Elena V. Grachova, M.Sc., Ph.D., Dr.Sci.

Date of Birth July 24, 1971
Place of Birth St. Petersburg, Russian Federation (Leningrad, U.S.S.R.)
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Education and qualification

1988-1993, M.Sc. in Chemistry, SPU
1995-1999, Ph.D. in Inorganic chemistry, *Synthesis, reactivity and dynamic behaviour of the phosphine-carbonyl rhodium clusters*
2002-2003, PostDoc in University of Bielefeld, Germany (Alexander von Humboldt Foundation Research Fellowship) *Transition metal carbonyl clusters containing $GaCp^*$ ($Cp^* = \eta^5$-pentamethylcyclopentadienyl) ligand. Directed synthesis, properties and ligand effect.*
2020, Dr.Sci. in Inorganic chemistry, *Design of supramolecular cluster compounds of coinage metals based on template polydentate ligands*

Scientific field and expertise

Coordination chemistry; organometallic chemistry; transition metal cluster compounds; mixed-metal cluster compounds; nano-scale molecular ensembles; supramolecular compounds; metal-containing molecular entities and materials; molecular emitters

Current and previous positions

1993-1995, Engineer, Institute of Chemistry, SPU
1999-2000, Junior researcher, Institute of Chemistry, SPU
2000-2001/2004-2005, Assistant Professor, Department of General and Inorganic Chemistry, SPU
2005-2021, Associate Professor, Department of General and Inorganic Chemistry, SPU
2021-present, Professor, Institute of Chemistry, SPU

Lecturer experience

1999-2012, Teacher in *"General and Inorganic Chemistry"* for 1st year students (020100. Chemistry; 020201. Fundamental and Applied Chemistry)
2003-2019, Regular Lecturer in *"Coordination chemistry"* for 4th year students (04.03.01. Chemistry)
2004-2019, Regular Lecturer in *"Coordination chemistry"* for 2th year students (04.03.02. Chemistry, Physics and Mechanics of Materials)
2008-2016, Regular Lecturer in *"Design of polynuclear and cluster complexes of transition metals"* for 5th year students (020201. Fundamental and Applied Chemistry)
2010, Lecturer of education workshop (lectures course) *"The Mingos Rule for Metal Clusters with Heavy Elements of the 15th Group: Pro and Contra"*, University of Heidelberg, Germany (academic exchange program)
2012-present, Coordinator of Open Scientific Master's Workshop *"Journal Club"* (04.04.01. Chemistry; 04.04.02. Chemistry, Physics and Mechanics of Materials)
http://chem.spbu.ru/learning/mag-seminar.html
2015, Regular Lecturer in *"Trends and problems of the modern coordination chemistry"* for 4th year students (020201. Fundamental and Applied Chemistry)
2015-2020, Regular Lecturer in *"Modern Inorganic Chemistry"* for 4th year students (04.03.01. Chemistry; 04.03.02. Chemistry, Physics and Mechanics of Materials)
2017-present, team member of the online course *"Inorganic chemistry: an introduction to the chemistry of elements"*; available on portal of SPU; online resources Open Education, Stepik and Coursera
2017, Lecturer of education workshop (lectures course) *"Interdisciplinary aspects of coordination chemistry and luminescence of transition metal complexes"* under supporting of "German-Russian Interdisciplinary Science Center" (G-RISC) in RWTH Aachen University;
2019, Lecturer of multidisciplinary education project of the University of Tromsø (Norway) and the Tomsk State University (Russia) in collaboration with SPU and the University of Oslo

(Norway) as the network partners, *"OPS@BE: Optical Probe Sensors at Biological Environments"*
2019, Invited lecture of *International School on Advanced Light-Emitting and Optical Materials (SLALOM 2019)* in ITMO University (St.Petersburg, Russia)
2019-present, Regular Lecturer in *"Coordination chemistry"* for 3th year students (04.03.01. Chemistry)
2021-present, Regular Lecturer in *"Inorganic chemistry"* for 4th year students (5009 Applied Physics and Mathematics, 5011 Physics, 5112 Engineering Physics, 5113 Electromagnetic and Acoustic Processes)
2021-present, Regular Lecturer in *"Advanced coordination chemistry"* (in English) for 2nd year students (04.04.01. Chemistry)
2024-present, Regular Lecturer in *"Supramolecular chemistry"* (in English) for 4th year students (04.03.01. Chemistry)
2024-present, Regular Lecture in *"Investigation methods of inorganic and coordination compounds"* for 4th year students (04.03.01. Chemistry)

Professional services

2005-2016, Scientific Secretary of General and Inorganic Chemistry Division, SPU
2016-present, member of the Expert Council of SPU in Chemistry
2021-present, member of the scientific advisory board of the Research Park SPU in Chemistry and Analytics
2024-present member of the Scientific Council of the Russian Academy of Sciences on Inorganic Chemistry

Reviewer of manuscripts for: ACS, Royal Society of Chemistry, Elsevier, Wiley, Springer, MPDI
2017-present, Reviewer of projects for Russian Science Foundation
2020-2021, Guest Editor of Special Issue 'Organometallic Compounds and Their Applications', Molecules MDPI www.mdpi.com/journal/molecules/special_issues/molecules_organometallic

Awards, individual grants and fellowships

1. **1993**, "Top-five" award for graduated students of the year
2. **1996-1997**, Russian Government Fellowship
3. Research grants of Basic Natural Sciences Centre (St. Petersburg, Russia):
   1997, *Redox processes of nitroso- and nitro compounds in the reactions with the carbonyl clusters of rhodium and heterometal platinum-rhodium clusters*
   1998, *The phosphine-carbonyl rhodium clusters: synthesis and study of the static and dynamic heteroligand effects*
   1999, *The phosphite-carbonyl rhodium clusters: synthesis and study of the heteroligand effects*
   2005, *The method of "building blocks" in cluster compounds chemistry and its application to create the cluster complexes with direct connection of high and low oxidation levels transition metals,* grant PD05-1.3-197
4. **1998**, Award "Distinguished Young Scientist Research Work", SPU
5. **1999-2000**, INTAS Fellowship for Young NIS Scientists (YSF99-4030), *Study of the halides and pyridines ligand effect on stereochemical nonrigidity of $Rh_6(CO)_{15}L$ derivatives, qualitative and quantitative aspects*, supervisors: Dr. Tunik S. P. (SPU, Russia); Prof. Heaton B. T. (University of Liverpool, UK)
6. **2000-2002**, Government Science Fellowship
7. ***Alexander von Humboldt Foundation support:***

2002/2003, Research Fellowship (IV-1-7109 RUS 1074525), *Transition metal carbonyl clusters containing $GaCp^*$ ($Cp^* = \eta^5$-pentamethylcyclopentadienyl) ligand. Directed synthesis, properties and ligand effect*, supervisor: Prof. Dr. Jutzi P. (University of Bielefeld, Germany)

2003/2004, Return Fellowship for Young Researchers (V-RKS-RUS/1074525), *Mixed-metal clusters: transition metal carbonyl clusters containing $GaCp^*$ ($Cp^* = \eta^5$-pentamethylcyclopentadienyl) fragment. Dynamic behaviour in solution and reactivity toward to carbonyl ligands substitution*, SPU, Russia

2005, Research Resumption Fellowship (V-8121/RUS/1074525), *ECp^* (E = Ga, In; $Cp^* = C_5Me_5$) compounds as building blocks in chemistry of transition metal clusters. Synthesis of "Very-Mixed" carbonyl cluster compounds containing ECp^* fragments*, supervisor: Prof. Dr. Linti G. (University of Heidelberg, Germany)

2006, Residence Allowance Fellowship (3.4-8100/B-RUS/1074525) for *"Very-Mixed" carbonyl cluster compounds containing $InCp^*$ fragments. Synthesis and structure characterization*, supervisor: Prof. Dr. Linti G. (University of Heidelberg, Germany)

2008, Research Resumption Fellowship, *Design of Linked Cluster Systems "Transition metal – Group 13 metal"*, supervisor: Prof. Dr. Linti G. (University of Heidelberg, Germany)

8. **2005**, Vladimir Potanin Foundation Award for the Most Perspective Young Teachers of Higher School
9. **2007-2012**, Academic Exchange Program of SPU and Ruprecht-Karls-Universität Heidelberg "*Low Nuclearity Cluster and Polynuclear Bridging Complexes Design"*
10. **2018,** The Award of SPU for a series of scientific articles *"Phosphorescent transition metal complexes, new approaches to the synthesis and application"*
11. **2019**, The Award of Student Council of Institute of Chemistry SPU *"The Best Lecturer"*

External grants and projects

1. **1996-1997**, Competitive Centre in Natural Science research grant, *Synthesis and Reactivity of Rhodium and Platinum-Rhodium Carbonyl-Nitrosyl Clusters*, principal investigator Dr. Tunik S.P.
2. **1996-1998**, INTAS-RFBR research grant (95-IN-RU-242), *Multinuclear NMR study of structure and ligand mobility in homo- and hetero-metallic transition metal carbonyl clusters,* in cooperation with University of Liverpool (UK) and University of Aveiro (Portugal), principal investigators: Prof. Heaton B.T. (University of Liverpool, UK) and Dr. Tunik S. P.
3. **2002-2004**, RFBR research grant 02-03-32792, *Chiral Induction in Reactions of Transition Metal Clusters. Study of Stereoselectivity of Diynes Cyclization on the $H_2Os_3(CO)_{10-x}(L^*)$ Clusters,* principal investigator Dr. Tunik S. P.
4. **2005-2006**, Royal Society of Chemistry Grant, *Investigation of solution structure and stereochemical norigidity of transition metal clusters containing chiral hemilabile ligands,* in cooperation with University of Liverpool (UK), principal investigator Prof. Heaton B.T. (University of Liverpool, UK)
5. **2005-2007**, RFBR research grant 05-03-33266*, Chiral transition metal clusters: new approach to the synthesis, resolution and application in asymmetric catalysis,* principal investigator Dr. Tunik S.P.
6. **2007-2009**, RFBR research grant 07-03-00908, *Synthesis and photophysical studies of heterovalent macrocomplexes, containing transition metal clusters and bifunctional phosphines*, principal investigator Dr. Kurochkin A.V.
7. **2009-2010**, RFBR research grant 09-03-12309, *Effective electroluminescence materials based on a novel class of nanosized supramolecular transition metal complexes: synthetic design, study of the photophysical characteristics and optimization of electroluminescence properties*, principal investigator Prof. Tunik S.P.

8. **2009-2010**, RFBR research grant 09-03-91279, *Molecular architecture with alkynyl/thiolate gold or platinum complexes. Study of their photophysical properties*, principal investigator Prof. Tunik S.P.
9. **2011-2013**, RFBR research grant 11-03-00541, *Supramolecular organometallic cage structures of Au(I) complexes: synthesis, photophysical and electrochemical properties of the "host-guest" compounds*, principal investigator Dr. Koshevoy I.O.
10. **2011-2013**, RFBR research grant 11-03-00974, *Synthesis of a novel class of functionalized heterometallic complexes and investigation of their photophysics and electrochemistry*, principal investigator Prof. Tunik S.P.
11. **2011-2013**, RFBR research grant 11-03-92010, *Heterometallic supramolecular complexes of the copper subgroup metals: synthesis, photophysical properties and application in molecular imaging and electroluminescence technology*, in cooperation with National Taiwan University; principal investigator Prof. Tunik S. P.
12. **2011-2013**, SPU research grant 12.37.132.2011, *Nanosize complexes of transition metals as high-performance luminophors: synthesis and photophysical properties investigation*, principal investigator Prof. Tunik S.P.
13. **2012-2013**, SPU research grant 12.39.1048.2012, *Nanoanalytical "biochip-label-detector" system for screening medical detection*, in cooperation with Institute of Macromolecular Compounds, Russian Academy of Sciences; supervisor Prof. Tennikova T.B., **responsible investigator**
14. **2012-2018,** Research program of cooperation with Institut für Festkörperphysik and Helmholtz Zentrum Berlin für Materialien und Energie Elektronenspeicherring BESSY II (HZB/BESSY II), Russian-German Laboratory at BESSY II; supervisor Dr. Vyalikh D.V. (Institut für Festkörperphysik, Technische Universität Dresden, Germany); **principal investigator of chemistry group**

2012		
2012_1_111048	18.06.2012 – 01.07.2012	Combined photoemission and x-ray absorption study of the Rods-in-belt supramolecular complexes containing gold-copper and gold-silver clusters
2013		
2013_1_120793	17.03.2013 – 01.04.2013	Tunable electronic properties of the 'rods-in-belt' supramolecular complexes
2013_1_121256	13.05.2013 – 20.05.2013	
2013_2_130319	18.11.2013 – 24.11.2013	Tunable electronic properties of the highly ordered Au(I)-Ag(I) and Au(I)-Cu(I) supramolecular aggregates
2014		
14100352-ST	24.02.2014 – 10.03.2014 02.06.2014 – 08.06.2014	Cu vs Fe. Photoemission and X-ray absorption insight into how metal and protein interact
14201378-ST	15.09.2014 – 21.09.2014	Novel family of luminescent Pt(II) complexes: photoemission and X-ray absorption insight into the electronic structure and its modification
2015		
14201051-ST/R	09.02.2015 – 15.02.2015	Tunable electronic properties of the highly ordered Au(I)-Ag(I) and Au(I)-Cu(I) supramolecular aggregates
15202930-ST	07.09.2015 – 13.09.2015	Modification of the electronic structure of the novel family of Pt(II) complexes by n-type doping
2016		
16103663-ST	18.04.2016 – 24.04.2016	Insight into the interfacial chemistry between the novel family of Pt(II) coordination compounds and alkali metals
2018		
18106481-CR/R	19.02.2018 – 25.02.2018	Insight into the electronic structure of novel MoS_2/CNT Hybrid Material for Ultrasensitive Gas Sensing
18106542-CR	26.03.2018 – 19.04.2018	Self-Assembled Supramolecular Complexes with 'Rods-in-Belt' Architecture in the Light of Soft X-rays

15. **2013-2015**, RFBR research grant 13-03-12411, *Novel Luminescent Systems Based on Noble Metal Complexes and Supramolecular Compounds*, principal investigator Prof. Kukushkin V.Yu.
16. **2013-2015**, RFBR research grant 13-04-40342, *Novel polyfunctional labels for bioimaging – covalent bioconjugates based on transition metal complexes* in the frameworks of the project *Development of original methods to study cell structures using a novel class of triplet luminophors based on polynuclear transition metal complexes*, in cooperation with Russian Research Institute for Agricultural Microbiology; principal investigator Prof. Tunik S.P.
17. **2014-2016**, RFBR research grant 14-03-00970, *Metal-organophosphorus luminophores for controllable light generation*, principal investigator Prof. Tunik S.P.; **responsible investigator**
18. **2014-2016**, SPU research grant 0.37.169.2014, *Triplet luminescence emitters and their covalent and noncovalent conjugates with proteins and oligonucleotides – new labels for luminescence microscopy*, principal investigator Dr. Melnikov A.S.; **responsible investigator**
19. **2014-2016**, Ministry of Education and Science of Russian Federation grant, *Development of the nano associated hybrids synthesis method for creating of the labels for medical-biological use* (project number 14.604.21.0078; Registration Number RFMEFI60414X0078); principal investigator Dr. Manshina A.A.; **responsible investigator**
20. **2015**, Research project *Complexes of metals copper subgroup with cyclic aminomethylphosphane ligands: synthesis and photophysical properties investigation,* in cooperation with Laboratory of organometallic and coordination compounds, A.E. Arbuzov Institute of Organic and Physical Chemistry (Kazan, Russian Federation); **principal investigator**
21. **2016-2017**, Research project *Complexes of metals copper subgroup with macrocyclic aminomethylphosphane ligands: synthesis and photophysical properties investigation,* in cooperation with Laboratory of organometallic and coordination compounds, A.E. Arbuzov Institute of Organic and Physical Chemistry (Kazan, Russian Federation); **principal investigator**
22. **2016-2020**, Russian Science Foundation grant 16-13-10064 *NIR molecular emitters based on d-f heterometallic complexes*; **principal investigator**
23. **2018-2022,** Research program of cooperation with European XFEL (scientific instrument FXE), in cooperation with A.E. Arbuzov Institute of Organic and Physical Chemistry (Kazan, Russian Federation); **principal investigator of chemistry group**

Facility, beamline	Experiment number/code	Data	Experiment title
2018			
ESRF, ID09 White Beam Station, Time-resolved Beamline	CH-5623	03.10.2018 – 08.10.2018	Probing aurophilicity in stimuli-responsive dimer complexes: the role of 'host-guest' interactions
2019			
European XFEL, FXE instrument	2266, allocation cycle 201802	14.03.2019 – 17.03.2019	Origins of enhanced aurophilicity in stimuli-responsive dimer complexes and the role of 'host-guest' interactions
2022			
European XFEL, FXE instrument	2906, allocation cycle 202201	14.04.2022 – 17.04.2022	Origins of enhanced aurophilicity in stimuli-responsive dimer complexes and the role of 'host-guest' interactions, continue

24. **2019-2022**, Russian Science Foundation grant 19-73-20055 *New organometallic phosphors: design of triplet emitters with adjustable photophysical characteristics*; **responsible investigator**
25. **2019,** Research project (agreement 46329568) *Synthesis and study of the photophysical properties of binuclear gold complexes based on template phosphine ligands* in collaboration

with the Federal Research Center 'Kazan Scientific Center of the Russian Academy of Sciences', A.E. Arbuzov Institute of Organic and Physical Chemistry (Russian Federation); **principal investigator**

26. **2020-2021,** Research project 91192757 *Phosphinine-Based Ligands for the Design of Novel Luminescent Transition Metal Complexes*, Program of Freie Universität Berlin and SPU cooperation in the framework of Strategic Partnership Program, **principal investigator**
27. **2021-2023,** Russian Science Foundation grant 21-13-00052 *Functional hybrid molecular systems based on transition metal complexes*; **principal investigator**
28. **2022,** Research project (ID 99617020) *Design of organic and coordination thermosensitive phosphors as a basis for new generation molecular and nanoscale thermometers for biomedical applications* in collaboration with the Federal Research Center 'Kazan Scientific Center of the Russian Academy of Sciences', A.E. Arbuzov Institute of Organic and Physical Chemistry (Russian Federation); **principal investigator**
29. **2024-2026,** Russian Science Foundation grant 24-13-00024 *Luminescent complexes of transition metals based on organophosphorus ligands*; **principal investigator**

Publications

Articles

1. M. Luginin, D. Snetkov, A. Sizova, A. Paderina, V. Sizov and E. Grachova, *Cyclometalated Au(III) complexes with alkynylphosphine oxide ligands: synthesis and photophysical properties*, **Dalton Trans.**, (2025) ; DOI: 10.1039/D4DT03250K; first published 03 January 2025
2. D. Yarullin, S. Slavova, E. Abramova, M. Zavalishin, P. Tolstoy, G. Gamov, E. Grachova, *Conformer-Specific Differences in Solid-Phase Emission of Pyridoxal 5'-Phosphate Hydrazones Containing Heteroaromatic Cycles*, **Opt. Mat.** 159 (2025) 116593; DOI: 10.1016/j.optmat.2024.116593; first published 18 December 2024
3. E. Boichenko, N. Smolyanov, J. Ashina, V. Khistiaeva, E. Grachova, D. Kirsanov, *Luminescent filaments based on polymer modified with Eu(III) complexes for 3D Printing of simple spectrophotometric devices for chemical analysis*, **Polym. Eng. Sci.** (2024) ; DOI: 10.1002/pen.27033; first published 24 November 2024
4. A. Paderina, S. Slavova, E. Tupikina, D. Snetkov and E. Grachova, *Aggregation game: changing solid-state emission using different counterions in mono-alkynylphosphonium Pt(II) complexes*, **Inorg. Chem.** 63(38) (2024) 17548-17560; DOI: 10.1021/acs.inorgchem.4c02130; first published 6 September 2024
5. P. Sakharov, A. Koronatov, A. Khlebnikov, S. Petrovskii, M. Luginin, E. Grachova, M. Novikov, *Synthesis of 2-Aryl-2H-1,2,3-triazoles via $P(OMe)_3$-Promoted Intramolecular Transannulation of 4-Diazenylisoxazol-5(4H)-ones*, **Adv. Synth. Catal.** 366 (24) (2024) 5073-5081; DOI: 10.1002/adsc.202400697; first published 14 August 2024
6. A. Paderina, A. Sizova, E. Grachova, *Cationic or Neutral: Dependence of Photophysical Properties of Bis-alkynylphosphonium Pt(II) Complexes on Ancillary Ligand*, **Chem. Eur. J.** 58(30) (2024) e202402242; DOI: 10.1002/chem.202402242; first published 12 August 2024**. ON COVER**
7. A. Petrovskaia, S. Petrovskii, A. Sizova, V. Sizov, A. Paderina, C. Müller, and E. Grachova, *Dual Emissive Mono- and Bis-alkynylpyridinium Pt(II) Complexes: Synthesis and Luminescent Properties*, **Organometallics** 43(20) (2024) 2495-2504; DOI: 10.1021/acs.organomet.4c00115; first published 25 June 2024; **Special issue "Applied Organometallic Chemistry"**
8. B.A. Faizullin, A.R. Khazieva, A.D. Voloshina, A.P. Lyubina, A.S. Sapunova, G.V. Sibgatullina, D.V. Samigullin, A.V. Paderina, E.V. Grachova, K.A. Petrov, A.R. Mustafina, *pH-responsive composite nanomaterial engineered from silica nanoparticles and luminescent mitochondrion-targeted Pt(II) complex as anticancer agent*, **J. Mol. Liq.** 399 (2024) 124381; DOI: 10.1016/j.molliq.2024.124381; first published 02 March 2024
9. S.K. Petrovskii, E.V. Grachova, and K.Yu. Monakhov, *Bioorthogonal Chemistry of Polyoxometalates – Challenges and Prospects*, **Chem. Sci.** 15 (2024) 4202-4221; DOI: 10.1039/D3SC06284H; first published 26 February 2024; **2024 Chemical Science Perspective & Review Collection. ON COVER**
10. A. Paderina, S. Slavova, S. Petrovskii, and E. Grachova, *Alkynylphosphonium Pt(II) Complexes: Synthesis, Characterization, and Features of Photophysical Properties in Solution and in the Solid State*, **Inorg. Chem.** 62(44) (2023) 18056-18068; DOI: 10.1021/acs.inorgchem.3c02209; first published 27 October 2023

11. A.Yu. Gitlina, S. Petrovskii, M. Luginin, A. Melnikov, E. Rychagova, S. Ketkov and E. Grachova, *X/Y Platinum(II) complexes: some features of supramolecular assembly via halogen bonding*, **Dalton Trans.** 52 (2023) 16005-16017; DOI: 10.1039/D3DT02970K; first published 06 October 2023
12. S.K. Petrovskii, M. Moors, S. Schmitz, E.V. Grachova and K.Yu. Monakhov, *Increasing the redox switching capacity of Lindqvist-type hexavanadates by organogold post-functionalisation*, **Chem. Comm.** 59 (2023) 9517-9520; DOI: 10.1039/D3CC02511J; first published 07 July 2023
13. A. Gitlina, V. Khistiaeva, A. Melnikov, M. Ivonina, V. Sizov, D. Spiridonova, A. Makarova, D. Vyalikh and E. Grachova, *Organometallic Ir(III) complexes: post-synthetic modification, photophysical properties and binuclear complex construction,* **Dalton Trans.** 52 (2023) 8986-8997; DOI: 10.1039/D3DT00901G; first published 12 June 2023
14. S. Petrovskii, A. Petrovskaia, A. Sizova, V. Sizov, E. Grachova, *Homoleptic Alkynylpyridinium Au(I) Complexes as Organometallic 'D-π-A' Chromophores*, **ChemPlusChem** 88(7) (2023) e202300155; DOI: 10.1002/cplu.202300155; first published 26 May 2023; **Special Issue "Gold Chemistry"**
15. S. Petrovskii, A. Paderina, A. Sizova, E. Grachova, *Homoleptic alkynylphosphonium Au(I) complexes as push-pull phosphorescent emitters*, **Inorg. Chem.** 62(13) (2023) 5123-5133; DOI: 10.1021/acs.inorgchem.2c04360; first published 20 March 2023
16. S. Petrovskii, V. Khistiaeva, A. Paderina, E. Abramova and E. Grachova, *Post-Functionalization of Organometallic Complexes via Click-Reaction*, **Molecules** 27 (2022) 6494; DOI: 10.3390/molecules27196494; first published 01 October 2022
17. A. Surkova, A. Bogomolov, A. Paderina, V. Khistiaeva, E. Boichenko, E. Grachova, D. Kirsanov, *Optical multisensor system based on lanthanide(III) complexes as near-infrared light sources for analysis of milk*, **Chemosensors**, 10(7) (2022) 288; DOI: 10.3390/chemosensors10070288; first published 20 July 2022
18. A. Paderina, R. Ramazanov, R. Valiev, C. Müller and E. Grachova, *So Close, Yet so Different: How One Donor Atom Changes Significantly the Photophysical Properties of Mononuclear Cu(I) Complexes*, **Inorg. Chem.**, 61(30) (2022) 11629-11638; DOI: 10.1021/acs.inorgchem.2c01145; first published 5 July 2022; **Virtual Issue "We Glow Together: A Dialogue on Luminescent Compounds". ON COVER**
19. A.Yu. Baranov, S.O. Slavova, A.S. Berezin, S.K. Petrovskii, D.G. Samsonenko, I.Yu. Bagryanskaya, V.P. Fedin, E.V. Grachova and A.V. Artem'ev, *Controllable synthesis and luminescent behavior of tetrahedral $Au@Cu_4$ and $Au@Ag_4$ clusters supported by tris(2-pyridyl)phosphine*, **Inorg. Chem.**, 61 (2022) 10925-10933; DOI: 10.1021/acs.inorgchem.2c01474; first published 1 July 2022; **Virtual Issue "We Glow Together: A Dialogue on Luminescent Compounds"**
20. S. Petrovskii, A. Senchukova, V. Sizov, A. Paderina, M. Luginin, E. Abramova and E. Grachova, *Efficient photoswitchable organometallic complexes with azobenzene and stilbene units: the case of Au(I)*, **Mol. Syst. Des. Eng.**, 7 (2022) 1249-1262; DOI: 10.1039/D2ME00071G; first published 21 June 2022
21. A. Paderina, A. Melnikov, S. Slavova, V. Sizov, V. Gurzhiy, S. Petrovskii, M. Luginin, O. Levin, I. Koshevoy and E. Grachova, *The tail wags the dog: the far periphery of the coordination environment manipulates the photophysical properties of heteroleptic Cu(I) complexes*, **Molecules** 27(7) (2022) 2250; DOI: 10.3390/molecules27072250; first published 30 March 2022
22. M.A. Kinzhalov, E.V. Grachova and K.V. Luzyanin, *Tuning the Luminescence of Transition Metal Complexes with Acyclic Diaminocarbene Ligands*, **Inorg. Chem. Front.** 9 (2022) 417-439; DOI: 10.1039/D1QI01288F; first published 06 December 2021
23. E.O. Abramova, A.V. Paderina, S.O. Slavova, E.A. Kostenko, E.V. Eliseenkov, S.K. Petrovskii, A.Yu. Gitlina, V.P. Boyarskiy, and E.V. Grachova, *Just Add the Gold: Aggregation-Induced-Emission Properties of Alkynylphosphinegold(I) Complexes Functionalized with Phenylene-Terpyridine Subunits*, **Inorg. Chem.** 60(24) (2021) 18715-18725; DOI: 10.1021/acs.inorgchem.1c02125; first published 26 November 2021
24. E.M. Baranovskii, V.V. Khistiaeva, K.V. Deriabin, S.K. Petrovskii, I.O. Koshevoy, I.E. Kolesnikov, E.V. Grachova and R.M. Islamova, *Re(I) complexes as Backbone Substituents and Cross-linking Agents for Hybrid Luminescent Polysiloxanes and Silicone Rubbers*, **Molecules** 26 (2021) 6866; DOI: 10.3390/molecules26226866; first published 14 November 2021
25. M. Beliaeva, A. Belyaev, E. Grachova, A. Steffen, I. Koshevoy, *Ditopic phosphide oxide group: a rigidifying Lewis base to switch luminescence and reactivity of a disilver complex*, **J. Am. Chem. Soc.** 143(37) (2021) 15045-15055; DOI: 10.1021/jacs.1c04413; first published 07 September 2021
26. Cheng-Ham Wu, K.S. Kisel, Muthu Kumar Thangavel, Yi-Ting Chen, Kai-Hsin Chang, Ming-Rung Tsai, Chia-Yu Chu, Yu-Fang Shen, Pei-Chun Wu, Tzu-Ming Liu, J. Jänis, E.V. Grachova, J.R. Shakirova, S.P. Tunik, I.O. Koshevoy, Pi-Tai Chou, *Functionalizing collagen with vessel-penetrating two-photon*

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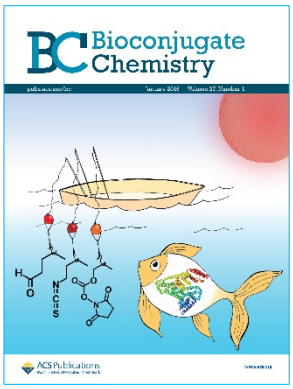
Covers gallery



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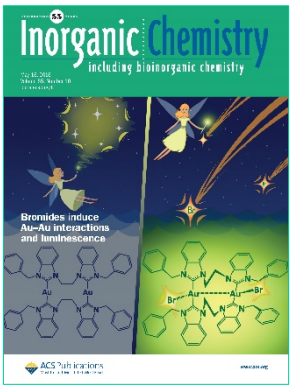

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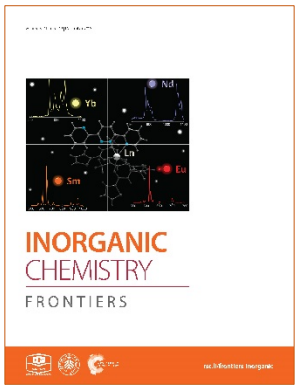

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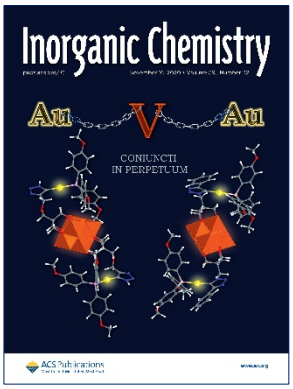

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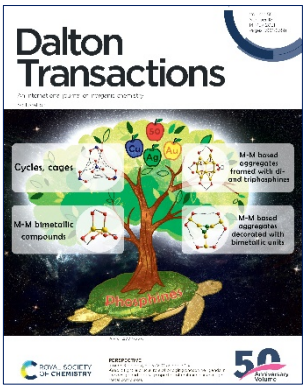
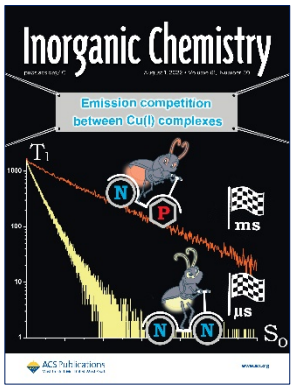


Keep it tight: a crucial role of bridging phosphine ligands in the design and optical properties of multinuclear coinage metal complexes, **Dalton Trans.** 50 (2021)



So Close, Yet so Different: How One Donor Atom Changes Significantly the Photophysical Properties of Mononuclear Cu(I) Complexes, **Inorg. Chem.**, 61(30) (2022)

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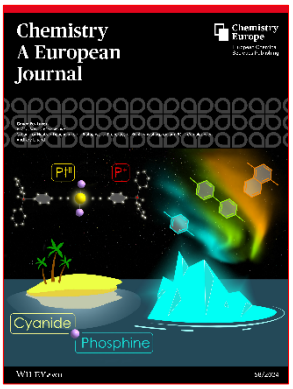

Cationic or Neutral: Dependence of Photophysical Properties of Bis-alkynylphosphonium Pt(II) Complexes on Ancillary Ligand, **Chem. Eur. J.** 58(30) (2024)

Contributions to Academic Conferences

1. E. Grachova, *Mononuclear Pt(II) complexes as building blocks of supramolecular systems*, IV Scientific Conference 'Dynamic processes in the chemistry of elementorganic compounds', 28 October - 01 November 2022, Arbuzov IOPC FRC Kazan Scientific Center of RAS, Kazan, Russia **Keynote**
2. Paderina A.V., Sizova A.A., Grachova E.V., *Cationic or neutral: dependance of photophysical properties of bis-alkynylphosphonium Pt(II) complexes on ancillary ligand*, The XIII International Conference on Chemistry For Young Scientists Mendeleev 2024, 2-6 September 2024, St Petersburg, Russia
3. Abramova E.O., Grachova E.V., *Bipyridine-based phosphine oxides as ancillary ligands for bis-cyclometallated iridium(III) complexes*, The XIII International Conference on Chemistry For Young Scientists Mendeleev 2024, 2-6 September 2024, St Petersburg, Russia
4. Luginin M.E., Grachova E.V., *Synthesis and photophysical properties of anthracyl and ethynylanthracene bis-cyclometallated gold(III) complexes bearing a ethynyldiphenylphosphoryl group*, The XIII International Conference on Chemistry For Young Scientists Mendeleev 2024, 2-6 September 2024, St Petersburg, Russia
5. Safronova S.D., Luginin M.E., Grachova E.V., *Cyanido-bridged heterometallic Pt(II)−Au(III) complexes: synthesis and photophysical properties,* The XIII International Conference on Chemistry For Young Scientists Mendeleev 2024, 2-6 September 2024, St Petersburg, Russia
6. Snetkov D.A., Grachova E.V., *A new class of cationic phosphine ligands containing a phosphonium moiety: synthesis and photophysical properties,* The XIII International Conference on Chemistry For Young Scientists Mendeleev 2024, 2-6 September 2024, St Petersburg, Russia
7. Grachova E.V., *Molecular emitters based on organometallic complexes of transition metals with aromatic ligands*, Russian Conference 'Chemistry of unsaturated compounds: alkynes, alkenes, arenes and heteroarenes' dedicated to the scientific heritage of M.G. Kucherov, 19-21 June 2024, St. Petersburg, Russia **Keynote**
8. E.V. Grachova E.V., A.V. Paderina, M.E. Luginin, C.O. Slavova, *Luminescent complexes of transition metals with D-π-A ligands*, the First Russian conference on luminescence LUMOS-2024, 23-26 April 2024, Moscow, Russia
9. Grachova E.D., Paderina A.V., Luginin M.E., Snetkov D.A., Grachova E.V., *Alkynyl complexes of Au(I) with D-π-A ligands: synthesis and photophysical properties*, the First Russian conference on luminescence LUMOS-2024, 23-26 April 2024, Moscow, Russia
10. Luginin M.E., Grachova E.V., *Biscyclometallated aryl complexes of gold(III) containing phosphinoxide group: synthesis and photophysical properties*, the First Russian conference on luminescence LUMOS-2024, 23-26 April 2024, Moscow, Russia
11. Safronova S.D., Luginin M.E., Grachova E.V., *Heterometallic complexes of Pt(II)−Au(III) with cyclometallated tridentate ligands*, the First Russian conference on luminescence LUMOS-2024, 23-26 April 2024, Moscow, Russia
12. Sumovskiy D.S., Makarov I.S., Filippov I.P., Grachova E.V., Rostovskiy N.V., *Cyclometallated complexes of iridium(III) on the basis of imidazopyridine: synthesis and study of photophysical properties*, the First Russian conference on luminescence LUMOS-2024, 23-26 April 2024, Moscow, Russia
13. D.N. Yarullin, M.N. Zavalishin, E.O. Abramova, E.V. Grachova E.V., G.A. Gamov, *Fluorescence of crystalline hydrazones derived from pyridoxal-5-phosphate*, the First Russian conference on luminescence LUMOS-2024, 23-26 April 2024, Moscow, Russia
14. Paderina A.V., Grachova E.V., *Features of photophysical properties of monoalkynylphosphonium complexes of platinum(II) in solid phase*, the First Russian conference on luminescence LUMOS-2024, 23-26 April 2024, Moscow, Russia
15. Snetkov D.A., Grachova E.V., *Terpyridine monoalkynyl complexes of pt(II) containing diphenylphosphoryl group: study of photophysical and stimuli-responsive properties*, the First Russian conference on luminescence LUMOS-2024, 23-26 April 2024, Moscow, Russia
16. Abramova E.O., Grachova E.V., *Synthesis of polyfunctional bipyridines for application as ligands of transition metal complexes*, International Scientific Conference of Students, Postgraduates and Young Scientists Lomonosov-2024, 12-26 April 2024, Moscow, Russia
17. Paderina A.V., Grachova E.V., *Features of synthesis of monoalkynyl complexes of Pt(II) bearing a charged phosphonium group on the periphery of the ligand environment*, International Scientific Conference of Students, Postgraduates and Young Scientists Lomonosov-2024, 12-26 April 2024, Moscow, Russia

18. Snetkov D.A., Grachova E.V., *Influence of anion size on photophysical properties of terpyridine monoalkynyl complexes of Pt(II) in solution and in solid phase*, International Scientific Conference of Students, Postgraduates and Young Scientists Lomonosov-2024, 12-26 April 2024, Moscow, Russia
19. Safronova S.D., Luginin M.E., Grachova E.V., *Synthesis of heterometallic complex Pt(II)-Au(III) with cyclometalating tridentate ligands*, Conference on Natural Sciences and Humanities with International Participation 'Nauka SPU 2023', 21 November 2023, St. Petersburg, Russia
20. Grachova E., Paderina A., Luginin M., *Organometallic compounds of transition metals: bright stars of Universe of molecular emitters*, IV International Symposium 'Modern trends in organometallic chemistry and catalysis' dedicated to the 100th anniversary of Academician M.E. Volpin, 23-27 May 2023, Moscow, Russia **Invited**
21. Paderina A.V., Petrovskiy S.K., Grachova E.V., *Bis-alkynyl complexes of Pt(II) with ligands based on phosphonium salts: photophysical and stimuli-responsive properties in the solid phase*, International Scientific Conference of Students, Postgraduates and Young Scientists "Lomonosov", 10-21 April 2023, Moscow, Russia
22. Snetkov D.A., Paderina A.V., Luginin M.E., Grachova E.V., *Influence of solvent properties on photophysical properties of diimine bis-alkynyl complexes of Pt(II) containing $PPh_2(O)$ group*, International Scientific Conference of Students, Postgraduates and Young Scientists "Lomonosov", 10-21 April 2023, Moscow, Russia
23. Luginin M.E., Snetkov D.A., Grachova E.V., *Alkynyl complexes of gold(III) containing tertiary phosphine oxides: synthesis and photophysical properties*, International Scientific Conference of Students, Postgraduates and Young Scientists "Lomonosov", 10-21 April 2023, Moscow, Russia
24. Sumovsky D.S., Makarov I.S., Filippov I.P., Grachova E.V., Rostovsky N.V., *Cyclometallated iridium(III) complexes based on imidazopyridines*, International Scientific Conference of Students, Postgraduates and Young Scientists "Lomonosov", 10-21 April 2023, Moscow, Russia
25. Surkova A., A. Bogomolov, A. Paderina, V. Khistiaeva, E. Boichenko, E. Grachova, D. Kirsanov, *Milk Analysis using a New Optical Multisensor System Based on Lanthanide(III) Complexes*, Eng. Proc. 48(1) (**2023**) 28; DOI: 10.3390/CSAC2023-14923; first published 07 October 2023 [This article belongs to the Proceedings of The 2nd International Electronic Conference on Chemical Sensors and Analytical Chemistry]
26. A. Surkova, A. Bogomolov, A. Paderina, V. Khistiaeva, E. Boichenko, E. Grachova, D. Kirsanov, *Milk analysis by a new optical multisensor system based on lanthanide(III) complexes*, The 2nd International Electronic Conference on Chemical Sensors and Analytical Chemistry, 2023
27. E. Grachova, A. Paderina, S. Petrovskii, E. Abramova, *Non-covalent interactions in the design of luminophores based on transition metal complexes*, 2nd International Symposium "Noncovalent Interactions in Synthesis, Catalysis, and Crystal Engineering", 14-16 November 2022, Moscow, Russia **Invited**
28. E. Grachova, *Supramolecular systems based on Pt(II) complexes and how to manage them*, XXIII International Chernyaev Conference on Chemistry, Analytics and Technology of Platinum Metals, 3-7 October 2022, Novosibirsk, Russia **Plenary**
29. A.V. Paderina, S.K. Petrovskii, E.V. Grachova, *Pt(II) bis-alkynyl complexes with ligands based on phosphonium salts: synthesis and photophysical properties*, XXIII International Chernyaev Conference on Chemistry, Analytics and Technology of Platinum Metals, 3-7 October 2022, Novosibirsk, Russia
30. A.D. Mironova, S.K. Petrovskii, E.V. Grachova, *Platinum(II) complexes with alkynylpyridinium ligands: Synthesis and photophysical properties*, XXIII International Chernyaev Conference on Chemistry, Analytics and Technology of Platinum Metals, 3-7 October 2022, Novosibirsk, Russia
31. S.K. Petrovskii, A.D. Mironova, E.V. Grachova, *Homoleptic gold(I) bis-alkynyl complexes with intramolecular charge transfer*, XXIII International Chernyaev Conference on Chemistry, Analytics and Technology of Platinum Metals, 3-7 October 2022, Novosibirsk, Russia
32. E. Grachova, *Non-rigid ligands in the design of polynuclear luminescent Au(I) complexes*, III Scientific Conference 'Dynamic processes in the chemistry of elementorganic compounds' dedicated to the 145th anniversary of Academician A.E. Arbuzov, 12-15 September 2022, Arbuzov IOPC FRC Kazan Scientific Center of RAS, Kazan, Russia **Invited**
33. E. Grachova, *Design of functional molecular systems based on lanthanide complexes,* VII Russian Day Rare Earths, 14-16 February 2022, Arbuzov IOPC FRC Kazan Scientific Center of RAS, Kazan, Russia **Invited**
34. S.K. Petrovsky, M. Morse, S. Schmitz, K.M. Monakhov, E.V. Grachova, *Polyoxovanadate-organogold molecular hybrids: a new class of compounds for molecular electronics*, XXVIII International Chugaev Conference on Coordination Chemistry, 3-8 October 2021, Tuapse, Russia

35. A.V. Paderina, Yu.R. Shakirova, I.O. Koshevoy, E.V. Grachova, *New effective method for the synthesis of bis-diimine Rhenium(I) complexes*, XXVIII International Chugaev Conference on Coordination Chemistry, 3-8 October 2021, Tuapse, Russia
36. V.V. Khistyaeva, E.V. Gracheva, I.O. Koshevoy, *Cyclometallated Pt(II) and Pd(II) binuclear complexes based on tridentate ligands: design and photophysical properties*, XXVIII International Chugaev Conference on Coordination Chemistry, 3-8 October 2021, Tuapse, Russia
37. E. Abramova, E. Kostenko, E. Eliseenkov, V. Boyarskiy, E. Grachova, *Aggregation-induced emission in gold(I) complexes bearing with terpyridine fragment,* XXVIII International Chugaev Conference on Coordination Chemistry, 3-8 October 2021, Tuapse, Russia
38. E.V. Grachova, *Transition metal complexes as 'building blocks' of functional molecular systems*, XXVIII International Chugaev Conference on Coordination Chemistry, 3-8 October 2021, Tuapse, Russia
39. Khistiaeva V.V., Grachova E.V., Koshevoy I.O., *So close but different: Pt(II) and Pd(II) binuclear cyclometalated compexes of the tridentate $N^{\cap}N^{\cap}C$ and $N^{\cap}C^{\cap}N$ ligands*, The XII International Conference on Chemistry For Young Scientists Mendeleev 2021, 6-10 September 2021, St Petersburg, Russia
40. E. Grachova, *Complexes of f-elements for the design of multichromic molecular emitters*, VI Russian Day Rare Earths, 17-19 February **2020**, Novosibirsk, Russia
41. E. Grachova, *Design of multicolor molecular emitters based on transition metal complexes for single-molecule-based (SMB) materials*, International School on Advanced Light-Emitting and Optical Materials (SLALOM 2019) ITMO University 12-13 December **2019**, St. Petersburg **Invited**
42. E. Grachova, *Heterometallic complexes constructed of d- and f-blocks: synthesis and structure characterization by soft X-ray*, Workshop on Spin-resolved Photoemission and Electronic Structure of Quantum and Energy Materials, 28-29 October **2019**, Berlin, Germany **Invited**
43. E. Grachova, *Design of multichromophore molecular emitters based on combination of transition metal complexes*, 5th EuChemS Inorganic Chemistry Conference (EICC-5), 24-28 June **2019**, Moscow, Russia **Invited**
44. A. Gitlina, I. Koshevoy, E. Grachova, *Solid-state organization of novel cyclometalated platinum(II) complexes through weak interactions*, 5th EuChemS Inorganic Chemistry Conference (EICC-5), 24-28 June **2019**, Moscow, Russia
45. E. Abramova, E. Kostenko, A. Gitlina, V. Boyarskiy, E. Eliseenkov and E. Grachova, *Gold(I) complexes decorated by flexible alkynyl-terpyridine ligands: some features of luminescence,* 5th EuChemS Inorganic Chemistry Conference (EICC-5), 24-28 June **2019**, Moscow, Russia
46. V. Khistiaeva, A. Gitlina, E.V. Grachova, *Click-chemistry as a convenient way for binding of metalloblocks: design principles for the construction of multi-metallic systems containing Ln(III),* 5th EuChemS Inorganic Chemistry Conference (EICC-5), 24-28 June **2019**, Moscow, Russia
47. A. Paderina, E. Grachova, J. Shakirova, E. Galenko, and A. Khlebnikov, *Heteroleptic phosphine-diimine Cu(I) and Ag(I) complexes: synthesis and photophysical properties*, 5th EuChemS Inorganic Chemistry Conference (EICC-5), 24-28 June **2019**, Moscow, Russia
48. V.V. Khistyayeva, A.Yu. Gitlina, E.V. Grachova, *Strategy of post-synthetic modification of metalloligands Ir(III) complexes for construction of luminescent d-f dyads*, V Russian Day Rare Earths, 14-15 February **2019**, Nizhny Novgorod, Russia
49. J. Shakirova, E. Grachova, I. Koshevoy, and S. Tunik, *Luminescent heterometallic Au(I)-Cu(I) cluster-capped assemblies: demonstration of post-synthetic modification of the metal cores*, The Russian National Cluster of Conferences on Inorganic Chemistry «InorgChem 2018», 17-21 September **2018**, Astrakhan, Russia
50. Kisel, K.S., Koshevoy, I.O.; Grachova, E.V., and Tunik, S.P, *Synthesis and luminescent properties of zinc(II) complexes based on the 2-pyridyl-1H-phenanthro[9,10-d]imidazole ligands*, The Russian National Cluster of Conferences on Inorganic Chemistry «InorgChem 2018», 17-21 September **2018**, Astrakhan, Russia
51. Elena Grachova, *Molecular emitters based on heavy metal complexes equipped by bipyridine arm: some features of design and photophysical properties*, 3rd STEPS Symposium on Photon Science, 11-12 March **2018**, Moscow, Russia
52. I.V. Solovyev, E.V. Grachova, *Mononuclear complexes of gold(I) as sensitizers of lanthanide luminescence*, IV Russian Rare Earth Day, 15-16 February **2018**, Moscow, Russia

53. S.O. Slavova, V.V. Sizov, I.V. Solovyev, E.V. Grachova, *Quantum-chemical calculations of the electronic structure and excited states of d-f heterometallic ensembles by DFT and TDDFT methods*, IV Russian Rare Earth Day, 15-16 February **2018**, Moscow, Russia
54. V.V. Khistyaeva, E.V. Grachova, *Heterometallic Ir(III)/Ln(III) luminescent dyads: NIR emitters based on d-f systems*, IV Russian Rare Earth Day, 15-16 February **2018**, Moscow, Russia
55. E.V. Grachova, A.Yu. Gitlina, V.V. Khistyaeva, I.V. Solovyev, *Molecular d-f emitters based on heterofunctional polytope ligands: design features and photophysical properties*, IV Russian Rare Earth Day, 15-16 February **2018**, Moscow, Russia
56. Elena Grachova, *Supramolecular cluster complexes of copper subgroup metals: some features of architecture and controlled formation of hybrid nanostructures*, Workshop devoted to 15 Years of Russian-German Laboratory at BESSY II, 7-8 December **2017**, the BESSY II Facility of Helmholtz-Zentrum Berlin, Berlin, Germany **Invited**
57. Solovyev I.V., Belyaev A. A., Grachova E.V., Koshevoy I.O., *Au(I) complexes as sensitizers of Ln(III) emission: synthesis and photophysical study*, 22nd Conference on Organometallic Chemistry (EuCOMC XXII), 9-13 July **2017**, Amsterdam, Netherlands
58. Kisel K.S., Koshevoy I.O., Grachova E.V., Tunik S.P., *A New Generation of Diimine Ligands with Tunable Photophysical Behavior and Their Rhenium(I) Complexes*, 22nd Conference on Organometallic Chemistry (EuCOMC XXII), 9-13 July **2017**, Amsterdam, Netherlands
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Patents

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