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**Date of birth: 15 July 1993**

**GENERAL SUMMARY**

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- **Scientific activity** is connected with physical, coordination, organoelemental chemistry, electrochemistry, nanochemistry and catalysis. The dissertation work is devoted to the electrochemical generation of cobalt and nickel nanoparticles.
- **Scientific interests:** electrochemistry, transition metal nanoparticles, binuclear complexes, organometallic sigma-complexes, homogeneous catalysis

**WORK EXPERIENCE**

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**JUNIOR RESEARCHER**

*Kazan Federal University*  
*Alexander Butlerov Institute of Chemistry*  
Research laboratory "Industrial Catalysis"  
Project "Homogeneous catalysis"

**02.2017 – PRESENT TIME**  
*Kazan, Russia*

**ASSISTANT RESEARCHER**

*Kazan Federal University*  
*Alexander Butlerov Institute of Chemistry*  
Research laboratory "Industrial Catalysis"  
Project "Homogeneous catalysis"

**06.2016 – 02.2017**  
*Kazan, Russia*

**ASSISTANT RESEARCHER**

*Kazan Federal University*  
*Alexander Butlerov Institute of Chemistry*  
Research laboratory "New catalysts for petrochemistry"

**05.2014 – 06.2016**  
*Kazan, Russia*

**JUNIOR RESEARCHER**

*FRC KSC of RAS*  
*A.E.Arbuzov Institute of Organic and Physical Chemistry*  
Laboratory of Organometallic and Coordination Compounds

**02.2018 – PRESENT TIME**  
*Kazan, Russia*

**ASSISTANT RESEARCHER**  
*FRC KSC of RAS*  
*A.E.Arbusov Institute of Organic and Physical Chemistry*  
Laboratory of Organometallic and Coordination Compounds

**10.2013 – 02.2018**  
*Kazan, Russia*

## **EDUCATION**

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**Kazan Federal University**  
*Alexander Butlerov Institute of Chemistry*  
PhD student (Specialty: 04.06.01 - Chemical sciences,  
Specialization: 02.00.04 - Physical chemistry)

**September 2020**  
*Kazan, Russia*

*Thesis titled: "Generation of cobalt and nickel nanoparticles under electrochemical reduction's conditions"*

**Kazan Federal University**  
*Alexander Butlerov Institute of Chemistry*  
Diploma of excellence

**June 2016**  
*Kazan, Russia*

*Thesis titled: "Electrochemical generation of transition metal nanoparticles"*

## **LANGUAGES**

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- Russian
- English

## **EXPERTISE**

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- Physical chemistry
- Coordination chemistry
- Nanochemistry
- Electrochemistry
- Catalysis
- Mass spectrometry

## **ACHIEVEMENTS, AWARDS, GRANTS**

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### **Awards and prizes**

- The winner of grant competition for young scientists of the conference "10<sup>th</sup> International Symposium on Nano and Supramolecular Chemistry (ISNSC 2018)", Dresden, Germany, 2018
- The winner of the republican scientific award for young scientists of the Republic of Tatarstan, Kazan, 2018
- The finalist of the contest "The Best Young Scientist of Republic of Tatarstan-2017" in the nomination "The Best Post-Graduate Student in the Natural Sciences", Kazan, 2017.
- Letter of Appreciation from the Export Corporation of the Republic of Tatarstan for participation in the International Exhibition and Conference "ChemTECH World Expo 2017" with a collective stand from the Republic of Tatarstan, Mumbai, India
- Winner of the Open Innovations Startup Tour of Innovation Center "Skolkovo" 2017, Almetyevsk
- III International SPE Symposium "Black Gold", 2017, Ufa
- Winner of the Conference of students and graduate students "Science and Innovations in the solution of the current problems of Kazan-2016"
- Winner of the Contest "The 50 Best Innovative Ideas for the Republic of Tatarstan-2016"
- Winner of the Contest "The 10 Best Innovative Ideas of KFU", 2016
- VI Russian Conference on Nanomaterials "NANO-2016", Moscow
- XVI Scientific-practical Conference of young scientists PJSC Tatneft 2016, Bavlly
- Diploma of the Winner of the Competition of scientific works of PJSC Tatneft in the section "Refining of oil and gas, petrochemistry" 2016
- The best graduate of the year - 2016 of the Republic of Tatarstan
- The best graduate of the year - 2016 of KFU

- Finalist of the VI Republican Youth Forum “Our Tatarstan” 2016
- Diploma of the winner of the Annual Student Prize of the Republic of Tatarstan “Student of the Year 2015” in the nomination “Intelligence of the Year”, 2015
- Special State scholarship of the Republic of Tatarstan for outstanding abilities in educational and scientific activities 2015
- Diploma of the winner of the "Student of the Year 2015 KFU" in the nomination “Intelligence of the Year in the field of natural and physical and mathematical sciences” 2015
- Diploma for the best poster presentation of IV international school-conference on catalysis for young scientists “Catalysts Design. From molecular to industrial level”2015, Kazan
- Winner of the company's scholarship program “British Petroleum Exploration Operating Company Limited” 2015
- Winner of the grant “The new organometallic catalysts for petrochemistry” of the company “British Petroleum” 2015
- The winner of the Sagdeev brothers' scholarship of 2015
- Scholarship of the Mayor of Kazan for excellent study and progress in research work following the results of 2013/14 academic year. Diploma of the winner of the Conference of students and graduate students “The Science and Innovations in solving the current problems of the city-2014”, Kazan
- Diploma of the winner of the XXII International conference of students, graduate students and young scientists “Lomonosov-2015”, Moscow
- Diploma for a successful speech at Scientific and Educational Conference of the A.M. Butlerov Institute of Chemistry of KFU for the student 2013-2016, Kazan

#### **Scientific internships**

- Internship of the European program “Erasmus” at Leipzig University (Leipzig, Germany) 2018
- Internship of the project “Homogeneous catalysis” of research laboratory “Industrial catalysis” at the Italian National Research Council (CNR), Institute of Chemistry of Organometallic Compounds (ICCOM) (Florence, Italy) 2017

#### **Participation in scientific and social events**

- Member of the International Society of Electrochemistry (ISE) 2019
- Participant in the asset of young scientists of the KFU for strategic development of the university. Meeting with the Prime Minister of the Russian Federation Dmitry Medvedev “Student Entrepreneurship” 2017
- Certificate of participation 80<sup>th</sup> Prague meeting on macromolecules “Self-assembly in the world of polymers” 2016, Prague.
- Certificate of participation Workshop “Career in Polymers VIII” 2016, Prague
- Certificate of participation “21<sup>st</sup> International Conference on Phosphorus Chemistry” 2016, Kazan
- Certificate for participation in the I International School-Conference of students, graduate students and young scientists “Biomedicine, materials and technologies of the XXI century” 2015, Kazan
- Certificate of the participant of the VIII Russian Conference with international participation of young scientists in chemistry “Mendeleev-2014”, St. Petersburg
- Certificate for participation in the Russian school-conference of students, graduate students and young scientists “Materials and Technologies of the XXI Century” 2014, Kazan

#### **Grants**

- Grant No. 05-203-xГ/2017 for young scientists of the Academy of Sciences of the Republic of Tatarstan “New types of catalytic systems based on nanoscale associates for petrochemistry” (2017) – *leader of the project*
- Grant No. C40-15 of the British Petroleum Exploration Operating Company Limited “New Organometallic Catalysts for Petrochemistry” (2015-2016) – *leader of the project*
- Grant No. 18-13-00442 of the Russian Science Foundation (RSF) “The new highly efficient and

- environmentally safe processes for the production of phosphorus-containing compounds based on the elemental phosphorus and phosphine oxide  $H_3PO$ ” (2018-2021) – *executor of the project*
- Grant No. 14-13-01122 of the Russian Science Foundation (RSF) “Chemistry of phosphine oxide  $H_3PO$  - from molecule to functional materials” (2014-2016) – *executor of the project*
  - Grant No. 15-43-02667 of the Russian Foundation for Basic Research (RFBR) “Development of new methods for the selective production of linear alpha-olefins based on ethylene” (2015-2017) – *executor of the project*

## PUBLICATIONS

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### List of articles:

- Khusnuriyalova A.F., Sukhov A.V., Bekmukhamedov G.E., Yakhvarov D.G. Electrochemical properties of cobalt(II), nickel(II) and iron(II) ions in the presence of 2,2'-bipyridine. *Russ. J. Electrochem.* 2020, 56, 4, 293-299.
- Luconi L., Tuci G., Yakhvarov D., Poli G., Rossin A., Khusnuriyalova A., Giambastiani G. Imidazole-bridged tetrameric group(IV) heteroleptic complexes from the spontaneous metal-ligand assembly of a potentially  $N_4$ -tetradentate ligand. *Eur. J. Inorg. Chem.* 2019, 39-40, 4384-4393.
- Khusnuriyalova A.F., Petr A., Gubaidullin A.T., Sukhov A.V., Morozov V.I., Büchner B., Kataev V., Sinyashin O.G., Yakhvarov D.G. Electrochemical generation and observation by magnetic resonance of superparamagnetic cobalt nanoparticles. *Electrochim. Acta.* 2018, 260, 324-329.
- Khusnuriyalova A.F., Babaev V.M., Rizvanov I.Kh., Metlushka K.E., Alfonsov V.A., Sinyashin O.G., Yakhvarov D.G. Tracking of the formation of binuclear nickel complexes of  $[Ni_2(\mu-O_2PR^1R^2)_2(bpy)_4]Br_2$  type by ESI and MALDI mass spectrometry. *Polyhedron.* 2017, 127, 302-306.
- Khusnuriyalova A.F., Kalugin L.E., Dobrynin A.B., Yakhvarov D.G. Electrochemical properties of nickel(II)-2,2'-bipyridine complexes in the presence of diphenylphosphinic acid. *Butlerov Commun.* 2015, 42, 6, 145-151.
- Yakhvarov D.G., Khusnuriyalova A.F., Sinyashin O.G. Electrochemical synthesis and properties of organonickel  $\sigma$ -complexes. *Organometallics.* 2014, 33, 4574-4589.

### List of theses:

- Khusnuriyalova A.F., Petr A., Gubaidullin A.T., Sukhov A.V., Morozov V.I., Büchner B., Kataev V., Sinyashin O.G., Yakhvarov D.G. Electrochemical generation of catalytically active cobalt nanoparticles / Book of abstracts of the 2<sup>nd</sup> Congress of the Interdivisional Group on Chemistry for Renewable Energy of the Italian Chemical Society – SCI ENERCHEM - Padova, Italy, 12-14 February 2020 - P. 40.
- Khusnuriyalova A.F., Petr A., Gubaidullin A.T., Sukhov A.V., Morozov V.I., Büchner B., Kataev V., Sinyashin O.G., Yakhvarov D.G. The observation by magnetic resonance of the electrochemically generated superparamagnetic cobalt nanoparticles / Book of abstracts of the International Conference “Magnetic Resonance – Current State and Future Perspectives” (EPR-75) - Kazan, Russia, 23-27 September 2019 - P. 78.
- Khusnuriyalova A.F., Sukhov A.V., Bekmukhamedov G.E., Gubaidullin A.T., Yakhvarov D.G. Electrochemical method of the preparation of catalytically active cobalt nanoparticles / Book of abstracts of the Scientific conference of grant holders of the RSF “Current trends in chemistry, biology, medicine“ From molecule to medicine ” - Kazan, Russia, November 26-28, 2018 - P. 61.
- Khusnuriyalova A.F., Petr A., Gubaidullin A.T., Sukhov A.V., Morozov V.I., Büchner B., Kataev V., Sinyashin O.G., Yakhvarov D.G. Electrochemical generation of cobalt nanoparticles / Book of abstracts of the XIX All-Russian Meeting with International Participation “Electrochemistry of Organic Compounds” ECOS-2018 - Novochoerkassk, Russia, October 3-6, 2018 - P. 107-108.
- Khusnuriyalova A.F., Petr A., Gubaidullin A.T., Sukhov A.V., Morozov V.I., Büchner B., Kataev V., Sinyashin O.G., Yakhvarov D.G. Electrochemical generation of cobalt nanoparticles / Book of abstracts of the 10<sup>th</sup> International Symposium on Nano and Supramolecular Chemistry (ISNSC 2018) - Dresden, Germany, July 9-12, 2018 - P. 160.
- Khusnuriyalova A.F., Sukhov A.V., Yakhvarov D.G. The new types of nanoscale organometallic catalytic systems for petrochemistry / Book of abstracts of the III International Symposium of Petrochemistry “SPE BlackGold” - Ufa, Russia, May 10-12, 2017 - P. 84.
- Khusnuriyalova A.F., Sukhov A.V., Yakhvarov D.G. The nanoscale organometallic associates for catalytic processes of polymerization and oligomerization of ethylene / Book of abstracts of the VI

- All-Russian Conference on Nanomaterials with Elements of a Scientific School for youth”- Moscow, November 22-25, 2016 – P. 580-581.
- Khusnuriyalova A.F. New organometallic catalysts based on nanoparticles for the chemical and petrochemical industry of the city of Kazan / Book of abstracts of the Conferences of students and PhD-students “Science and Innovations in solving actual problems of the city-2016” - Kazan, Russia, 2016 - P. 73.
  - Khusnuriyalova A.F., Sykhov A.V., Gorbachuk E.V., Vagizov R.I., Yakhvarov D.G. Electrochemical generation of transition metal nanoparticles (Fe, Co, Ni) for catalytic oligo- and polymerization / Book of abstracts of the Workshop “Career in Polymers VIII” - Prague, Czech Republic, July 15, 2016 - P. 24.
  - Khusnuriyalova A.F., Sykhov A.V., Gorbachuk E.V., Vagizov R.I., Yakhvarov D.G. Electrochemical generation of transition metal nanoparticles (Fe, Co, Ni) for catalytic oligo- and polymerization./ Book of abstracts of the 80<sup>th</sup> Prague meeting on macromolecules “Self-assembly in the world of polymers”- Prague, Czech Republic, July 10-14, 2016 - P. 108.
  - Khusnuriyalova A.F., Kalugin L.E., Dobrynin A.B., Sinyashin O.G., Yakhvarov D.G. The coordination properties of diphenylphosphinic acid in nickel(II) complexes / Book of abstracts of the “21<sup>st</sup> International Conference on Phosphorus Chemistry” Kazan, Russia, 5-10 June 2016 - P. 180.
  - Khusnuriyalova A. The new methods of obtaining and activation organonickel catalysts for oligomerization and polymerization of ethylene / Book of abstracts of the IV International school-conference on catalysis for young scientists “Catalysts Design. From molecular to industrial level” Kazan, Russia, 2015 - P. 102.
  - Khusnuriyalova A.F. The new organonickel catalysts for oligomerization and polymerization of ethylene - real contribution to reducing the man-caused environmental impact of the city of Kazan / Book of abstracts of the Conferences of students and PhD-students “Science and Innovations in solving actual problems of the city-2014” - Kazan, Russia, 2014 - P. 73.
  - Khusnuriyalova A.F. The new methods of obtaining and activation organonickel catalysts for oligomerization and polymerization of ethylene / Book of abstracts of the XXII International conference of students, graduate students and young scientists “Lomonosov-2015” - Moscow, Russia, 2015 - ISBN 978-5-317-04946-1.
  - Khusnuriyalova A.F., Gubaidullin A.T., Petr A., Yakhvarov D.G. Electrochemical generation of nanoparticles of cobalt / Book of abstracts of the I International School-Conference of students, graduate students and young scientists “Biomedicine, materials and technologies of the XXI century” - Kazan, Russia, 2015 - P. 590.
  - Khusnuriyalova A.F., Babaev V.M., Rizvanov I.K., Metlushka K.E., Sinyashin O.G., Yakhvarov D.G. Synthesis of new binuclear nickel complexes formed by  $\{\mu\text{-O}_2\text{P}\}$  ligands / Book of abstracts of the VIII Russian Conference with international participation of young scientists in chemistry “Mendeleev-2014” - St. Petersburg, Russia, 2014 - P. 228.
  - Khusnuriyalova A.F., Babaev V.M., Rizvanov I.K., Metlushka K.E., Sinyashin O.G., Yakhvarov D.G. The new binuclear complexes of nickel with bridged heterocyclic  $\{\mu\text{-O}_2\text{PR}^1\text{R}^2\}$  ligands / Book of abstracts of the Russian school-conference of students, graduate students and young scientists “Materials and Technologies of the XXI Century” - Kazan, Russia, 2014 - P. 352.

Total number of scientific articles in refereed journals:	6
Total number of speeches at scientific conferences:	23