updated on September 24, 2018

Dmitry V. Peryshkov

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Education and Work Experience:

2013-present	Assistant Professor, Department of Chemistry and Biochemistry, University of South Carolina
2011–2013	Postdoctoral Research Associate, Department of Chemistry Massachusetts Institute of Technology (Advisor: Professor R.R. Schrock)
2006–2011	Ph.D. in Chemistry, Department of Chemistry Colorado State University (Advisor: Professor S.H. Strauss)
1998– 2004	B.S. and M.S. in Materials Science, Department of Materials Science Moscow State University, Russia (Advisor: Professor E.A. Goodilin)

Awards

Doctoral New Investigator Award, American Chemical Society Petroleum Research Fund, 2014

National Science Foundation Faculty Early Career Development Program (CAREER) Award, 2017

USC Breakthrough Star Award, 2018

List of Publications:

as an assistant professor at USC:

46. Rahman, M. M.; Smith, M. D.; **Peryshkov, D. V.*** Imido Group Interchange in Reactions of Zwitterionic Tantalum(V) Vinylimido Complexes and Nitriles. *Organometallics,* **2018**, *37*, 2945−2949.

45. Eleazer, B. J and **Peryshkov, D. V.*** Coordination Chemistry of Carborane Clusters: Metal-Boron Bonds in Carborane, Carboranyl, and Carboryne Complexes *Comments on Inorganic Chemistry* (Invited Review) **2018** DOI: 10.1080/02603594.2018.1465939

44. Eleazer, B. J.; Smith, M. D.; Popov, A. A.*; **Peryshkov, D. V.*** Expansion of the (BB)>Ru Metallacycle with Coinage Metal Cations: Formation of B-M-Ru-B (M = Cu, Ag, Au) Dimetalacyclodiboryls *Chemical Science* **2018**, *9*, 2601–2608.

43. Islam, M. J.; Smith, M. D.; **Peryshkov, D. V**.* Sterically Encumbered Dianionic Dicarboranyl Pincer Ligand $(C_5H_3N)(C_2B_{10}H_{11})_2$ and its CNC Nickel(II) Complex *Journal of Organometallic Chemistry* (Special issue in celebration of Irina P. Beletskaya 85th Birthday) **2018**, *867*, 208-213.

42. Rahman, M. M.; Smith, M. D.; Amaya, J. A.; Makris, T. M.; **Peryshkov, D. V.*** Activation of C–H Bonds of Alkyl- and Arylnitriles by the $TaCl_5$–PPh_3 Lewis Pair *Inorganic Chemistry* **2017**, *56*, 11798–11803.

41. Eleazer, B. J.; Smith, M. D.; Popov, A. A.*; **Peryshkov, D. V.*** Rapid Reversible Borane to Boryl Hydride Exchange by Metal Shuttling on the Carborane Cluster Surface *Chemical Science* **2017**, *8*, 5399–5407.

40. **Peryshkov, D. V.***; Strauss, S. H.* Exceptional Structural Compliance of the $B_{12}F_{12}^{2-}$ Superweak Anion *Inorganic Chemistry,* **2017**, *56*, 4072–4083.

39. Eleazer, B. J.; Smith, M. D.; **Peryshkov, D. V.*** POBOP Pincer Complexes of Nickel(II): Synthesis and B–H Activation of the Carborane Ligand Upon Oxidation with Iodine *Journal of Organometallic Chemistry* (Special Issue "Frontiers in Organometallic Chemistry 2016") **2017**, *829*, 42–47.

38. Wong, Y. O.; Smith, M. D.; **Peryshkov, D. V.*** Reversible Water Activation Driven by Contraction and Expansion of the 12-vertex-*closo*-12-vertex-*nido* Biscarborane Cluster *Chemical Communications* **2016**, *52*, 12710–12713.

37. Eleazer, B. J.; Smith, M. D.; Popov, A. A.*; **Peryshkov, D. V.*** (BB)-Carboryne Complex of Ruthenium: Synthesis by Double B–H Activation at a Single Metal Center *Journal of the American Chemical Society* **2016**, *138*, 10531–10538.

36. Adams, R. D.*; Kiprotich, J.; **Peryshkov, D. V.***; Wong, Y. O. Opening of Carborane Cages by Metal Cluster Complexes. The Reaction of a Thiolate-Substituted Carborane with Triosmium Carbonyl Cluster Complexes *Inorganic Chemistry* **2016**, *55*, 8207–8213.

35. Rahman, M. M.; Smith, M. D.; **Peryshkov, D. V.*** Formation of a Cationic Vinylimido Group upon C-H Activation of Nitriles by Trialkylamines in the Presence of $TaCl_5$ *Inorganic Chemistry* **2016**, *55*, 5101–5103.

34. Wong, Y. O.; Smith, M. D.; **Peryshkov, D. V.*** Synthesis of the first example of the 12-vertex-*closo*-12-vertex-*nido* biscarborane cluster by a metal-free B-H activation at a phosphorus(III) center *Chemistry – A European Journal* **2016**, *22*, 6764–6767.

33. Adams, R. D.,* Kiprotich, J.; **Peryshkov, D. V.;*** Wong, Y. O. Cage Opening of a Carborane Ligand by Metal Cluster Complexes *Chemistry – A European Journal* **2016**, *22*, 6501–6504.

32. Eleazer, B. J.; Smith, M. D.; **Peryshkov, D. V.*** Metal- and Ligand-Centered Reactivity of *meta*-Carboranyl-Backbone Pincer Complexes of Rhodium *Organometallics*, **2016**, *35*, 106–112.

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prior to the appointment at USC:

31. Bukovsky, E. V.; **Peryshkov, D. V.**; Wu, H.; Zhou, W.; Tang, W. S.; Jones, W. M.; Stavila, V.; Udovic, T. J.; Strauss, S. H. Comparison of the Coordination of $B_{12}F_{12}^{2-}$, $B_{12}Cl_{12}^{2-}$, and $B_{12}H_{12}^{2-}$ to Na^+ in the Solid State: Crystal Structures and Thermal Behavior of $Na_2(B_{12}F_{12})$, $Na_2(H_2O)_4(B_{12}F_{12})$, $Na_2(B_{12}Cl_{12})$, and $Na_2(H_2O)_6(B_{12}Cl_{12})$ *Inorganic Chemistry* **2017** *56*, 4369–4379.

30. Malischewski, M.; **Peryshkov, D. V.**; Bukovsky, E. V.; Seppelt, K.; Strauss, S. H. Structures of $M_2(SO_2)_6B_{12}F_{12}$ (M = Ag or K) and $Ag_2(H_2O)_4B_{12}F_{12}$: Comparison of the Coordination of SO_2 versus

H_2O and of $B_{12}F_{12}^{2-}$ versus Other Weakly Coordinating Anions to Metal Ions in the Solid State *Inorganic Chemistry* **2016**, *55*, 12254–12262.

29. Conley, M. P.; Mougel, V.; **Peryshkov, D. V.**; Forrest, Jr. W. P.; Gajan, D.; Lesage, A.; Emsley, L.; Copéret, C.; Schrock, R. R. A Well-Defined Silica-Supported Tungsten Oxo Alkylidene Is a Highly Active Alkene Metathesis Catalyst *Journal of the American Chemical Society* **2013**, *135*, 19068–19070.

28. Cain, M. F.; Forrest, Jr. W. P.; **Peryshkov, D. V.**; Schrock, R. R.; Müller, P. Synthesis of a TREN in Which the Aryl Substituents are Part of a 45 Atom Macrocycle *Journal of the American Chemical Society* **2013**, *135*, 15338–15341.

27. **Peryshkov, D. V.**; Forrest, Jr. W. P.; Schrock, R. R.; Smith, S. J.; Müller, P. $B(C_6F_5)_3$ Activation of Oxo Tungsten Complexes That Are Relevant to Olefin Metathesis *Organometallics*, **2013**, *32*, 5256–5259.

26. Bukovsky, E. V.; Fiedler, S. R.; **Peryshkov, D. V.**; Popov, A. A.; Strauss, S. H. The Structure of $(H_3O)_2B_{12}F_{12}\cdot 6H_2O$ – a CCP Lattice of $B_{12}F_{12}^{2-}$ Anions Intercalated with a Nonplanar Network of O–H···O Connected O_6 Rings. *European Journal of Inorganic Chemistry* **2012**, 208–212.

25. **Peryshkov, D. V.**, Schrock, R. R. Synthesis of Tungsten Oxo Alkylidene Complexes *Organometallics*, **2012**, *31*, 7278–7286

24. **Peryshkov, D. V.;** Schrock, R. R.; Takase, M. K.; Mueller, P.; Hoveyda, A. H. *Z*-Selective Olefin Metathesis Reactions Promoted by Tungsten Oxo Alkylidene Complexes. *Journal of the American Chemical Society* **2011**, *133*, 20754–20757.

23. Belletire, J. L.; Schneider, S.; Shackelford, S. A.; **Peryshkov, D. V.**; Strauss, S. H. Pairing heterocyclic cations with closo-dodecafluorododecaborate (2–). Synthesis of binary heterocyclium(1+) salts and a $Ag_4(heterocycle)_8^{4+}$ salt of $B_{12}F_{12}^{2-}$. *Journal of Fluorine Chemistry* **2011**, *132*, 925–936.

22. Shackelford, S. A.; Belletire, J. L.; Boatz, J. A.; Schneider, S.; Wheaton, A. K.; Wight, B. A.; Ammon, H. L.; **Peryshkov, D. V.**; Strauss, S. H. Bridged Heterocyclium Dicationic closo-Icosahedral Perfluoroborane, Borane, and Carborane Salts via Aqueous, Open-Air Benchtop Synthesis (vol 12, pg 2714, 2010). *Organic Letters* **2011**, *13*, 2795–2796.

21. Shustova, N. B.; **Peryshkov, D. V.**; Kuvychko, I. V.; Chen, Y.-S.; Mackey, M. A.; Coumbe, C. E.; Heaps, D. T.; Confait, B. S.; Heine, T.; Phillips, J. P.; Stevenson, S.; Dunsch, L.; Popov, A. A.; Strauss, S. H.; Boltalina, O. V. Poly(perfluoroalkylation) of Metallic Nitride Fullerenes Reveals Addition-Pattern Guidelines: Synthesis and Characterization of a Family of Sc3N@C-80(CF3)(n) (n=2-16) and Their Radical Anions. *Journal of the American Chemical Society* **2011**, *133*, 2672–2690.

20. Shustova, N. B.; Kuvychko, I. V.; **Peryshkov, D. V.**; Whitaker, J. B.; Larson, B. W.; Chen, Y.-S.; Dunsch, L.; Seppelt, K.; Popov, A. A.; Strauss, S. H.; Boltalina, O. V. Chemical tailoring of fullerene acceptors: synthesis, structures and electrochemical properties of perfluoroisopropylfullerenes. *Chemical Communications* **2011**, *47*, 875–877.

19. **Peryshkov, D. V.;** Strauss, S. H. $K_2B_{12}F_{12}$ A rare A_2X structure for an ionic compound at ambient conditions. *Journal of Fluorine Chemistry* **2010**, *131*, 1252–1256.

18. **Peryshkov, D. V.**; Goreshnik, E.; Mazej, Z.; Strauss, S. H. Co-crystallization of octahedral and icosahedral fluoroanions in $K_3(AsF_6)(B_{12}F_{12})$ and $Cs_3(AsF_6)(B_{12}F_{12})$ Rare examples of salts containing fluoroanions with different shapes and charges. *Journal of Fluorine Chemistry* **2010**, *131*, 1225–1228.

17. **Peryshkov, D. V**.; Popov, A. A.; Strauss, S. H. Latent Porosity in Potassium Dodecafluoro-closo-dodecaborate(2–). Structures and Rapid Room Temperature Interconversions of Crystalline $K_2B_{12}F_{12}$, $K_2(H_2O)_2B_{12}F_{12}$, and $K_2(H_2O)_4B_{12}F_{12}$ in the Presence of Water Vapor. *Journal of the American Chemical Society* **2010**, *132*, 13902–13913.

16. Shackelford, S. A.; Belletire, J. L.; Boatz, J. A.; Schneider, S.; Wheaton, A. K.; Wight, B. A.; Ammon, H. L.; **Peryshkov, D. V.**; Strauss, S. H. Bridged Heterocyclium Dicationic closo-Icosahedral Perfluoroborane, Borane, and Carborane Salts via Aqueous, Open-Air Benchtop Synthesis. *Organic Letters* **2010**, *12*, 2714–2717.

15. **Peryshkov, D. V.**; Popov, A. A.; Strauss, S. H. Direct Perfluorination of $K_2B_{12}H_{12}$ in Acetonitrile Occurs at the Gas Bubble-Solution Interface and Is Inhibited by HF. Experimental and DFT Study of Inhibition by Protic Acids and Soft, Polarizable Anions. *Journal of the American Chemical Society* **2009**, *131*, 18393–18403.

14. Shustova, N. B.; **Peryshkov, D. V.**; Kareev, I. E.; Boltalina, O. V.; Strauss, S. H. 1,4,7,11,18,21,24,31,35,39,51,58,61,64-Tetradecakis(trifluoromethyl)-1,4,7,11,18,21,24,31,35,39,51,58,61,64-tetradecahydro(C_{70}-D_{5h})[5,6]fullerene p-xylene trisolvate. *Acta Crystallographica Section E-Structure Reports Online* **2007**, *63*, O3928–U1876.

13. Shustova, N. B.; **Peryshkov, D. V.**; Boltalina, O. V.; Strauss, S. H. 1,4,10,19,25,41,55,60,67,69-Decakis(trifluoromethyl)-1,4,10,19,25,41,55,60,67,69-decahydro(C_{70}-D_{5h})[5,6] fullerene. *Acta Crystallographica Section E-Structure Reports Online* **2007**, *63*, O4073–U3278.

12. Shustova, N. B.; **Peryshkov, D. V.**; Kareev, I. E.; Boltalina, O. V.; Strauss, S. H. 1,6,11,16,18,24,27,36-octakis(trifluoromethyl)-1,6,11,16,18,24,27,36-octahydro(C_{60}-I_h)[5,6]fullerene deuterochloroform solvate. *Acta Crystallographica Section E-Structure Reports Online* **2007**, *63*, O3398–U2441.

11. Shustova, N. B.; **Peryshkov, D. V.**; Popov, A. A.; Boltalina, O. V.; Strauss, S. H. 1,6,11,18,24,27,33,51,54,60-decakis(trifluoromethyl)-1,6,11,18,24,27,33,51,54,60-decahydro(C_{60}-I_h)[5,6]fullerene. *Acta Crystallographica Section E-Structure Reports Online* **2007**, *63*, O3129–U2823.

10. Kareev, I. E.; Shustova, N. B.; **Peryshkov, D. V.**; Lebedkin, S. F.; Miller, S. M.; Anderson, O. P.; Popov, A. A.; Boltalina, O. V.; Strauss, S. H. X-ray structure and DFT study of *C*1-$C_{60}(CF_3)_{12}$. A high-energy, kinetically-stable isomer prepared at 500 ºC. *Chemical Communications* **2007**, 1650–1652.

9. Shlyakhtina, A. V.; Knotko, A. V.; Boguslavskii, M. V.; Stefanovich, S. Y.; **Peryshkov, D. V.**; Kolbanev, I. V.; Shcherbakova, L. G. Effects of the synthesis procedure, doping and non-

stoichiometry on the order-disorder transformation in $Ln_2Ti_2O_7$ (Ln = Tm–Lu) oxygen-ion conductors. *Solid State Ionics* **2005**, *176*, 2297–2304.

8. Shlyakhtina, A. V.; Knotko, A. V.; Boguslavskii, M. V.; Stefanovich, S. Y.; Kolbanev, I. V.; **Peryshkov, D. V.**; Shcherbakova, L. G. Influence of structural defects on the electrical conductivity of $(Yb_{1-x}Sc_x)_2Ti_2O_7$ (x=0, 0.09, 0.3). *Inorganic Materials* **2005**, *41*, 406–411.

7. Goodilin, E. A.; **Peryshkov, D. V.**; Presniakov, I. A.; Didenko, K. V.; Tretyakov, Y. D. A comparative Mossbauer study of the $Nd_{1+x}Ba_{2-x}(Cu_{0.97}{}^{57}Fe_{0.03})_3O_z$ solid solution: the role of low-temperature treatment. *Superconductor Science & Technology* **2004**, *17*, 1353–1360.

6. Goodilin, E. A.; **Peryshkov, D. V.**; Didenko, K. V.; Makarova, M. V.; Tretyakov, Y. D. Dynamics of cation ordering in an intentionally prepared low-T-c pseudocubic $NdBa_2Cu_3O_{6.9}$ phase. *Superconductor Science & Technology* **2004**, *17*, 1341–1345.

5. **Peryshkov, D. V.**; Goodilin, E. A.; Presnyakov, I. A.; Didenko, K. V.; Tretyakov, Y. D.; Birkner, A.; Grunert, W. Thermal instability of a cation-disordered $NdBa_2Cu_3O_7$ superconductor. *Mendeleev Communications* **2004**, 161–163.

4. Tretyakov, Y. D.; Goodilin, E. A.; **Peryshkov, D. V.**; Itkis, D. M. Structural and microstructural features of functional materials based on cuprates and manganites. *Uspekhi Khimii* **2004**, *73*, 954–973.

3. **Peryshkov, D. V.**; Gudilin, E. A.; Makarova, M. V.; Pomerantseva, E. A.; Mudretsova, S. N.; Maiorova, A. F.; Tret'yakov, Y. D. Dynamics of cation ordering in the superconducting $NdBa_2Cu_3O_7$ phase. *Doklady Chemistry* **2002**, *387*, 323–327.

2. Didenko, K. V.; **Peryshkov, D. V.**; Gudilin, E. A.; Presnyakov, I. A.; Pomerantseva, E. A.; Tret'yakov, Y. D. Specific features of the local structure of quasi-cubic lanthanide barium cuprates $Nd_{1+x}Ba_{2-x}((Cu_{0.97}{}^{57}Fe_{0.03})_3O_{7-z}$ (x=0, 0.6). *Doklady Chemistry* **2002**, *387*, 316–321.

1. **Peryshkov, D. V**.; Gudilin, E. A.; Makarova, M. V.; Trofimenko, E. A.; Mudretsova, S. N.; Maiorova, A. F.; Tret'yakov, Y. D. Evolution of the superconducting $NdBa_2Cu_3O_z$ phase upon isothermal annealing. *Doklady Chemistry* **2002**, *383*, 105–109.

Thesis Advisor and Postgraduate-Scholar Sponsor:

Graduate Students:

2013–2018 (Ph.D.)	Bennet J. Eleazer (University of South Carolina)
2013–2018 (Ph.D.)	Md Mamdudur Rahman (University of South Carolina)
2014–2016 (M.S.)	Surendra Karki (University of South Carolina)
2015–present	Md Jahirul Islam (University of South Carolina)
2016–2018	Dmitry Royzman (University of South Carolina)
2017–present	Gayathri Gange (University of South Carolina)
2017–present	Chathumal Jayaweera (University of South Carolina)

Postdoctoral Fellows:

2015–2017 Dr. Yuenn Onn Wong (University of South Carolina)

updated on September 24, 2018

Funding

National Science Foundation, "CAREER: Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions" 2017–2022 (active) $709,725

American Chemical Society Petroleum Research Fund, "Electron-Donating Carboranyl Ligands for Iron-Catalyzed Hydrocarbon Oxidation" 2014–2016 (completed) $110,000

Office of the USC Vice President for Research, ASPIRE I, Track I. "The Role of Boron-Metal Bonds in Cooperative Activation of Small Molecules" 2015–2016 (completed) $15,000

Committee Assignments

Chemistry and Biochemistry - Recruiting Committee
Chemistry and Biochemistry - Library Committee
Chemistry and Biochemistry - Dry Stills Committee
Chemistry and Biochemistry -X-ray Policy Committee

Seminars and Meetings.

1. University of South Florida, "Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions" November 2017
2. University of North Carolina – Chapel Hill, "Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions" January 2018
3. University of Southern California, "Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions" May 2018
4. University of California, Los Angeles, "Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions" May 2018
5. University of California, Riverside, "Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions" May 2018
6. University of Maryland, "Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions" September 2018
7. North Carolina State University, "Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions" September 2018
8. Peryshkov D. V. Novel metal-free B–H activation of icosahedral boron clusters, *251 ACS National Meeting & Exposition*, San Diego, March 13–17, 2016. (invited)
9. Peryshkov, D. V. Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions, *43rd International Conference on Coordination Chemistry (ICCC2018)*, Sendai, Japan July 30−August 4, 2018. (invited)
10. Peryshkov, D.V. Multimetallic Complexes Supported by Carborane Ligands, *Gordon Research Conference on Organometallic Chemistry*, Newport RI, July 8–13, 2018 (selected from poster presenters and invited for an oral presentation)

11. Peryshkov, D.V. Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions: Boranes, Boryls, and Carborynes, *16th Boron Chemistry Meeting in the Americas (BORAMXVI)*, Boston, MA, June 26−June 30, 2018.
12. Peryshkov, D.V. Carborane Cluster Architectures Featuring Multiple Metal-Boron Interactions, *2nd From Carbon-Rich Molecules to Carbon-Based Materials Conference*, Nassau, Bahamas, June 7−June 10, 2018.
13. Peryshkov, D. V. Boron Cluster Architectures Featuring Multiple Metal-Boron Interactions, *Gordon Research Conference on Organometallic Chemistry*, Newport RI, July 9–14, 2017
14. Peryshkov D. V. Multiple metal-boron interactions in carboranyl pincer complexes, *254th ACS National Meeting*, Washington, DC, August 20-24, 2017.
15. Peryshkov D. V. Formation of Ta(V) imido complexes upon cooperative Lewis acid-Lewis base C-H activation of aryl- and alkylnitriles, *254th ACS National Meeting*,Washington, DC, August 20-24, 2017.
16. Peryshkov D. V. Metal- and ligand-centered reactivity of B-metalated carboranyl pincer complexes of rhodium, *251 ACS National Meeting & Exposition*, San Diego, March 13–17, 2016.
17. Peryshkov D. V. Formation of zwitterionic imido complexes upon activation of coordinated nitriles, *251 ACS National Meeting & Exposition*, San Diego, March 13–17, 2016.
18. Peryshkov, D. V. Metal- and Ligand-Centered Reactivity of B-Carboranyl Pincer Complexes, *Organometallic Chemistry Gordon Research Conference,* Newport RI, July 7–15, 2016
19. Peryshkov D. V. Metal-ligand cooperativity in carborane-based metal complexes, *2016 Southeast Regional ACS Meeting (SERMACS)*, Columbia SC, October 23–26, 2016.
20. Peryshkov D. V. Metal-ligand cooperativity in B-carboranyl metal complexes: The synthesis of the first BB-carboryne, *2016 Southwest Regional ACS Meeting (SWRM)*, Galveston TX, November 10–13, 2016.

Synergistic Activities

Teaching and Service: Development of the new multidisciplinary course “Chemistry of Renewable Energy” at the University of South Carolina, attended by the students of the department of chemistry and biochemistry and the department of chemical engineering.

Peer-review service for the *J. Am. Chem. Soc., Dalton Trans.*, *J. Organomet. Chem., Inorg. Chem., Organometallics*, and *Inorg. Chem. Frontiers.*

Outreach: Judge at Discovery Day showcase events in Columbia, South Carolina.
Organizer of the Southeast Undergraduate Research Conference SURC-2017.
Graduate Education for Minorities (GEM) Get Ready for the Advanced Degree (GRAD) Lab faculty participant, October 2015.