

# Curriculum Vitae

## Yaroslav S. Kochergin

Date of burth: 12 April 1990

### **Contacts:**

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Reside in: Prague, Czech Republic

Citizenship: Russian Federation



### **Education**

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October 2015 – present time      **Charles University, Faculty of Science, Department of Organic Chemistry, Prague, Czech Republic**

Doctoral study on the topic “Design of porous (C, N, S)-based donor-acceptor materials”. Expected date of graduation – January 2019.

September 2007 – August 2012      **D. I. Mendeleev University of Chemical Technology of Russia, Department of Oil and gas chemistry and polymeric materials, Moscow, Russia**

**Specialisation - Organic chemistry, degree – MSc, GPA – 4.5 of 5.** Diploma work (Thesis): “Synthesis and modification of 2,3-diarylcyclopent-2-en-1-ones”, performed under supervision of Dr. Vladimir Shirinyan at N. D. Zelinsky Institute of Organic Chemistry, RAS, laboratory of heterocyclic compounds, October 2011 - June 2012, Moscow, Russia.

## Work experience

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October 2015 —  
present time

**Charles University, Faculty of Science, Department of Organic Chemistry (till March 2018), Institute of Organic Chemistry and Biochemistry CAS (till present time), Prague, Czech Republic.**

### **Postgraduate researcher**

Job duties: Work in the synthetic lab of Functional Nanomaterials group. Design and synthesis of porous donor-acceptor sulphur and nitrogen-containing  $\pi$ -conjugated polymers in bulk using heterogeneous catalyst and on surface to produce solid materials in the form of powders or thin films. Full structural and morphological characterisation of obtained products with solid-state  $^{13}\text{C}$  CP-MAS NMR, FTIR, and UV-Vis spectroscopy, TGA and PXRD analyses, imaging using TEM and SEM microscopy, elemental composition determination using combustion elemental analysis, ICP-OES, EDX and XPS spectroscopy. Characterisation of electronic and optical properties of obtained materials (conductivity, bandgap, band positions, photoluminescence). Testing developed polymer systems as semiconducting photocatalysts in visible-light-induced water splitting and as chemochromic acid/base sensors. Day-to-day supervision of bachelor and master students, taking care of the entire laboratory – ordering chemicals, solvents, consumables, maintaining lab equipment and analytical instruments.

June 2014 —  
December 2014

**Baker Hughes, Aksay, Kazakhstan**

### **Field engineer I – Coiled Tubing and Stimulation services**

Job duties: Work as a Field Engineer in Coiled Tubing department. First year of LEAD Engineering Development program, working in the oilfield, design of performance programs, preparation of chemicals and equipment to the upcoming job. In October 2014 successfully passed Engineering Development Program course in Baker Hughes Eastern Hemisphere Educational Centre in Dubai, UAE.

March 2013 —  
June 2014

**Weatherford, Kogalym, Russia**

### **Laboratory engineer of hydraulic fracturing department**

Job duties: working in the field laboratory for quality control of fracturing fluid, testing of industrial water, hydraulic fracturing fluid sampling, selection of fracturing fluid systems with optimum rheology, processing laboratory reports, working with specialized documentation.

October 2012 — **Kazan National Research Technological University, Kazan, Russia**  
February 2013

**Postgraduate researcher**

Job duties: Working in a chemical laboratory of macrocyclic compounds under supervision of Prof. Elena Gavrilova. Synthesis of calix[4]resorcinarenes and subsequent functionalization with various amino acids to produce water-soluble biologically active organic complexes. Characterization of obtained products with  $^1\text{H}$ ,  $^{13}\text{C}$  and  $^{31}\text{P}$  NMR, FTIR and UV-Vis spectroscopy. Day-to-day supervising of master students, teaching organic chemistry seminars and supervising laboratory practices of bachelor students.

October 2011 — **N. D. Zelinsky Institute of Organic Chemistry, RAS, Moscow, Russia**  
June 2012

**Laboratory assistant**

Job duties: Work in the laboratory of heterocyclic compounds under supervision of Dr. Vladimir Shirinyan and PhD student Dmitry Lonshakov. Synthesis and derivatisation of photochromic diarylcyclopentenones for optical memory switches. Gaining basic skills of work in chemical laboratory – setting up experiments, learning different workup techniques, performing analytical analysis using NMR, FTIR and Mass-spectroscopy.

**Professional skills and achievements:**

- English language – FCE certificate (score 177/190), German and Czech language – basics.
- Professional PC user, including MS Office, Internet, Materials Studio, ChemOffice package, Origin, EndNote, MestReNova (NMR software).
- More than 7-year working experience in the chemical laboratory, including work on various analytical equipment (NMR, solid-state NMR, PXRD, FTIR, TGA, HPLC, mass spectrometers, SEM, TEM, UV-Vis and photoluminescence in solid and liquid states).
- Supervised three master and three bachelor students
- Participated in the 2016 Macromolecular Journals Writing Competition with article “Polymer-based nanomimics: A new instrument against Malaria”, which was featured as one (out of eight) best contributions. <https://www.materialsvIEWS.com/polymer-based-nanomimics-new-instrument-malaria>

**Scholarships**

- STARS PhD Scholarship, Faculty of Science, Charles University, Prague, 2015 - present time.

## List of publications:

1. **Y. S. Kochergin**, J. Tarábek, Y. Noda, K. Škodáková, J. Schmidt, M. J. Bojdys, "Insights into the design of acid-base chemosensors based on sulphur- and nitrogen-containing porous donor-acceptor polymers", manuscript in preparation.
2. D. Schwarz, A. Acharjya, A. Ichangi, **Y. S. Kochergin**, P. Lyu, M. V. Opanasenko, J. Tarábek, J. Vacek Chocholoušová, J. Vacek, J. Schmidt, P. Nachtigall, A. Thomas, M. J. Bojdys, "Tuning the porosity and photocatalytic performance of triazine-based graphdiyne polymers *via* polymorphism", *ChemSusChem*, manuscript submitted.
3. **Y. S. Kochergin**, D. Schwarz, A. Acharjya, A. Ichangi, R. Kulkarni, P. Eliášová, J. Vacek, J. Schmidt, A. Thomas, M. J. Bojdys, "Exploring the “Goldilocks Zone” of Semiconducting Polymer Photocatalysts *via* Donor-Acceptor Interactions", *Angew. Chem. Int. Ed.* **2018**, 0.
4. D. Schwarz, **Y. S. Kochergin**, A. Acharjya, A. Ichangi, M. V. Opanasenko, J. Čejka, U. Lappan, P. Arki, J. He, J. Schmidt, P. Nachtigall, A. Thomas, J. Tarábek, M. J. Bojdys, "Tailored Band Gaps in Sulfur- and Nitrogen-Containing Porous Donor–Acceptor Polymers", *Chem. - Eur. J.* **2017**, 23, 13023-13027.
5. R. R. Kashapov, L. Ya. Zakharova, E. L. Gavrilova, M. N. Saifutdinova, **Y. S. Kochergin**, O. G. Sinyashin, "Construction of a water-soluble form of amino acid C-methylcalix[4]resorcinarene", *Journal of Molecular Liquids.* **2015**, 208, 58-62.

## Conferences:

1. **Y. S. Kochergin**, D. Schwarz, A. Acharjya, A. Ichangi, J. Schmidt, A. Thomas, M. J. Bojdys, "Exploring the “Goldilocks Zone” of Semiconducting Polymer Photocatalysts *via* Donor-Acceptor Interactions", the 2018 E-MRS Spring Meeting, Book of Abstracts, Symposium R – Solid state ionics: advanced functional materials for solid state devices, R-20 (R P2.58), Strasbourg, France, June 18-22, **2018**.
2. **Y. S. Kochergin**, D. Schwarz, A. Ichangi, M. J. Bojdys, "Fluorescent S- and N-containing Donor-Acceptor Polymers with Tuneable Band-Gap Architecture as Volatile Organic Compounds Sensors", Polymers 2018: Design, Function and Application, Book of Abstracts, Session 1 – Design to function, 136, 27, Barcelona, Spain, March 21-23, **2018**.
3. **Y. S. Kochergin**, D. Schwarz, A. Ichangi, M. J. Bojdys, "Porosity and Bandgap Tuning in S- and N-Containing, Donor-Acceptor Polymers (SNPs)", Vltava 2017 - 8th French-Czech Chemistry Meeting, Book of Abstracts, 58 (Poster 8), Prague, Czech Republic, September 4-5, **2017**.
4. **Y. S. Kochergin**, D. Schwarz, J. Čejka, A. Thomas, A. Amitava, M. Bojdys, "Metal-free photocatalysis with sulphur- and nitrogen-containing, porous donor-acceptor polymers (SNPs)", 13th International Conference on Materials Chemistry (MC13), Book of Abstracts, Section - Magnetic, Electronic & Optical Materials, P107, Liverpool, UK, July 10-13, **2017**.
5. E. L. Gavrilova, M. N. Sayfutdinova, **Y. S. Kochergin**, A. M. Bekmukhametova, G. A. Gaynanova, L. Ya. Zakharova, O. G. Sinyashin, "New calix[4]resorcinols with amino acid fragments at the upper

- rim: synthesis and solubility in organized media", 5th International Colloids Conference, Book of Abstracts, P 235, Amsterdam, Netherlands, June 21 - 24, **2015**.
6. E. L. Gavrilova, R. I. Tarasova, L. A. Mushlaikina, **Y. S. Kochergin**, O. G. Synayshin, V. P. Balashov, "Synthesis and Biological Activity of Acylated Phosphorylacetic Acids Hydrazides Derivatives", 20th International Conference on Phosphorus Chemistry, Book of Abstracts, P 237 (P 40), Dublin, Ireland, June 28 – July 2, **2014**.
  7. **Y. S. Kochergin**, D. Lonshakov, A., Lvov, V. Shirinyan, M. Krayushkin, "Synthesis and study of properties of fluorescent 2,3-diarylcyclopent-2-en-1-ones", V Youth conference IOC RAS: book of abstracts - M.: MAKS-Press, 23, Moscow, Russia, **2012**.
  8. **Y. S. Kochergin**, D. Lonshakov, A., Lvov, V. Shirinyan, M. Krayushkin, "Modifications and spectral properties of photochromic 2,3-diarylcyclopent-2-en-1-ones", all-Russian scientific conference (with international participation): "Advances in the synthesis and complexation": book of abstracts., 1st section "Organic chemistry". - M.: PFUR, Moscow, Russia, April 23-27, **2012**.