

ZUFAR GAFUROV



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GENERAL SUMMARY

•**PhD student** of A.E. Arbuzov Institute of Organic and Physical Chemistry (specialty 02.00.08 - Chemistry of Organoelement compounds). The dissertation work is devoted to the pincer complexes of transition metals with unsymmetrical phosphorus- and nitrogen-containing ligands: synthesis and application in homogeneous catalysis.

•**Scientific interests:** organometallic and coordination chemistry, homogeneous catalysis, electroanalytical methods, electrochemistry, highly reactive organometallics, chemistry of white phosphorus.

PROFESSIONAL EXPERIENCE

JUNIOR RESEARCHER **09.2018 – PRESENT**
*Russian Academy of Sciences
A.E.Arbusov Institute of Organic and Physical Chemistry
Kazan, Russia*

ASSISTANT RESEARCHER **09.2016 – 12.2018**
*Alexander Butlerov Institute of Chemistry
Kazan Federal University
Kazan, Russia*

ASSISTANT RESEARCHER **03.2014 – 11.2016**
*Russian Academy of Sciences
A.E.Arbusov Institute of Organic and Physical Chemistry
Kazan, Russia*

EDUCATION

M. Sc. in PHYSICAL CHEMISTRY **June 2017**
*Kazan Federal University
Kazan, Russia*

Thesis titled: "Electrochemical synthesis, electrochemical properties and reactivity of organonickel sigma-complexes of type [NiBr(aryl)(bpy)], where aryl is ortho-substituted phenyl, bpy - 2,2'-bipyridine"

EXPERTISE

- Electroanalytical Chemistry
- Electrosynthesis
- Inorganic Chemistry
- Organic Chemistry
- Organometallic Chemistry

SPOKEN LANGUAGES

Russian – mother tongue

English – fluently

ACHIEVEMENTS, AWARDS, GRANTS

- Scholarship of the Mayor of Kazan for excellent study and progress in research work following the results of 2017/18 academic year.
- Scholarship of the President of the Russian Federation for progress in research work for PhD students for 2018/19 academic year.
- Diploma for a successful speech at International conference “Organometallic Chemistry Around the World” (7th Razuvaev Lectures), September 16–21, Nizhny Novgorod.
- **Project No. 19-33-90288** of the Russian Foundation for Basic Research (RFBR) “Development of electrochemical methods for obtaining of *N*-heterocyclic carbene complexes of late transition metals for use in homogeneous catalysis” (2019-2021) – *executor of the project.*
- **Project No. 19-29-08051** of the Russian Foundation for Basic Research (RFBR) “The development of new methods of electrochemical generation and activation of highly efficient catalysts based on complexes of group VIII 3d-metals and alpha-phosphorylated alpha-amino acids for the oligomerization of ethylene” (2019-2022) – *executor of the project.*
- **Project No. 18-33-00177** of the Russian Foundation for Basic Research (RFBR) “Development of nickel (II) based new homogeneous catalysts with pincer type ligands for processes of oligomerization of ethylene and cross-coupling of organic halides” (2018-2019) – *leader of the project.*
- **Project 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 H₃PO” (2018-2020) – *executor of the project.*
- **Project No 15-43-02486** of the Russian Foundation for Basic Research (RFBR) “Development of asymmetric organocatalysts based on organophosphorus compounds and Betty bases.” (2015-2017) – *executor of the project.*

- **Project 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*.

SCIENTIFIC VISITS

Institute of Chemistry of Organometallic Compounds (ICCOM), CNR, Sesto Fiorentino (Florence), Italy **02.07.2016 - 31.07.2016**

Department of Chemistry and Food Chemistry, Technical University of Dresden, Dresden, Germany **15.10.2016 - 15.12.2016**

Institute of Chemistry of Organometallic Compounds (ICCOM), CNR, Sesto Fiorentino (Florence), Italy **15.04.2017 - 01.06.2017**

Department of Chemistry and Food Chemistry, Technical University of Dresden, Dresden, Germany **01.02.2018 - 30.04.2018**

Department of Chemistry and Food Chemistry, Technical University of Dresden, Dresden, Germany **01.10.2018 - 05.03.2019**

PUBLICATIONS

1. **Z. N. Gafurov**, G. E. Bekmukhamedov, A. A. Kagilev, A. O. Kantyukov, I. F. Sakhapov, I. K. Mikhailov, K. R. Khayarov, R. B. Zaripov, D. R. Islamov, K. S. Usachev, L. Luconi, A. Rossin, G. Giambastiani, D. G. Yakhvarov. Unsymmetrical Pyrazole-Based PCN Pincer Ni II Halides: Reactivity and Catalytic Activity in Ethylene Oligomerization // *Journal of Organometallic Chemistry*, **2020**, 912, 121163.
2. **Z. N. Gafurov**, A. A. Kagilev, A. O. Kantyukov, O. G. Sinyashin, D. G. Yakhvarov. Hydrogenation reaction pathways in chemistry of white phosphorus // *Pure and Applied Chemistry*, **2019**, 91 (5), 797-810.
3. L. Luconi, C. Garino, P. Cerreia Vioglio, R. Gobetto, M. Chierotti, D. Yakhvarov, **Z. Gafurov**, V. Morozov, I. Sakhapov, A. Rossin, G. Giambastiani. Halogen Bonding Interactions and Electrochemical Properties of Unsymmetrical Pyrazole Pincer Ni II Halides: a Peculiar Behaviour of the Fluoride Complex (PCN)NiF // *ACS Omega*, **2019**, 4(1), 1118-1129.
4. L. Luconi, A. Rossin, G. Tuci, **Z. Gafurov**, D. M. Lyubov, A. A. Trifonov, S. Cicchi, H. Ba, C. Pham-Huu, D. Yakhvarov, G. Giambastiani. Benzoimidazole-Pyridylamido Zirconium and Hafnium Alkyl Complexes as Homogeneous Catalysts for the Tandem Carbon Dioxide Hydrosilylation to Methane // *ChemCatChem*, **2019**, 11(1), 495-510.

5. **Z. N. Gafurov**, A. B. Dobrynin, I. F. Sakhapov, A. A. Kagilev, A. O. Kantyukov, A. A. Balabaev, A. V. Toropchina, O. G. Sinyashin, D. G. Yakhvarov. New 2,2'-bipyridine and 1,10-phenanthroline based nickel (II) phosphates // *Phosphorus, Sulfur, Silicon Relat. Elem.*, **2019**, 194, 517-521.
6. **Z. N. Gafurov**, A. A. Kagilev, A. O. Kantyukov, A. A. Balabaev, O. G. Sinyashin, D. G. Yakhvarov. Classification and synthesis of nickel pincer complexes // *Russian Chemical Bulletin*, **2018**, 67 (3), 385-405.
7. L. Luconi, **Z. N. Gafurov**, A. Rossin, G. Tuci, O. G. Sinyashin, D. G. Yakhvarov, G. Giambastiani. Palladium(II) pyrazolyl-pyridyl complexes containing a sterically hindered *N*-heterocyclic carbene moiety for the Suzuki-Miyaura cross-coupling reaction // *Inorganica Chimica Acta*, **2018**, 470, 100-105.
8. **Z. N. Gafurov**, A. O. Kantyukov, A. A. Kagilev, A. A. Balabaev, O. G. Sinyashin, D. G. Yakhvarov. Nickel and palladium *N*-heterocyclic carbene complexes. Synthesis and application in cross-coupling reactions // *Russian Chemical Bulletin*, **2017**, 66 (9), 1529-1535.
9. **Z. N. Gafurov**, O. G. Sinyashin, D. G. Yakhvarov. Electrochemical methods for synthesis of organoelement compounds and functional materials // *Pure and Applied Chemistry*, **2017**, 89 (8), 1089-1103.
10. **Z. N. Gafurov**, I. F. Sakhapov, V. M. Babaev, A. B. Dobrynin, V. A. Kurmaz, K. E. Metlushka, I. K. Rizvanov, G. R. Shaikhutdinova, O. G. Sinyashin, D. G. Yakhvarov. Study of the reactivity of organonickel sigma-complexes towards nitriles // *Russian Chemical Bulletin*, **2017**, 66 (2), 254-259.
11. **Z. N. Gafurov**, L. I. Musin, I. F. Sakhapov, V. M. Babaev, E. I. Musina, A. A. Karasik, O. G. Sinyashin, D. G. Yakhvarov. The formation of secondary arylphosphines in the reaction of organonickel sigma-complex [NiBr(Mes)(bpy)], where Mes = 2,4,6-trimethylphenyl, bpy = 2,2'-bipyridine, with phenylphosphine // *Phosphorus, Sulfur, Silicon Relat. Elem.*, **2016**, 191, 1475-1477.
12. I. F. Sakhapov, **Z. N. Gafurov**, V. M. Babaev, I. Kh. Rizvanov, A. B. Dobrynin, D. B. Krivolapov, Kh. R. Khayarov, O. G. Sinyashin, D. G. Yakhvarov. First example of organonickel complex bearing three cyclic substituents in the σ -bonded aromatic ring: bromo[(2,2'-bipyridine)-2,4,6-tricyclohexylphenylnickel] // *Mendeleev Communications*, **2016**, 26, 131-133.
13. I. F. Sakhapov, **Z. N. Gafurov**, V. M. Babaev, V. A. Kurmaz, R. R. Mukhametbareev, I. K. Rizvanov, O. G. Sinyashin, D. G. Yakhvarov. Electrochemical properties and reactivity of organonickel sigma-complex [NiBr(Mes)(bpy)] (Mes = 2,4,6-trimethylphenyl, bpy = 2,2'-bipyridine) // *Russian Journal of Electrochemistry*, **2015**, 51 (11), 1061-1068.

Total number of scientific papers in peer-reviewed journals: 13

Total number of speeches at scientific meetings: 15