

CMR@IBR2 2020 Scientific Programme

Due to Corona Virus outbreak, the conference will be held online via Video conference.

Monday, October 12, 2020

INTRODUCTORY SESSION

Chair: A. Belushkin

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| 10.00 – 10.10 | Shvetsov V. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Opening and Welcome. |
| 10.10 – 10.20 | Tropin T. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Technical instructions. |
| 10.20– 10.50 | Shvetsov V. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Progress report on developing a concept for a new neutron source at FLNP. |
| 10.50 – 11.20 | Kozlenko D. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Neutron scattering instrumentation of IBR-2 high flux pulsed reactor for Condensed Matter Research: recent developments. |
| 11.20 – 11.50 | Alekseev P. (NRC "Kurchatov Institute", Moscow, Russia). Inelastic neutron scattering in research on the physics of strongly correlated electron systems |
| 11.50 – 12.20 | Mezei F. (ESS, Lund, Sweden). The "LvB" compact neutron source project at Martonvásár (Hungary). |
| 12.20 - 12.40 | <i>Break</i> |

PLENARY SESSION 1: FUNCTIONAL AND NANOSTRUCTURED MATERIALS

Chair: A. Balagurov

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| 12.40 -13.10 | Fedotov S. (Skolkovo Institute of Science and Technology, Moscow, Russia). Defects structure in olivine-type cathode materials studied by neutron diffraction. |
| 13.10 – 13.40 | Golovin I. (National University of Science and Technology "MISIS", Moscow, Russia). Study of first and second order transitions in Fe-Ga and Fe-Al alloys. |
| 13.40 – 14.00 | Mohamed A. (National University of Science and Technology "MISIS", Moscow, Russia). Application of in situ neutron diffraction to study thermo-kinetic transitions in galphenols. |
| 14.00 – 15.00 | <i>Lunch</i> |

Chair: A. Ivanov

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| 15.00 –15.30 | Gordeliy V. (IBS Grenoble and ICS Forschungszentrum Jülich, Germany). Physics and Biology of Biomembranes. |
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| 15.30 – 15.50 | Sun L. (National University of Science and Technology “MISIS”, Moscow, Russia). Influence of chemical composition on spinodal decomposition of austenite and thermo-elastic martensitic transition in low-Cu Mn-Cu alloys. |
| 15.50 – 16.10 | Krezov K, (Institute for Nuclear Research and Nuclear Energy BAS, Sofia, Bulgaria). Barium titanate from multicomponent oxide glass doped with iron oxide – crystallization effects. |
| 16.10 – 16.30 | Urusova N. (Institute of Solid State Chemistry Ural Branch RAS, Ekaterinburg, Russia). Features of magnetic phase transitions in the $\text{LiNi}_{1-x}\text{Co}_x\text{PO}_4$ magnetoelectrics. |
| 16.30 – 16.50 | Semkin M. (Institute of Metal Physics Ural Branch RAS, Ekaterinburg, Russia). Magnetic phase diagram $\text{LiNi}_{0.9}\text{Co}_{0.1}\text{PO}_4$. |
| 16.50 – 17.00 | <i>Break</i> |

Chair: S.Fedotov

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| 17.00 – 17.20 | Lushnikov S. (Moscow State University, Moscow, Russia). Structure of RNi_3 (R-Dy, Ho)-based intermetallic hydrides at 5K and 293K temperature. |
| 17.20 – 17.40 | Savin A. (National Institute of R&D for Technical Physics, Iasi, Romania). Monitoring techniques of Yttria stabilized zirconia used as thermal barrier coating |
| 17.40 – 18.00 | D Souza A. (Manipal Academy of Higher Education, Manipal, India). Influencing structure property correlations in Bi doped $\text{La}_{0.7}\text{Sr}_{0.3}\text{MnO}_3$ manganites by Bi substitution. |
| 18.00 – 18.20 | Craus M.-L. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Influence of low PB concentration on the structure and transport phenomena of LaMnO_3 manganites. |

Tuesday , October 13, 2020

PLENARY SESSION 1: FUNCTIONAL AND NANOSTRUCTURED MATERIALS

Chair:M.Avdeev

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| 10.00 -10.20 | Zakharchenko T. (N.N. Semenov Federal Research Center for Chemical Physics, Moscow, Russia). Small-angle neutron scattering studies of pore filling in carbon electrodes: mechanisms limiting lithium-air battery capacity. |
| 10.20 – 10.40 | Ushakova E. (Moscow State University, Moscow, Russia). Monitoring of lithium plating by neutron reflectometry. |
| 10.40 – 11.00 | Valkov S. (Institute of Electronics Bulgarian AS, Sofia, Bulgaria). Hybrid techniques for manufacturing of aluminum composite layers with TiCN nanoparticles. |

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| 11.00 – 11.20 | Belogorlov A. (A.V.Topchiev Institute of Petrochemical Synthesis RAS, Moscow, Russia). Application of the small-angle neutron scattering method to study dispersion of non-wetting liquids in nanoporous materials. |
| 11.20 – 11.40 | Korda D. (Petersburg Nuclear Physics Institute, NRC "Kurchatov Institute", Gatchina, Russia). Neutron reflectometry of carbon nanotubes layer deposited on conducting substrates. |
| 11.40 – 12.00 | Iftimie N. (National Institute of R&D for Technical Physics, Iasi, Romania). The possibility to use reconfigurable architecture structures as electromagnetic sensors array. |
| 12.00 – 12.20 | Larichev Yu. (Boreskov Institute of Catalysis Siberian Branch RAS, Novosibirsk, Russia). SANS and SAXS study of supported metal catalysts and nanocomposites |
| 12.20 – 12.40 | <i>Break</i> |

PLENARY SESSION 2: DEVELOPMENT OF NEUTRON SCATTERING TECHNIQUES AND INSTRUMENTS

Chair: A.Ioffe

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| 12.40 – 13.10 | Ivanov A. (ILL, Grenoble, France). Magnetic interactions in single crystals studied with crystal spectrometers. |
| 13.10 – 13.30 | Chudoba D. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Development of an inelastic neutron scattering spectrometer in inverse geometry at the IBR 2 reactor. |
| 13.30 – 13.50 | Kuklin A. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Status and prospects of small-angle scattering at IBR2. |
| 13.50 – 15.00 | <i>Lunch</i> |

Chair: E. Goremychkin

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| 15.00 – 15.20 | Kichanov S. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). The neutron radiography and tomography facility on the IBR-2 reactor: current state and recent results. |
| 15.20 – 15 40 | Zhaketov V. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Polarized neutron reflectometry with secondary radiation registration. |
| 15.40 – 16.00 | Kozhevnikov S. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Divergence of a neutron microbeam from planar waveguides. |
| 16.00 – 16.20 | Frank A. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Intense UCN source at IBR2 reactor. The dream or opportunity? |

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| 16.20 – 16.40 | Milkov V. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Ring detector for small-angle scattering of thermal neutrons for real-time diffractometer (RTD). |
| 16.40 – 17.00 | Bodnarchuk V. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). The influence of delayed neutrons at the pulsed reactor IBR-2 on the signal/background ratio of low-resolution neutron instruments. |
| 17.00 – 17.10 | <i>Break</i> |
| 17.10 – 19.00 | <i>Poster Session 1</i> |

Wednesday, October 14, 2020

PLENARY SESSION 3: MAGNETIC NANOMATERIALS

Chair: Bodnarchuk V.

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| 10.00 – 10.30 | Kravtsov E. (Institute of Metal Physics Ural Branch RAS, Ekaterinburg, Russia). Magnetism of rare-earth multilayers. |
| 10.30 – 10.50 | Devyaterikov D. (Institute of Metal Physics Ural Branch RAS, Ekaterinburg, Russia). Observation of helimagnetism in Dy and Ho thin films via neutron reflectivity measurements. |
| 10.50 – 11.10 | Shibaev A. (Moscow State University, Moscow, Russia). Synthesis of rodlike and spherical magnetite nanoparticles assisted by magnetic field. |
| 11.10 – 11.30 | Rajnak M. (Institute of Experimental Physics SAS, Košice, Slovakia). Structure and dielectric properties of low-polarity ferrofluids under an electric field. |
| 11.30 – 11.50 | Nagorny A. (National Taras Shevchenko University, Kyiv, Ukraine / Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Structural aspects of Fe ₃ O ₄ /CoFe ₂ O ₄ nanoparticles by X-Ray and neutron scattering: powders and stabilization in water. |
| 11.50 – 12.10 | <i>Break</i> |

PLENARY SESSION 4: SOFT CONDENSED MATTER (BIOLOGICAL NANOSYSTEMS, LIPID MEMBRANES, POLYMERS)

Chairman: S. Grigoriev

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| 12.10 – 12.40 | Kucerka N. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Advances in understanding the conformational diseases mimicking model membranes by neutron scattering. |
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| 12.40 – 13.00 | Siposova K. (Institute of Experimental Physics, Slovak Academy of Sciences, Košice, Slovakia). Effect of nanomaterials on protein amyloid aggregation. |
| 13.00 – 13.20 | Molchanov V. (Moscow State University, Moscow, Russia). Living micelles-nanoparticles networks. |
| 13.20 – 13.40 | Hrubovcak P. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Single lipid bilayer changes induced by cholesterol and melatonin. |
| 13.40 – 15.00 | <i>Lunch</i> |

Chairman: N.Kucerka

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| 15.00 – 15.30 | Grigoriev S. (Petersburg Nuclear Physics Institute, NRC "Kurchatov Institute", Gatchina, Russia). Classification of fractal objects by SANS: case of logarithmic fractal. |
| 15.30 – 16.00 | Angelov B. (Institute of Physics Czech AS, Prague, Czech Republic). Multiphase and sponge lipid nanoparticles studied by SANS and time resolved SAXS. |
| 16.00 – 16.20 | Lebedev D. (Petersburg Nuclear Physics Institute, NRC "Kurchatov Institute", Gatchina, Russia). Effects of macromolecules and protein complexes on the interphase chromatin organization registered by SANS. |
| 16.20 – 16.40 | Kamynina A. (Moscow Institute of Physics and Technology, Moscow, Russia). Peptide (60-76) from RAGE and its analogue protect spatial memory in transgenic 5xFAD mice and induce calcium signaling in primary culture via activation of RAGE. |
| 16.40 – 17.00 | <i>Break</i> |
| 17.00 – 19.00 | <i>Poster Session 2</i> |

Thursday, October 15, 2020

PLENARY SESSION 4: SOFT CONDENSED MATTER (BIOLOGICAL NANOSYSTEMS, LIPID MEMBRANES, POLYMERS)

Chair: B.Angelov

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| 10.00 – 10.30 | Baranchikov A. (Kurnakov Institute of General and Inorganic Chemistry RAS, Moscow, Russia). Small-angle neutron scattering for the structure of aerogel-based materials. |
| 10.30 – 10.50 | Artykulnyi O. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Study of surfactant-polymer complexes structure by small-angle neutron scattering. |

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| 10.50 – 11.10 | Lebedev V. (Petersburg Nuclear Physics Institute, NRC "Kurchatov Institute", Gatchina, Russia). Structure of diffusive polymer membranes for molecular and ionic transport. |
| 11.10 – 11.30 | Kwiatkowski A. (Moscow State University, Moscow, Russia). Small-angle neutron scattering study of polymer-containing (hybrid) wormlike micelles of ionic surfactant. |
| 11.30 – 11.50 | Safarik I. (Biology Centre, Ceske Budejovice, Czech Republic). Cotton textile/iron oxide nanozyme composites with peroxidase-like activity: Preparation and SANS/SAXS characterization. |
| 11.50 – 12.10 | <i>Break</i> |

Chair: Yu.Gorshkova

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| 12.10 – 12.30 | Zajac W. (Institute of Nuclear Physics Polish Academy of Sciences, Krakow, Poland). Calamitic liquid crystal under nanometer spatial confinement – investigation by SANS and complementary methods. |
| 12.30 – 12.50 | Juszyńska-Gałązka E. (Institute of Nuclear Physics Polish Academy of Sciences, Poland). Vibrational dynamics of molecules phenyl substances with varying degrees of molecular ordering. |
| 12.50 – 14.30 | Lunch |

PLENARY SESSIONS 5: TEXTURE AND STRESS INVESTIGATIONS OF MATERIALS

Chair: T.Ivankina

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| 14.30 – 15.00 | Froitzheim N. (Steimann Institute for Geology, Mineralogy and Paleontology, Uni Bonn, Germany). Time-of-flight neutron diffraction texture analysis of deformed rocks from shear zones related to continent collision in the Alps. |
| 15.00 – 15.20 | Zel I. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Neutron tomography of anisotropic rocks: assessment of structural, magnetic and seismic anisotropy. |
| 15.20 – 15.40 | Pakhnevich A. (Borissiak Paleontological Institute RAS, Moscow, Russia). Crystallographic texture of freshwater bivalve molluscs of the Family Unionidae. |
| 15.40 – 16.00 | Duliu O. (University of Bucharest, Bucharest, Romania). Neutron diffraction and neutron computed tomography Investigation of Scleractinian Corals skeleton. |
| 16.00 -16.10 | <i>Break</i> |

Chair: G.Bokuchava

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| 16.10 – 16.40 | Baczmanski A. (University of Science and Technology, Krakow, Poland). Deformation mechanisms and microstress evolution in polycrystalline materials studied using diffraction and modelling. |
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- 16.40 – 17.10 **Em V.** (NRC Kurchatov institute, Moscow, Russia). Neutron diffraction study of residual stresses at research reactor IR-8 of National Research Center “Kurchatov Institute”.
- 17.10 – 17.30 Kot P. (AGH University of Science and Technology, Krakow, Poland). Investigation of microstress evolution in Mg-alloy using TOF neutron diffraction.

Friday , October 16, 2020

PLENARY SESSIONS 6: NEUTRON IMAGING

Chair: S.Kichanov

- 10.00 – 10.30 **Saprykina I.** (Institute of Archaeology RAS, Moscow, Russia). The neutron tomography and diffraction as a routine research method for the non-ferrous metal archaeological objects.
- 10.30 – 10.50 Abdurakhimov B. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). The study of ancient Romanian pottery fragments by non-destructive techniques at the IBR-2 reactor.
- 10.50 – 11.10 Kenessarín M. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Research of structure of cement materials for storage of radioactive graphite by neutron tomography.
- 11.10 – 11.30 *Break*

PLENARY SESSIONS 7: USER’S INFRASTRUCTURE

Chair: T.Tropin

- 11.30 – 11.50 Chudoba D. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). User Programme at FLNP JINR.
- 11.50 – 12.10 Ivanshina O. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Synthesis of new materials and investigations using Raman spectroscopy and thermal analysis in FLNP JINR.
- 12.10 – 12.30 Bobrikov I. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). New equipment for sample preparation and study of functional materials.
- 12.30 – 12.50 Gorshkova Yu. (Frank Laboratory of Neutron Physics, Joint Institute for Nuclear Research, Dubna, Russia). Complementary methods in soft matter research in FLNP JINR: atomic-force microscopy and dynamic light scattering.
- 12.50 – 13.20 Open discussion. Kozlenko D.
- 13.20 – 13.30 Workshop closing