

Potential scientific supervisors: Chemistry & Materials Science

| № | Surname | Name | University | Scientific interests | Link to portfolio |
|----|-------------|--------|---|--|---|
| 1. | Bakhtiyrova | Yulia | Kazan (Volga region) Federal University | Heteroatom chemistry. Compounds of four-coordinated phosphorus. | https://kpfu.ru/portal/ias_utils.file_download?p_table_id=4&p_file=F1204621750/Bakhtiyarova.Yu.V..portfolio.pdf |
| 2. | Bondarenko | Lyubov | Moscow Aviation Institute | Physical chemistry, materials science | https://files.mai.ru/site/upload/doc/Бондаренко_Л_С_(англ).pdf |
| 3. | Buryukin | Fedor | Siberian Federal University | Enhancement of deep refining technologies, Improvement of oil refining technologies, improvement of motor fuels operating properties fuels, oilfield chemistry, chemical methods of enhanced oil recovery. | https://www.sfu-kras.ru/files/Buryukin_F.A._Struktura_n_auchnogo_profilya_portfolio_PNR_2023_ENG.pdf |
| 4. | Vasilyeva | Marina | Far Eastern Federal University | Environmental chemistry, electrochemical synthesis of film functional materials, plasma electrolytic oxidation, heterogeneous catalysis, photocatalysis, surface chemistry, electrode materials, electrochemical sensors | https://www.dvfu.ru/en/open_doors/vasilyeva/ |
| 5. | Gushchin | Artem | Novosibirsk State University | Coordination and cluster compounds of transition metals | https://www.nsu.ru/upload/medialibrary/2cd/v1un10b7iqyio9s66o1uvlmdd2697zg5/%D0%93%D1%83%D1%89%D0%B8%D0%BD_%D0%B0%D0%BD%D0%B3%D0%BB.pdf |
| 6. | Zairov | Rustem | Kazan (Volga region) Federal University | Chemistry of nanomaterials, coordination compounds of d-metals, physico-chemistry of dispersed systems, luminescence of lanthanides, their complexes and nanoparticles, supramolecular chemistry | https://kpfu.ru/portal/ias_utils.file_download?p_table_id=4&p_file=F_1519351407/Zairov.R.R..portfolio.pdf |

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| 7. | Zelentsov | Sergey | Lobachevsky State University of Nizhni Novgorod (UNN) | Quantum chemistry, photochemistry, plasma chemistry, potential energy surface method, reaction mechanisms in high energy chemistry, photolithography, electron lithography, photochemistry of azides and nitro compounds, mathematical methods in chemistry. | http://eng.unn.ru/images/Open_Doors/Profiles/zelentsov.pdf |
| 8. | Ziyatdinova | Guzel | Kazan (Volga region) Federal University | Electroanalytical chemistry of biologically active compounds in biomedical samples and foodstuff | https://kpfu.ru/portal/ias_utils.file_download?p_table_id=4&p_file=F_1364140068/Ziyatdinova.G.K..portfolio.pdf |
| 9. | Zyuzin | Mikhail | ITMO University | Development of nanomaterials for biomedical applications, drug delivery, light-sensitive nanomaterials, microfluidics | https://aspirantura.itmo.ru/?main=43 |
| 10. | Knyazev | Alexandr | Lobachevsky State University of Nizhni Novgorod (UNN) | Crystal chemistry Chemical thermodynamics of inorganic and organic compounds Radiochemistry | http://eng.unn.ru/images/Open_Doors/Profiles/knyazevAV.pdf |
| 11. | Kostin | Gennadiy | Novosibirsk State University | Material chemistry, coordination chemistry, physical chemistry | https://www.nsu.ru/upload/medialibrary/090/z0y6fh7twliccq15kht8hksxyt9vl62t/Kostin%20%D0%B0%D0%BD%D0%B3%D0%BB.pdf |
| 12. | Krivoshapkin | Pavel | ITMO University | 1. Nanomaterials and interactions in colloids. The head has developed and proposed a semi-empirical physicochemical model that makes it possible to predict the processes of interaction of nanosized particles of metal oxides at the surface boundary of functional materials of various nature (polymer, carbon or ceramic objects). A concept is proposed for the formation of | https://aspirantura.itmo.ru/?main=43 |

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| | | | | <p>nanostructured layers of metal oxides by controlling the chemical nature of the surface, morphology and electrical surface characteristics of both the materials themselves and the particles of metal oxides. The principles of the formation of hybrid systems based on nanosized particles of biopolymers, carbon, and metals / metal oxides have been studied.</p> <p>2. Nanomedicine. Unique complex interdisciplinary data on the development and study of multifunctional nanoplatfoms - radiosensitizers of a new generation - biocompatible ceramic nanoparticles (nanoantennas) based on metal oxides with specified structure, morphology and properties have been obtained.</p> <p>3. Sustainable Chemistry for Energy Technologies. An integrated approach to the treatment and processing of wastewater and gas emissions from pollution, heavy metals. Capture, storage and processing of various molecules, including carbon dioxide. Alternative energy sources.</p> | |
| 13. | Krivoshapkina | Elena | ITMO University | <p>Developed original methods for the synthesis of metal and metal oxide nanoparticles using solution chemistry; investigated the principles of nanoparticle distribution in polymer and inorganic matrices; investigated membrane catalytic reactor protection and the dependence of the catalytic activity on the morphology of the separating layers; investigated the assembly</p> | https://aspirantura.itmo.ru/?main=43 |

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| | | | | <p>of hybrid systems based on polysaccharide, carbon, scleroprotein and metal oxide nanoparticles; and synthesized and manufactured nanomaterials catalytic, imaging, and sensing applications. Created nanomaterials with improved optical and mechanical properties; used the extended DLVO theory to estimate the interaction energy of particles in aqueous and water-hazardous metal oxide systems, taking into account the structural component of surface forces; identified the key approaches to the production of natural biopolymer-based hybrid materials, which is the foundation for the development of new functional organo-inorganic materials which, due to the combination of components with different structures and properties, have synergistic effects and unique properties. The developed inorganic nanoparticle-modified biopolymer-based material solves a wide range of problems</p> | |
| 14. | Kurzina | Irina | National Research Tomsk State University | <ol style="list-style-type: none"> 1. Electrophysical foundations of ion-plasma technologies for modifying the surface properties of polymer materials 2. Physico-chemical bases of synthesis and phase formation of ion-modified biocompatible and bioresorbable hydroxyapatite under microwave exposure. 3. Physical bases of hardening of ultrafine-grained titanium under irradiation with aluminum and nickel ions. 4. Development of new highly efficient | http://tsuod.tilda.ws/kurzinaen |

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| | | | | <p>adsorbents and technologies for their application to increase the volume and quality of APG processing at oil and gas processing enterprises of the Siberian region.</p> <p>5. Scientific bases of new production technologies for obtaining high-performance composite materials and complex-profile products.</p> <p>6. Development of the fundamental foundations for the production of new organic and polymer compounds and materials.</p> <p>7. Search for biomarkers and therapeutic targets in the processes of chronic inflammation associated with the progression of malignant neoplasms, regenerative processes of cardiovascular diseases and implantolog</p> | |
| 15. | Yakimova | Luidmila | Kazan (Volga region) Federal University | calix[4]arenes, pillar[5]arenes, hybrid materials, silica, silsesquioxanes, synthesis, self-assemble, self-organization, molecular recognition, biopolimers | https://kpfu.ru/portal/docs/F256494517/Portfolio.Yakimova.LS.na.anglijskom.yazyke.docx |
| 16. | Mazhukin | Dmitrii | Novosibirsk State University | Development of synthetic approaches, study of physicochemical characteristics and the application of stable nitroxyl radicals in modern branches of the chemistry of materials | https://www.nsu.ru/upload/medialibrary/5c9/x2ljxit8rfagkea29wpignpacrz2g0pt/%D0%9C%D0%B0%D0%B6%D1%83%D0%BA%D0%B8%D0%BD_%D0%B0%D0%BD%D0%B3%D0%BB.pdf |
| 17. | Makarov | Sergey | ITMO University | Perovskite nanophotonics: 1. Perovskite nanolasers and microlasers 2. Effects of nanophotonics in thin-film optoelectronic devices | https://aspirantura.itmo.ru/?main=43 |

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| | | | | 3. Perovskite devices with dual functionality 4. Highly efficient perovskite solar cells | |
| 18. | Muravev | Anton | ITMO University | <p>Organic synthesis of small organic molecules and macrocycles (calixarenes, crown-ethers, melamines, barbituric and cyanuric acids, terpyridines, pyrazoles) using click reactions.</p> <p>Supramolecular interactions between organic compounds and metal ions, as well as biomolecules in solution, gas and solid phases, as well as liquid–liquid and liquid–gas interfaces.</p> <p>Programmable functional characteristics of organic compounds and their supramolecular complexes – luminescence, piezoelectric effect, catalysis of organic reactions, biological activity.</p> | https://aspirantura.itmo.ru/?main=43 |
| 19. | Naumov | Anton | Peter the Great St Petersburg Polytechnic University | Synthesis of composite materials by means of Friction Stir Processing | https://opendoors.spbstu.ru/files/supervisors_portfolio/naumov.pdf |
| 20. | Nizamov | Ilyas | Kazan (Volga region) Federal University | Chemistry of phosphorus dithioacids, phosphorus sulfides, biologically active organophosphorusulfur compounds | https://kpfu.ru/portal/ias_utils.file_download?p_table_id=4&p_file=F_905254186/Nizamov.IS.portfolio.pdf |

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| 21. | Novikov | Alexander | ITMO University | Studying the properties of (bio)active and functional chemical systems at all levels of matter organizations (from the nano- to the macrolevel) through the use of DFT calculation methods, chemoinformatics, correlation analysis, computer modeling and the creation of descriptor systems for describing complex macromolecules | https://aspirantura.itmo.ru/?main=43 |
| 22. | Orlova | Anna | ITMO University | Fundamental research in the field of development of colloidal systems and multilayer coatings based on colloidal quantum-sized semiconductor 0D, 1D and 2D nanocrystals; magnetic nanoparticles; metal oxides; molecular generators of reactive oxygen species (ROS); specific indicator molecules; porous dielectric matrices | https://aspirantura.itmo.ru/?main=43 |
| 23. | Orlova | Tatiana | ITMO University | Self-assembled supramolecular architectures, their topology, evolution, optics, photonics and photophysics: 1. Principles, methods, approaches of forming localized elastic excitations in liquid crystals 2. Spatiotemporal evolution of localized liquid crystal structures 3. Numerical and experimental analysis of the topology and evolution of liquid crystal structures 4. Study of optical and photonic properties of localized liquid crystal structures 5. Development of “smart” photomechanochemical systems based on localized elastic excitations | https://aspirantura.itmo.ru/?main=43 |

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| 24. | Polyakov | Pyotr | Siberian Federal University | Study of the behavior of liquid metal electrodes during the production and refining of metals | https://www.sfu-kras.ru/files/111111Polyakov_P.V._Struktura_nauchnogo_profilya_portfolio_PNR_2023_ENG.pdf |
| 25. | Pavel S. Postnikov | | Tomsk Polytechnic University | <ol style="list-style-type: none"> 1. Functional upcycling of polymer wastes towards design of smart materials 2. Plasmon-assisted transformations of organic compounds 3. Design of smart materials for environmental chemical engineering 4. Targeted design of non-covalent organic frameworks 5. Non-covalent catalysis in organic synthesis 6. Novel hypervalent iodine reagents 7. Surface chemistry in sensor design | https://tpu.ru/upload/medialibrary/139/56uwzhv6b97so2gggw734wl0dd034z/Postnikov-AYA.pdf |
| 26. | Raul Rodriguez | | Tomsk Polytechnic University | The work of Prof. Rodriguez focuses on nanomaterials. The study of laser treatment processes on nanomaterials and their composites are the basis for the fabrication of graphene-based composites for a wide range of applications from biomedicine to energy. Plasmonic nanomaterials have a special benefit of working as nano-antennas focusing light at the nanoscale and enhancing optical spectroscopy signals. It is used for nanospectroscopy applications and nanoelectronics | https://tpu.ru/upload/medialibrary/bf1/nnbpu2cz3kmtf4pvnhy30xggeukk1tz/Rodriges-AYA.pdf |
| 27. | Rodin | Alexey | University of Science and Technology MISIS | Diffusion in multicomponent and Multiphase systems. Nucleation of the phase and phase growth | https://en.misis.ru/university/events/olimpiad/2023-09/4849/ |

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| 28. | Sergey V. Romanenko | | Tomsk Polytechnic University | analytical chemistry, analysis of environmental objects, energy efficiency | https://tpu.ru/upload/medialibrary/b58/yka18s2n1v8en4v1m7d928odji7u9175/Romanenko-AYA_.pdf |
| 29. | Romanov | Aleksei | ITMO University | <ol style="list-style-type: none"> 1. Micro- and nanomechanics of disclinations in solids 2. Mesoscopic models of plastic deformation and fracture 3. Physical and mechanical properties of amorphous, nanostructured and nanocomposite materials 4. Micro- and nanomechanics of dislocation defects in thin film materials of electronics and optoelectronics 5. Theoretical foundations of modern optoelectronic devices | https://aspirantura.itmo.ru/?main=43 |
| 30. | Savchenkov | Anton | Samara University | <p>Synthesis, structure elucidation and relationship among composition/structure/properties of coordination compounds.</p> <p>Implementation of stereoatomic model and Voronoi–Dirichlet tessellation for analysis of crystal structures, including noncovalent interactions, polymorphism, actinide contraction and more.</p> | https://ssau.ru/files/priem_doc/postgraduate/savchenkov_en.pdf |
| 31. | Sadykov | Vladislav | Novosibirsk State University | Advanced technologies of nanophase and nanocomposites materials synthesis; heterogeneous catalysis for energy; solid state ionics; oxygen and hydrogen separation membranes; solid oxide fuel cells | https://www.nsu.ru/upload/medialibrary/951/iirb66g4z9sig4aswro8qd94rwc4tr1b/%D0%A1%D0%B0%D0%B4%D1%8B%D0%BA%D0%BE%D0%B2_%D0%B0%D0%BD%D0%B3%D0%BB_2023.pdf |

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| 32. | Skorb | Ekaterina | ITMO University | <p>Infochemistry and self-organization for chemical systems.</p> <p>Development of interdisciplinary approaches of chemistry with IT with study and modeling of chemical systems at interfaces for programmable, smart materials for medicine, diagnostics, energy, etc.</p> | https://aspirantura.itmo.ru/?main=43 |
| 33. | Smirnov | Evgeny | ITMO University | <p>Nanotechnology, material science, nanoparticles: synthesis and properties of colloidal particles, preparation of novel materials.</p> <p>Physical chemistry, surface chemistry: self-assembly at soft interfaces (liquid-liquid, liquid-air, etc.).</p> <p>Electrochemistry: investigation of properties of nanoparticles and their assemblies, in particular, for photocatalytic and electrocatalytic applications.</p> <p>Analytical chemistry: application of nanoparticles and their assemblies for surface enhanced methods, for example, SERS, as well as in ELISA-based methods.</p> | https://aspirantura.itmo.ru/?main=43 |
| 34. | Sokolovskaya | Elina | University of Science and Technology MISIS | <p>Quality management of structural materials; big data (data minig) of production control; computerized control of structures and fractures</p> | https://en.misis.ru/university/events/olimpiad/2023-09/4849/ |

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| 35. | Elena V. Stepanova | | Tomsk Polytechnic University | Carbohydrate chemistry. Total synthesis. Protective groups in carbohydrates | https://tpu.ru/upload/medialibrary/01d/vyvrcc6s0m0dk2j52h2nv9lk1hykq5nf/Stepanova-AYA.pdf |
| 36. | Roman Surmenev | | Tomsk Polytechnic University | Ferroelectric, magnetoelectric, composites, implants, tissue engineering, surface modification, piezoelectric response, piezoresponse force microscopy, scaffolds, piezoelectric materials, magnetic field, ultrasound, wireless power transfer, flexible electronics | https://tpu.ru/upload/medialibrary/bc6/75gmze54a16mq35m21czwrqoxq0jl9yc/Surmenev-AYA.pdf |
| 37. | Ulasevich | Svetlana | ITMO University | The main research interests concern biomimetic materials and the development of bioactive materials based on functional coatings based on titanium dioxide and polymer systems, as well as the study of their principles of functioning and biological response. Functional coatings and stimuli-responsive dynamic systems have been developed to create microdosing systems for the controlled release of drugs, active chemicals, as well as to regulate and control the growth of osteoblast cells. The sonochemical fabrication of functional materials and coatings. | https://aspirantura.itmo.ru/?main=43 |
| 38. | Uspenskaya | Mayya | ITMO University | Chemistry of polymers: 1. Polymerization processes 2. Composition-structure-property relationships 3. Development of methods for obtaining polymer composites with specified performance characteristics | https://aspirantura.itmo.ru/?main=43 |

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| 39. | Ushakova | Elena | ITMO University | <p>Synthesis and functionalization of carbon nanoparticles by solvothermal and microwave methods</p> <p>Hybrid materials based on carbon nanoparticles and metal, semiconductor and magnetic nanoparticles</p> <p>Carbon nanoparticles emitting in the red and near infrared region of the spectrum</p> <p>Chiral carbon nanoparticles for theranostics</p> <p>Sensors based on carbon nanoparticles</p> | https://aspirantura.itmo.ru/?main=43 |
| 40. | Fedorov | Aleksey | Lobachevsky State University of Nizhni Novgorod (UNN) | <p>Supervisor's research interests</p> <p>Organic synthesis, chemistry of natural compounds, homogeneous catalysis, medicinal chemistry</p> | http://eng.unn.ru/images/Open_Doors/Profiles/fedorovAU.pdf |
| 41. | Fedoseev | Gleb | Ural Federal University named after the first President of Russia B.N. Yeltsin | <p>Evolutionary mechanisms of inter- and circumstellar matter in various environments;</p> <p>Physical chemistry and/or Interdisciplinary Chemistry</p> | https://urfu.ru/en/research/postgraduate-programs-in-english/admission-options/open-doors-olympiad/research-supervisors/gleb-s-fedoseev/fedoseev-gleb-sergeevich/ |
| 42. | Shityakov | Sergey | ITMO University | <p>Neuroscience, precision medicine, bioinformatics, biomedical engineering, and rational drug design at the blood-brain barrier using modern computer modelling methods of chemical interactions</p> | https://aspirantura.itmo.ru/?main=43 |