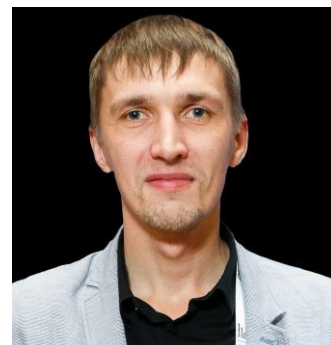


## MIKHAIL N. KHRIZANFOROV

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### GENERAL SUMMARY

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During work at the Institute, Mikhail Khrizanforov developed original composite systems that have no analogues in the world, which are used in various fields of world science and industry - as a result, a new type of supercapacitors was created; sensor systems operating on the principle of donor-acceptor pairs (detectors of explosives); various fuel cells and carbon dioxide reduction catalysts. All developments are based on a composite system developed by Mikhail based on phosphonium ionic liquids. He is an expert of the scientific and technological councils of the Russian Science Foundation and a member of the international electrochemical community ISE. More than 14 years of laboratory and research experience in the field of electrochemistry, nanotechnology, physical chemistry, electrosynthesis, electroanalysis, electrocatalytic phenomena and organoelement chemistry. During this time, more than 100 publications (Scopus) have been published. h-index = 22 (Scopus). The number of citations is more than 1500

\* **Scientific Interests:** electrosynthesis, energy storage, batteries, solid state electrochemistry, electrochemically induced reactions, catalysis, problems of electrolysis, electrochemical phenomena, electrodes, redox processes, HOMO/LUMO/, electroanalytical methods, electron transfer, intermediates, metal complex catalysis, coupling reactions, functionalization, ecological problems, organoelemental compounds, etc.

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**SPIN** 8489-9938,  
**eLIBRARY AuthorID** 863973

### PROFESSIONAL EXPERIENCE

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#### LEADING RESEARCH FELLOW

*A.M. Butlerov Chemistry Institute of the Kazan Federal University,*  
Kazan, Russia

2022- present

#### SENIOR RESEARCH FELLOW

*Arbuzov Institute of Organic and Physical Chemistry, FRC Kazan*  
*Scientific Center, Russian Academy of Sciences, Kazan, Russia*

2019- present

#### VISITING RESEARCH ASSOCIATE

Lehigh University, Bethlehem, PA, USA

2019- 2019

#### RESEARCH OFFICER

Russian Academy of Sciences, *Arbuzov Institute of Organic and*  
*Physical Chemistry Kazan, Russia*

2015- 2019

#### JUNIOR RESEARCH OFFICER

*Russian Academy of Sciences, Arbuzov Institute of Organic and*  
*Physical Chemistry*  
Kazan, Russia

2010-2015

## EDUCATION

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### PhD in Chemistry

Kazan State University, Kazan, Russia

November 2013

Thesis titled: "Electrocatalytic fluoroalkylation of aromatic halides by transition metal complexes (Ni, Co, Cu, and Pd)"

### M.Sc. IN ORGANIC CHEMYSTRY

Kazan State University, Kazan, Russia

June 2010

Thesis titled: "Electrocatalytic fluoroalkylation by transition metal complexes in low oxidation state"

## EXPERTISE

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- Electrochemistry
- Solid State Electrochemistry
- Physical Chemistry
- Organic Chemistry, Organoelemental Chemistry
- Electrosynthesis
- Electroanalysis (Voltammetry)
- Electrocatalytic Phenomena

## AWARDS, HONOURS, FELLOWSHIPS

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- 1) Since 2024, Expert of the Scientific and Technological Council of the Russian Science Foundation (RSF Expert since 2018 - more than 260 expert reviews).
- 2) Diploma for the Best Presentation at the 2nd China-Russia Symposium on Chemistry and Materials (May 29 - June 1, 2024).
- 3) Diploma for the Best Oral Presentation (1st place) at the Academic Forum "Continent of Science" (November 1-4, 2023).
- 4) Diploma for the Best Oral Presentation at WSOC2023.
- 5) Order dated 29.10.2020 No. 142-p/osp/z with entry in the employment record - Certificate of Honor for contribution to the development of the Institute on the occasion of the 75th anniversary of the A.E. Arbuzov Institute of Organic and Physical Chemistry.
- 6) Laureate of the "Best Young Scientist of FRC 2020" award.
- 7) Member of the International Society of Electrochemistry (since 2019).
- 8) Winner of the Scholarship of the President of the Russian Federation (2018-2020)
- 9) Best young scientist in the field of natural sciences of Republic Tatarstan (2017)
- 10) Young Arbuzovs Prize in the field of fundamental and applied chemistry of Kazan (2015)
- 11) Winner of the III All-Russian Competition of Innovation in the field of green chemistry (2014)

## INTERNATIONAL COOPERATIONS

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**Professor David Vicic** (Chemistry Department of Lehigh University, Bethlehem, PA, USA) E-mail: [vicic@lehigh.edu](mailto:vicic@lehigh.edu)

**Professor Martin Knupfer** (Leibniz institute for solid state and materials research, Department Electronic and Optical Properties at IFW Dresden, Germany) E-mail: [M.Knupfer@ifw-dresden.de](mailto:M.Knupfer@ifw-dresden.de)

## LIST OF PUBLICATIONS SINCE 2019

[1] {Q1} Khrizanforov, M., Nailieva, F.F., Ivshin, K., Zagidullin, A., Samorodnova, A.P., Shekurov, R.P., Milyukova, P., Laskin, A., Novikov, A.S. and Vasili, M., 2024. Ugi's amine based coordination polymers as a synergistic catalysts for electrocatalytic reduction of carbon dioxide. *Dalton Trans.* **2024**, DOI: 10.1039/D4DT01181C

[2] {Q1} M.N. Khrizanforov, A.A. Zagidullin, R.P. Shekurov, F.F. Akhmatkhanova, I.A. Bezkishko, V.V. Ermolaev, V.A. Miluykov, *Inorganic and Organometallic Polymers as Energy Storage Materials and Enhancing Their Efficiency*, *Comm. Inorg. Chem.*, **2024**, 44(2), 98-142, DOI: 10.1080/02603594.2023.2220295

- [3] {Q1} M. Khrizanforov, B. Akhmadeev, P. Milyukova, A. Mustafina, A. Zinnatullin, A. Khannanov, R. Nazmutdinov, K. Brylev, Q. Shao, R. Zairov, Can Re cluster complexes be an efficient catalyst for hydrogen evolution reaction? Insights from experiments and computations, *Dalton Trans.*, **2024**, 53(19), 8417-8428, DOI: 10.1039/D4DT00144C
- [4] {Q1} Khrizanforova, V.V., Fayzullin, R.R., Kartashov, S.V., Morozov, V.I., Khrizanforov, M.N., Gerasimova, T.P. and Budnikova, Y.H., Carbon Dioxide Electroreduction and Formic Acid Oxidation by Formal Nickel (I) Complexes of Di-isopropylphenyl Bis-iminoacenaphthene. *Chem. Eur. J.*, **2024**, 30(24), p.e202400168.
- [5] {Q1} Gavrilova, T., Deeva, Y., Uporova, A., Chupakhina, T., Yatsyk, I., Rogov, A., Cherosov, M., Batulin, R., Khrizanforov, M. and Khantimerov, S., Li3V2 (PO4) 3 Cathode Material: Synthesis Method, High Lithium Diffusion Coefficient and Magnetic Inhomogeneity. *Int. J. Mol. Sci.*, **2024**, 25(5), p.2884.
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- [7] {Q1} Zagidullin, A. and Khrizanforov, M., Recent Advances in Novel Compositions for Electrochemical Applications. *Int. J. Mol. Sci.*, **2023**, 24(20), p.15388.
- [8] {Q1} Shekurov, R.P., Khrizanforov, M.N., Bezkishko, I.A., Ivshin, K.A., Zagidullin, A.A., Lazareva, A.A., Kataeva, O.N. and Miluykov, V.A., Influence of the Substituent's Size in the Phosphinate Group on the Conformational Possibilities of Ferrocenylobisphosphinic Acids in the Design of Coordination Polymers and Metal–Organic Frameworks. *Int. J. Mol. Sci.*, **2023**, 24(18), p.14087.
- [9] {Q1} Gibadullina, E., Neganova, M., Aleksandrova, Y., Nguyen, H.B.T., Voloshina, A., Khrizanforov, M., Nguyen, T.T., Vinyukova, E., Volcho, K., Tsyppyshev, D. et al., 2023. Hybrids of Sterically Hindered Phenols and Diaryl Ureas: Synthesis, Switch from Antioxidant Activity to ROS Generation and Induction of Apoptosis. *Int. J. Mol. Sci.*, **2023**, 24(16), p.12637.
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- [11] {Q1} Khrizanforov, M., Editorial of Special Issue “Synthesis and Molecular Applications of Metal–Organic Frameworks (MOFs)”. *Int. J. Mol. Sci.*, **2023**, 24(9), p.7857.
- [12] {Q1} Zagidullin, A.A., Lakomkina, A.R., Khrizanforov, M.N., Fayzullin, R.R., Kholin, K.V., Gerasimova, T.P., Shekurov, R.P., Bezkishko, I.A. and Miluykov, V.A., Synthesis, Structure, and Electrochemical Properties of 2, 3, 4, 5-Tetraphenyl-1-Monophosphaferrocene Derivatives. *Molecules*, **2023**, 28(6), p.2481.
- [13] {Q1} Ermolaev, V.V., Kadyrgulova, L.R., Khrizanforov, M.N., Gerasimova, T.P., Baembitova, G.R., Lazareva, A.A. and Miluykov, V.A., 2022. Conductive mediators in oxidation based on ferrocene functionalized phosphonium ionic liquids. *Int. J. Mol. Sci.*, **2022**, 23(24), p.15534.
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- [29] {Q1} Budnikova, Y., Bochkova, O., Khrizanforov, M., Nizameev, I., Kholin, K., Gryaznova, T., Laskin, A., Dudkina, Y., Strelakova, S., Fedorenko, S. et al., Selective C (sp<sup>2</sup>)-H Amination Catalyzed by High-Valent Cobalt (III)/(IV)-bpy Complex Immobilized on Silica Nanoparticles. *ChemCatChem*, **2019**, 11(22), pp.5615-5624.

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- [32] {Q1} Khrizanforov, M., Shekurov, R., Miluykov, V., Gilmanova, L., Kataeva, O., Yamaleeva, Z., Gerasimova, T., Ermolaev, V., Gubaidullin, A., Laskin, A. and Budnikova, Y., Excellent supercapacitor and sensor performance of robust cobalt phosphinate ferrocenyl organic framework materials achieved by intrinsic redox and structure properties. *Dalton Trans.* **2019**, 48(45), pp.16986-16992.
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- [37] {Q2} Faizullin, B.A., Spiridonova, Y.S., Kholin, K.V., Khrizanforov, M.N., Litvinov, I.A., Voloshina, A.D., Parfenov, A.A., Musina, E.I., Strelnik, I.D., Karasik, A.A. and Mustafina, A.R., Structure-dependent aggregation and ROS-generation in aqueous media of new cationic copper (I) complexes based on 1, 5, 3, 7-diazadiphosphacyclooctanes. *Inorg. Chim. Acta*, **2024**, p.122382.
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functionalization of white phosphorus. *J. Organomet. Chem.*, **2021**, 956, p.122122. (2021 - Q2)

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