oriented education tracks

Our educational programs:

- Bachelor program “Physics of High Technologies”
- Basic higher education “Space engine technologies”
- Specialized higher education “Smart Materials and Advanced Technologies”
- Specialized higher education “Physical processes in space engine systems”

Academic and industrial partners of the programs

Conference proceedings

The conference publication committee considers articles for publication in four journals: «Bulletin of the Russian Academy of Sciences: Physics», «Physics of Metals and Metallography», «Biotekhnologiya» and «Physics of the Solid State». To submit an article, prepare a manuscript in selected journal's template and send it to the proceeding editor – **Dr. Victor Belyaev, vkbelyaev@gmail.com**.

The **submission deadline** for the manuscripts is the **25th of August 2025**.

The proceeding editor and members of publication committee **will approve** the selected journal or **advice to change the journal** and provide step-by-step instruction for the manuscript submission no later than the **30th of August 2025.**

All the journals are peer-reviewed, the revision will start from the submission of the manuscript to the journal. Submission of the manuscript doesn't guarantee the acceptance. Authors of accepted manuscript will be provided with the acceptance letter no later than the **12th of December 2025**.

For the publication following journals can be chosen:

Bulletin of the Russian Academy of Sciences: Physics (ISSN: 1062-8738)

«Bulletin of the Russian Academy of Sciences. Physics» is a peer-reviewed journal featuring full-text articles, letters, and reviews on the latest research in physics and astronomy, covering nuclear physics, cosmic rays, condensed matter physics, plasma physics, optics, nanotechnologies, solar and astrophysics, and applications in material sciences, life sciences, and other fields. The journal focuses on multidisciplinary topics in natural sciences, encompassing fundamental and applied research. *Journal submission language: Russian.*

Authors guidelines

Physics of Metals and Metallography (ISSN: 1555-6190)

«Physics of Metals and Metallography» is a peer-reviewed journal dedicated to the comprehensive exploration of the principles governing metals and metal alloys, their electrical and magnetic properties, their structure, phase transformations, and mechanical properties. The journal publishes scientific reviews and papers written by experts involved in basic, applied, and engineering research. *Journal submission language: Russian or English.*

Authors guidelines

Physics of the Solid State (ISSN: 1063-7834)

«Physics of the Solid State» is a journal that publishes the up-to-date results obtained in various fields of solid state physics, such as solid state acoustics, solid state optics, phase transitions, electronic and vibrational spectroscopy, ferroelectricity, magnetism, superconductivity and phase transitions. The Journal also presents review articles devoted to the most important problems of solid state physics.
Journal submission language: Russian.

Authors guidelines

Biotekhnologiya (ISSN: 0234-2758)

«Biotekhnologiya» publishes original articles related to various aspects of biotechnology that have practical application in the fields of medicine, agriculture, environmental protection, modern industry and «green chemistry». Articles are published concerning both the creation of micro- and macroorganisms with useful properties by methods of genetic engineering, classical selection, high-performance screening, and original biotechnological processes, equipment, methods of product analysis and process control methods. *Journal submission language: Russian or English (for foreign authors).*

Authors guidelines

Conference programme

Time limitation:

Plenary presentations are limited by 40 minutes with addition of 5 minutes for questions;

Invited talks are limited by 25 minutes with addition of 5 minutes for questions;

Oral talks are limited by 12 minutes with addition of 3 minutes for questions.

Magnetism and Magnetic Materials

Mathematical modeling & Digital Twins

Magneto-optical Phenomena and Devices

Additive Technologies and Smart Composites

Biomaterialscience applications

2D materials for high-tech and environmental applications

Time/Date	Sunday 17/08/2025	
	Big Hall	**Small Hall**
08:00 - 15:00	**Excursion (optional)**	
15:00 - 17:00	**Registration**	
17:00 - 17:30	**Conference Opening Ceremony**	
17:30 - 18:15	chair: Valeria Rodionova **Plenary talk** **Alexander Tishin** Modern Applications of Magnetic Materials: Trends and Challenges	
18:15 - 19:00	**Plenary-Tutorial** **Alexander Granovsky** Magnetic nanocomposites "ferromagnetic metal-insulator"	
19:00 - 19:10	**Nikolay Perov** In memory of Anatoly Vedyaev	
19:10 - 20:30	**Welcome Party**	

Time/Date	Monday 18/08/2025	
	Big Hall	**Small Hall**
8:00 - 9:15	**Registration**	
9:15 - 10:00	chair: Vladimir Belotelov **Plenary talk** **Alexander Baryshev** Reviewing recent R&D in magnetooptic applications	
Section:	**Magneto-optical Phenomena and Devices**	**Mathematical modeling & Digital Twins**
10:00 - 10:30	chair: Alexander Baryshev **Invited Talk** **Vladimir Belotelov** Ultrafast excitation of propagating exchange spin waves by nanophotonic structures	chair: Andrey Zubarev **Invited Talk** **Arthur Zakinyan** Ferrofluid Composites: Microstructure and Properties
10:30 - 10:45	**Andrey Fedyanin** Dielectric photonic metasurfaces for analog optical image processing	**Andrey Ptashenko** Investigation of nonlinear effects of spin waves in multilayer ferromagnetic structures with a periodic metallic shield
10:45 - 11:00	**Alexey Yurasov** Resonant-like magneto-optical spectra in the Ta(2 nm)/$Co_{50}Pt_{50}$(4.6 nm)/Ta(2 nm) nanostructure	**Taa Taaev** Nucleation of magnetic skyrmions by spin-polarized current injection
11:00 - 11:15	**Alexander Pyatakov** A magnetic bubble domain making: electric field-controlled blowing and splitting	**Mikhail Zagrebin** Magnetic properties of Fe-Me (Me =Ga, Ge) alloys with low Me content: Insights from ab initio and Monte Carlo
11:15 - 11:30	**Marina Simdyanova** Magneto-optical Spectroscopy of CoFeB–$LiNbO_3$ Nanocomposite Films	**Daniil Kladko** Prediction of magnetic properties for nanoparticles with machine learning
11:30 - 12:00	**Coffee Break**	
Section:	**Magnetism and Magnetic Materials**	**Additive Technologies and Smart Composites**
12:00 - 12:30	chair: Alexey Kozlov **Invited Talk** **Nikolai Usov** Magnetosomes in nature, biomedicine and physics	chair: Roman Surmenev **Invited Talk** **Azamat Zhansitov** High performance polymer materials for additive technologies
12:30 - 12:45	**Alexey Drovosekov** Magnetic resonance in nanogranular composites: Observation of "double-quantum" excitations in ferromagnetic particles	**Petr Ershov** Fabrication of Magnetoelectric PVDF/CFO Composites Using FDM and DIW 3D Printing Techniques

12:45 - 13:00	**Alexandr Kamzin** Magnetic nanoparticles and nanocomposites for modern technologies of diagnostics (MRT, MPI) and treatment (MHT)	**Liudmila Makarova** Effect of mobility and distribution of particles in magnetic elastomers on magnetoelectric effect in layered composites
13:00 - 13:15	**Daria Kononenko** Deformation and interaction of ferroliquid drops in a magnetic field	**Invited Talk** **Andrei Turutin** Magnetoelectric Composite Materials from Bulk to MEMS
13:15 - 13:30	**Aleksandr Utkin** Investigation of magnetoresistance of $CoFeB/SiO_2$ composite in magnetic fields of 1 and 5 T at temperatures of 2-400 K	
13:30 - 15:00	**Lunch**	
Section:	**Magnetism and Magnetic Materials**	**Biomaterialscience applications**
15:00 - 15:30	chair: Larissa Panina **Invited Talk** **Alexander Sigov** Spin-to charge conversion and Zeeman torque effect in THz spintronic structure	chair: Anton Anikin **Invited Talk** **Yusef Hesuani** Methods of Bioprinting
15:30 - 15:45	**Elena Mishina** Spin valves for THz emitter/modulator	**Invited Talk** **Egor Osidak** Bioprinting with collagen: state of art
15:45 - 16:00	**Valery Ryazanov** Effect of Ferromagnets on Coherent Transport in Josephson Hybrid Nanostructures	
16:00 - 16:15	**Alexandra Perevalova** The Effect of Argon Ion Irradiation on the Electrical Resistivity and Magnetotransport Properties of Topological Weyl Semimetal WTe_2	**Roman Chernozem** Noninvasive Deep Brain Stimulation Using Magnetoelectric Core–Shell Nanotransducers
16:15 - 16:30	**Artem Tarasov** Antisite-Defect-Driven Magnetic Phase Transition in Sb-Doped $MnBi_2Te_4$	**Kateryna Levada** Photothermal therapy utilizing star-shaped $Au@Fe_3O_4$ nanoparticles induces cell death in human hepatocarcinoma
16:30 - 16:45	**Vladislava Anferova** Tuning the Electronic Structure of Surface States at the Au/MnBi2Te4 Interface	**Valentina Antipova** Effect of magnetoelectric stimulation on mesenchymal stem cell condensation and differentiation
16:45 - 17:00	**Andrei Azarevich** Magnetic Phase Diagrams of Antiferromagnet DyB_{12} with Jahn-Teller Lattice Instability and Electron Phase Separation	**Stanislav Pshenichnikov** $Ti_3C_2T_x$ MXenes obtained by the MILD method induce cytotoxic effect on liver cancer cells
17:00 -18:30	**Poster Session I + Snacks**	

Time/Date	Tuesday 19/08/2025	
	Big Hall	**Small Hall**
8:30 - 9:15	**Registration**	
9:15 - 10:00	chair: Larissa Panina **Plenary talk** **Konstantin Zvezdin** Spintronics Beyond MRAM: From Data Storage to Computations	
Section:	**Mathematical modeling & Digital Twins**	**2D materials for high-tech and environmental applications**
10:00 - 10:30	chair: Liudmila Makarova **Invited Talk** **Alexey Ivanov** Magnetization of Immobilized Multi-Core Particles Containing Few Superparamagnetic Nanogranules	chair: Christina Gritsenko **Invited Talk** **Victor Sysoev** Low-dimensional 2D crystals as emerging materials for electronic olfaction
10:30 - 10:45	**Andrey Zubarev** Overshoots of electrical resistivity of magnetic elastomers	**Vasiliy Glazkov** Magnetic phase transitions in decorated square kagomé lattice antiferromagnets of nabokoite family
10:45 - 11:00	**Vladimir Zverev** Computer Simulation of FORC Diagrams for Ellipsoidal Multicore Nanoparticles	**Nikolay Shilov** Purification of argon from oxygen-containing impurities using MXenes of the composition $Ti_3C_2T_x$
11:00 - 11:15	**Vera Balaeva** Influence of nanoscale magnonic crystal geometry on spin magnetization	**Invited Talk** **Vyacheslav Zhandun** 2D magnetic MXenes $(M1_{1-x}M2_x)_3C_2$ (M1=V, Ta, Cr, Fe; M2= Cr, Mn): the stability, ordering, and magnetic properties
11:15 - 11:30	**Dzhuma Kurbanova** Critical behavior of the antiferromagnetic Potts model on a bcc lattice	
11:30 - 12:00	**Coffee Break**	
Section:	**Magnetism and Magnetic Materials**	**2D materials for high-tech and environmental applications**
12:00 - 12:15	chair: Victor Belyaev **Mikhail Dorokhin** Micromagnetic structure and topological magnetic states in thin Co/Pd ferromagnetic films	chair: Christina Gritsenko **Invited Talk** **Dmitry Kvashnin** Defects, doping, dimensionality reduction as a way to tune the electronic, optical and magnetic properties of low-D nanomaterials. Computer simulation and experiment
12:15 - 12:30	**Alena Prikhodchenko** Research of the structure and magnetic properties in Pt/Co/MgO and WTe_x/Pt/Co/MgO films	
12:30 - 12:45	**Evgeny Skorokhodov** MRFM studies of the gyrotropic mode in the ferromagnetic-antiferromagnetic system	**Kurban Magomedov** Modelling of $Ti_3C_2T_x$–MXene Functionalization by Citric Acid and Lysin

12:45 - 13:00	**Gleb Demin** Neuromorphic functionality of thin-film GMI structure in a nonlinear mode of the current excitation	**Dinara Sobola** Microscopy techniques for study of graphene sensors
13:00 - 13:15	**Igor Pashen'kin** Magnetic tunnel junctions with perpendicular magnetic anisotropy	**Victor Yushankhai** Single-molecule magnets and how to compute their properties
13:15 - 13:30	**Natalia Nosova** Effect of Se-S substitution on the crystal structure and physical properties of high coercivity $Fe_{0.25}TaX_2$ (X = S, Se)	
13:30 - 15:00	**Lunch**	
15:00 - 15:45	chair: Alexey Ivanov **Plenary-Tutorial** **Yuriy Raikher** Mathematical modelling of the magnetoelectric effect in polymer composites on the base of PVDF	
Section:	**Mathematical modeling & Digital Twins**	**Magneto-optical Phenomena and Devices**
15:45 - 16:00	chair: Liudmila Makarova **Vladimir Gudkov** Effect of Magnetic and Elastic Anisotropy on Adiabatic Potential Energy of a Jahn-Teller Complex in Dilute Semiconductors	chair: Victor Pavlov **Invited Talk** **Tatyana Dolgova** Magnetoplasmonic and terahertz photoinduced metasurfaces with anomalous dynamics of optical response
16:00 - 16:15	**Gleb Demin** First-principles analysis of the magnetic properties of Co-Ni-Fe alloy depending on its crystal structure and composition	
16:15 - 16:30	**Valeria Kolesnikova** FORC-analysis study of magnetic interactions in ferrite oxides	**Anastasia Nerovnaya** Magnetic field-induced tunable optical spatial differentiator based on magnetoplasmonic crystals
16:30 - 16:45	**Artem Ignatov** Modeling of multiferroic composites properties via FEM	**Maria Gavryushina** Magneto-optical effects enhancement at the bound state continuum resonances
16:45 - 17:00	**Liudmila Siurakshina** Extracting anisotropic exchange in spin Hamiltonians with quantum chemical cluster calculations for complex transition metal oxides	**Nikolai Khokhlov** Electric field as a new tool in ultrafast magnetism
17:00 -18:30	**Poster Session II + Snacks**	

Time/Date	Wednesday 20/08/2025	
	Big Hall	**Small Hall**
8:30 - 9:15	**Registration**	
9:15 - 10:00	chair: Alexander Pyatakov **Plenary talk** **Petr Vetoshko** A first MEG-feasible fluxgate magnetometer	
Section:	**Magnetism and Magnetic Materials**	**Biomaterialscience applications**
10:00 - 10:30	chair: Valeria Kolesnikova **Invited Talk** **Dmitry Zagorskiy** Metallic nanowires of different types-synthesis, structure, magnetic properties and possible applications	chair: Kateryna Levada **Invited Talk** **Dmitry Gorin** Multifunctional and multimodal contrast agents containing iron oxide nanoparticles
10:30 - 10:45	**Dinara Khairetdinova** Structural and magnetic properties of ternary alloyed FeCoCu nanowires	**Elina Genina** Optical clearing technology in antitumor photothermal therapy
10:45 - 11:00	**Aleksei Shestakov** Phase transition in $Fe_{45}Co_{30}Si_{10}B_{15}$ and $Co_{83}Fe_7C_1Si_7B_2$ microwires in the temperature dependence of the ESR spectrum	**Anna Motorzhina** Magnetic microdisks as an agent for combined photothermal and magnetomechanical therapy
11:00 - 11:15	**Alena Pashnina** Spectral response of circular magnetization in Co-rich amorphous microwires	**Invited Talk** **Elena Nikolskaya** Polymeric Materials for Medicine: Biocompatibility and Efficiency in Biological Systems
11:15 - 11:30	**Adrian Acuna Perez** Magnetization reversal in Low Curie amorphous microwires for wireless sensors	
11:30 - 12:00	**Coffee Break**	
Section:	**Magnetism and Magnetic Materials**	**Additive Technologies and Smart Composites**
12:00 - 12:15	chair: Alexander Pyatakov **Akhmed Aliev** On methods of direct measurement of magnetocaloric effect in the temperature range of 4-400 K under AC magnetic fields	chair: Azamat Zhansitov **Amina Vindizheva** Composite materials based on polyether ether ketone and natural magnetite
12:15 - 12:30	**Sabina Emelyanova** Low-temperature Hall effect in magnetocaloric Ni-Mn-Sb-Al alloyss	**Lada Shlapakova** Enhanced Piezoelectric Response of Glycine-loaded Poly(3-hydroxybutyrate) Scaffolds for Nerve Tissue Engineering

12:30 - 12:45	**Dmitrii Kanurin** Structure and Magnetic Properties of FeRh Microflakes	**Anastasia Fetisova** Shape memory effect in 3D-printed biocompatible composite poly(lactic acid)-based scaffolds for bone tissue engineering
12:45 - 13:00	**Ivan Markov** Magnetoelectric effect in the region of torsional and longitudinal-shear modes in the structure of lithium niobate / AMAG	**Svetlana Voronina** Nanocomposite sensitive element in the industrial internet of things
13:00 - 13:15	**Yuliya Elkina** Influence of small lanthanum additions on the structural and electromagnetic properties of lithium ferrite	**Invited Talk** **Alexander Burko** Application of Raman mapping for determining heterogeneous phases in PVDF polymer films
13:15 - 13:30	**Christina Gritsenko** Double step magnetization reversal in 2D magnetoplasmonic crystals based on permalloy	
13:30 - 15:00	**Lunch**	
15:00 - 15:45	chair: Dmitry Gorin **Plenary-Tutorial** **Larissa Panina** From nano-to-micro magnetoplasmonic hybrids for combined therapies: design, magnetic and optical properties	
Section:	**Magnetism and Magnetic Materials**	**Magneto-optical Phenomena and Devices**
15:45 - 16:15	chair: Vladimir Zverev **Invited Talk** **Franciscarlos Gomes da Silva** Influence of Size and Shell Fraction on Exchange Bias and Coercivity in Core/Shell Ferrite Nanoparticles	chair: Alexey Sokolov **Invited Talk** **Victor Pavlov** Antiferromagnetism, symmetry and nonlinear optics
16:15 - 16:30	**Alexander Omelianchik** The Interplay of Magnetic Anisotropy and Interactions in Magnetic Nanoparticle Assemblies	**Alexei Bouravleuv** (In,Mn)As quantum dot p-i-n structure
16:30 - 16:45	**Vitalii Salnikov** Influence of annealing on the microstructure and magnetic properties of Mn-substituted cobalt ferrite nanoparticles	**Alexander Eryzhenkov** Weyl semimetal and axion insulator phases in $MnBi_2Te_4$-based systems
16:45 - 17:00	**Elizaveta Shipkova** Radiation Effects on Magnet Properties of Ferrites	**Viktoria Vivchar** Influence of temperature on optical properties of magnetic fluid with aggregates of nanoparticles
17:00 -17:50	**Spare time**	
17:50 -18:00	**Conference photo**	
18:00 - 20:00	**Conference buffet & conversation**	

Time/Date	Thursday 21/08/2025	
	Big Hall	**Small Hall**
8:30 - 9:15	**Registration**	
9:15 - 10:00	chair: Yuriy Raikher **Plenary talk** **Roman Surmenev** Biomedical applications of piezoelectric and magnetoelectric materials	
Section:	**Additive Technologies and Smart Composites**	**Magneto-optical Phenomena and Devices**
10:00 - 10:30	chair: Petr Ershov **Invited Talk** **Nikolay Perov** Modern magnetic composite materials, their properties and application prospects	chair: Tatyana Dolgova **Invited Talk** **Alexey Sokolov** A comparative study of magneto-optical effects in the mixed ferrite $Zn_{1-x}Co_xFe_2O_4$ and $Mg_{1-x}Co_x\ Fe_2O_4$ nanoparticles
10:30 - 10:45	**Pavel Vorontsov** Uniaxial Tension-Induced Phase Transitions in PVDF/CFO Composites	**Anton Anikin** Correlation of light-to-heat conversion coefficient and SAR in photothermal and magnetothermal studies of nanoparticle solutions
10:45 - 11:00	**Denis Petrukhin** Polymer-based Free-standing Composites Fullerene/PVDF With Controlled β-Phase: Formulation and Quantum Chemical Simulation	**Evgeny Karashtin** Experimental evidence of IR radiation absorption due to spin-flip transitions in a helical ferromagnet
11:00 - 11:15	**Invited Talk** **Alexander Gerasimenko** Biointerfaces based on laser-induced carbon composite materials	**Aleksandr Frolov** Microdiffraction gratings tuned by external magnetic field
11:15 - 11:30		**Victor Belyaev** Magnetoplasmonic crystal based DC and AC magnetic field sensor
11:30 - 12:00	**Coffee Break**	
Section:	**Magnetism and Magnetic Materials**	**Biomaterialscience applications**
12:00 - 12:15	chair: Mikhail Dorokhin **Pavel Terentev** Change in the type of magnetic anisotropy in $GdMn_2(Ge_{1-x}Si_x)_2$ compounds	chair: Evgeny Karashtin **Petr Nikitin** Ultrasensitive detection of cancer and cardiac disease markers in saliva using graphene and magnetic bioconjugates
12:15 - 12:30	**Artem Sinkevich** Crystal structure and magnetocrystalline anisotropy of $Y_2(Fe_xCo_{1-x})_{17}H_y$ compounds	

12:30 - 12:45	**Mikhail Gorshenkov** Synthesis of intermetallic powder with hard magnetic phase τ-MnAl by calcium thermal reduction	**Irina Yanina** Optical properties of adipose tissue in a rat model of diabetes mellitus
12:45 - 13:00	**Anastasiia Fortuna** Alloyed Rapidly Quenched τ-MnAl Ribbons: Microstructure and Magnetic Properties	**Aleksey Amosov** Using Biosensors Based on MXenes and DNA Aptamers for the Quantitative Determination of Coronavirus RBD Protein
13:00 - 13:15	**Oleg Surdin** Pulsed Non-Destructive Facility for Studying Material Properties in Fields up to 60 T	**Polina Serbun** Natural biologically active agents with antiinflammatory properties for ENT-surgery
13:15 - 13:30	**Alexey Kozlov** Heavy metal dichalcogenides as promising materials for modern spintronics	**Petr Snetkov** Nanomaterials based on natural polymers for ENT surgery
13:30 - 14:00	**Closing Ceremony**	
15:00 - 19:00	**Excursion (optional)**	

List of posters

Monday, August 18

1. Vera Balaeva	Peculiarities of signal propagation under the influence of spin current in structures of magnetic material-normal metal type
2. Victoria Baydikova	The effect of substrate selection on the structure and electronic properties of SrIrO3 epitaxial thin films
3. Sergey Gavrilyuk	Study of ferromagnetic resonance and resistivity of multi-nanolayer films $\{[(Co_{40}Fe_{40}B_{20})_x(SiO_2)_{1-x}]/[ZnO]\}_{50}$ and their relationships
4. Levan Ichkitidze	Residual magnetization of a complex of carbon nanotubes and ferromagnetic nanoparticles
5. Artem Ignatov	Comparative study of inductive circuit configurations with planar coils for magnetic particle detection
6. Alexandra Ivanova	Microstructure and magnetic properties of Heusler alloy Ni-Mn-Ga-Cu in different structural states
7. Irina Kalentyeva	Spin LED with intensity modulation
8. Darya Kalyuzhnaya	Droplet Formation and Dynamics of Magnetic Fluid-Based Emulsions in a Microfluidic Chip in a Magnetic Field
9. Valeria Kolesnikova	The composite systems based on ferromagnetic microwires for energy harvesting systems
10. Elizaveta Kozhina	Template synthesis for the production of aligned arrays of Co nanowires as SERS-active platforms
11. Anastasia Kurganskaya	The Effect of Terbium and Hydrogen Addition on the Magnetic Properties of Medium-Enthropy $Gd_{0.33}Dy_{0.33}Y_{0.33}Ni$ Alloy
12. Rodion Likerov	Magnetic properties of Cu_2MnBO_5:Cr ludwigite crystals
13. Mariia Lobkova	Development of the Ultra-sensitive Sensor of a Brain's Magnetic Field Based on the Magnetic Tunnel Junctions and Magnetic Concentrators
14. Igor Iyapilin	Spin-wave current in textured dielectric magnetic structures
15. Dmitry Maslov	New type of inductive compensation magnetization sensor for measurements in ultra-high magnetic fields: design and experimental results

16. Michail Mayburov	Temperature dynamics of magnetic and elastic oscillations in manganese-zinc spinel magnetic films of nonstoichiometric composition in the field of magnetic phase transition
17. Anastasia Orlova	Non-uniform magnetic structures in an FM / FeMn bilayer
18. Denis Petrukhin	Synthesis and Study of Structural, Magnetic and Magnetoelectric Properties of Sr-Substituted Bismuth Ferrite
19. Anastasiia Prishchepa	Design and synthesis of cobalt ferrite nanoparticles with different morphology: characterization of structural and magnetic properties
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26. Vadim D. Genin	Diffusion of aqueous DMSO solutions of different concentrations in rat skin ex vivo
27. Ekaterina Lazareva	Study of Optical Clearing of Lung Tissue Using Inhalation Aerosols by Multi-wave Refractometry
28. Ekaterina Korepanova	Dumbbell-shaped nanoparticles induce cell death of human hepatocarcinoma cells during magneto-mechanical treatment
29. Elena Vinogradova	Study of the Effect of Hyaluronic Acid Solutions with Curcumin, Usnic Acid, and Mangiferin on Epithelial Cells
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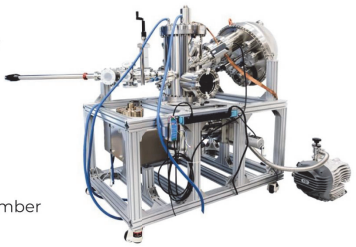

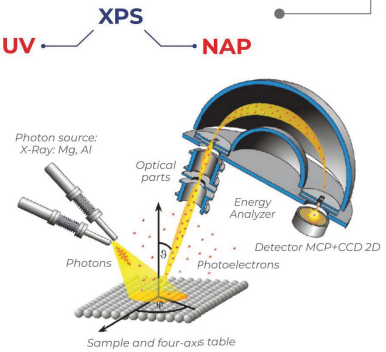

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+ the electronic structure of the atoms of matter
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+ link lengths
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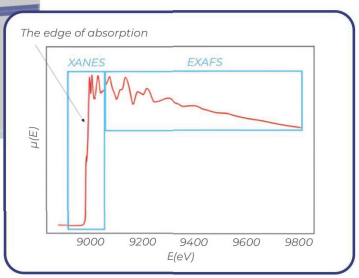

The XANES spectrum provides information about the valence state and geometry of the atoms' surroundings, while the EXAFS spectrum provides information about bond lengths, coordination numbers, types of neighbouring atoms, etc.

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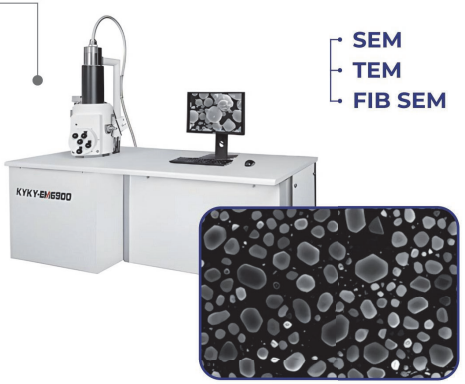

Gold spheres, spatial resolution is 1.5nm

+ SE (SE LV) surface topography
+ BSE (BASE LV) composition analysis
+ EDS elementary microanalysis.
+ EBSD crystallographic studies WDS elemental analysis
+ CL optical properties
+ STEM translucent mode
+ Electronic lithography

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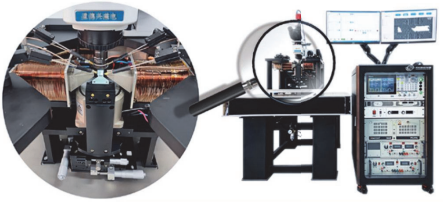
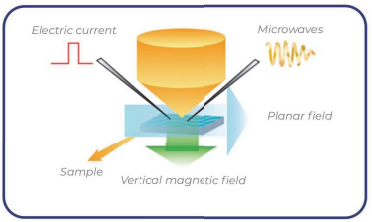
Measurement of a wide range of physical properties of materials under controlled conditions (temperature, magnetic field, pressure):

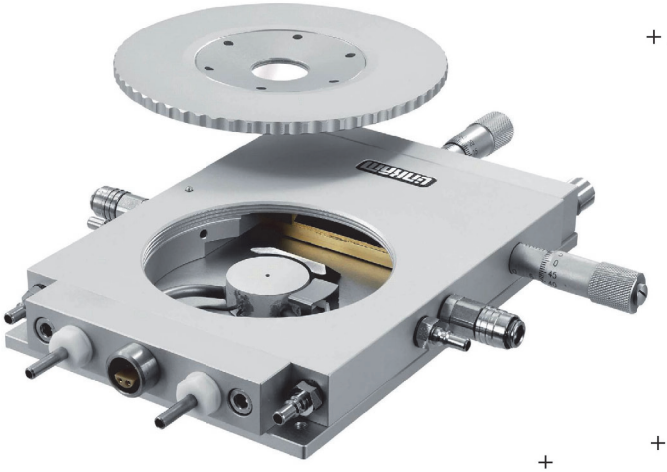




+ Electrical properties (resistance, conductivity, Hall effect)
+ Magnetic properties (magnetization, magnetic susceptibility)
+ Thermal properties (heat capacity, thermal conductivity)
+ Mechanical properties (e.g. magnetostriction)

УНИВЕРСАЛЬНАЯ СИСТЕМА НАГРЕВА И ОХЛАЖДЕНИЯ
THMS600

LINKAM



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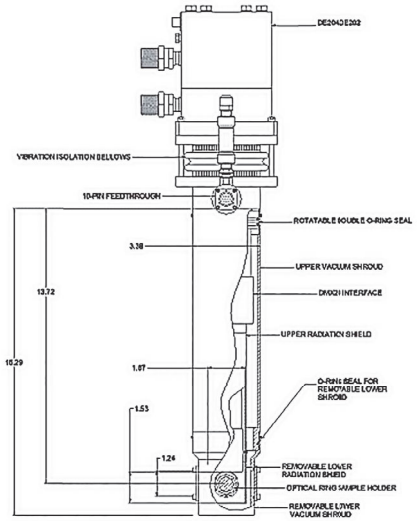
КРИОСТАТЫ ЗАМКНУТОГО ЦИКЛА С ИЗМЕНЯЕМОЙ ТЕМПЕРАТУРОЙ С НИЗКИМ УРОВНЕМ ВИБРАЦИЙ И ПРИМЕНЕНИЕМ РЕЗИНОВОГО СИЛЬФОНА



- Доступные диапазоны рабочих температур вплоть до 3 K.
- Доступны системы с охлаждающими головками на 10K, 6,5 K и 4 K с различной мощностью охлаждения
- Системы со сверхнизкой вибрацией доступны с четырьмя стационарными опорами и/или мобильной опорой с регулируемым креплением и подъёмным рычагом.

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- Этот инновационный криостат, изготовленный Cryo Industries, работающий по схеме «Образец в вакууме», имеет крайне низкий уровень вибраций благородя конструкции с гибким резиновым сильфоном и теплопередаче через газ. **Результатом является сверхнизкий уровень вибраций образца!**
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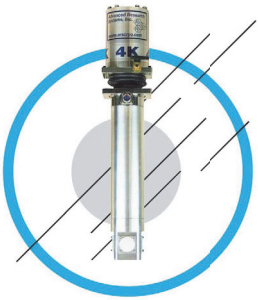

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Notes

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