

Konstantin Bukhryakov, Ph.D.

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Professional Experience

Florida International University (FIU), Miami, USA **2018 – present**

Assistant Professor
Transition metal complex catalysis and organocatalysis. Organic, organometallic, and polymer chemistry.

Massachusetts Institute of Technology (MIT), Cambridge, USA **2015 – 2018**

Postdoctoral Associate with Prof. Richard R. Schrock (Nobel Prize winner 2005)
Synthesis and applications of molybdenum and tungsten based catalysts for olefin metathesis.

King Abdullah University of Science and Technology (KAUST), Thuwal, Saudi Arabia **2012 – 2015**

Postdoctoral Research Fellow with Prof. Valentin Rodionov.
Synthesis and applications of amphiphilic molecules in materials science and catalysis.

Chemical Diversity Research Institute (CDI), Moscow, Russia **2006 – 2012**

Senior Research Scientist
Contract R&D, synthesis of new compounds for pharma clients (including Merck, Eli Lilly, Novartis, Abbott), hit to lead development, lead optimization, target-based library design and parallel synthesis.

Education

Lomonosov Moscow State University (MSU), Moscow, Russia **2008 – 2012**

Ph.D. in organic chemistry under the guidance of Prof. Alexander Kurkin.
Thesis: "Synthesis of enantiomerically pure imidazopyridine and pyridopyrazine derivatives with a chiral substituent at the nitrogen."

Tyumen State University, Tyumen, Russia **2001 – 2006**

B.S. in organic chemistry under the guidance of Prof. Mikhail Belyatsky
Thesis: "Intramolecular cyclization in the Meerwein and Wittig reactions"

Funded Research

1. ACS PRF# 61343-DNI3: Iron-based catalysts for olefin metathesis, \$110,000. PI: **K. V. Bukhryakov**, 09/01/2020-08/31/2022.

Publications

FIU:

28. D. S. Belov, G. Tejada, C. Tsay, and **K. V. Bukhryakov**,* Synthesis and Evaluation of Vanadium Arylimido Chloride Complexes for Olefin Metathesis, *Chem. Eur. J.*, **2021**, *27*, 4578-4582.
27. D. S. Belov, L. Mathivathanan, M. J. Beazley, W. B. Martin, and **K. V. Bukhryakov**,* Stereospecific Ring-Opening Metathesis Polymerization of Norbornene Catalyzed by Iron Complexes, *Angew. Chem., Int. Ed.*, **2021**, *60*, 2934-2938. Highlighted in [ChemistryViews](#).
26. S. Chuprun, C. M. Acosta, L. Mathivathanan, and **K. V. Bukhryakov**,* Molybdenum Benzyldiyne Complexes for Olefin Metathesis Reactions, *Organometallics*, **2020**, *39*, 3453-3457.

Postdoctoral research (MIT):

25. F. Zhai, **K. V. Bukhryakov**, R. R. Schrock, A. Hoveyda, C. Tsay, and P. Muller, Syntheses of Molybdenum Oxo Benzylidene Complexes, *J. Am. Chem. Soc.*, **2018**, *140*, 13609-13613.
24. **K. V. Bukhryakov**, R. R. Schrock, A. Hoveyda, C. Tsay, and P. Muller, Syntheses of Molybdenum Oxo Alkylidene Complexes Through Addition of Water to an Alkylidyne Complex, *J. Am. Chem. Soc.*, **2018**, *140*, 2797-2800.
23. **K. V. Bukhryakov**, S. VenkatRamani, C. Tsay, A. Hoveyda, and R. R. Schrock, Syntheses of Molybdenum Adamantylimido and *t*-Butylimido Alkylidene Chloride Complexes Using HCl and Diphenylmethylphosphine, *Organometallics*, **2017**, *36*, 4208-4214.
22. P. E. Sues, **K. V. Bukhryakov**, and R. R. Schrock, Evaluation of Several Molybdenum and Ruthenium Catalysts for the Matathesis Homocoupling of 3-Methyl-1-Butene, *Helv. Chim. Acta*, **2017**, *100*, e1700181.
21. **K. V. Bukhryakov**, R. R. Schrock, A. Hoveyda, P. Muller, and J. Becker, Synthesis of 2,6-Hexatertiarybutylterphenyl Derivatives, 2,6-(2,4,6-*t*-Bu₃C₆H₂)₂C₆H₃X, where X = I, Li, OH, SH, N₃, or NH₂, *Org. Lett.*, **2017**, *19*, 2607-2609.
20. J. K. Lam, C. Zhu, **K. V. Bukhryakov**, P. Muller, A. Hoveyda, and R. R. Schrock, Synthesis and Evaluation of Molybdenum and Tungsten Monoaryloxo Halide Alkylidene Complexes for Z-Selective Cross-Metathesis of Cyclooctene and Z-1,2-Dichloroethylene, *J. Am. Chem. Soc.*, **2016**, *138*, 15774-15783.
19. P. E. Sues, J. M. John, **K. V. Bukhryakov**, R. R. Schrock, and P. Muller, Molybdenum and Tungsten Alkylidene Complexes That Contain a 2-Pyridyl-substituted Phenoxide Ligand, *Organometallics*, **2016**, *35*, 3587-3593.

Postdoctoral research (KAUST):

18. T. Chen, B. Chen, **K. V. Bukhryakov**, and V. O. Rodionov, Thiols Make for Better Catalyst: Au Nanoparticles Supported on Functional SBA-15 for Catalysis of Ullmann-type Homocouplings, *Chem. Commun.*, **2017**, *53*, 11638-11641.
17. K. B. Vu, T. Chen, S. Almahdali, **K. V. Bukhryakov**, and V. O. Rodionov, Hollow Nanospheres with Fluorous Interiors for Transport of Molecular Oxygen in Water, *ChemistrySelect*, **2016**, *1*, 3306-3309.
16. **K. V. Bukhryakov**, V. G. Desyatkin, and V. O. Rodionov, Cooperative Organocatalysis of Mukaiyama-Type Aldol Reactions by Thioureas and Nitro Compounds, *Chem. Commun.*, **2016**, *52*, 7576-7579.
15. C. Mugemana, **K. V. Bukhryakov**, O. Bertrand, K. B. Vu, J.-F. Gohy, N. Hadjichristidis, V. O. Rodionov, Ring opening metathesis polymerization of cyclopentene using a ruthenium catalyst confined by a branched polymer architecture, *Polym. Chem.*, **2016**, *7*, 2923-2928.
14. **K. V. Bukhryakov**, C. Mugemana, K. B. Vu, V. O. Rodionov, Palladium-N-Heterocyclic Carbene Pre-Catalyst Site-Isolated in the Core of a Star Polymer, *Org. Lett.*, **2015**, *17*, 4826-4829 (selected by the Editorial Board of *Synfacts* for its important insights, *Synfacts*, **2016**, *12*, 99).
13. K. B. Vu, **K. V. Bukhryakov**, D. H. Anjum, V. O. Rodionov, Surface-Bound Ligands Modulate Chemoselectivity and Activity of a Bimetallic Nanoparticle Catalyst, *ACS Catal.*, **2015**, *5*, 2529-2533 (K. B. Vu and **K. V. Bukhryakov** contributed equally).
12. **K. V. Bukhryakov**, S. Almahdali, and V. O. Rodionov, Amplification of Chirality through Self-Replication of Micellar Aggregates in Water, *Langmuir*, **2015**, *31*, 2931-2935.
11. B. Chen, **K. V. Bukhryakov**, R. Sougrat, and V. Rodionov, An Enzyme-Inspired Functional Surfactant for Aerobic Oxidation of Activated Alcohols to Aldehydes in Water, *ACS Catal.*, **2015**, *5*, 1313-1317.
10. **K. V. Bukhryakov**, V. G. Desyatkin, J. P. O'Shea, S. R. Almahdali, V. Solovyeva, and V. Rodionov, Cooperative Catalysis With Block Copolymer Micelles: A Combinatorial Approach, *ACS Comb. Sci.*, **2015**, *17*, 76-80 (selected as **ACS Editors' Choice** article, Jan. 13, 2015 and **highlighted in C&EN**, Jan. 19, 2015).
9. C. Mugemana, B. Chen, **K. V. Bukhryakov**, and V. Rodionov, Star Block-Copolymers: Enzyme-Inspired Catalysts for Oxidation of Alcohols in Water, *Chem. Commun.*, **2014**, *50*, 7862-7865.

Ph.D. research (MSU and CDI):

8. **K. V. Bukhryakov**, A. V. Kurkin, M. A. Yurovskaya, Synthesis of Imidazo[4,5-*b*]pyridines with a Chiral Substituent at the Nitrogen Atom and their Conversion to Piperazine Derivatives, *Chem. Heterocycl. Compd. (N.Y.)*, **2012**, *48*, 773-784.
7. **K. V. Bukhryakov**, A. V. Kurkin, and M. A. Yurovskaya, Synthetic Approaches to Imidazo[4,5-*b*]pyridine Derivatives (review), *Chem. Heterocycl. Compd. (N.Y.)*, **2011**, *47*, 533-557.
6. A. V. Kurkin, **K. V. Bukhryakov**, M. A. Yurovskaya, Synthesis of 1,2,3,4-tetrahydro[2,3-*b*]pyrazindiones with a Chiral Substituent at the Nitrogen, *Chem. Heterocycl. Compd. (N.Y.)*, **2009**, *45*, 188-193.
5. I. Konstantinov, **K. Bukhryakov**, Y. Gezentsvey, and M. Krasavin, Practical Method for Parallel Synthesis of Diversely Substituted 1-Phenylpiperazines, *Lett. Org. Chem.*, **2011**, *8*, 628-630.
4. C. Hulme, **K. Bukhryakov** et al., Multi-Component Reactions in Drug Discovery, *Adv. Exp. Med. Bio*, **2011**, *699*, 88-89.

3. M. Krasavin, R. Karapetian, I. Konstantinov, Y. Gezentsvey, **K. Bukhryakov**, E. Godovykh, O. Soldatkina, Y. Lavrovsky, A.V. Sosnov, A.A. Gakh, Discovery and Potency Optimization of 2-Amino-5-arylmethyl-1,3-thiazole Derivatives as Potential Therapeutic Agents for Prostate Cancer, *Arch. Pharm.*, **2009**, 342, 420-427.
2. M. Krasavin, S. Shkavrov, V. Parchinsky, and **K. Bukhryakov**, Imidazo[1,2-*a*]quinoxalines Accessed via Two Sequential Isocyanide-Based Multicomponent Reactions, *J. Org. Chem.*, **2009**, 74, 2627-2629.
1. M. Krasavin, S. Tsirolnikov, M. Nikulnikov, Y. Sandulenko, and **K. Bukhryakov**, *tert*-Butyl Isocyanide Revisited as a Convertible Reagent in the Groebke–Blackburn Reaction, *Tetrahedron Lett.*, **2008**, 49, 7318–7321.

Patents

1. R. R. Schrock, **K. V. Bukhryakov**, A. Hoveyda, Molybdenum Oxo Alkylidene Compounds, Methods of Making the Same and Use Thereof in Metathesis Reactions, [US Patent App. 16/966,369](#).

Professional Development

ACS New Faculty Workshop

2019

June 28-30, 2019. Pasadena, CA

The workshop primarily focuses on developing and implementing evidence-based teaching practices in the classroom. Additional topics discussed include integrating teaching and research, student mentoring, effective time management, laboratory safety, and grantsmanship/funding.

NSF Early Career workshop

2019

May 19-21, 2019. Alexandria, VA

The workshop gave participant feedback on research ideas and draft proposals, helped plan educational and outreach activities. Also, it enabled the participant to network with peers, interact with successful NSF awardees, and talk with many NSF CHE staff members and program managers from other federal agencies (DOE and NIH).

MIT Educational Technology Teaching Certificate Program, MIT

2017

Teaching course designed to learn how to use technology to enhance both student learning experience and assessment. This course is level two of the MIT Kaufman Teaching Certificate Program.

MIT Kaufman Teaching Certificate Program, MIT

2016

Teaching course designed to educate and provide future career support for individuals who are passionate about teaching and mentoring.