

MODERN DEVELOPMENT OF MAGNETIC RESONANCE

program

2026

KAZAN * RUSSIA



MODERN DEVELOPMENT OF MAGNETIC RESONANCE

PROGRAM OF THE
INTERNATIONAL CONFERENCE

THE CONFERENCE IS ORGANIZED AS PART
OF THE ANNUAL "KAZAN SCIENCE WEEK"

KAZAN, SEPTEMBER 28 – OCTOBER 02, 2026

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VENUE

Conference “Modern Development of Magnetic Resonance 2026” will be held in Nogai Hotel.

Address: 420140, Russia, Republic of Tatarstan, Kazan, Profsoyuznaya str., 16B.

SECTIONS

- ADVANCES IN MAGNETIC RESONANCE
- MODERN METHODS OF MAGNETIC RESONANCE
- LOW-DIMENSIONAL SYSTEMS, NANO-SYSTEMS AND MOLECULAR MAGNETS
- SPIN-BASED INFORMATION PROCESSING AND OPTICAL QUANTUM TECHNOLOGIES
- STRONGLY CORRELATED ELECTRON SYSTEMS
- CHEMICAL AND BIOLOGICAL SYSTEMS
- DEFECTS AND SPIN QUBITS
- MAGNETIC RESONANCE IMAGING AND APPLICATIONS IN MEDICAL PHYSICS
- MÖSSBAUER SPECTROSCOPY AND ITS APPLICATIONS
- RELATED PHENOMENA

SECTION COLOR SCHEME

ADVANCES
IN MAGNETIC
RESONANCE

MODERN
METHODS OF
MAGNETIC
RESONANCE

LOW-DIMENSIONAL
SYSTEMS,
NANO-SYSTEMS
AND MOLECULAR
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SPIN-BASED
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STRONGLY
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CHEMICAL AND
BIOLOGICAL
SYSTEMS

DEFECTS
AND
SPIN QUBITS

MAGNETIC
RESONANCE
IMAGING AND
APPLICATIONS IN
MEDICAL PHYSICS
SYSTEMS

MÖSSBAUER
SPECTROSCOPY
AND ITS
APPLICATIONS

RELATED
PHENOMENA

08:30–11:00	Registration		
11:00–11:30	Opening ceremony		
11:30–13:00	Plenary lectures. Chair: S. Khantimerov		
11:30–12:15	Plenary lecture 1		
12:15–13:00	Plenary lecture 2		
13:00–14:30	Break		
	Room 1		Room 2
14:30–16:00	Advances in Magnetic Resonance Chair: A. Sukhanov	14:30–16:00	Low-Dimensional Systems, Nano-Systems and Molecular Magnets Chair: V. Shaginyan
16:00–16:30	Coffee break		
16:30–17:40	Advances in Magnetic Resonance Chair: R. Zaripov	16:30–18:00	Low-Dimensional Systems, Nano-Systems and Molecular Magnets Chair: R. Yusupov
17:40–18:00	Round Table “Possibilities for the development of THz-EPR spectroscopy at the SKIF synchrotron source		

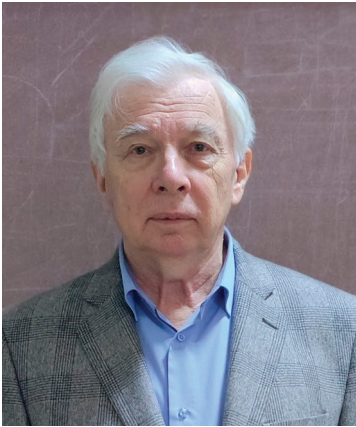
09:00–10:30	Plenary lectures. Chair: A. Vanin		
09:00–09:45	Plenary lecture 1		
09:45–10:30	Plenary lecture 2		
10:30–11:00	Coffee-break		
	Room 1		Room 2
11:00–12:00	Modern Methods of Magnetic Resonance Chair: R. Eremina	11:00–12:00	Low-Dimensional Systems, Nano-Systems and Molecular Magnets Chair: T. Gavrilova
12:00–14:00	Break		
14:00–17:00	Zavoisky Award 2026 Ceremony Zavoisky Awardee 2026 Lecture <i>Tatarstan Academy of Sciences, Baumana str., 20</i>		

09:00–10:30	Plenary lectures. Chair: S. Demishev		
09:00–09:45	Plenary lecture 1		
09:45–10:30	Plenary lecture 2		
10:30–11:00	Coffee-break		
	Room 1		Room 2
11:00–12:50	Chemical and Biological Systems Chair: S. Dzuba	11:00–13:00	Strongly Correlated Electron Systems Chair: R. Babunts
13:00–14:30	Break	13:00–18:00	XXV Youth Scientific School (School-2026)
14:30–15:50	Chemical and Biological Systems Chair: E. Bagryanskaya		
16:30–17:15	Plenary lecture. Chair: K. Salikhov		
17:15–18:05	Chemical and Biological Systems Chair: D. Astvatsaturov		

	Room 1
09:00–10:20	Low-dimensional systems. Advances in Magnetic Resonance Chair: A. Kamashev
10:20–10:50	Coffee-break
10:50–12:40	Advances in Magnetic Resonance Chair V. Voronkova
14:30–16:30	Poster session 1–5
16:30–17:00	Coffee break
17:00–19:00	Poster session 6–10

09:00–09:45	Plenary lecture. Chair: Yu. Kandrashkin		
	Room 1		Room 2
09:45–10:45	Mössbauer Spectroscopy and its Applications Chair: N. Suleimanov	09:45–10:45	Related Phenomena Chair: V. Volkov
10:45–11:15	Coffee-break		
11:15–12:15	Advances in Magnetic Resonance Chair: Yu. Talanov	11:15–12:45	Strongly Correlated Electron Systems Chair: E. Vavilova
	Room 1		Room 2
12:15–13:55	Chemical and Biological Systems Chair: E. Konstantinova		
13:55–14:25	Coffee-break		
14:25	Closing ceremony		

29 September

ESR spectroscopy of quantum-disordered
states in spin chains

Aleksandr I. Smirnov

P. L. Kapitza Institute for Physical Problems,
Moscow, Russia

$S = 1/2$ spin chains with antiferromagnetic exchange have a quantum-disordered ground state with no magnetic order. This is an ensemble of delocalized fermions (spinons). In neutron scattering or ESR the energy is absorbed via a spinon transition from inside the Fermi-surface to outside, providing a continuum of transmitted energy, strongly different from magnon peaks in magnets. We study the spinons by microwave absorption in crystals hosting chains of $S = 1/2$ -ions. We obtain evidence for the concept of spinons and their chirality observing a fine structure of the continuum. We detect an interaction of spinons, indicating a kind of a Fermi-liquid (not a Fermi-gas). In contrast to known Fermi-liquids, e.g. electrons in metals, the fermions in spin chains are collective dynamic structures of localized spins.

The Landau-Lifshitz equation, the Gilbert equation,
and the description of EPR using semiclassical magnetization
dynamics: Breaking stereotypes and new effects

11:30–12:15
28 September

We discuss fundamental aspects of semiclassical magnetization dynamics applied to the calculation of electron paramagnetic resonance (EPR) with the emphasis on accounting for the magnetic fluctuations, including the quantum ones. The use of a semiclassical approach for modeling of EPR in various systems goes beyond the stereotypes established in the literature, including the widely accepted equivalence of Landau-Lifshitz and Gilbert equations. Our results are primarily of interest to the physics of strongly correlated electron systems and can be used to study spin-nematic effects, polarization effects, relationships between spectroscopic parameters, and a new group of magnetic phenomena, the spin-fluctuation transitions. Given the widespread use of semiclassical models for various spintronic devices, it is important to keep in mind that the choice of one equation or another can lead to radically different results.



Sergey DEMISHEV
Vereshchagin High
Pressure Physics
Institute,
Moscow, Russia

On the narrowing effect of EPR spectra due to particle
motion and its potential implications for other scientific
disciplines

12:15–13:00
28 September

According to the new paradigm, due to the transfer of quantum coherence from the partner during random bimolecular collisions of paramagnetic particles, the motion of an ensemble of spins with different resonant frequencies exhibits well-defined organized modes, collective degrees of freedom. These collective modes are the normal coordinates of the system of linear kinetic equations for the magnetizations of electron spin sub-ensembles, which replace the quantum mechanics equations of spin dynamics, given that in dilute solutions, the exchange interaction is switched on at random moments in time.

In the new spin exchange paradigm, the elementary excitations of collective modes of motion are all bosons. Therefore, quasiparticles of excitation of collective modes of motion of spin sub-ensembles under conditions of exchange narrowing in principle open the way to the realization of a Bose condensate at room temperatures.



Kev SALIKHOV
Zavoisky Physical-
Technical Institute,
Kazan, Russia

9:00–9:45
29 September

Application of new spin labels to the study
of biomolecular structure



Elena
BAGRYANSKAYA

Vorozhtsov
Novosibirsk Institute
of Organic Chemistry,
Russia

Pulse Dipolar EPR (PELDOR/DEER) is widely used to study the structure of proteins and nucleic acids. The report provides an overview of our works of using new spin labels based on triarylmethyl, nitroxide and copper complexes for studying the complex of enzymes, DNA and inhibitor. A triply orthogonal PELDOR/DEER was used to investigate the structure of enzyme-DNA-inhibitor complex. By measuring the dipolar couplings between the three distinct labels, we confirm the formation of the ternary complex in solution and reveal its conformational dynamics. Extensive molecular dynamics simulations allowed to constructed the experimentally measured distance between the spin labels. This integrated approach provides unprecedented structural insights into the inhibition mechanism of enzyme by inhibitor and establishes a powerful methodological framework for studying similar multi-component enzymatic systems.

9:45–10:30
29 September

Nano-scale clustering of mono-spin-labeled molecules
from double electron-electron resonance data



Sergei
DZUBA

Voevodsky Institute of
Chemical Kinetics and
Combustion,
Novosibirsk, Russia

Double electron–electron resonance (DEER, also known as PELDOR) is a pulsed EPR technique with the unique ability to study the distances between spin labels in the nanometer range. The DEER method is primarily used to study the nanoscale conformations of doubly spin-labeled biomolecules. For studying nanoclusters with the number of spin labels $N > 2$, it is better to use mono-spin-labeled molecules. However, even in this case, the DEER method faces difficulties in both performing measurements correctly and interpreting the data. The report analyzes these issues and provides recommendations on the proper application of the DEER method.

Multi-extreme THz ESR: developments and future directions

9:00–9:45
30 September

This report overviews the THz ESR systems developed in Kobe under multi-extreme conditions, such as high magnetic fields, high pressures, and low temperatures. It covers a frequency range of 0.03 to 7 THz and a temperature range of 1.8 to 300 K, and generates magnetic fields up to 55 T. Furthermore, the pressure range was extended from 1.5 GPa to 2.5 GPa using a hybrid-type piston-cylinder pressure cell. Our multi-extreme THz ESR also incorporates mechanically detected ESR measurements utilizing a commercially available membrane-type surface stress sensor, which extends our previous micro-cantilever-based ESR method. Some applications and future directions will be presented.



Hitoshi
OHTA

Kobe University,
Kobe, Japan

Optically detected cross-relaxation resonances in dielectric and semiconductor crystals

9:45–10:30
30 September

Cross-relaxation occurs due to energy-conserving spin flips between two distant paramagnetic defects tuned to resonance by the magnetic field. Optically detected magnetic resonance (ODMR) has proven to be a particularly effective method for studying such processes. This report presents an overview of cross-relaxation resonances discovered during ODMR studies of dielectric and semiconductor crystals at the Ioffe Institute. The following phenomena are considered: cross-relaxation between optically pumped F-centers and impurity defects in irradiated alkali halide crystals, manifestation cross-relaxation in the luminescence of Ce^{3+} in Ce and Gd co-doped garnet crystals and in the luminescence of heavy-hole excitons in GaAs/AlAs superlattices, cross-relaxation between NV centers and nitrogen atoms in diamond, and cross-relaxation between optically active vacancy centers and other defects in silicon carbide.



Nikolai
ROMANOV

Ioffe Institute,
Saint Petersburg, Russia

16:30–17:15
30 September

Inversion recovery EPR characterizes the impact
of Heisenberg exchange on nitroxide T_1
in low viscosity solutions



Sandra EATON
University of Denver,
Denver, USA

The time constant for relief of spin population inversion, T_1^{eff} , at 293 K for the nitroxide radical tempol in toluene and for a triarylmethyl radical in water as a function of radical concentration will be discussed. An inversion recovery experiment creates non-equilibrium populations, which permits characterization of the contributions to the recovery curves from electron spin relaxation and from Heisenberg exchange. The fraction of collisions that contribute to the Heisenberg exchange term depends on the fraction of molecules for which the spin population is inverted, which may depend on the pulse bandwidth. For triarylmethyl radicals this means that the concentration dependence of T_1^{eff} can be decreased by inverting the spin populations for most of the ^{13}C isotopomers.

09:00–09:45
02 October

Study of the photophysics of the compact electron donor-
acceptor compounds using time-resolved electron
spin resonance spectroscopy



Jianzhang ZHAO
Dalian University
of Technology,
Dalian, China

The electron transfer in electron donor-acceptor compounds has been studied for decades, which is important for mimic of natural photosynthesis center, photocatalysis and photovoltaics. The photophysics of these compounds are complicated, very often states equilibrium exists and the electron spin dynamics plays an important role in the evolution of electronic states. By collaboration with a few ERP groups in Russia, especially the one at Zavoisky Physical-Technical Institute, we studied the photophysics of electron donor-acceptor compounds using optical spectra and time-resolved EPR spectra, the results show that spin correlated radical pair (SCRPs) was observed in dyads based on long linker, and the ^3CS state with stronger spin-spin interaction was observed in dyads containing shorter linker. The intersystem crossing (ISC) mechanism of the dyads was also studied with time-resolved EPR spectra.

08:30–11:00	Registration		
11:00–11:30	Opening ceremony		
11:30–13:00	Plenary lectures. Chair: S. Khantimerov		
11:30–12:15	Sergey Demishev: The Landau-Lifshitz equation, the Gilbert equation, and the description of EPR using semiclassical magnetization dynamics: Breaking stereotypes and new effects <i>Vereshchagin High Pressure Physics Institute</i>		
12:15–13:00	Kev Salikhov: On the narrowing effect of EPR spectra due to particle motion and its potential implications for other scientific disciplines <i>Zavoisky Physical-Technical Institute</i>		
13:00–14:30	Break		
	Room 1		Room 2
14:30–16:00	Advances in Magnetic Resonance Chair: A. Sukhanov	14:30–16:00	Low-Dimensional Systems, Nano-Systems and Molecular Magnets Chair: V. Shaginyan
	Vasilii Belykh (invited) Emerging ODMR techniques for spin dynamics in solids <i>TU Dortmund University, Germany</i>		Roman Babunts (invited) ODMR based mapping of diamond and silicon carbide with nanometer resolution <i>Ioffe Institute</i>
	Anatoly Vanin (invited) Dimerization of NO molecules as the initial stage of iron dinitrosyl complexes formation in animals and humans <i>Semenov Federal Research Center for Chemical Physics</i>		Vladimir Zhaketov (oral) Polarized neutron reflectometry in oscillating magnetic fields: Resonant phenomena in low-dimensional magnetic systems <i>Joint Institute for Nuclear Research</i>

	Haijun Yang (invited) A quantitative EPR method based on electron relaxation time distribution tested on the dual NMR/EPR spectrometer <i>Tsinghua University, China</i>		Egor Alakshin (oral) Magnetic properties of PrF_3 nanoparticles <i>Kazan Federal University</i>
			Gleb Dolgorukov (oral) ^3He NMR based measurement of the paramagnetic layer depth in $\text{LaF}_3\text{:Gd}^{3+}$ delta doped nanoparticles <i>Kazan Federal University</i>
16:00–16:30	Coffee-break		
16:30–17:40	Advances in Magnetic Resonance Chair: R. Zaripov	16:30–18:00	Low-Dimensional Systems, Nano-Systems and Molecular Magnets Chair: R. Yusupov
	Alexandra Yurkovskaya (invited) Short-lived cation radicals visualized by CIDNP <i>International Tomography Center</i>		Gareth Eaton (invited) Low-lying electronic energy levels correlate with faster electron spin lattice relaxation rates for lanthanide complexes in diverse coordination environments <i>University of Denver, USA</i>

	Kirill Sannikov (oral) Low-field NMR of ^{129}Xe at low temperatures: frequency and temperature dependences of spin-lattice relaxation in liquid and solid phases near triple point <i>Kazan Federal University</i>		Bulat Mukhamadullin (oral) ^1H NMR monitoring of DyF_3 nanoparticle agglomeration <i>Kazan Federal University</i>
	Sergey Veber (oral) Infrared spectroscopy with the advantages of synchrotron radiation sources: Global experience and prospects for the “IR-diagnostics” beamline at the SKIF facility <i>International Tomography Center</i>		Irina Romanova (oral) Modeling of structural and magnetic properties of $\text{Gd}_{1-x}\text{R}_x\text{MO}_3$ compounds <i>Kazan Federal University</i>
17:40-18:00	Round Table “Possibilities for the development of THz-EPR spectroscopy at the SKIF synchrotron source”		Kirill Tsiberkin (oral) Transition between transverse relaxation and regular spin dynamics in dipole chain <i>Perm State University</i>

09:00–10:30	Plenary lectures. Chair: A. Vanin		
09:00–09:45	Elena Bagryanskaya: Application of new spin labels to the study of biomolecular structure <i>Vorozhtsov Novosibirsk Institute of Organic Chemistry</i>		
09:45–10:30	Sergey Dzuba: Nano-scale clustering of mono-spin-labeled molecules from double electron-electron resonance data <i>Voevodsky Institute of Chemical Kinetics and Combustion</i>		
10:30–11:00	Coffee-break		
	Room 1		Room 2
11:00–12:00	Modern Methods of Magnetic Resonance Chair: R. Eremina	11:00–12:00	Low-Dimensional Systems, Nano-Systems and Molecular Magnets Chair: T. Gavrilova
	Vladimir Ulanov (oral) Dispersion shape of the EPR spectra lines of the impurity Gd^{3+} ions in the narrow-gap $Pb_{1-x}Ag_xS$ semiconductors: parameters and possible nature of the effect <i>Zavoisky Physical-Technical Institutes</i>		Aleksei Shestakov (oral) Dependence of the ferromagnetic–paramagnetic transition temperature on microwire size in $Co_{83}Fe_7C_1Si_7B_2$ and $Fe_{45}Co_{30}Si_{10}B_{15}$ <i>Prokhorov General Physics Institute</i>
	Gleb Slivin (oral) Weighted least-squares approach to the weak-signal problem in orientational studies of graphene oxide membranes <i>Semenov Federal Research Center for Chemical Physics</i>		Mikhail Matveev (oral) The influence of graphene oxide membranes architecture on their functional properties <i>Semenov Federal Research Center for Chemical Physics</i>

	Ivan Frolov (oral) Sequential radical pair CIDNP <i>Novosibirsk State University</i>		Ekaterina Kovycheva (oral) Modeling of the magnetic response of low-scaled spin structures <i>Perm State University</i>
12:00–14:00	Break		
14:00–17:00	Zavoisky Award 2026 Ceremony Zavoisky Awardee 2026 Lecture <i>Tatarstan Academy of Sciences, Baumana str., 20</i>		

09:00–10:30	Plenary lectures. Chair: S. Demishev		
09:00–09:45	Hitoshi Ohta: Multi-extreme THz ESR: developments and future directions <i>Kobe University, Japan</i>		
09:45–10:30	Nikolai Romanov: Optically detected cross-relaxation resonances in dielectric and semiconductor crystals <i>Ioffe Institute</i>		
10:30–11:00	Coffee-break		
	Room 1		Room 2
11:00–12:50	Chemical and Biological Systems Chair: S. Dzuba	11:00–13:00	Strongly Correlated Electron Systems Chair: R. Babunts
	Olesya Krumkacheva (invited) Structural characterization of conformationally heterogeneous biomolecular complexes with photoactive ligands by pulsed dipolar EPR spectroscopy <i>International Tomography Center</i>		Vasiliy Glazkov (invited) Magnetic order in nabokoite family compounds <i>P. L. Kapitza Institute for Physical Problems</i>
	Vitaly Volkov (invited) Water molecules and biologically active substances in RBC on NMR data <i>Federal Research Center of Problems of Chemical Physics and Medicinal Chemistry</i>		Shojiro Kimura (invited) High field ESR measurements of the interacting spin dimer systems <i>Tohoku University, Japan</i>
	Elizaveta Konstantinova (invited) Photoelectronic properties of optical sensor platforms based on anodic aluminum oxide <i>Lomonosov Moscow State University</i>		Alexey Semeno (oral) Electron spin resonance probing of antiferromagnetic state in CeB ₆ <i>Prokhorov General Physics Institute</i>

	Nikolay Polyakov (oral) NMR study of supramolecular drug delivery systems and drugs interaction with lipid membranes <i>Voevodsky Institute of Chemical Kinetics and Combustion</i>		Rushana Eremina (oral) Properties of ludwigite Cu_2MnBO_5 <i>Zavoisky Physical-Technical Institute</i>
			Daniil Popov (oral) Impact of manganese ions on magnetic and structural properties of cobalt containing ludwigites <i>Zavoisky Physical-Technical Institute</i>
13:00–14:30	Break	13:00–18:00	XXV Youth Scientific School (School-2026)
14:30–15:50	Chemical and Biological Systems Chair: E. Bagryanskaya		
	Matvey Fedin (invited) Applications of EPR spectroscopy to heterojunction photocatalysts <i>International Tomography Center</i>		
	Alexander Kokorin (invited) Structural reorganization of VO^{2+} complexes on the surface of TiO_2 <i>Semenov Federal Research Center for Chemical Physics</i>		

	Ivan Zhukov (oral) Disentanglement of intra- and inter-molecular pathways of photoinduced electron transfer in biomimetic TRP-PRON-F dyads by time-resolved and field-cycling CIDNP <i>International Tomography Center</i>		
15:50–16:30	Coffee-break		
16:30–17:15	Plenary lecture. Chair: K. Salikhov Sandra Eaton: Inversion recovery EPR characterizes the impact of Heisenberg exchange on nitroxide T_1 in low viscosity solutions <i>University of Denver, USA</i>		
17:15–18:05	Chemical and Biological Systems Chair: D. Astvatsaturov		
	Vladimir Chizhik (invited) Comprehensive use of NMR methods in studying microstructure and molecular mobility in ionic liquid systems <i>Saint Petersburg State University</i>		
	Philip Toukach (oral) Automated prediction of natural carbohydrate structure from 2D NMR data <i>Zelinsky Institute of Organic Chemistry</i>		

	Room 1
09:00–10:20	Low-dimensional systems. Advances in Magnetic Resonance Chair: A. Kamashev
	Alexander Smirnov (invited) Spin 3/2 paramagnet, spin 1/2 quantum chains and a weakly ordered antiferromagnet in Cs_2CoCl_4 <i>P. L. Kapitza Institute for Physical Problems</i>
	Yoshio Teki (invited) Π -topology, spin alignment, DEP generation and ESPT of photogenerated organic multi-spin π -systems <i>Osaka Metropolitan University, Japan</i>
	Kev Salikhov (oral) Using nuclear hyperpolarization in photoinduced electron transfer to study chiral induced electron spin selectivity <i>Zavoisky Physical-Technical Institute</i>
10:20–10:50	Coffee-break
10:50–12:40	Advances in Magnetic Resonance Chair V. Voronkova
	Andrey Sukhanov (invited) Features of ESEEM In the study of photosystem I in trehalose matrix <i>Zavoisky Physical-Technical Institutes</i>
	Ruslan Zaripov (invited) Multi-pulse protocols in EPR: from spectral diffusion suppression to quantum zeno analogy <i>Zavoisky Physical-Technical Institute</i>
	Nikolay Polyakov (invited) Nuclear hyperpolarization in electron transfer in chiral systems <i>Voevodsky Institute of Chemical Kinetics and Combustion</i>
	Yuri Kandrashkin (oral) Photoinduced spin dynamics in rigid chromophore–radical compounds <i>Zavoisky Physical-Technical Institute</i>
14:30–16:30	Poster session 1–5
16:30–17:00	Coffee-break
17:00–19:00	Poster session 6–10

09:00–09:45	Plenary lecture. Chair: Yu. Kandrashkin Jianzhang Zhao: Study of the photophysics of the compact electron donor-acceptor compounds using time-resolved electron spin resonance spectroscopy <i>Dalian University of Technology, China</i>		
	Room 1		Room 2
09:45–10:45	Mössbauer Spectroscopy and its Applications Chair: N. Suleimanov	09:45–10:45	Related Phenomena Chair: V. Volkov
	Elena Voronina (oral) Nanoscale magnetic inhomogeneities in Fe–Al alloys with Ga and B additions: structure, stability, and temperature evolution <i>Kazan Federal University</i>		Rinat Mamin (oral) Conducting and superconducting films with local electric field on interphases <i>Zavoisky Physical-Technical Institute</i>
	Farit Vagizov (oral) Increasing the efficiency of a special wireless communication system based on the stochastic gamma-ray flow <i>Kazan Federal University</i>		Georgii Andreev (oral) Magnetic hysteresis of paramagnetic LiDYF ₄ : A magnetocaloric model <i>Kazan Federal University</i>
	Almaz Zinnatullin (oral) Combined Mössbauer effect and DFT studies of the hyperfine interactions and lattice dynamics in phosphoferrocenes <i>Kazan Federal University</i>		Leonid Grunin (oral) Entropy: A perspective based on NMR relaxation times <i>Resonance Systems GmbH, Germany</i>
10:45–11:15	Coffee-break		

	Room 1		Room 2
11:15-12:15	Advances in Magnetic Resonance Chair: Yu. Talanov	11:15-12:45	Strongly Correlated Electron Systems Chair: E. Vavilova
	Vladimir Zobov (oral) Quantum dynamics in Krylov space and operator growth: a study using multiple-quantum NMR <i>Kirensky Institute of Physics</i>		Vasily Shaginyan (invited) Topological foundations of the scaling behavior of superconductors <i>Petersburg Nuclear Physics Institute of NRC Kurchatov Institute</i>
	Razil Ziatdinov (oral) Transferred hyperfine interactions in $\text{CaF}_2:\text{Pu}^{3+}$ ENDOR <i>Kazan Federal University</i>		Yury Bunkov (oral) A new permanent macroscopic coherent quantum state at room temperature <i>Russian Quantum Center</i>
	Ilnur Gimazov (oral) Broadband ESR spectrometer based on VNA and its application for FM materials <i>Zavoisky Physical-Technical Institute</i>		Ivan Yatsyk (oral) Electron-polaron transition and high-temperature phonon drag in $\text{Ca}_{0.3}\text{Sr}_{0.7}\text{Ti}_{0.3}\text{Mn}_{0.3}\text{O}_{3-6}$ perovskite <i>Zavoisky Physical-Technical Institute</i>
			Artemiy Popov (oral) Electron paramagnetic resonance and magnetic oscillation modes described by semiclassical spin dynamics with combined relaxation term <i>Vereshchagin Institute for High Pressure Physics</i>

	Room 1		Room 2
12:15-13:55	Chemical and Biological Systems Chair: E. Konstantinova		
	Dmitrii Astvatsaturov (oral) EPR study of graphite oxides with different oxidation levels <i>Zavoisky Physical-Technical Institute</i>		
	Ekaterina Kytina (oral) Comparative analysis of paramagnetic centers in nanosized anodic aluminum oxide synthesized in organic and inorganic acids and subjected to additional etching and annealing <i>Lomonosov Moscow State University</i>		
	Denis Saritsky (oral) Analysis and simulation of EPR spectra of iron-doped bioactive glasses using the Czjzek distribution <i>Institute of Chemistry FEB RAS</i>		
	Yahya Fattakhov (oral) MRI investigation of the development of bird embryos <i>Zavoisky Physical-Technical Institute</i>		

	Khalil Gainutdinov (oral) EPR study of nitric monoxide content in the brain of rats after combined brain and spinal cord injury <i>Zavoisky Physical-Technical Institute</i>		
13:55-14:25	Coffee-break		
14:25	Closing ceremony		

1. Advances in magnetic resonance. Poster session

1-Po1	R.I. Batalov, V.F. Valeev, H.A. Novikov, N.V. Kurbatova, K.I. Gerasimov, R.B. Zaripov: Pulsed and steady-state thermal annealing of sapphire single crystal implanted with chromium ions: Optical and EPR studies
1-Po2	A.A. Bayazitov, A.R. Fakhrutdinov, Ya.V. Fattakhov, V.L. Odivanov, V.A. Shagalov Simulation of a specialized dual-frequency sensor for MRI 0.4 T
1-Po31	R.V. Davydov, D.S. Provodin, V.V. Davydov: Features of the search for an analytical solution of Bloch equations with nonlinear coefficients for describing the modulation technique for recording a nuclear magnetic resonance signal
1-Po4	M.L. Falin, V.A. Latypov, S.L. Korableva: EPR spectroscopy of rare earth ions in a CsCaF ₃ crystal
1-Po5	S.V. Komlina, A.N. Atnyukova, S.A. Dzuba: Orientational motions of nitroxide molecules in glassy ethanol and dibutyl phthalate studied by CW and pulsed EPR
1-Po6	A.A. Rakhmonov, R.M. Eremina, I.I. Fazlizhanov, E.M. Moshkina: Magnetic properties of ludwigite Mn _{0.53} Mg _{2.47} BO ₅ in the temperature range 300–570 K
1-Po7	A.A. Sukhanov, V.K. Voronkova, Zhanjun Li, J. Zhao: Exchange and dipolar interactions in some photoexcited systems
1-Po8	V.F. Tarasov: Effect of quantum interference under simultaneous excitation of magnetic dipole and electric quadrupole resonance transitions

2. Modern methods of magnetic resonance. Poster session

2-Po1	I.T. Khairutdinov: Simulation of chirp pulse inversion performance in an inhomogeneous RF field
2-Po2	A.A. Samsonenko, S.E. Tolstikov, S. Wu, Z. Wang, S.L. Veber: High-field EPR spectroscopy for measuring magnetic resonance parameters of heterospin complexes of Cu(II)

3. Low-dimensional systems, nano-systems and molecular magnets. Poster session

3-Po1	D.K. Davlyatshina, I.V. Yanilkin, A.I. Gumarov: Control of temperature dependence of coercive force in multilayer epitaxial films Pd _{96-x} Fe ₄ Co _x
3-Po2	B.F. Farrakhov, Ya.V. Fattakhov: Melting of the surface layer of the implanted GaAs and Si by the halogen incandescent lamps

3-Po3	E.N. Frolova, O.A. Turanova, A.R. Sharipova, E.E. Batueva, L.V. Bazan, R.F. Likerov, R.G. Batulin, M.A. Cherosov, A.A. Sukhanov, A.N. Turanov: Influence of anions on the magnetic properties of mixed-valence heptanuclear iron complexes
3-Po4	R.T. Galeev, R.B. Zaripov: Observation of an unusual double quantum transition in the EPR spectrum
3-Po5	A.M. Garaeva, I.V. Romanova, E.I. Boltenkova, E.M. Alakshin: Study of the magnetic properties of micro and nanosized DyF ₃ powder
3-Po6	S.A. Klimova, A.A. Goldberg, R.V. Davydov, V.V. Davydov: Resonance response of finite two-dimensional ising-like ferromagnets
3-Po7	H. Mohammadi, I.V. Romanova, I.G.S. Acosta, O.V. Nedopekin: Engineering electronic and magnetic behavior in functionalized MXene nanoclusters via first-principles calculations
3-Po8	N.I. Nurgazizov, D.A. Bizyaev, A.A. Bukharaev, A.P. Chuklanov: Conditions of 180° switching of the quasiuniform magnetization in planar Ni particles by thermally induced magnetoelastic effect
3-Po9	Zh.Kh. Pulotov, B.F. Gabbasov, I.V. Yanilkin, A.I. Gumarov, A.G. Kiimov, L.R. Tagirov, R.V. Yusupov: Compositional structure influence on FMR properties of epitaxial Pd _{1-x} Fe _x /Pt thin film bilayers
3-Po10	M.A. Severina, T.Z. Sharifullin, P.E. Kazin, A.V. Vasiliev: Synthesis and magnetic properties of dysprosium-doped lutetium titanates and lanthanum zirconates with pyrochlore structure
3-Po11	T.S. Shaposhnikova, R.F. Mamin: The shape change of Neel's skyrmion as a result of an electric field
3-Po12	Yu.V. Slesareva, M.Yu. Volkov, D.A. Astvatsaturov, N.A. Chumakova, E.L. Vavilova: ¹ H NMR study of acetonitrile fractions and relaxation in graphite oxide
3-Po13	T.A. Soldatov, A.I. Smirnov: Spin 1/2–3/2 crossover in a chain antiferromagnet Cs ₂ CoCl ₄
3-Po14	R. Tagirov, A. Azarevich, A. Samarin, S. Kozyukhin, S. Bezzubov, A. Semeno, V. Glushkov: Low temperature magnetism and g-factor anisotropy in the compound CaCuSi ₄ O ₁₀
3-Po15	N.Kh. Useinov: Anisotropic magnetoresistance in magnetic tunnel junctions
4. Spin-based information processing and optical quantum technologies. Poster session	

4-Po1	I.S. Pichkovskiy, V.E. Zobov: A selective pulse sequence for implementing associative memory on two qutrits via quantum annealing
4-Po2	V.E. Zobov, V.P. Shauro: Control of the states of quadrupole nuclei through hyperfine interaction with electrons
5. Strongly correlated electron systems. Poster session	
5-Po1	D. Arbuzov, A. Kamashev, N. Garifyanov, I. Garifullin: The effect of a superconducting spin valve in a Py/Pb/Py heterostructure with oxidized interfaces
5-Po2	T.P. Gavrilova, A.R. Gafarova, R.B. Zaripov, I.V. Yatsyk, A.I. Zaitsev, A.V. Cherepakhin, E.M. Moshkina: ESR investigation of magnetic inhomogeneities in the pentaborate $GdMnB_5O_{10}$
5-Po3	Yu. Goryunov, A. Nateprov: Spin nematicity in the Eu ternary pnictides: the ESR viewpoint
5-Po4	B.R. Mukhamaturov, T.D. Kremlev, V.A. Tumanov, Yu.N. Proshin: Critical temperature of thin superconducting films within the proximity-effect theory in the dirty limit
5-Po5	M.I. Nasyrova, I.A. Sotnikov, M.A. Cherosov, A.A. Rodionov, R.V. Yusupov, S.G. Lushnikov: Magnetisation and magnetic resonance in relaxor ferroelectrics with double perovskite structure $PbNi_{1/3}Nb_{2/3}O_3$ and $PbCo_{1/3}Nb_{2/3}O_3$
5-Po6	A.E. Os'kin, S.V. Demishev: Processing and analysis of the electron paramagnetic resonance line shape in the noncentrosymmetric magnet $Mn_{1-x}Rh_xSi$
5-Po7	A.A. Validov, D.A. Bizyaev, D.A. Arbuzov, N.N. Garyf'yanov, A.A. Kamashev, I.A. Garifullin: Fabrication of photomasks using combined photo- and scanning probe lithography techniques
6. Chemical and biological systems. Poster session	
6-Po1	M.M. Akhmetov, M.Yu. Volkov, G.G. Gumarov, D.S. Rybin: 2D noesy NMR spectroscopy study of mechanoactivated Ca and Mg gluconates
6-Po2	O. Alkhuder, M.A. Kostin, P.M. Tolstoy: Multinuclear ^1H and ^{31}P NMR characterization of hydrogen-bonded complexes of phosphine oxide
6-Po3	A.A. Elizarova, O.V. Malyshkina, O.V. Shavykin: Differences in the hydrodynamic radius of block and gradient copolymers in dilute solution
6-Po4	M.I. Ibragimova, A.I. Chushnikov, I.V. Yatsyk, D.Kh. Khaibullina, G.G. Gumarov: Features of the EPR spectra of serum ceruloplasmin in patients with undifferentiated connective tissue dysplasia

6-Po5	L.A. Kontorina, E.M. Gibadullina, E.A. Chugunova, B.I. Khairutdinov: NMR spectroscopy of the interaction between 4,6-dinitro-7-chlorobenzofuroxan and an oligonucleotide
6-Po6	I.R. Nigmatullin, E.A. Ermakova, E.M. Gibadullina, E.A. Chugunova, B.I. Khairutdinov: Analysis of the anticancer potential of novel (hetero) aromatic derivatives using NMR spectroscopy and molecular modeling methods
6-Po7	O.V. Shavykin, E.I. Fatullaev, I.M. Neelov, D.M. Markelov: Is local mobility in lysine-based dendrigrafts similar to that in dendrimers or chains?
6-Po8	D.A. Tsukhlova, D.L. Melnikova, E.A. Shchitova, V.D. Skirda: Features of T_2 behavior of water in aqueous sugar solutions
6-Po9	M.Yu. Volkov: 2D NMR study of phthalazole
6-Po10	S.V. Yurtaeva, I.V. Yatsyk, A.A. Rodionov: Observation of noise-like magnetic resonance fine structure in spectra of biological tissues
7. Defects and spin qubits. Poster session	
7-Po1	E.V. Dmitrieva, G.V. Mamin, F.F. Murzakhanov, I.N. Gracheva, M.R. Gafurov, V.A. Soltamov: Electron-nuclear interactions of V_B^- centers and ^{11}B shells in hexagonal boron nitride
7-Po2	Yu.E. Ermakova, E.V. Dmitrieva, D.V. Shurtakova, F.F. Murzakhanov, I.N. Gracheva, M.A. Sadovnikova, G.V. Mamin, M.R. Gafurov: Spin properties and electron-nuclear interactions of axial NV centers in 6H-SiC: spectroscopic and theoretical study
7-Po3	V.I. Kolesnikova, G.S. Shakurov, V.V. Semashko, D.V. Badikov: Comprehensive studies of magnetic and optical spectroscopic properties of PbGa_2S_4 crystals doped by Ho^{3+} AND Na^+ ions
7-Po4	L.V. Nikiforov, D.V. Dmitrieva, D.S. Dmitrieva, V.V. Davydov: Research of oxygen vacancies in two types of $\alpha\text{-SiO}_2$ (G2 fused silica and G3 natural silica) using EPR under γ -radiation
7-Po5	R.B. Zaripov, V.A. Ulanov, R.R. Zainullin: Spin dynamics and local structure in $\text{Pb}_{1-x}\text{Cu}_x\text{S}:\text{Mn}/\text{Gd}$ probed by pulsed EPR
8. Magnetic resonance imaging and applications in medical physics. Poster session	
8-Po1	E.E. Batueva, L.I. Savostina, O.A. Turanova, A.N. Turanov: Mixed-valence heptanuclear iron complex as a potential MRI contrast agent

8-Po2	N.A. Nefediev, N.E. Staroverov, R.V. Davydov: Improving the structural correspondence of MRI studies using a modified TransMorph neural network
8-Po3	V.L. Odivanov, A.R. Fakhrutdinov, Ya.V. Fattakhov, V.A. Shagalov, A.A. Bayazitov: Gradient pulse shaper for NMR or MRI installation
8-Po4	D.V. Pasenko, R.V. Davydov: CTCF as a backbone-agnostic cascade plug-in for deformable 3D brain MRI registration
8-Po5	A.A. Petrova, L.I. Savostina, M.R. Gafurov: Computer simulation of hydroxyapatite doping with vanadium: search for thermodynamically stable configurations
9. Mössbauer spectroscopy and its applications. Poster session	
10. Related phenomena. Poster session	
10-Po-1	T.P. Gavrilova, A.R. Gafarova, D.V. Mamedov, I.V. Yatsyk, O.I. Gyrdasova: Electron spin resonance and magnetic properties of ZnO and Cu-doped ZnO: Effect $\text{As}^{3+}/\text{As}^{5+}$ treatment
10-Po-2	R.F. Likеров, I.V. Yatsyk, R.M. Eremina, R.G. Batulin, M.A. Cherosov: High-entropy perovskite-like oxide $(\text{BaCaSrLaNa})_{0.2}\text{FeO}_3$: Synthesis, EPR and magnetometry measurements
10-Po-3	A.D. Shishkin, V.V. Semashko, V.I. Kolesnikova, G.S. Shakurov: Prospects for the use of LiHoF_4 microparticles in LIR ² thermometry

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ООО "Криогенные приборы" – ведущий российский производитель криостатов и криогенного оборудования.

Проточные гелиевые криостаты



Проточные гелиевые криостаты предназначены для проведения исследований образцов в диапазоне температур от <1.6 до 325 K.

Образец в таком криостате может быть расположен в вакууме либо в динамическом потоке гелия. Существует специальная версия для микроскопии. Она имеет плоскую оптическую головку малой высоты (около 3-4 см) для размещения на предметном столике микроскопа, малое рабочее расстояние от поверхности окна до образца и специальную систему устранения термического дрейфа образца вдоль

осей X и Y. Важным преимуществом проточных криостатов является низкий уровень вибраций. Помимо этого, они имеют наиболее низкую цену среди всех систем, работающих при гелиевых температурах, и компактные размеры, что дает возможность легко перемещать криостат между лабораториями.



Азотные криостаты



Преимуществом азотных криостатов является простота конструкции (по сравнению с гелиевыми), низкая цена, широкие возможности по кастомизации, возможность применения недорогих, в т.ч. отечественных, температурных контроллеров. Такие криостаты просты в работе и не требуют сервисного обслуживания.

Базовая температура составляет 78K, однако в ряде случаев (при откачке паров азота) возможно ее снижение до ~65K.



Существуют модификации заливных криостатов для специальных применений, которые могут работать в любом положении.

В большинстве случаев образец в таких криостатах размещается в вакууме, реже – в парах азота или в жидком азоте. Возможны как оптические, так и неоптические исполнения, в том числе под большие образцы или с узким кончиком для использования в магнитных полях.

Криостат открытого потока



Криостат открытого потока предназначен для охлаждения образцов, находящихся в атмосферном воздухе. Криостатирование образца производится в диапазоне температур 4,5 — 120 K при работе с жидким гелием, и от 80 до 150K при работе с жидким азотом. Возможно исполнение с охладителем с криорефрижератором.

Конструкция криостата позволяет встроить его в рентгеновский дифрактометр, обеспечить равномерное захлаживание образцов

и предоставить круговой доступ к образцу (во всех положениях гониометра) на близкой дистанции.

Между образцом, источником и детектором дифрактометра нет никаких преград, что существенно упрощает процесс исследований.

Заливные гелиевые криостаты

Заливные гелиевые криостаты предназначены для проведения исследований образцов в диапазоне температур от <2 до 325 K и выше. Преимущества: возможность работы при очень низких температурах (до 1.3 K), малый расход жидкого гелия, наименьшие вибрации среди всех стандартных криостатов.

Недостатки: возможность работы только в вертикальном положении и относительно высокая цена.

Образец в заливном гелиевом криостате может быть расположен в вакууме, в парах либо в жидком гелии. Во втором и третьем случае обычно доступна возможность быстрой смены образца без необходимости отогрева криостата. Криостат может быть выполнен как с азотной рубашкой, так и без нее, но первый вариант обеспечивает меньший расход гелия.



Криостаты замкнутого цикла (стандартное исполнение)

Это наиболее простые и бюджетные «сухие» криостаты. Они обеспечивают пользователю возможность термостатирования образца в диапазоне тем-

ператур от 3...20 K до 325 K (опционально — до 500 K). Образец находится в вакууме. Замкнутый цикл позволяет полностью отказаться от жидких хладагентов (азота и гелия), из-за чего криостаты и называют «сухими». Криостаты на криорефрижераторах с циклом Гиффорда-МакМагона, могут работать в любом положении.



Такие криостаты не имеют средств подавления вибраций, они передаются на образец напрямую от криорефрижератора. В случае ГМ криорефрижераторов, вибрации на образце составляют $\sim 20 \dots 800$ мкм, а при использовании пульсационной трубы – $1 \dots 5$ мкм.

Существуют как оптические, так и неоптические исполнения. Оптический доступ в стандартном исполнении к образцу возможен по двум взаимно-перпендикулярным осям. Доступна возможность установки дополнительного окна в торец криостата, либо разработка оконного блока под задачи пользователя. Имеются также специальные версии подобных криостатов для использования в нейтронографии, магнитных измерений; версия с реализацией градиента температуры на держателе образца и др.



«Сухой» криостат с образцом в газе, или криостаты с верхней загрузкой образца («top-loading cryostat»)



Такие криостаты применяются в двух случаях: при частой смене образцов и при температурных исследованиях образцов с низкой теплопроводностью (например, порошков, теплоизоляторов или ячейки с жидкими образцами).

В конструкции такого криостата криогенный рефрижератор термически связан с нижней частью шахты. В шахту устанавливается шток (вставка) с держателем образца и напускается гелиевый газ, который выполняет функцию теплового проводника. Это позволяет эффективно термостатировать образцы с плохой теплопроводностью и/или образцы сложной формы, например, порошки различных материалов. Быстрая смена образцов возможна за счет того, что для не требуется отогревать весь криостат.

Имеется возможность исполнения с низким (< 100 нм) уровнем вибраций, когда шток устанавливается на отдельный суппорт, расположенный, например, на оптическом столе.

Отдельно стоит отметить криостат для Мессбауэровской спектроскопии, где криорефрижератор расположен снизу, и над ним расположена шахта под образец. Это также исполнение со сниженными вибрациями, однако образец здесь монтируется на том же суппорте, что и криорефрижератор.

Для снижения вибраций суппорт специально утяжеляется; при этом он разрабатывается под конкретную модель спектрометра.

Криостат замкнутого цикла с образцом в вакууме с низким уровнем вибраций



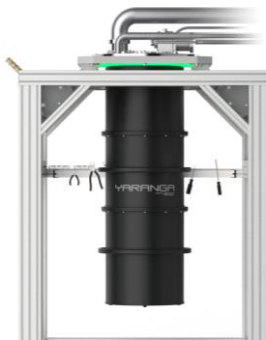
Для снижения вибраций на образце в криостатах на базе криорефрижераторов на цикле Гиффорд-МакМагона разработаны специальные интерфейсы для устранения прямого контакта между самим рефрижератором и держателем образца. Блок образца монтируется на одной базе (например, на оптическом столе), а криорефрижератор – на другой (обычно на напольном суппорте). Типичный уровень вибраций в таких криостатах – менее 100 нм (согласно материалам зарубежных производителей и собственным тестам).

Из недостатков следует выделить достаточно большой размер, необходимость установки двух суппортов, а также снижение мощности охлаждения и повышение базовой температуры из-за наличия теплопередающего интерфейса. Есть специальная версия для оптической микроскопии, когда образец расположен в L-образно вынесенном блоке. Оптическая ось при этом может быть как параллельна, так и перпендикулярна оптическому столу.

Криостаты для работы с температурами ниже 1К

В этом диапазоне температур можно выделить 3 основных типа криостатов:

- криостаты на откачке паров ^4He (до $\sim 0.9\text{K}$) либо ^3He (до $\sim 0.3\text{K}$). Такие системы основаны на принципе конденсации жидкого ^3He либо ^4He с последующей его откачкой турбомолекулярным насосом. Имеют три ступени охлаждения (50K, 4K, 1/0.3 K);
- криостаты растворения ^3He - ^4He работают до температур $< 20\text{ мК}$. Имеют четыре ступени охлаждения (50K, 4K, 1K, $< 50\text{ мК}$);
- криостаты с модулем ядерного размагничивания, которые позволяют работать с температурами ниже 1 мК. Имеют пять ступеней охлаждения (50K, 4K, 1K, 20 мК, NDR).



Основные применения: физика сверхнизких температур, исследования кубитов, построение квантовых компьютеров. Образец находится в вакууме, при этом медная пластина для размещения образцов обычно имеет диаметр от 200 до $> 500\text{ мм}$. В предлагаемых нами системах к этой пластине можно подвести до 200 коаксиальных проводов.

Наша компания готова изготовить нестандартные криостаты практически под любые задачи пользователя. Мы открыты к сотрудничеству с научными группами по созданию новых приборов.

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NUCLEAR MAGNETIC RESONANCE



ZT-N600
600 MHz NMR



ZT-N400
400 MHz NMR



HT-PNMR12
60/90 MHz NMR



Zheng Scientific Instruments

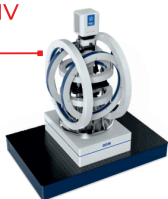
NMR Spectrometer Modernization & Upgrade Compatible with 300-600 MHz Magnet

The solutions involve retaining the magnet while upgrading other modules to the latest designs, aiming to enhance instrument performance, extend service life, improve automation efficiency, and obtain professional services in a more cost-effective manner.



Nitrogen-vacancy (NV) magnetometry

Widefield NV
Microscope



NV Magnetometer
based on AFM



Equipment for synthesis and purification

Flash
chromatographs

Automatic peptide
synthesizers (SPPS)



Microwave synthesizers

Automated sample preparation

Automatic
extractors

Homogenizers

Microwave sample
digestion systems



Solvent evaporators

Analytical columns
for HPLC and GC,
flash columns

General laboratory equipment

Water purification
systems



Gas generators

Consumables and spare parts for analytical instruments

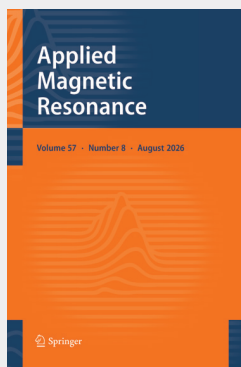
Hollow cathode lamps
deuterium lamps



Columns



Applied Magnetic Resonance



Applied Magnetic Resonance provides an international forum for the application of magnetic resonance methodology in physics, chemistry, biology, medicine, geochemistry, ecology, engineering, and related fields.

The contents include articles with a strong emphasis on new applications, and on new experimental methods.

- Is dedicated to the application of all magnetic resonance methodologies (ESR, NMR, MRI), their derivatives and combinations.
- Emphasizes new applications and new experimental methods
- Publishes regular and review articles, as well as topical issues
- Journal impact Factor 1.3 (2025)
- 5-year Journal impact Factor 1.2 (2025)

Call for papers: Special Issue – MDMR2026

This special issue welcomes papers demonstrating applications of magnetic resonance spectroscopy. Topics covered include, but are not limited to:

- Advances in magnetic resonance
- Modern methods of magnetic resonance
- Strongly correlated electron systems
- Low-dimensional systems, nano-systems and molecular magnets
- Spin-based information processing and optical quantum technologies
- Chemical and biological systems
- Defects and spin qubits
- Magnetic resonance imaging and applications in medical physics

The submission deadline is 30 November 2026.

Please make sure to choose the special issue article tab “MDMR2026”.

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