

CURRICULUM VITAE

Yulia Pushkar

Department of Physics and Astronomy, Purdue University
525 Northwestern Avenue West Lafayette, IN 47907
Phone: 765-4963279 Email: ypushkar@purdue.edu

Academic preparation

Postdoc: 2004-2008, University of California, Berkeley & Lawrence Berkeley National Lab.

Postdoc: 2003-2004, Institut für Experimentalphysik, Freie Universität Berlin, Germany.

Ph.D. 2003 (summa cum laude), Biophysics, Freie Universität Berlin, Germany.

M.S. 1999 (with honor), Physical Chemistry, Moscow State University, Russia.

Appointments

Associate Professor of Physics Purdue University,	2014 - present
Visiting Professor, Swiss Federal Institute of Technology (ETH, Zurich)	05-11, 2015
Assistant Professor of Physics Purdue University,	2008 - 2014

Awards:

Showalter Faculty Scholar	2019
Purdue College of Science Team Award	2019
(for work on T32 Molecular Biophysics Training Grant)	
Outstanding Advisor Award, Purdue University	2017
The Purdue College of Science Research Award	2016
Kavli Fellow (promising young scientist under age of 40)	2015
Outstanding Advisor Award, Purdue University	2015
National Science Foundation CAREER Award	2014
Seed for Success Award, Purdue University	2010
Young Investigator Award, Gordon Research Conference on Photosynthesis	2006
Postdoctoral Richard Malkin Award for research in the field of photosynthesis	2005
The German Academic Exchange Service (DAAD) grant for graduate study	2000
Halder-Topsoe Graduate Student Research Grant	1999
Chevron Corporation Award for Research in Ecologically Friendly Catalysis	1998
Open Society Institute and Soros Foundation Undergraduate Research Grants	1994-1999

Experience

- Over twenty years of experimental experience in EPR spectroscopy as applied in catalysis; protein studies; studies of the electron transfer process in proteins, protein-cofactor interactions. Experience in spin labels, isotope labels and paramagnetic probe molecules techniques.
- Over fifteen years of experimental experience in application of Synchrotron X-ray absorption, emission and diffraction methods for analysis of molecular structures; crystal structures; structure and function of active sites in metalloproteins; electronic structures of organic/inorganic compounds. Time resolved studies using lasers and X-rays.

Synergistic activities

Member: American Chemical Society, Biophysical Society

Co-organizer of Midwest Photosynthesis Meeting

Co-PI of NIH funded Biophysics Training grant, Purdue (2019-2024).

NSF: Graduate Research Fellowship Program (GRFP) panelist, Chemistry of Living Systems reviewer.

Manuscript reviewer for Journal of the American Chemical Society, Nature Chemistry, Nature Energy, Nature Catalysis, Angewandte Chemie, Biochemistry, Materials Today, Polyhedron, The Journal of Physical Chemistry, PlosOne, Inorganic Chemistry, ACS catalysis, Brain Structure, Chem. Soc. Rev., ChemSUSChem, ChemComm, Metallomics, Journal of Biological Inorganic Chemistry, PCCP.

Participant of the Research Experience for Undergraduates (REU) program in Physics department funded by NSF

Member of Spectroscopy panel, Advanced Photon Source, ANL

Spectroscopy beamlines oversight advisory committee, Advanced Photon Source, ANL

List of publications

1. "Atomically-dispersed Iridium on Indium Tin Oxide Efficiently Catalyzes Water Oxidation" Lebedev, Dmitry; Ezhov, Roman; Herasdo, J; Comas Vives, Aleix; Kaeffer, Nicolas; Willinger, Marc-Georg; Solans-Monfort, Xavier; Huang, Xing; Pushkar, Yulia; Copéret, Christophe, **ACS Central Science**, 2020, 6, 1189-1198.
2. "Characterization of the $\text{Fe}^{\text{V}}=\text{O}$ complex in the pathway of water oxidation" Roman Ezhov, Alireza Karbakhsh Ravari, Yulia Pushkar, **Angewandte Chemie**, 2020, 132, 13604-13607.
3. „Water Oxidation Catalyst $\text{cis-}[\text{Ru}(\text{bpy})(5,5'\text{-dcbpy})(\text{H}_2\text{O})_2]^{2+}$ and Its Stabilization in Metal-organic Framework" Roman Ezhov, Alireza Ravari Karbakhsh, Allison Page, Yulia Pushkar, **ACS Catalysis**, 2020, 10, 5299-5308.
4. „Unraveling the mechanism of catalytic water oxidation via *de novo* synthesis of reactive intermediate“ Alireza Karbakhsh Ravari, Guibo Zhu, Roman Ezhov, Yuliana Pineda-Galvan, Allison Bailly Page, Whitney Weinschenk, Lifan Yan, Yulia Pushkar, **Journal of the American Chemical Society**, 2020, 142(2), 884-893.
5. „An evolutionarily conserved iron-sulfur cluster underlies redox sensory function of the Chloroplast Sensor Kinase“ Iskander M. Ibrahim, Huan Wu, Roman Ezhov, Gilbert E. Kayanja, Stanislav D. Zakharov, Yanyan Du, Weiguo Andy Tao, Yulia Pushkar, William A. Cramer, and Sujith Puthiyaveetil, **Communications Biology**, 2020, 3(1), 1-11.

2019

6. “A High-Valent Manganese(IV)-Oxo-Ce(IV) Complex and Its Enhanced Oxidizing Reactivity“ Deepika G. Karmalkar, Muniyandi Sankaralingam, Mi Sook Seo, Roman Ezhov, Yong-Min Lee, Yulia N. Pushkar, Won-Suk Kim, Shunichi Fukuzumi, and Wonwoo Nam, **Angewandte Chemie**, 2019, 131, 1-7.
7. „Early Binding of Substrate Oxygen is Responsible for Spectroscopically Distinct S_2 -State in Photosystem II“ Yulia Pushkar, Alireza Karbakhsh Ravari, Scott Jensen, Mark C Palenik, **Journal of Physical Chemistry Letters**, 2019, 10, 5284-5291.

8. „Detection of the site protected 7-coordinate $\text{Ru}^{\text{V}}=\text{O}$ species and its chemical reactivity to enable catalytic water oxidation”
Yuliana Pineda-Galvan, Alireza K. Ravari, Sergei Shmakov, Liubov Lifshits, Nattawut Kaveevivitchai, Randolph Thummel, Yulia Pushkar, **Journal of Catalysis**, 2019, 375, 1-7.
9. „Redox Reactivity of a Mononuclear Manganese-Oxo Complex Binding Calcium Ion and Other Redox-Inactive Metal Ions”
Muniyandi Sankaralingam, Yong-Min Lee, Yuliana Pineda-Galvan, Deepika G Karmalkar, Mi Sook Seo, So Hyun Jeon, Yulia Pushkar, Shunichi Fukuzumi, Wonwoo Nam, **Journal of the American Chemical Society**, 2019, 141 (3), pp 1324–1336
10. “DIY XES - Development of an Inexpensive, Versatile, and Easy to Fabricate XES Analyzer and Sample Delivery System” Scott C. Jensen, Brendan T. Sullivan, Daniel A. Hartzler, and Yulia Pushkar, **X-ray Spectrometry**, 2019, 1-9.
11. „X-ray Emission Spectroscopy at X-ray Free Electron Lasers: Limits to Observation of the Classical Spectroscopic Response for Electronic Structure Analysis”
S. Jensen, B. T. Sullivan, D. A. Hartzler, J. M. Aguilar, S. Awel, S. Bajt, S. Basu, R. Bean, H. Chapman, C. Conrad, M. Frank, R. Fromme, J. M. Martin-Garcia, T. D. Grant, M. Heymann, M. S. Hunter, G. Ketawala, R. A. Kirian, J. Knoska, C. Kupitz, X. Li, M. Liang, S. Lisova, V. Mariani, V. L. Mazalova, M. Messerschmidt, M. Moran, G. Nelson, D. Oberthuer, A. Schaffer, R. G. Sierra, N. Vaughn, U. Weierstall, M. O. Wiedorn, P. L. Xavier, J.-H. Yang, O. Yefanov, N. Zatsepin, A. L. Aquila, P. Fromme, S. Boutet, G. T. Seidler, Y. Pushkar, **The Journal of Physical Chemistry Letters**, 2019, 10 (3), pp 441–446.

2018

12. „Mechanism for O-O bond formation via radical coupling of metal and ligand based radicals – a new pathway”
Yulia Pushkar, Yuliana Pineda-Galvan, Alireza K. Ravari, Tatiana Otroshchenko, Daniel A. Hartzler, **Journal of the American Chemical Society**, 2018, 140, (42), 13538-13541.
13. “Rapid evolution of the Photosystem II electronic structure during water splitting”
Katherine M. Davis, Brendan T. Sullivan, Mark Palenik, Lifan Yan, Vatsal Purohit, Gregory Robison, Irina Kosheleva, Robert W. Henning, Gerald T. Seidler, Yulia Pushkar, **Physical Review X**, 2018, 8, 041014.
14. “Model of the Oxygen Evolving Complex which is highly predisposed to O–O bond formation”
Yulia Pushkar, Katherine M. Davis, Mark Palenik, **The Journal of Physical Chemistry Letters**, 2018, 9, 3524-3531.
15. “The key $\text{Ru}^{\text{V}}=\text{O}$ intermediate of site-isolated mononuclear water oxidation catalyst detected by *in situ* X-ray absorption spectroscopy”
Dmitry Lebedev, Yuliana Pineda-Galvan, Yuki Tokimaru, Alexey Fedorov, Nicolas Kaeffer, Christophe Copéret and Yulia Pushkar, **Journal of the American Chemical Society**, 2018, 140, 451-458.
16. “Insights into MOF Reactivity: Chemical Water Oxidation Catalysis by a $[\text{Ru}(\text{tpy})(\text{dcbpy})\text{OH}_2]^{2+}$ Modified Metal-Organic Framework”
Shaoyang Lin, Alireza K. Ravari, Pavel M. Usov, Meng Cai, Jie Zhu, Spencer R. Ahrenholtz, Yulia Pushkar, Amanda J. Morris, **ChemSusChem**, 2018, 11, 464. DOI: 10.1002/cssc.201701644.

2017

17. “X-ray Emission Spectroscopy of Biomimetic Mn Coordination Complexes”
Scott C. Jensen, Katherine M. Davis, Brendan Sullivan, Daniel A. Hartzler, Gerald T. Seidler, Diego M. Casa, Elina Kasman, Hannah E. Colmer, Allyssa A. Massie, Timothy A. Jackson, and Yulia Pushkar, **The Journal of Physical Chemistry Letters**, 2017, 8, 2584–2589.
18. “Electrochemical Water Oxidation by a Catalyst-Modified Metal Organic Framework Thin Film”
Shaoyang Lin, Yuliana P. Galvan, William A. Maza, Charity C. Epley, Jie Zhu, Matthew C. Kessinger, Yulia Pushkar, Amanda J. Morris, **ChemSusChem**, 2017, 10, 3, 514-522.

This paper was featured on the journal cover.

19. „On the nature of the Cu-rich aggregates in brain astrocytes“
Brendan Sullivan, Gregory Robison, Jenna Osborn, Martin Kay, Peter Thompson, Katherine Davis, Taisiya Zakharova, Olga Antipova, Yulia Pushkar, **Redox Biology**, 2017, v. 11, 231-239
20. Mechanistic Analysis of Water Oxidation Catalyst $\text{cis-}[\text{Ru}(\text{bpy})_2(\text{H}_2\text{O})_2]^{2+}$: Effect of Dimerization.
Darren Erdman, Yuliana Pineda-Galvan and Yulia Pushkar, **Catalysts**, 2017, v. 7 (2) article number 39.

2016

21. “X-ray emission spectroscopy of Mn coordination complexes towards interpreting the electronic structure of the Oxygen Evolving Complex of Photosystem II”
Katherine M. Davis, Mark Palenik, Lifan Yan, Paul F. Smith, Gerald T. Seidler, G. Charles Dismukes, Yulia Pushkar, **Journal of Physical Chemistry C**, 2016, 120(6), 3326-3333.
22. „In vivo Mn exposure does not affect adult neurogenesis in rats“
Brendan Sullivan, Gregory Robison, Martin Kay, Yulia Pushkar, **Toxicological Sciences**, 2016, 152(2): 257-61.
23. „Copper Accumulation in Rodent Brain Astrocytes: A Species Difference”
Brendan Sullivan, Gregory Robison, John K. Young, Kebreten F. Manaye, Yulia Pushkar, **Journal of Trace Elements in Medicine and Biology**, 2017; 39: 6-13.
24. „Uncovering the role of oxygen atom transfer in Ru-based catalytic water oxidation“
Dooshaye Moonshiram, Yuliana Pineda-Galvan, Darren Erdman, Mark Palenik, Ruifa Zong, Randolph Thummel, Yulia Pushkar **Journal of the American Chemical Society**, 2016, 138 (48), pp 15605–15616.

2015

25. „Rapid Evolution of the Photosystem II Electronic Structure during Water Splitting“
Katherine M. Davis, Brendan T. Sullivan, Mark Palenik, Lifan Yan, Vatsal Purohit, Gregory Robison, Irina Kosheleva, Robert W. Henning, Gerald T. Seidler, Yulia Pushkar, [arXiv:1506.08862](https://arxiv.org/abs/1506.08862)
26. “Unexpected Ligand Lability in Condition of Water Oxidation Catalysis”
Lifan Yan, Ruifa Zong, Yulia Pushkar, **Journal of Catalysis**, 2015, V. 330, p. 255-260.
27. “Structure of the Oxygen Evolving Complex of Photosystem II at Room Temperature”
Katherine M. Davis, Yulia Pushkar, **Journal of Physical Chemistry B**, 2015, 119(8), p. 3492-3498.
28. “Identification of dopaminergic neurons of the substantia nigra compacta as a target of manganese accumulation”
Gregory A. Robison; Brendan Sullivan; Jason R Cannon; Yulia Pushkar, **Metallomics**, 2015, 7(5), p. 748-755, 10.1039/C5MT00023H.

This paper was featured on the journal cover.

2014

29. „Spectroscopic analysis of catalytic water oxidation by $\text{Ru}^{\text{II}}(\text{bpy})(\text{tpy})\text{H}_2\text{O}]^{2+}$ suggests that $\text{Ru}^{\text{V}}=\text{O}$ is not a rate-limiting intermediate“
Yulia Pushkar, Dooshaye Moonshiram, Vatsal Purohit, Lifan Yan, Igor Alperovich, **Journal of the American Chemical Society**, 2014, 136 (34), pp 11938–11945.
30. “Serial Time-resolved crystallography of Photosystem II using a femtosecond X-ray laser”
C. Kupitz, S. Basu, I. Grotjohann, R. Fromme, N. A. Zatsepin, K. N. Rendek, M. Hunter, R. L. Shoeman, T. A. White, D. Wang, D. James, J.-H. Yang, D. E Cobb, B. Reeder, R. G. Sierra, H. Liu, A. Barty, A. L. Aquila, D. Deponte, R. A. Kirian, S. Bari, J. J. Bergkamp, K. R. Beyerlein, M. J. Bogan, C. Caleman, T.-C.

Chao, C. E. Conrad, K. M. Davis, H. Fleckenstein, L. Galli, S. P. Hau-Riege, S. Kassemeyer, H. Laksmono, M. Liang, L. Lomb, S. Marchesini, A. M. Martin, M. Messerschmidt, D. Milathianaki, K. Nass, A. Ros, S. Roy-Chowdhury, K. Schmidt, M. Seibert, J. Steinbrener, F. Stellato, L. Yan, C. Yoon, T. A. Moore, A. L. Moore, Y. Pushkar, G. J. Williams, S. Boutet, R. B. Doak, U. Weierstall, M. Frank, H. N. Chapman, J. C.H. Spence and P. Fromme, *Nature*, 2014, 513, pp 261-265.

31. „Triplet excited state energies and phosphorescence spectra of (bacterio)chlorophylls.“
Daniel A. Hartzler, Dariusz M. Niedzwiedzki, Donald A. Bryant, Robert E. Blankenship, Yulia Pushkar, Sergei Savikhin, *Journal of Physical Chemistry B*, 2014, 118 (26), pp 7221–7232.

2013

32. “Electronic structure assessment: Combined Density Functional Theory Calculations and Ru L_{2,3}-edge X-ray Absorption Near-edge Spectroscopy of Water Oxidation Catalyst”
Igor Alperovich, Dooshaye Moonshiram, Javier Concepcion, and Yulia Pushkar, *Journal of Physical Chemistry C*, 2013, 117 (37), pp 18994–19001.
33. „X-ray Fluorescence Imaging of the Hippocampal Formation after Manganese Exposure”
Gregory Robison, Taisiya Zakharova, Sherleen X. Fu, Wendy Jiang, Rachael Fulper, Raul Barrea, Wei Zheng and Yulia Pushkar, *Metalomics*, 2013, 5 (11), pp 1554-1565.
34. “Kinetic modeling of the x-ray induced damage to a metalloprotein”
Katherine M. Davis, Irina Kosheleva, Robert W. Henning, Gerald T. Seidler, Yulia Pushkar, *Journal of Physical Chemistry B*, 2013, 117 (31), pp 9161–9169.
35. “Aging results in copper accumulations in GFAP-positive cells in the subventricular zone”
Yulia Pushkar, Gregory Robison, Brendan Sullivan, Wei Zheng, Sherleen X. Fu, Meghan Kohne, Wendy Jiang, Sven Rohr, Barry Lai, Matthew A. Marcus, Taisiya Zakharova, *Aging Cell*, 2013, 12(5), pp 823–832. DOI: 10.1111/accel.12112.
36. „Electronic Structure Changes of Mn in the Oxygen-Evolving Complex of Photosystem II during the Catalytic Cycle“
Pieter Glatzel, Henning Schroeder, Yulia Pushkar, Thaddeus Boron, Shreya Mukherjee, George Christou, Vincent L. Pecoraro, Johannes Messinger, Vittal K. Yachandra, Uwe Bergmann, and Junko Yano, *Inorganic Chemistry*, 2013, 52 (10), pp 5642–5644.
37. „Mechanism of Catalytic Water Oxidation by Ruthenium Blue dimer catalyst: comparative study in D₂O versus H₂O“
Dooshaye Moonshiram, Vatsal Purohit, Javier Concepcion, Thomas Meyer, Yulia Pushkar, *Materials*, 2013, 6 (2), pp 392-409.
38. „Experimental Demonstration of Radicaloid Character in a Ru^V=O Intermediate in Catalytic Water Oxidation“
Dooshaye Moonshiram, Igor Alperovich, Javier Concepcion, Thomas Meyer, Yulia Pushkar, *Proceedings of the National Academy of Science*, 2013 110 (10) 3765-3770.
39. “A Mononuclear Nonheme Manganese(IV)-Oxo Complex Binding Redox-Inactive Metal Ions.”
Junying Chen, Yong-Min Lee, Katherine M. Davis, Xiujuan Wu, Mi Sook Seo, Kyung-Bin Cho, Heejung Yoon, Young Jun Park, Shunichi Fukuzumi, Yulia N. Pushkar, and Wonwoo Nam, *Journal of the American Chemical Society*, 2013, 135 (17), pp 6388–6391.

This paper was featured on the journal cover.

2012

40. “X-ray Fluorescence Imaging: A New Tool for Studying Manganese Neurotoxicity”
Gregory Robison, Taisiya Zakharova, Sherleen X. Fu, Rachel Fulper, Wendy Jiang, Matthew A. Marcus, Raul Barrea, Wei Zheng, Yulia Pushkar, *PlosOne*, 2012, Vol. 7 (11), Article Number: e48899.
41. “Ru L_{2,3} XANES theoretical simulation with DFT: a test of the core-hole treatment”

Igor Alperovich, Dooshaye Moonshiram, Alexander Soldatov, Yulia Pushkar, *Solid State Communications*, 2012, V.152, 1880-1884.

42. "Increased β -Amyloid Deposition in Tg-SWDI Transgenic Mouse Brain Following In Vivo Lead Exposure", Huiying Gu, Gregory Robison, Raul Barrea, Xing Wei, Martin R. Farlow, Yulia Pushkar, Yansheng Du, Wei Zhen, *Toxicology Letters*, 2012, Vol. 213, 211-219.
43. "Fast detection Allowing Analysis of the Electronic Structure of Metalloprotein by X-ray Emission Spectroscopy at Room Temperature"
Katherine M. Davis, Brian A. Mattern, Joseph I. Pacold, Taisiya Zakharova, Dale Brewe, Irina Kosheleva, Robert W. Henning, Timothy J. Graber, Steve M. Heald, Gerald T. Seidler, Yulia Pushkar, *Journal of Physical Chemistry Letters*, 2012, 3, 1858-1864.
44. "Theoretical modelling of L_{2,3}-edges XANES using DFT"
Igor Alperovich, Alexander Soldatov, Dooshaye Moonshiram, Yulia Pushkar, *Journal of Experimental and Theoretical Physics Letters*, 2012, v. 95, issue 10.
45. "Structure and Electronic Configurations of the Intermediates of Water Oxidation in Blue Ruthenium Dimer Catalysis"
Dooshaye Moonshiram, Jonah Jurss, Javier Concepcion, Taisiya Zakharova, Igor Alperovich, Thomas Meyer, Yulia Pushkar, *Journal of American Chemical Society*, 2012, 134, 4625-4636.

2011

46. "A Highly Reactive Mononuclear Nonheme Manganese(IV)-Oxo Complex That Can Activate the Strong C-H Bonds of Alkanes"
Xiujuan Wu, Mi Sook Seo, Katherine Davis, Yong-Min Lee, Junying Chen, Kyung-Bin Cho, Yulia Pushkar, Wonwoo Nam, *Journal of American Chemical Society*, 2011, 133 (50), pp 20088-20091.
47. "Understanding the Electronic Structure of 4d Metal Complexes: From Molecular Spinors to L-edge Spectra of a di-Ru Catalyst"
Igor Alperovich, Grigory Smolentsev, Dooshaye Moonshiram, Jonah W. Jurss, Javier J. Concepcion, Thomas Meyer, Alexander Soldatov, Yulia Pushkar, *Journal of American Chemical Society*, 2011, 133 (39), p 15786-15794.

2010

48. "Direct Detection of Oxygen Ligation to the Mn₄Ca Cluster of Photosystem II by X-ray Emission Spectroscopy"
Yulia Pushkar, Xi Long, Pieter Glatzel, Gary W. Brudvig, G. Charles Dismukes, Terrence J. Collins, Vittal K. Yachandra, Junko Yano, Uwe Bergmann, *Angewandte Chemie International Edition*, 2010, v. 49, 4, p 800-803.
49. "Activation of a water molecule using a mononuclear Mn complex: from Mn-aquo, to Mn-hydroxo, to Mn-oxyl via charge compensation"
Benedikt Lassalle-Kaiser, Christelle Hureau, Dimitrios A. Pantazis, Yulia Pushkar, Regis Guillot, Vittal K. Yachandra, Junko Yano, Frank Neese, Elodie Anxolabehere-Mallart, *Energy & Environmental Science*, 2010, v. 3, 7, 924-938

2009

50. "X-ray Emission Spectroscopy To Study Ligand Valence Orbitals in Mn Coordination Complexes"
Grigoriy Smolentsev, Alexander V. Soldatov, Johannes Messinger, Kathrin Merz, Thomas Weyhermuller, Uwe Bergmann, Yulia Pushkar, Junko Yano, Vittal K. Yachandra, Pieter Glatzel, *Journal of American Chemical Society*, 2009, 131, 13161-13167.
51. "Incorporation of 2,3-Disubstituted-1,4-naphthoquinones into the A₁ Binding Site of Photosystem I Studied by EPR and ENDOR Spectroscopy"
Art van der Est, Yulia Puskar, Irina Karyagina, Branden Fonovic, Travis Dudding, Jens Niklas, Wolfgang Lubitz, John H. Golbeck, *Applied Magnetic Resonance*, 2010, 37, 65-83.

2008

52. "Single-Molecule Magnetism Properties of the First Strontium-Manganese Cluster [SrMn₁₄O₁₁(OMe)₃(O₂CPh)₁₈(MeCN)₂]"
Abhudaya Mishra, Yulia Pushkar, Junko Yano, Vittal K. Yachandra, Wolfgang Wernsdorfer, Khalil A. Abboud, George Christou **Inorganic Chemistry** 2008, 47, 1940-1948.
53. "Visible Light-Induced Electron Transfer from Di-μ-oxo-Bridged Dinuclear Mn Complexes to Cr Centers in Silica Nanopores"
Walter Weare, Yulia Pushkar, Vittal Yachandra, Heinz Frei, **Journal of American Chemical Society** 2008, 130(34); 11355-11363.
54. "Structural changes in the Mn₄Ca cluster and the mechanism of photosynthetic water splitting"
Yulia Pushkar, Junko Yano, Kenneth Sauer, Alain Boussac, Vittal Yachandra **Proceedings of the National Academy of Science** 2008, vol. 105, N. 6, 1879-1884.
55. "High-resolution structure of the photosynthetic Mn₄Ca catalyst from X-ray spectroscopy"
Junko Yano, Jan Kern, Yulia Pushkar, Kenneth Sauer, Pieter Glatzel, Uwe Bergmann, Johannes Messinger, Athina Zouni, Vittal K. Yachandra **Philosophical Transactions of the Royal Society B** 2008 vol. 363, N. 1494, 1139-1147.
56. "Focusing the view on Nature's water splitting catalyst"
Samir Zein, Leonid V. Kulik, Junko Yano, Jan Kern, Yulia Pushkar, Athina Zouni, Vittal K. Yachandra, Wolfgang Lubitz, Frank Neese, Johannes Messinger **Philosophical Transactions of the Royal Society B** 2008 vol. 363, N. 1494, 1167-1177.

2007

57. "Polarized X-ray Absorption Spectroscopy of Single-Crystal Mn(V) Complexes Relevant to the Oxygen Evolving Complex of Photosystem II"
Junko Yano, John Robblee, Yulia Pushkar, Matthew A. Marcus, Jesper Bendix, José M. Workman, Terrence J. Collins, Edward I. Solomon, Serena DeBeer George, Vittal Yachandra **Journal of the American Chemical Society** 2007, 129(43), 12989-13000.
58. "Contributions of the Protein Environment to the Midpoint Potentials of the A₁ Phylloquinones and the F_X Iron-Sulfur Cluster in Photosystem I"
Irina Karyagina, Yulia Pushkar, Dietmar Stehlik, Art van der Est, Hiroshi Ishikita, Ernst-Walter Knapp, Bharat Jagannathan, Rufat Agalarov, and John H. Golbeck **Biochemistry** 2007, 46(38), 10804-10816.
59. "Structure and orientation of the Mn₄Ca cluster in plant Photosystem II membranes studied by polarized range-extended X-ray absorption spectroscopy"
Yulia Pushkar, Junko Yano, Pieter Glatzel, Johannes Messinger, Azul Lewis, Kenneth Sauer, Uwe Bergmann, Vittal K. Yachandra **Journal of Biological Chemistry** 2007, V. 282, N. 10, 7198-7208.

This paper was selected as a paper of the week by Journal of Biological Chemistry and featured on the journal cover

60. "Heteronuclear Mn-Ca/Sr Complexes, and Ca/Sr EXAFS Spectral Comparisons with the Oxygen-Evolving Complex of Photosystem II"
Abhudaya Mishra, Junko Yano, Yulia Pushkar, Vittal K. Yachandra, Khalil A. Abboud, George Christou **Chemical Communications** 2007, V. 15, 1538-1540.

2006

61. "Where Water is Oxidized to Oxygen: Structure of the Photosynthetic Mn₄Ca Cluster"
Junko Yano, Jan Kern, Kenneth Sauer, Matthew J. Latimer, Yulia Pushkar, Jacek Biesiadka, Bernhard Loll, Wolfram Saenger, Johannes Messinger, Athina Zouni, Vittal K. Yachandra **Science** 2006, V. 314; 821-825

2005

62. "High-Resolution Mn EXAFS of the Oxygen-Evolving Complex in Photosystem II: Structural Implications for the Mn₄Ca Cluster"
Junko Yano, Yulia Pushkar, Pieter Glatzel, Azul Lewis, Kenneth Sauer, Johannes Messinger, Uwe Bergmann, Vittal Yachandra **Journal of the American Chemical Society (Communication)** 2005, V. 127, N. 43, 14974-14975.
63. "X-ray Damage to the Mn₄Ca Complex in Single-Crystals of Photosystem II: A Case Study for Metallo-Protein Crystallography"
Junko Yano, Jan Kern, Klaus-Dieter Irrgang, Matthew J. Latimer, Uwe Bergmann, Pieter Glatzel, Yulia Pushkar, Jacek Biesiadka, Bernhard Loll, Kenneth Sauer, Johannes Messinger, Athina Zouni, Vittal K. Yachandra **Proceedings of the National Academy of Science** 2005, V. 102, N 34, 12047-12052.
64. "Recruitment of a Foreign Quinone into the A₁ site of Photosystem I. Consecutive Forward Electron Transfer from A₀ to A₁ to F_X with Anthraquinone in the A₁ Site as studied by transient EPR"
Yulia Pushkar, Irina Karyagina, Dietmar Stehlik, Sarah Brown, Art van der Est **Journal of Biological Chemistry** 2005, V. 280, N13, 12382-12390.
65. "Recruitment of a Foreign Quinone into the A₁ site of Photosystem I. Characterization of a *menB rubA* double deletion mutant in *Synechococcus SP.* PCC 7002 devoid of F_X, F_A and F_B and containing Plastoquinone or exchanged 9,10-Anthroquinone"
Yumiko Sakuragi, Boris Zybailov, Gaozhong Shen, Donald A. Bryant, John H. Golbeck, Bruce A. Diner, Irina Karyagina, Yulia Pushkar, and Dietmar Stehlik **Journal of Biological Chemistry** 2005, V. 280, N13, 12371-12381.
66. "Transient and pulsed EPR study of ¹⁷O substituted methyl-naphthoquinone as radical anion in the A₁ binding site of Photosystem I and in frozen solution"
Yulia Pushkar, Oleg Ayzatulin, Dietmar Stehlik **Applied Magnetic Resonance** 2005, V. 28, 195-211

2004

67. "Asymmetric hydrogen-bonding of the quinone cofactor in Photosystem I probed by ¹³C labeled naphthoquinones"
Yulia Pushkar, Herbert Zimmermann, John H. Golbeck, Dietmar Stehlik **Journal of Physical Chemistry B** 2004, 108 (27) 9439-9448.

This paper was featured on the journal cover.

68. "An EPR/ENDOR study of the asymmetric hydrogen bond between the quinone electron acceptor and the protein backbone in Photosystem I"
Yulia Pushkar, Dietmar Stehlik, Maurice van Gastel, Wolfgang Lubitz **Journal of Molecular Structure** 2004, V. 700, 1-3, 233-241.
69. "Evidence for Asymmetric Electron Transfer in Cyanobacterial Photosystem I: Analysis of a Methionine to Leucine Mutation of the Ligand to the Primary Electron Acceptor A₀"
Wu Xu, Parag Chitnis, Alfia Valieva, Art van der Est, Yulia Pushkar, Dietmar Stehlik, Rachel Cohen, Gaozhong Shen, and John H. Golbeck **Biochemistry** 2004, 43(16); 4741-4754.
70. "Paramagnetic complexes of anthraquinone on the surface of Al₂O₃ and ZrO₂ according to the 3-mm wave band EPR spectra"
Fionov A.V., Pushkar Y., Lunina E.V. **Russian Journal of Physical Chemistry** 2004, 78(9), 1408-1412.
71. "Reactivity of palladium(II) methyl complexes towards CO₂: formation of carbonate complexes"
Yulia Pushkar, Ola F. Wendt **Inorganica Chimica Acta** 2004, 357, 1295-1298.

2003

72. "Interpretation of multifrequency transient EPR spectra of the P₇₀₀⁺A₀Q_K⁻ state in Photosystem I complexes with a sequential correlated radical pair model: wild type versus A₀ mutants"

Kev M. Salikhov, Yulia Pushkar, John H. Golbeck, Dietmar Stehlik *Applied Magnetic Resonance* 2003, 24, 467-482.

73. "Electron Transfer in Cyanobacterial Photosystem I. I. Physiological and Spectral Characterization of Site-Directed Mutants in a Putative Electron Transfer Pathway from A_0 through A_1 to F_X "
Wu Xu, Parag Chitnis, Yulia Pushkar, Christian Teutloff, Stephan G. Zech, Robert Bittl, Dietmar Stehlik, Alfia Valieva, Art van der Est, Boris Zybailov, Gaozhong Shen, and John H. Golbeck *Journal of Biological Chemistry* 2003, 278, 30, 27864-27875.
74. "Electron Transfer in Cyanobacterial Photosystem I. II. Determination of Forward Electron Transfer Rates of Site-Directed Mutants in a Putative Electron Transfer Pathway from A_0 through A_1 to F_X "
Klaus Brettel, Parag R. Chitnis, Art van der Est, John H. Golbeck, Mariana Guergova-Kuras, Yulia Pushkar, Gaozhong Shen, Dietmar Stehlik, Alfia Valieva, Wu Xu, Stephan G. Zech, Boris Zybailov *Journal of Biological Chemistry* 2003, 278, 30, 27876-27887.

2002

75. "Orientation and protein-cofactor interactions of monosubstituted n-alkyl naphthoquinones in the A_1 binding site of Photosystem I"
Yulia Pushkar, Stephan G. Zech, Sarah Brown, Art van der Est, Herbert Zimmermann, Dietmar Stehlik *Journal of Physical Chemistry B* 2002, 106(46); 12052-12058.

2000

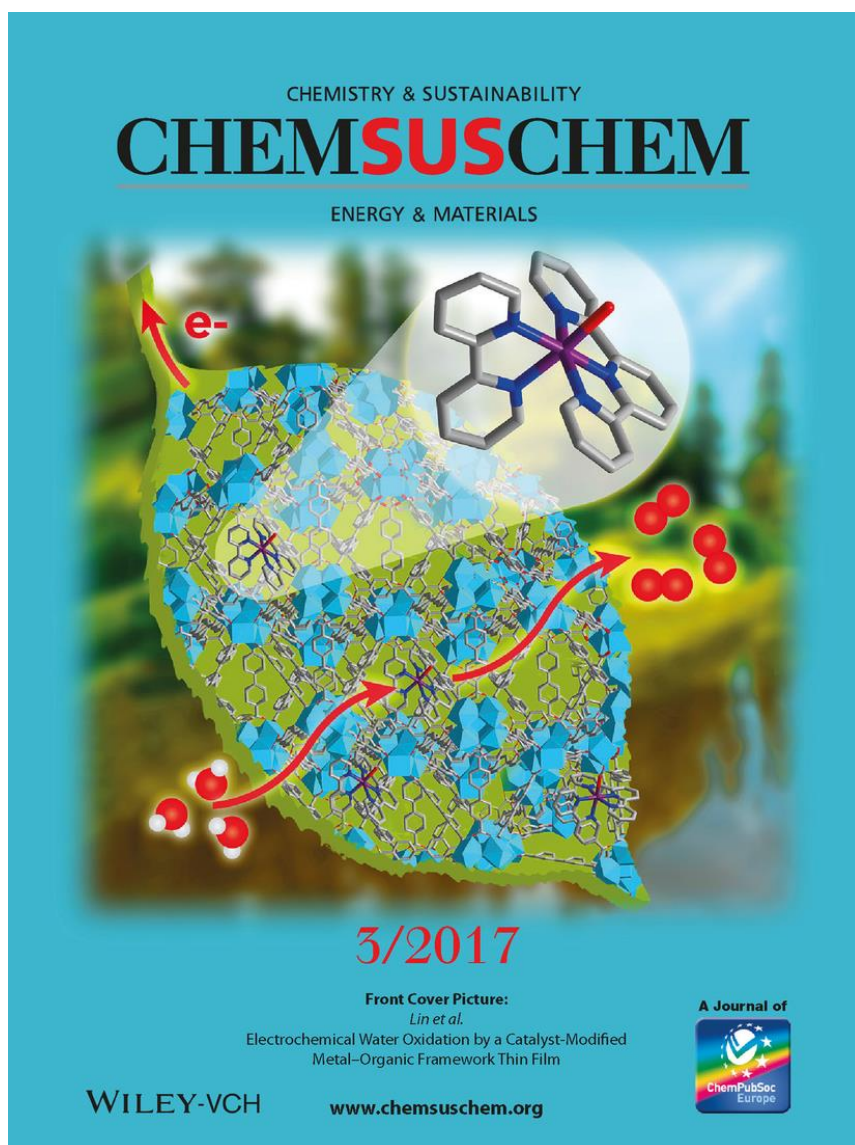
76. "Structure and Lewis acid properties of Gallia-alumina catalysts"
Y. Pushkar, O.O. Parenago, A. Sinitsky, A.N. Kharlanov, E.V. Lunina *Applied Surface Science* 2000, 67, p. 69-78.
77. "Coordination of nitroxyl radical probes to the Lewis acid sites on the surface of gallium oxide: a quantum-chemical analysis"
A.M. Tokmachev, Y. Pushkar, E.V. Lunina, N.D. Chuvylkin *Russian Chemical Bulletin* 2000, 49, 6, p. 991-996.

1999

78. "Paramagnetic complexes of probe molecules with electron-accepting sites on the surface of M_2O_3 - ZrO_2 ($M=Al, Ga$)."
Y. Pushkar, O.O. Parenago, A.V. Fionov, E.V. Lunina *Colloids and Surface A: Physicochemical and Engineering Aspects* 1999, 158, 1-2 p. 179-187.

1998

79. "Role of the crystalline structure in the formation of Lewis acid sites at the surface of gallium oxide"
O.O. Parenago, Y. Pushkar, A.O. Turakulova, G.P. Murav'eva, E.V. Lunina *Kinetic and Catalysis* 1998, 39, 2 268-273.



Featured on the journal cover:

“Electrochemical Water Oxidation by a Catalyst-Modified Metal Organic Framework Thin Film”

Shaoyang Lin, Yuliana P. Galvan, William A. Maza, Charity C. Epley, Jie Zhu, Matthew C. Kessinger, Yulia Pushkar, Amanda J. Morris, *ChemSusChem*, 2016, 9, 1-10.

Metallomics

www.rsc.org/metallomics



ISSN 1756-5901



PAPER

Yulia Pushkar et al.

Identification of dopaminergic neurons of the substantia nigra pars compacta as a target of manganese accumulation

Indexed in
Medline!

Featured on the journal cover:

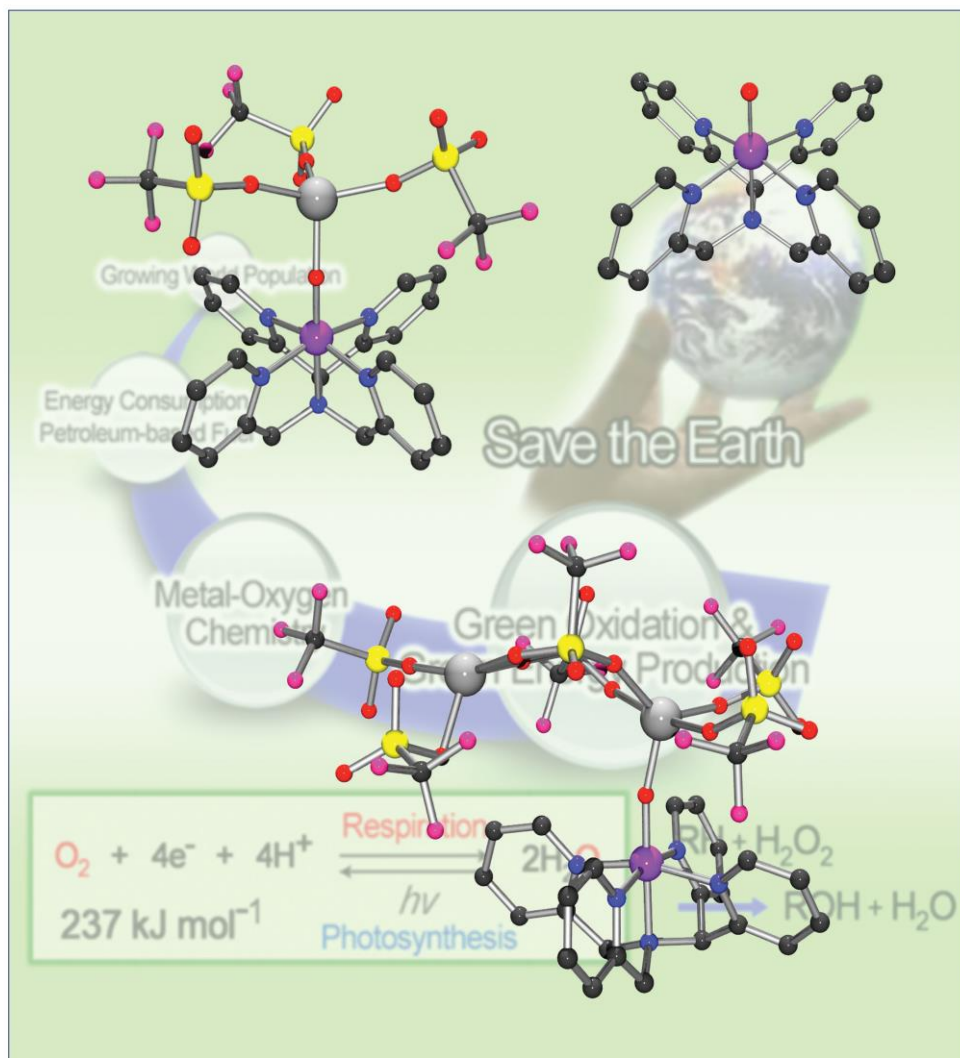
“Identification of dopaminergic neurons of the substantia nigra pars compacta as a target of manganese accumulation”

Gregory A. Robison; Brendan Sullivan; Jason R Cannon; Yulia Pushkar, *Metallomics*, 10.1039/C5MT00023H.

May 1, 2013
Volume 135
Number 17
pubs.acs.org/JACS

J | A | C | S

JOURNAL OF THE AMERICAN CHEMICAL SOCIETY



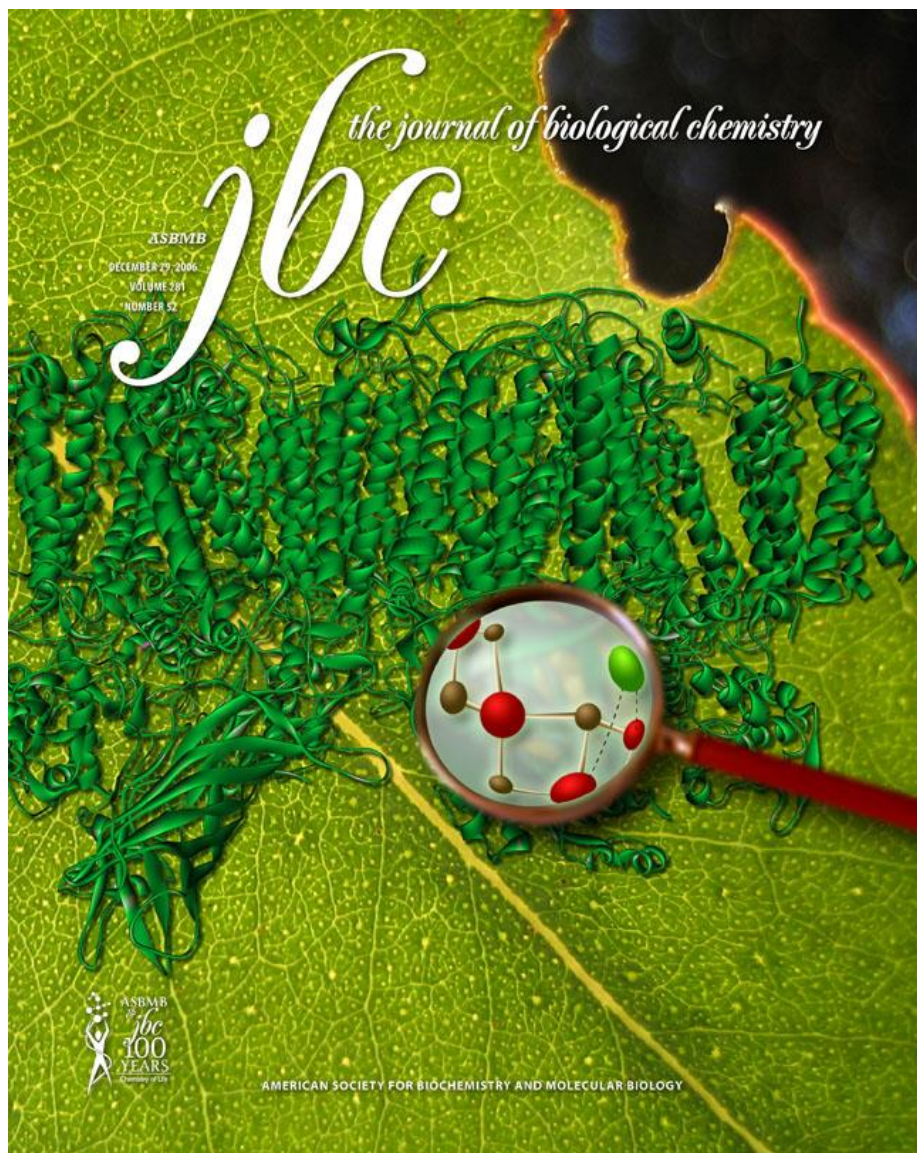
 ACS Publications
MOST TRUSTED. MOST CITED. MOST READ.

www.acs.org

Featured on the journal cover:

“A Mononuclear Nonheme Manganese(IV)-Oxo Complex Binding Redox-Inactive Metal Ions.”

Junying Chen, Yong-Min Lee, Katherine M. Davis, Xiujuan Wu, Mi Sook Seo, Kyung-Bin Cho, Heejung Yoon, Young Jun Park, Shunichi Fukuzumi, Yulia N. Pushkar, and Wonwoo Nam, *Journal of the American Chemical Society*, 2013, 135 (17), pp 6388–6391.



Featured on the journal cover:

“Structure and orientation of the Mn_4Ca cluster in plant Photosystem II membranes studied by polarized range-extended X-ray absorption spectroscopy”

Yulia Pushkar, Junko Yano, Pieter Glatzel, Johannes Messinger, Azul Lewis, Kenneth Sauer, Uwe Bergmann, Vittal K. Yachandra *Journal of Biological Chemistry* **2007**, V. 282, N. 10, 7198-7208.



Featured on the journal cover:

“Asymmetric hydrogen-bonding of the quinone cofactor in Photosystem I probed by ^{13}C labeled naphthoquinones”

Yulia Pushkar, Herbert Zimmermann, John H. Golbeck, Dietmar Stehlik *J. Phys. Chem. B* **2004** 108 (27) 9439-9448.