

JOHN D. FORTNER

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DEPARTMENT CHEMICAL & ENVIRONMENTAL ENGINEERING

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ACADEMIC APPOINTMENTS

- 2023 – present **Professor**
Director of Undergraduate Studies
Department of Chemical and Environmental Engineering
Yale University
- 2019 – 2022 **Associate Professor**
Department of Chemical and Environmental Engineering
Yale University
- 2016 – 2018 **INCEES Career Development Associate Professor (with tenure)**
Department of Energy, Environmental and Chemical Engineering
International Center for Energy, Environment and Sustainability
Washington University in St. Louis
- 2010 – 2016 **ICARES Career Development Assistant Professor**
Department of Energy, Environmental and Chemical Engineering
International Center for Advanced Renewable Energy and Sustainability
Washington University in St. Louis
- 2008 – 2010 **Intelligence Community (IC) Postdoctoral Research Fellow**
Department of Chemistry
Center for Biological and Environmental Nanotechnology (CBEN)
Rice University / U.S. Intelligence Community
- 2007 – 2008 **Postdoctoral Fellow**
School of Civil and Environmental Engineering
Georgia Institute of Technology
- 2005, 2007 **Visiting Scholar (2005) / Postdoctoral Fellow (2007)**
Institute for Geotechnical Engineering
Swiss Federal Institute of Technology Zurich (ETHZ)
- 2004 – 2007 **Visiting Scholar**
School of Civil and Environmental Engineering
Georgia Institute of Technology
- 2001 – 2007 **Graduate Research Assistant**
Department of Civil and Environmental Engineering
Rice University

EDUCATION

Ph.D., Environmental Engineering

Rice University, 2007

B.S., Bioenvironmental Science

Texas A&M University, *magna cum laude*, 2000

SELECT AWARDS AND HONORS

- Fellow, Royal Society of Chemistry (2021 – present).
- Appointee, U.S. National Academies of Sciences, Engineering, and Medicine’s Board on Chemical Science and Technology (BCST), 2020 – 2023.
- Walter L. Huber Civil Engineering Research Prize (2020), American Society of Civil Engineers (ASCE). Highest level mid-career research award in all areas of civil engineering.
- Vice Chair (2019) and Chair (2021, 2023) of the Environmental Nanotechnology Gordon Research Conference (GRC) (elected 2017).
- Graduate Advisor (along with Dr. Pratim Biswas, WUSTL), Dr. Yi Jiang (recipient) of CH2M Hill / Association for Environmental Engineering and Science Professors (AEESP), Outstanding Doctoral Dissertation Award (2017). Dissertation title: Crumpled Graphene Oxide: Aerosol Synthesis and Environmental Applications.
- 2016-2017 School of Engineering and Applied Science (SEAS; WUSTL) Dean’s Teaching Award Awarded to one School wide faculty member annually for their outstanding contributions to the School’s educational mission.
- Mindlin Foundation Scholar (2016 – 2018).
- Graduate Advisor (along with Dr. Pratim Biswas, WUSTL), Dr. Yi Jiang (recipient) of the 2016 Environmental Chemistry Graduate Student Award from the American Chemical Society.
- 2015 – 2016 EECE Faculty Teaching Award Department of Energy, Environmental and Chemical Engineering (EECE), Washington University in St. Louis. Awarded to one EECE faculty member annually for their outstanding contribution to the Department’s educational mission.
- 2015 Sustainable Nanotechnology Organization (SNO) Emerging Investigator. Annual award gives recognition to a field nominated emerging scientist and/or engineer working in the area of sustainable nanotechnology.
- U.S. National Science Foundation (NSF) CAREER Award (2015 – 2020).
- Ralph E. Powe Junior Faculty Enhancement Award (2012), Oak Ridge Associated Universities (ORAU).
- American Chemical Society, Petroleum Research Fund (PRF) Doctoral New Investigator (DNI) Award (2012).
- Young International Visiting Scholar (2011 – 2012), Chinese National Science Foundation (CNSF) in association with Nankai University, Hosted by Prof. Wei Chen.
- International Center for Advanced Renewable Energy and Sustainability (ICARES, later becoming INCEES) Career Development Professorship (2011 – 2018), WUSTL.

- Intelligence Community (IC) Postdoctoral Research Fellowship (2008). A broadly competitive fellowship awarded to young scientist and engineers focused on research in areas of interest to the U.S. Intelligence Community (\$240,000 USD over two years).
- CH2M Hill / Association for Environmental Engineering and Science Professors (AEESP), Outstanding Doctoral Dissertation Award, 2007 (Graduate Advisor Dr. Joseph Hughes). Dissertation title: C₆₀ in Water: Aggregation Characterization, Reactivity and Behavior.

PEER REVIEWED PUBLICATIONS (102)

* Indicates corresponding author and *italicized* names denote Fortner Lab members
h-index = 45; >8,500 citations (Google Scholar, as of 2/15/2023)

1. *Kelsey Haddad*, Ahmed Abokifa, *Siyuan An*, *Junseok Lee*, Baranidharan Raman, Pratim Biswas, **John Fortner***, “Crumpled Graphene Oxide for Enhanced Room Temperature Gas Sensing: Understanding the Critical Roles of Surface Morphology and Functionalization,” *Journal of Materials Chemistry A*, 11 (1), 447-459.
2. Miao Tian, Xiaoting Meng, Wenlu Li, Xiaofei You, Chang Liu, **John Fortner**, “Hydrophilic Montmorillonite for Tailoring the Structure and Selectivity of Polyamide Membrane,” *Journal of Membrane Science*, 120674, 2022.
3. *Eun-Tae Yun*, Woonghee Lee, **John Fortner**, Kangwoo Cho, Seungkwan Hong, Jaesang Lee, “Dual role of N-doped graphene film as cathode material for anodic organic oxidation and persulfate production and as planar carbocatalyst for non-electrochemical persulfate activation,” *Environmental Science: Nano*, 9 (5), 1662-1674, 2022.
4. *Qingqing Zeng*, *Yi Jiang*, **John Fortner***, “Enhanced Polysulfone Ultrafiltration Membrane Performance Through Fullerol Addition: A Study Towards Optimization,” *Chemical Engineering Journal*, 431, p. 134071, 2022.
5. *Changwoo Kim*, *Seung Soo Lee*, *Anushree Ghosh*, *Junseok Lee*, **John Fortner***, “Cetyltrimethylammonium Bromide - Oleic Acid (CTAB-OA) Bilayer Coated Iron Oxide Nanocrystals for Enhanced Chromium (VI) Photoreduction via Ligand-to-Metal Charge Transfer Mechanism,” *Chemical Engineering Journal*, 431, p. 133938, 2022.
6. Chen Liu, Natalie L. Cápiro, **John Fortner**, and Kurt D. Pennell, “In-situ Sequestration of Perfluoroalkyl Substances Using a Polymer-Stabilized Ion Exchange Resin,” *Journal of Hazardous Materials*, 422, p. 126960, 2022.
7. Shuchi Liao, Chen Liu, Dorothea Pinchbeck, Natalie L. Cápiro, **John D. Fortner**, Linda M. Abriola and Kurt D. Pennell, “Effects of Rhamnolipid Biosurfactant on the Dissolution and Transport of Silver Nanoparticles in Porous Media,” *Environmental Science: Nano*, 8 (9), p. 2492–2506, 2021.
8. *Changwoo Kim*, *Siyuan An*, *Junseok Lee*, *Anushree Ghosh*, Mingjiang Zhong, **John Fortner***, “Photoactive Polyethylenimine (PEI) Coated Graphene Oxide Composites for Enhanced Cr(VI) Reduction and Recovery,” *ACS Applied Materials and Interfaces*, 13 (24), p. 28027–28035, 2021.
9. Ji-Soo Jang, Lea R. Winter, *Changwoo Kim*, **John D. Fortner***, and Menachem Elimelech*, “High Precision Separation Membranes for Selective Environmental Gas Sensors,” *Trends in Chemistry*, 3 (7), p. 547–560, 2021. *Co-corresponding authors

10. Ahmed A. Abokifa, *Kelsey Haddad*, Baranidharan Raman, **John D. Fortner**, and Pratim Biswas, “Room Temperature Sensing Mechanism of SnO₂ towards Chloroform Gas: Comparing First Principles Calculations with Sensing Experiments,” *Applied Surface Science*, 554, p. 149603, 2021.
11. *Siyuan An*, *Qingqing Zeng*, *Wenlu Li*, and **John Fortner***, “A Graphene Oxide Cookbook: Exploring Chemical and Colloidal Properties as a Function of Synthesis Parameters,” *Journal of Colloid and Interface Science*, 588, p. 725–736, 2021.
12. Anna L Hagstrom, Paul Anastas, Andrea Boissevain, Alexandre Borrel, Nicole C Deziel, Suzanne E Fenton, Cheryl Fields, **John D Fortner**, Nikolas Franceschi-Hofmann, Raymond Frigon, Lan Jin, Jae-Hong Kim, Nicole C Kleinstreuer, Jeremy Koelmel, Yu Lei, Zeyan Liew, Xiuqi Ma, Lori Mathieu, Sara L Nason, Kari Organtini, Youssef Oulhote, Shannon Pociu, Krystal J Godri Pollitt, James Saiers, David C Thompson, Brian Toal, Eric J Weiner, Shannon Whirledge, Yawei Zhang, Vasilis Vasiliou, “Yale School of Public Health Symposium: An Overview of the Challenges and Opportunities Associated with Per-and Polyfluoroalkyl Substances (PFAS),” *Science of the Total Environment*, p. 146192, 2021.
13. Shuchi Liao, *Anushree Ghosh*, Natalie L. Cápiro, **John Fortner**, and Kurt Pennell, “Effect of Rhamnolipid (Biosurfactant) on Transport and Retention of Iron Oxide Nanoparticles in Water-Saturated Quartz Sand,” *Environmental Science: Nano*, 8 (1), p. 311–327, 2021.
14. *Changwoo Kim*, *Seung Soo Lee*, *Kit Tan Kwan*, *Junseok Lee*, *Wenlu Li*, Brandon J. Lafferty, Daniel E. Giammar, and **John D. Fortner***, “Surface Functionalized Nanoscale Metal Oxides for Arsenic (V), Chromium (VI), and Uranium (VI) Sorption: Considering Single- and Multi-Sorbate Dynamics,” *Environmental Science: Nano*, 7 (12), p. 3805–3813, 2020.
15. Eugene Kim, Xuyan Qin, James Qiao, *Qingqing Zeng*, **John Fortner**, Fuzhong Zhang, “Graphene Oxide/Mussel Foot Protein Composites for High-Strength and Ultra-Tough Thin Films,” *Scientific Reports*, 10 (1), p. 1–8, 2020.
16. Xuechen Zhou, Zhangxin Wang, Razi Epsztein, Cheng Zhan, *Wenlu Li*, **John D. Fortner**, Tuan Anh Pham, Jae-Hong Kim, and Menachem Elimelech, “Ion Transport under Sub-nanometer Confinement: Relative Roles of Partitioning and Intra-Pore Diffusion,” *Science Advances*, 6 (48), eabd9045, 2020.
17. *Changwoo Kim*, Kurt D. Pennell, and **John D. Fortner***, “Delineating the Relationship between Nanoparticle Attachment Efficiency and Fluid Flow Velocity,” *Environmental Science and Technology*, 54 (21), p. 13992–13999, 2020.
18. *Changwoo Kim* and **John Fortner***, “Surface Engineered Nanomaterials in Water: Understanding Critical Dynamics of Soft Organic Coatings and Relative Aggregation Density,” *Environmental Science and Technology*, 54 (21), p. 13548–13555, 2020.
19. *Changwoo Kim*, *Junseok Lee*, *Will Wang*, **John Fortner***, “Organic Functionalized Graphene Oxide Behavior in Water,” *Nanomaterials*, 10 (6), p. 1228, 2020.
20. *Neha Sharma*, *Anushree Ghosh*, **John D. Fortner***, Daniel E. Giammar*, “Modeling Performance of Rhamnolipid-Coated Engineered Iron Oxide Nanoparticles for U(VI) Sorption and Separation,” *Environmental Science: Nano*, 7 (7), p. 2010–2020, 2020. *Co-corresponding authors.

21. Peng Liao, Chao Pan, Wenyu Ding, *Wenlu Li*, Songhu Yuan, **John Fortner**, Daniel Giammar, “Formation and Transport of Cr(III)-NOM-Fe Colloids upon Reaction of Cr(VI) with NOM-Fe(II) Colloids at Anoxic-Oxic Interfaces,” *Environmental Science and Technology*, 54 (7), p. 4256–4266, 2020.
22. *Wenlu Li*, **John D. Fortner**,* (Super)paramagnetic nanoparticles as platform materials for environmental applications: From synthesis to demonstration. *Frontiers in Environmental Science and Engineering*, 14 (77), 2020.
23. Sergi Garcia-Segura, Alec Brockway Nienhauser, Ana S. Fajardo, Rishabh Bansal, Christian L. Coonrod, **John D. Fortner**, Mariana Marcos-Hernández, Tanya Rogers, Dino Villagran, Michael S. Wong, Paul Westerhoff, “Disparities between Experimental and Environmental Conditions: Research Steps Towards Making Electrochemical Water Treatment a Reality,” *Current Opinion in Electrochemistry*, 22, p.9–16, 2020.
24. *Changwoo Kim*, *Junseok Lee*, *Daniel Schmucker*, and **John D. Fortner***, “Highly Stable Superparamagnetic Iron Oxide Nanoparticles as Functional Draw Solutes for Osmotically Driven Water Transport,” *npj Clean Water* (a Nature journal), 3 (1), p.1–6, 2020.
25. *Changwoo Kim*, *Seung Soo Lee*, *Wenlu Li*, and **John D. Fortner***, “Towards Optimizing Cobalt Based Metal Oxide Nanocrystals for Hydrogen Generation via NaBH₄ Hydrolysis,” *Applied Catalysis A: General*, 589, p.117303, 2020.
26. *Siyuan An*, *Jiewei Wu*, *Yao Nie*, *Wenlu Li*, **John D. Fortner***, “Free chlorine induced phototransformation of graphene oxide in water: Reaction kinetics and product characterization,” *Chemical Engineering Journal*, 381, p.122609, 2020.
27. *Zezen Pan*, *Xiaoming Zhu*, *Anshuman Satpathy*, *Wenlu Li*, **John D. Fortner**, and Daniel E. Giammar, “Cr(VI) Adsorption on Engineered Iron Oxide Nanoparticles: Exploring Complexation Processes and Water Chemistry,” *Environmental Science and Technology*, 53 (20), p.11913–11921, 2019.
28. *Yi Jiang*, *Qingqing Zeng*, *Pratim Biswas*, **John Fortner***, “Graphene Oxides as Nanofillers in Polysulfone Ultrafiltration Membranes: Shape Matters,” *Journal of Membrane Science*, 581, p.453–461, 2019.
29. *Leiyu He*, *Lin Xie*, *Dengjun Wang*, *Wenlu Li*, **John Fortner**, *Qianqian Li*, *Yanhua Duan*, *Zhenqing Shi*, *Peng Liao*, *Chongxuan Liu*, “Elucidating the Role of Sulfide on the Stability of Ferrihydrite Colloids under Anoxic Conditions,” *Environmental Science and Technology*, 53 (8), p.4173–4184, 2019.
30. *Hui Qiu*, *Meichen Ye*, *Qingqing Zeng*, *Wenlu Li*, **John Fortner**, *LeLe Liu*, *Luyang Yang*, *Jinhong Zhu*, “Fabrication of Agricultural Waste Supported UiO-66 Nanoparticles with High Utilization in Phosphate Removal from Water,” *Chemical Engineering Journal*, 360, p.621-630, 2019.
31. *Yining Ou*, *Jiewei Wu*, *James R. Meyer*, *Marcus Foston*, *Wenlu Li*, **John D. Fortner***, “Photoenhanced Oxidation of nC₆₀ in Water: Exploring H₂O₂ and Hydroxyl Radical Based Reactions,” *Chemical Engineering Journal*, 360, p.665–672, 2019.
32. *Qianqian Li*, *Lin Xie*, *Yi Jiang*, **John Fortner**, *Kai Yu*, *Peng Liao*, *Chongxuan Liu*, “Formation and Stability of NOM-Mn(III) Colloids in Aquatic Environments,” *Water Research*, 149, p.190–201, 2019.

33. Changwoo Kim, Siyuan An, Junseok Lee, Qingqing Zeng, **John Fortner***, “Engineering Graphene Oxide Laminate Membranes for Enhanced Flux and Boron Treatment with Polyethylenimine (PEI) Polymers,” *ACS Applied Materials and Interfaces*, 11 (1), p.924–929, 2018.
34. Eugene Kim, Bin Dai, James B. Qiao, Wenlu Li, **John D. Fortner**, Fuzhong Zhang, “Microbially Synthesized Mussel Foot Proteins Display Enhanced Underwater Adhesion,” *ACS Applied Materials and Interfaces*, 10 (49), p.43003–43012, 2018.
35. Wenlei Zhu, Meikun Shen, Guozheng Fan, Alicia Yang, James Meyer, Yining Ou, **John Fortner**, Marcus Foston, Zhaosheng Li, Zhigang Zou, Bryce Sadtler, “Facet-Dependent Activity in the Photocatalytic Conversion of Methane to Methanol using Bismuth Vanadate Microcrystals,” *ACS Applied Nanomaterials*, 1 (12), p.6683–6691, 2018.
36. Changwoo Kim, Seung Soo Lee, Benjamin J. Reinhart, Minjung Cho, Brandon J. Lafferty, Wenlu Li, and **John D. Fortner***, “Surface Optimized Core-Shell Nanocomposites (Fe₃O₄@MnFe₂O₄) for Ultra-High Uranium Sorption and Low-Field Magnetic Separation in Water,” *Environmental Science: Nano*, 5 (10), p.2252–2256, 2018.
37. Kelsey Haddad, Ahmed A. Abokifa, Shalinee Kavadiya, Byeongdu Lee, Sriya Banerjee, Barani Raman, Parag Banerjee, Cynthia S. Lo, **John D. Fortner**, Pratim Biswas, “SnO₂ Nanostructured Thin Films for Room Temperature Gas Sensing of Volatile Organic Compounds,” *ACS Applied Materials and Interfaces*, 10 (35), p.29972–29981, 2018.
38. Paul Westerhoff, Ariel Atkinson, **John Fortner**, Michael S. Wong, Julie Zimmerman, Jorge Gardea-Torresdey, James Ranville, Pierre Herckes, “Nanoparticles in Drinking Water Pose Ill-Define But Manageable Exposure Risks,” *Nature Nanotechnology*, 13 (8), p.661, 2018.
39. Ahmed A. Abokifa, Kelsey Haddad, **John D. Fortner**, Cynthia S. Lo, Pratim Biswas, “Sensing Mechanism of Ethanol and Acetone at Room Temperature by SnO₂ Nano-columns Synthesized by Aerosol Routes: Theoretical Calculations Compared to Experimental Results,” *Journal of Materials Chemistry A*, 6 (5), p.2053–2066, 2018.
40. Changwoo Kim, Seung Soo Lee, Brandon J. Lafferty, Daniel E. Giammar, **John D. Fortner***, “Engineered Superparamagnetic Nanomaterials for Arsenic (V) and Chromium (VI) Sorption and Separation: Quantifying the Role of Organic Surface Coatings,” *Environmental Science: Nano*, 5 (2), p.556–563, 2018.
41. Dhruv Mitroo, Jiewei Wu, Peter Colletti, Seung Soo Lee, Michael Walker, William Brune, Brent Williams, **John Fortner***, “Atmospheric Reactivity of Fullerene (C₆₀) Aerosols,” *ACS Earth and Space Chemistry*, 2 (2), p.95–102, 2018.
42. Wenlu Li, Peng Liao, Trey Oldham, Yi Jiang, Chao Pan, Songhu Yuan, **John D. Fortner***, “Real Time Evaluation of Natural Organic Matter Deposition Processes onto Model Environmental Surfaces,” *Water Research*, 129, p.231–239, 2018.
43. Peng Liao, Wenlu Li, Yi Jiang, Jiewei Wu, Songhu Yuan, **John D. Fortner***, Daniel E. Giammar*, “Formation, Aggregation, and Deposition Dynamics of NOM-Iron Colloids at Anoxic-Oxic Interfaces,” *Environmental Science and Technology*, 51 (21), p.12235–12245, 2017. *co-corresponding authors

44. Baile Wu, Liping Fang, **John D. Fortner**, Xiaohong Guan, Irene Lo, “Highly Efficient and Selective Phosphate Removal from Wastewater by Magnetically Recoverable La(OH)₃/Fe₃O₄ Nanocomposites,” *Water Research*, 126, p.179–188, 2017.
45. Yi Jiang, Ramesh Raliya, Pratim Biswas, **John D. Fortner***, “Graphene Oxide Aggregation in Water: Evaluating the Interplay Between Material and Natural Organic Matter Properties,” *Environmental Science: Nano*, 4, p.1484–1493, 2017.
46. Zezhen Pan, Wenlu Li, **John Fortner**, Daniel Giammar, “Measurement and Surface Complexation Modeling of U(VI) Adsorption to Engineered Iron Oxide Nanoparticles,” *Environmental Science and Technology*, 51 (16), p.9219–9226, 2017.
47. Wenlu Li, Lyndsay Troyer, Seung Soo Lee, Jiewei Wu, Changwoo Kim, Brandon Lafferty, Jeffery Catalano, **John Fortner***, “Engineering Nanoscale Iron Oxides for Uranyl Sorption and Separation: Optimization of Particle Core Size and Bilayer Surface Coatings,” *ACS Applied Materials and Interfaces*, 9 (15), p.13163–13172, 2017.
48. Jiewei Wu, Lawrence B. Alemany, Wenlu Li, Denise Benoit, **John D. Fortner***, “Photoenhanced Transformation of Hydroxylated Fullerene (Fullerol) by Free Chlorine,” *Environmental Science: Nano*, 4, p. 470–479, 2017.
49. Jiewei Wu, Wenlu Li, **John D. Fortner***, “Photoenhanced Oxidation of C₆₀ Aggregates (nC₆₀) by Free Chlorine in Water,” *Environmental Science: Nano*, 4, p.117–126, 2017.
50. Peng Liao, Wenlu Li, Dengjun Wang, Yi Jiang, **John D. Fortner**, Songhu Yuan, “Effect of Reduced Humic Acid on the Transport of Ferrihydrite Nanoparticles Under Anoxic Conditions,” *Water Research*, 109, p.347–357, 2017.
51. Wenlu Li, Jiewei Wu, Seung Soo Lee, **John D. Fortner***, “Surface Tunable Magnetic Nanosorbents for Carbon Dioxide Sorption and Separation,” *Chemical Engineering Journal*, 313, p.1160–1167, 2017.
52. Lei Hou, Ximeng Wang, Chengdong Zhang, Lilin Wang, **John Fortner**, Wei Chen, “Complex Interplay Between Formation Routes and Natural Organic Matter Modification Controls Capabilities of C₆₀ nanoparticles to Accumulate Organic Contaminants,” *Journal of Environmental Science*, 51, p.315–323, 2017.
53. Wenlu Li, Seung Soo Lee, Anjuliee M. Mittelman, Di Liu, Jiewei Wu, Carl H. Hinton, Linda M. Abriola, Kurt D. Pennell, **John D. Fortner***, “Aqueous Aggregation Behavior of Engineered Superparamagnetic Iron Oxide Nanoparticles: Effects of Oxidative Surface Aging,” *Environmental Science and Technology*, 50 (23), p.12789–12798, 2016.
54. Kelsey Haddad, Ahmed A. Abokifa, Shalinee Kavadiya, Tandeep S. Chadha, Pranav Shetty, Yang Wang, **John Fortner**, Pratim Biswas, “Growth of Single Crystal, Oriented SnO₂ Nanocolumn Arrays by Aerosol Chemical Vapor Deposition (ACVD),” *CrystEngComm*, 18, p.7544–7553, 2016.
55. Yi Jiang, Pratim Biswas, **John D. Fortner***, “A Review of Recent Developments in Graphene-Enabled Membranes for Water Treatment,” *Environmental Science: Water Research and Technology*, 2, p.915-922, 2016.
56. Wenlu Li, John T. Mayo, Denise N. Benoit, Lyndsay D. Troyer, Zuzanna A. Lewicka, Brandon J. Lafferty, Jeffrey G. Catalano, Seung Soo Lee, Vicki L. Colvin, **John D. Fortner***,

- “Engineered Superparamagnetic Nanoparticles for Enhanced Uranium Separation and Sensing,” *Journal of Materials Chemistry A*, 4 (39), p.15022–15029, 2016.
57. Tian A. Qiu, Miranda J. Gallagher, Natalie V. Hudson-Smith, Jiewei Wu, Miriam O. P. Krause, **John D. Fortner**, Christy L. Haynes, “Research Highlights: Unveiling the Mechanisms Underlying Nanoparticle-Induced ROS Generation and Oxidative Stress,” Submitted to *Environmental Science: Nano*, 2, p.940–945, 2016.
 58. Yao Nie, Wei-Ning Wang, Yi Jiang, **John Fortner**, Pratim Biswas, “Crumpled Reduced Graphene Oxide–Amine–Titanium Dioxide Nanocomposites for Simultaneous Carbon Dioxide Adsorption and Photoreduction,” *Catalysis Science and Technology*, 6, p.6187-6196, 2016.
 59. Wenlu Li, Seung Soo Lee, Jiewei Wu, Carl Hinton, **John Fortner***, “Shape and Size Controlled Synthesis of Uniform Iron Oxide Nanocrystals Through New Non-hydrolytic routes,” *Nanotechnology*, 27 (32), 324002, 2016.
 60. Yi Jiang, Ramesh Raliya, Pratim Biswas*, **John D. Fortner***, “Graphene Oxides in Water: Correlating Morphology and Surface Chemistry with Aggregation Behavior,” *Environmental Science and Technology*, 50 (13), p.6964–6973, 2016. *co-corresponding authors.
 61. Yi Jiang, Di Liu, Minjung Cho, Seung Soo Lee, Fuzhong Zhang, Pratim Biswas, **John D. Fortner***, “*In Situ* Photocatalytic Synthesis of Ag Nanoparticles on Crumpled Graphene Oxide Composite Membranes for Filtration and Disinfection Applications,” *Environmental Science and Technology*, 50 (5), p.2514–2521, 2016.
 62. Lin Wang, Scott Burns, Daniel E. Giammar, **John D. Fortner***, “Element Mobilization from Bakken Shale as a Function of Water Chemistry,” *Chemosphere*, 149, p.286–293, 2016.
 63. Wenlu Li, Carl H. Hinton, Seung Soo Lee, Jiewei Wu, **John D. Fortner***, “Surface Engineering Superparamagnetic Nanoparticles for Aqueous Applications: Design and Characterization of Tailored Organic Bilayers,” *Environmental Science: Nano*, 3, p.85–93, 2016.
 64. Jiewei Wu, Denise Benoit, Seung Soo Lee, Wenlu Li, **John D. Fortner***, “Ground State Reactions of nC₆₀ with Free Chlorine in Water,” *Environmental Science and Technology*, 50 (2), p.721–731, 2015.
 65. Yoon Myung, Fei Wu, Sriya Banerjee, Andreea Stoica, Hongxia Zhong, Seung-Soo Lee, **John Fortner**, Li Yang, Parag Banerjee, “Highly conducting, n-type Bi₁₂O₁₅Cl₆ nanosheets with superlattice-like structure,” *Materials Chemistry*, 27, p.7710–7718, 2015.
 66. Anjuliee M. Mittelman, **John D. Fortner**, Kurt D. Pennell, “Effects of Ultra-Violet Light on Silver Nanoparticle Mobility and Dissolution,” *Environmental Science: Nano*, 2, p.683–691, 2015.
 67. Seung Soo Lee, Wenlu Li, Minjung Cho, Brandon J. Lafferty, **John D. Fortner***, “Surface Functionalized Manganese Ferrite Nanocrystals for Enhanced Uranium Sorption and Separation in Water,” *Journal of Materials Chemistry A*, 3, p.21930–21939, 2015.
 68. Tianjiao Xia, **John D. Fortner**, Dongqiang Zhu, Zhichong Qi, Wei Chen, “Transport of Sulfide-Reduced Graphene Oxide in Saturated Quartz Sand: Cation-Dependent Retention Mechanisms,” *Environmental Science and Technology*, 49 (19), p.11468–11475, 2015.

69. *Seung Soo Lee, Wenlu Li, Minjung Cho, Jeffrey G. Catalano, Brandon J. Lafferty, Paolo Decuzzi, John D. Fortner**, “Engineered Manganese Oxide Nanocrystals for Enhanced Uranyl Sorption and Separation,” *Environmental Science: Nano*, 2, p.500–508, 2015
70. *Yi Jiang, Wei-Ning Wang, Di Liu, Yao Nie, Wenlu Li, Jiewei Wu, Fuzhong Zhang, Pratim Biswas, John D. Fortner**, “Engineered Crumpled Graphene Oxide Nanocomposite Membrane Assemblies for Advanced Water Treatment Processes,” *Environmental Science and Technology*, 49 (11), p.6846–6854, 2015.
71. *Xianji Tao, John D. Fortner, Yiliang He, Yongsheng Chen, Hua Wei, Weiqun Lu, Joseph B. Hughes*, “Interactive effects of aqueous stable fullerene nanocrystals (nC₆₀) and Cd²⁺ on *Daphnia magna*: Evaluation of immune enzymes sub-lethal responses, accumulation and interaction,” *Chemosphere* 122, p.162–167, 2015.
72. *Lin Wang, John D. Fortner, Daniel E. Giammar*, “Impact of Water Chemistry on Element Mobilization from Eagle Ford Shale,” *Environmental Engineering Science*, 32 (4), p.310–320, 2015.
73. *Jiewei Wu, David Goodwin, Kathy Peter, Liza Petrie, Wenlu Li, Howard Fairbrother, John D. Fortner**, “Photo-Oxidation of Hydrogenated Fullerene (Fullerane) in Water,” *Environmental Science and Technology Letters*, 1 (12), p. 490–494, 2014.
74. *Wenlu Li, Di Liu, Jiewei Wu, Changwoo Kim, John D. Fortner**, “Engineered Superparamagnetic Iron Oxide Nanocrystals for Environmental Sensing Applications: Evaluating Aqueous Aggregation and Surface Deposition Processes,” *Environmental Science and Technology*, 48 (20), p.11892–11900, 2014.
75. *Yi Jiang, Wei-Ning Wang, Pratim Biswas, John D. Fortner**, “Facile Aerosol Synthesis and Characterization of Ternary Crumpled Graphene–TiO₂–Magnetite Nanocomposites for Advanced Water Treatment,” *ACS Applied Materials and Interfaces*, 6 (14), p.11766–11774, 2014.
76. *Jiewei Wu, Lawrence Alemany, Wenlu Li, Liza Petrie, John D. Fortner**, “Reduction of Hydroxylated Fullerene (Fullerol) in Water by Zn(0): Reaction Kinetics and Hemiketal Product Characterization,” *Environmental Science and Technology*, 48 (13), p.7384–7392, 2014.
77. *Wei-Ning Wang, Yi Jiang, John D. Fortner, Pratim Biswas*, “Nanostructured Graphene-Titanium Dioxide Composites Synthesized by a Single Step Aerosol Process for Photoreduction of Carbon Dioxide,” *Environmental Engineering Science*, 31 (7), p.428–434, 2014.
78. *Jesse Farrell, John D. Fortner, Sarah Work, Carolina Avendano, Natalia Gomez, Rafael Zárate Araiza, Qilin Li, Pedro Alvarez, Vicki Colvin, Amy Kan, Mason Tomson*, “Evaluation of nanoscale magnetite for arsenic removal from drinking water wells in Guanajuato, Mexico,” *Environmental Engineering Science*, 31 (7), p.393–402, 2014.
79. *Casey D. Donahoe, Thomas L. Cohen, Wenlu Li, Peter K. Nguyen, John D. Fortner, Robi D. Mitra, Donald L. Elbert*, “Clickable Poly(ethylene glycol) Nanogel Solutions as Ultralow Protein Adsorbing Coatings: Benefits of Attachment Under Salt-Induced Phase Separation Conditions and Comparison with PEG/Albumin Nanogel Coatings,” *Langmuir*, 29 (12), p.4128–4139, 2013.

80. Xianji Tao, Yiliang He, **John D. Fortner**, Yongsheng Chen, Joseph B. Hughes, “Effects of aqueous stable fullerene nanocrystal (nC₆₀) on copper: Enhanced toxicity and accumulation of copper in *Daphnia magna*,” *Chemosphere*, 92 (9), p.1245–1252, 2013.
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85. Zuzanna A. Lewicka, Angelo F. Benedetto, Denise N. Benoit, **John D. Fortner**, Vicki L. Colvin, “Structure and Composition of TiO₂ and ZnO Nanomaterials in Commercial Suncare Products,” *Nanoparticle Research*, 13(9), p.3607–3617, 2011.
86. Dong Li, **John D. Fortner**, David R. Johnson, Chun Chen, Qilin Li, Pedro J.J. Alvarez, “Bioaccumulation of ¹⁴C₆₀ by the Earthworm *Eisenia foetida*,” *Environmental Science and Technology*, 44 (23), p.9170–9175, 2010.
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88. Xianji Tao, **John D. Fortner**, Bo Zhang, Yiliang He, Joseph B. Hughes, “Effects of Aqueous Stable Fullerene Nanocrystals (nC₆₀) on *Daphnia magna*: Evaluation of Sublethal, Reproductive Responses,” *Chemosphere*, 77 (11), p.1482–1487, 2009.
89. Min Cho, **John D. Fortner**, Joseph B. Hughes, Jae-Hong Kim, “*Escherichia coli* Inactivation by Water-Soluble, Ozonated C₆₀ derivative: Kinetics and Mechanisms,” *Environmental Science and Technology*, 43 (19), p.7410–7415, 2009.
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91. Bo Zhang, Min Cho, **John D. Fortner**, Jaesang Lee, Ching-Hua Huang, Joseph B. Hughes, Jae-Hong Kim, “Delineating Oxidative Processes of Aqueous C₆₀ Preparations: Role of THF Peroxide,” *Environmental Science and Technology*, 43 (1), p.108–113, 2009.
92. Jacqueline M. Tront, **Joseph. D. Fortner**, Michael L. Plötze, Joseph B. Hughes, Alexander M. Puzrin, “Microbial Fuel Cell Technology for Measurement of Microbial Respiration of

- Lactate as an Example of Bioremediation Amendment,” *Biotechnology Letters*, 42 (8), p.1385–1390, 2008.
93. Jacqueline M. Tront, **Joseph. D. Fortner**, Michael L. Plötze, Joseph B. Hughes, Alexander M. Puzrin, “Microbial Fuel Cell Biosensor for *In situ* Assessment of Microbial Activity,” *Biosensors and Bioelectronics*, 24 (4), p.586–590, 2008.
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 95. **John D. Fortner**, Doo-Il Kim, Adina M. Boyd, Joshua C. Falkner, Vicki L. Colvin, Joseph B. Hughes, Jae-Hong Kim, “Reaction of Water Stable C₆₀ Aggregates with Ozone,” *Environmental Science and Technology*, 41 (21), p.7497–7502, 2007.
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 98. Hoon Hyung, **John D. Fortner**, Joseph B. Hughes, Jae-Hong Kim, “Natural Organic Matter Stabilizes Carbon Nanotubes in the Aqueous Phase,” *Environmental Science and Technology*, 41(1), p.179–184, 2007.
 99. Delina Y. Lyon, **John. D. Fortner**, Christy M. Sayes, Vicki L. Colvin, Joseph B. Hughes, “Bacterial Cell Association and Antimicrobial Activity of a C₆₀ Water Suspension,” *Environmental Toxicology and Chemistry*, 24 (11), p.2757–2762, 2005.
 100. **John D. Fortner**, Delina Y. Lyon, Christy M. Sayes, Adina M. Boyd, Joshua C. Faulkner, Y. J. Tao, W. Guo, Kevin D. Ausman, Vicki L. Colvin, Joseph B. Hughes, “C₆₀ in Water: Nanocrystal Formation and Microbial Response,” *Environmental Science and Technology*, 39 (11), p.4307–4316, 2005.
 101. C. M. Sayes, **J. D. Fortner**, W. Guo, D. Y. Lyon, A. M. Boyd, K. D. Ausman, Y. J. Tao, B. Sitharaman, L. J. Wilson, J. B. Hughes, J. L. West, V. L. Colvin, “The Differential Cytotoxicity of Water Soluble Fullerenes,” *Nano Letters*, 4 (10), p.1881–1887, 2004.
 102. **John D. Fortner**, Chunlong Zhang, Jim C. Spain, Joseph B. Hughes, “Factors Controlling Bioremediation of Dinitrotoluene in Vadose Zone Soils,” *Environmental Science and Technology*, 37 (15), p.3382–3391, 2003.

BOOK CHAPTERS (3)

1. Juan Chang, Erbing Wang, *Trey Oldham*, *Wenlu Li*, **John Fortner**, “Tuning Iron Oxide-based Nanomaterials as Next Generation Adsorbents for Environmental Applications,” *Chemistry in the Environment Series No. 4.: Emerging Nanotechnologies for Water Treatment*, p.117–152, 2022 (accepted 2021). Pub. Royal Society of Chemistry, Eds. Yanbiao Liu, Chong-Chen Wang and Wen Liu.
2. *Yi Jiang*, Bo Peng, Zhishang Wan, *Changwoo Kim*, *Wenlu Li*, **John Fortner**, “Nanotechnology as a Key Enabler for Effective Environmental Remediation Technologies,”

A New Paradigm for Environmental Chemistry and Toxicology, p. 197–207, 2020. Pub. Springer, Eds. Guibin Jiang and Xiangdong Li.

3. **John D. Fortner**, Jaesang Lee, Joseph B. Hughes, Jae-Hong Kim, “Chemical and Photochemical Reactivity of Fullerenes (C₆₀) in the Aqueous Phase,” *Nanoscience and Nanotechnology: Environmental and Health Impact*, p. 159–195, 2008, Pub. Wiley, Ed. Vicki Grassian.

PATENTS AND PATENTS PENDING (3)

1. *Changwoo Kim*, **John D. Fortner (lead developer)**, “High Efficiency (Photo)Reduction of Chromium by Polyethylenimine (PEI) Organic Polymers Coupled with Nanomaterial Platforms for High Recovery,” Patent Application Pending.
2. *Yi Jiang*, Wei-Ning Wang, Pratim Biswas, **John D. Fortner (lead developer)**, “Composite Nanostructures Having a Crumpled Graphene Oxide Shell,” granted Dec. 2020), US Patent No. US10874992B2
3. *Seung Soo Lee*, Brandon J. Lafferty, *Wenlu Li*, **John D. Fortner (lead developer)**, “Engineered Nanoparticles for Aqueous Applications,” granted Oct., 2021, US Patent No. US11148119B2

PROFESSIONAL PRESENTATIONS AND INVITED SEMINARS (73)

1. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” 2022 Future-Shaping ACE Congress, Seoul South Korea (simultaneous online broadcasted) November, 2022. *Invited Plenary Lecture*.
2. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” University of Rhode Island, October 2022, *Invited Seminar*.
3. **John D. Fortner**, “Impacts of Surface Coating Aging on the Fate, Transport, and Efficacy of Nanofertilizers During Foliar Application,” Nanoscale Science and Engineering for Agriculture and Food Systems (USDA Grantee Meeting), 2022.
4. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” Connecticut Agricultural Experiment Station, New Haven, CT, January 2020. *Invited Seminar*.
5. **John D. Fortner**, “Environmental Applications of Non-Planar Graphene Oxide Materials,” 10th National Conference on Environmental Chemistry, Nankai University, August 2019. *Invited Speaker*
6. Wenlu Li, Peng Liao, Trey Oldham, Yi Jiang, Chao Pan, Songhu Yuan, **John D. Fortner**, “Real-time Evaluation of Natural Organic Matter Deposition Processes onto Model Environmental Surfaces,” EuroClay 2019, Pierre & Marie Curie University, Paris, July 2019. *Invited Keynote Presentation*.
7. **John D. Fortner**, “Impacts of Surface Coating Aging on the Fate, Transport, and Efficacy of Nanofertilizers During Foliar Application,” USDA Grantee Meeting, Vanderbilt University, May 2019.
8. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” Department of Chemical Engineering, University of Illinois at

Chicago, October 2018. *Invited Departmental Seminar*

9. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” Department of Civil and Environmental Engineering, University of Pittsburgh, October 2018. *Invited Departmental Seminar*
10. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Water Treatment: Crumpled Graphene Oxide Composite Materials,” Royal Society of Chemistry, Environmental Nanotechnology Symposium, London, September 2018. *Invited Speaker*
11. **John D. Fortner**, “Impacts of Surface Coating Aging on the Fate, Transport, and Efficacy of Nanofertilizers During Foliar Application,” Gordon Research Conference, Nanoscale Science and Engineering for Agriculture and Food Systems, June 2018. *Poster Presentation*
12. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” Department of Chemical and Biological Engineering, Virginia Commonwealth University, April 2018. *Invited Departmental Seminar*
13. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” Department of Civil and Environmental Engineering, Missouri University of Science and Technology, February 2018. *Invited Departmental Seminar*
14. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” Department of Civil and Environmental Engineering, Rice University, December 2017. *Invited Departmental Seminar*
15. **John D. Fortner**, “Development and Demonstration of Superparamagnetic Nanomaterials for Novel Flow-Through Separation and Recovery Processes for Metal/Metalloid Pollutions and Rare Earth Elements,” Applied Environmental Nanotechnology Workshop, Hong Kong University of Science and Technology, June, 2017. *Invited Presentation*
16. **John D. Fortner**, “Graphene-Based Platform Composite Materials for Advanced Water Treatment Membranes,” Applied Environmental Nanotechnology Workshop, Hong Kong University of Science and Technology, June, 2017. *Invited Speaker*
17. **John D. Fortner**, “Graphene-Based Platform Composite Materials for Advanced Water Treatment Membranes,” Tsinghua University, June, 2017. *Invited Speaker*
18. **John D. Fortner**, “Development and Demonstration of Superparamagnetic Nanomaterials for Novel Flow-Through Separation and Recovery Processes for Metal/Metalloid Pollutions and Rare Earth Elements,” International Center for Energy, Environment and Sustainability, Washington University in St. Louis, April 2017. *Invited Speaker*
19. **John D. Fortner**, “Introduction to Chemical Analysis: Characterization Techniques for Nanomaterials,” Chemical Analysis and Material Characterization Workshop, Washington University in St. Louis, October 2016. *Invited Speaker*
20. **John D. Fortner**, “Multifunctional Nanoscale Materials for Advanced Environmental Applications,” Faculty of Chemical Technology and Biotechnology, Budapest University of Technology and Economics, June 2016. *Invited Departmental Seminar*
21. **John D. Fortner**, “Engineering Crumpled Graphene Oxide Nanocomposites as Platform Materials for Advanced Water Treatment Processes,” IWA Nano & Water Specialist

Conference, Rice University, May 2016. *Invited Keynote*

22. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” Department of Geography and Environmental Engineering, Johns Hopkins University, April 2016. *Invited Departmental Seminar*
23. **John D. Fortner**, “Engineered Crumpled Graphene Oxide (CGO) Nanocomposite Platform Materials for Environmental Applications,” American Chemical Society, National Meeting, San Diego, CA, March 2016. *Invited Session Keynote*
24. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Water Treatment and Environmental Sensing Applications,” Department of Civil and Environmental Engineering, University of Missouri, December 2015. *Invited Departmental Seminar*
25. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Water Treatment and Environmental Sensing Applications,” Department of Civil and Environmental Engineering, University of Iowa, November 2015. *Invited Departmental Seminar*
26. **John D. Fortner**, “Engineered Crumpled Graphene Oxide (CGO) Nanocomposite Membrane Assemblies for Advanced Water Treatment Processes” Sustainable Nanotechnology Organization Conference, Portland, OR, November 2015. *Invited, Session Opening Presentation*
27. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Environmental Applications,” Department of Energy, Environmental, and Chemical Engineering, Washington University in St. Louis, October 2015. *Departmental Seminar (Tenure Lecture)*.
28. **John D. Fortner**, “Nanoscale Material Platforms for Advanced Water Treatment: Development and Application of Crumpled Graphene Oxide Nanocomposites,” Association of Environmental Engineering and Science Professors (AEESP), New Haven, CT, Yale University, June 2015. *Oral Presentation*
29. **John D. Fortner**, “C₆₀ Availability Water: How it Happens and What it Means,” American Society of Mechanical Engineers (ASME), 2015 4th Global Congress on NanoEngineering for Medicine and Biology (NEMB), Minneapolis, MN, April 2015. *Invited Keynote Presentation*
30. **John D. Fortner**, “Nanoscale Material Platforms for Advanced Water Treatment: Development and Application of Crumpled Graphene Oxide Nanocomposites,” Sustainable Nanotechnology Organization Conference, Boston, MA, November 2014. *Oral Presentation*
31. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Water Treatment and Environmental Sensing,” Department of Civil and Environmental Engineering, Tufts University, November 2014. *Invited Departmental Seminar*
32. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Water Treatment and Environmental Sensing,” Department of Civil and Environmental Engineering, University of Massachusetts Amherst, October 2014. *Invited Departmental Seminar*
33. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Water Treatment and Environmental Sensing,” Department of Civil and Environmental Engineering, Arizona State University, October 2014. *Invited Departmental Seminar*

34. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Water Treatment and Environmental Sensing,” Department of Civil and Environmental Engineering, ACS Colloids, University of Pennsylvania, June 2014. *Invited Keynote Presentation*
35. **John D. Fortner**, “Multifunctional Nanoscale Material Platforms for Advanced Water Treatment and Environmental Sensing,” Department of Civil and Environmental Engineering, Duke University, April 2014. *Invited Departmental Seminar*
36. **John D. Fortner**, Yi Jiang, Wei-Ning Wang, Pratim Biswas, “Engineered, Crumpled Graphene Oxide-based Nanocomposites as Platform Materials for Advanced Water Treatment Technologies,” Gordon Research Conference, Environmental Nanotechnology, Stowe, VT, June 2013. *Poster Presentation*
37. **John D. Fortner**, Lin Wang, Begum Karakocak, Orhan Yenigun, Daniel E. Giammar, “Water Quality Implications of Hydraulic Fracturing for Shale Gas Production,” McDonnell Academy Global Energy and Environment Partnership (MAGEEP), ACCESS Lecture Series, Washington University in St. Louis, May 2013. *Oral Presentation*
38. **John D. Fortner** “Environmental Implications and Applications of Engineered Nanomaterials: Fullerene and Magnetite Case Studies,” University of Rhode Island, Amgen Seminar Series in the Department of Chemical Engineering, March 2013. *Invited Departmental Seminar*
39. **John D. Fortner**, “Environmental Implications and Applications of Engineered Nanomaterials: Fullerene and Magnetite Case Studies,” University of Illinois at Urbana-Champaign, Department of Civil and Environmental Engineering, November 2012. *Invited Departmental Seminar*
40. Daniel E. Giammar, Lin Wang, **John D. Fortner**, “Impacts of Chemistry of Fracturing Fluids on the Mobilization of Trace Elements in Shales,” American Chemical Society, National Meeting, Philadelphia, August 2012.
41. **John D. Fortner**, Jiewei Wu, Wenlu Li, Lawrence Alemany, Liza Petrie, Cara G. Welker, Yi Jiang, “Reduction of Hydroxylated Fullerene (Fullerenol) by Zn(0) in Water: Reaction Kinetics and Product Characterization,” Gordon Research Conference, Environmental Science – Water, Holderness, NH, June 2012. *Poster Presentation*
42. **John D. Fortner**, “Improving Water Treatment for Developing Communities through Engineered Nanoscale Materials and Processes: Optimizing Magnetite for Arsenic Treatment,” MAGEEP ICARES Spring Seminar Series, Washington University in St. Louis, May 2012. *Oral Presentation*
43. **John D. Fortner**, “Environmental Implications & Applications of Engineered Nanomaterials: Fullerene and Magnetite Case Studies,” American Chemical Society, National Meeting, San Diego, CA, April 2012. *Invited Keynote Presentation*
44. **John D. Fortner** and Fern Wickson, “What does it Mean to Harm the Environment: Nanotech Based Remediation Considerations,” Roundtable Panel Session, Society for the Study of Nanosciences and Emerging Technologies, Annual Meeting, Tempe, AZ, November 2011. *Invited Presentation*
45. **John D. Fortner**, “Environmental Implications & Applications of Engineered Nanomaterials: Fullerene and Magnetite Case Studies,” Missouri University of Science and Technology,

Department of Chemical and Biological Engineering, October 2011. *Invited Departmental Seminar*

46. **John D. Fortner**, John T. Mayo, Arjun Prakash, Zuzanna A. Lewicka, Dennis N. Benoit, Vicki L. Colvin, "Optimized Nanocrystalline Iron Oxides for Uranium Concentration, Separation and Trace Level Detection in Environmental Samples," Goldschmidt Conference, Prague, CZ, August 2011. *Oral Presentation*
47. **John D. Fortner**, John T. Mayo, Arjun Prakash, Zuzanna Lewicka, Dennis N. Benoit, Vicki L. Colvin, "Optimized Nanocrystalline Iron Oxides for Uranium Concentration, Separation and Trace Level Detection in Environmental Samples," ACS Surface Science and Colloids Symposium, Montreal, CA, June 2011. *Oral presentation*
48. **John D. Fortner**, John T. Mayo, Arjun Prakash, Zuzanna Lewicka, Dennis N. Benoit, Vicki L. Colvin, "Optimized Nanocrystalline Iron Oxides for Uranium Concentration, Separation and Trace Level Detection in Environmental Samples," Gordon Research Conference Environmental Nanotechnology, NH, June 2011. *Poster Presentation*
49. **John D. Fortner**, John T. Mayo, Arjun Prakash, Zuzanna Lewicka, Dennis N. Benoit, Vicki L. Colvin, "Engineered Nanocrystalline Iron Oxides for Low Level Uranium Analysis," International Water Association (IWA), Nano and Water, Monte Verita, CH, May 2011. *Oral Presentation*
50. **John D. Fortner**, "Application of Engineered Nanocrystalline Iron Oxides (nMAG) for Uranium Analysis," American Chemical Society, Anaheim, CA, April 2011. *Oral Presentation and Session Moderator*
51. **John D. Fortner**, "Environmental Implications & Applications of Engineered Nanomaterials: Fullerene and Magnetite Case Studies," Missouri University of Science and Technology, Department of Civil, Architectural and Environmental Engineering, February 2011. *Invited Departmental Seminar*
52. **John D. Fortner**, "Development and Scale-Up of Nanoscale Iron Oxides for the Treatment of Arsenic in Guanajuato, Mexico," NanoMex'10, Cuernavaca, MX, November 2010. *Invited Plenary Presentation*
53. **John D. Fortner**, Vicki L. Colvin, "Nano-Scale Magnetite for the Sequestration and Separation of Radioisotopes for Environmental Monitoring, Remediation and Forensics," IC Colloquium, Washington D.C., April 2010. *Oral Presentation*
54. **John D. Fortner**, Joseph B. Hughes, Vicki L. Colvin, "Engineered Carbon Nanomaterials in the Environment: C₆₀ Aggregate Chemistry and Biological Effects," Nano Aqua, Cairo, EG, April 2010. *Invited Plenary Presentation*
55. **John D. Fortner**, Vicki L. Colvin, "Engineered Nanomaterials in the Environment: Chemistry of Fullerenes (C₆₀) in Aqueous Systems," Nankai University, Tianjin, CN, March, 2010. *Invited Departmental Seminar*
56. **John D. Fortner** and Vicki L. Colvin, "Designing Safety: The Ultimate in Biological Control," AAAS, 'Science of the Small: NanoBioTechnology under the Biological Microscope,' San Diego, CA, February 2010. *Invited Platform Presentation*
57. **John D. Fortner**, Joseph B. Hughes, Vicki L. Colvin, "Engineered Nanomaterials in the Environment: Buckminsterfullerene (C₆₀) as a Model Compound in Aqueous Systems," First

Annual NanoThailand Symposium, Bangkok, TH, November 2008. ***Invited Keynote Presentation***

58. **John D. Fortner** and Vicki L. Colvin, “Engineering Safe Nanomaterials: From Research to Policy,” Implementing Advanced Interconnect Technology Solutions, Second JISSO International Forum, Atlanta, GA, May 2008. ***Oral Presentation***
59. **John D. Fortner**, Joseph B. Hughes, Vicki L. Colvin, “Designing for Safety: Understanding How Nanoparticle Structure Impacts Biology,” International Conference on Nanomaterial Toxicology, Indian Institute of Toxicology Research, Lucknow, IN, February 2008. ***Invited Plenary Lecture***
60. **John D. Fortner**, Joseph B. Hughes, Vicki L. Colvin, “Engineered Nanomaterials in the Environment: Carbon Fullerenes in Aqueous Systems,” Royal Commission on Environmental Pollution, Rice University, January 2007. ***Invited Presentation***
61. **John D. Fortner**, Michael L. Plötze, Joseph B. Hughes, Alexander M. Puzrin, “C₆₀ in Water: Aggregate Interactions with Clay Minerals,” Institute for Geotechnical Engineering (IGT), ETH Zurich, CH, November 2007. ***Invited Departmental Seminar***
62. **John D. Fortner**, Joseph B. Hughes, “Reports From the Field: Selected Projects in Angola,” Georgia Institute of Technology Advisor Board, April 2007. ***Invited Presentation***
63. **John D. Fortner**, Doo-Il Kim, Adina M. Boyd, Joshua C. Faulkner, Sean Moran, Joseph B. Hughes, Jae-Hong Kim, “Ozonation of C₆₀ in Water,” 233rd American Chemical Society National Meeting, Chicago, IL, March 2007. ***Oral Presentation***
64. **John D. Fortner**, Adina M. Boyd, Brandon J. Lafferty, Doo-Il Kim, Joshua C. Faulkner, Jae-Hong Kim, Joseph B. Hughes, “Ozonation of Nano-Scale C₆₀ Aggregates in Water,” Gordon Research Conference, Environmental Sciences: Water, Plymouth, NH, June 2006. ***Poster Presentation***
65. **John D. Fortner**, Doo-Il Kim, Jae-Hong Kim, Joseph B. Hughes, “Ozonation of C₆₀ Aggregates in Water,” Society of Environmental Toxicology and Chemistry (SETAC), 26th Annual Meeting, Baltimore, MD, November 2005. ***Invited Platform Presentation***
66. **John D. Fortner**, Doo-Il Kim, Jae-Hong Kim, Joseph B. Hughes, “Transformation of Water-Stable, Nanoscale C₆₀ aggregates During Ozonation Processes,” American Water Works Association (AWWA), Water Quality Treatment Conference (WQTC), Quebec City, CA, November 2005. ***Platform Presentation***
67. **John D. Fortner**, Delina Y. Lyon, Vicki L. Colvin, Pedro J.J. Alvarez, Joseph B. Hughes, “Fate, Transport and Reactivity of C₆₀ in Natural Systems,” El Centro de Investigación y de Estudios Avanzados del Instituto Politécnico Nacional (CINVESTAV-IPN), Mexico City, MX, May 2005. ***Invited Departmental Seminar***
68. **John D. Fortner**, Joshua C. Falkner, E. Matthew Hotze, Delina Y. Lyon, Christy M. Sayes, Kevin D. Ausman, Vicki L. Colvin, Joseph B. Hughes, “C₆₀ Aggregates in Water: Formation Dynamics and Further Characterization,” 229th American Chemical Society National Meeting, San Diego, CA, March 2005. ***Invited Keynote Presentation***
69. **John D. Fortner**, Joseph B. Hughes, Brian Harriss, Marcus Millard, “Challenges in Environmental Engineering in Angola,” Civil and Environmental Engineering Advisory Board, Georgia Institute of Technology, November 2004. ***Invited Presentation***

70. **John D. Fortner**, Delina Y. Lyon, Joseph B. Hughes, "Potential for Hydroxylation of C₆₀ and C₆₀(OH)_n in Environmental Systems," Center for Biological and Environmental Nanotechnology (CBEN): National Science Foundation (NSF) site visit, Rice University, Houston, TX, June 2003. *Oral Presentation*
71. **John D. Fortner**, Chunlong Zhang, Joseph B. Hughes, "Evaluating Feedback Inhibition during 2,4-Dinitrotoluene Biodegradation," *In situ* and On-Site Bioremediation Symposium, Battelle, Orlando, FL, June 2003. *Oral Presentation*
72. **John D. Fortner**, Chunlong Zhang, Katherine E. Finnessy, Joseph B. Hughes, "*In situ* Biostimulation of Dinitrotoluene Mineralization in Vadose Zone Soils: Bench-Scale Analysis," Innovative Approaches to the *in situ* Assessment and Remediation of Contaminated Sites, NSF-Pan-American Advanced Study Institute, Rio de Janeiro, BR, July 2002. *Poster Presentation*
73. **John D. Fortner**, Chunlong Zhang, Katherine E. Finnessy, Joseph B. Hughes, "Bench-Scale Analysis of *in situ* Dinitrotoluene Bioremediation for Vadose Zone Soils," Third International Conference on Remediation of Chlorinated and Recalcitrant Compounds, Battelle, Monterey, CA, May 2002. *Poster Presentation*

GROUP MEMBER AND ASSOCIATED PRESENTATIONS (46), speaker *italicized*

1. *Wenlu Li* and **John Fortner**, "Multifunctional Nanoscale Iron Oxide for Advanced Environmental Applications," Westlake University, Hangzhou, China, 2019.
2. *Anushree Ghosh* and **John Fortner**, "Effect of Rhamnolipid on Aggregation and Deposition of Iron Oxide Nanoparticles," 257th ACS National Meeting, San Diego, CA, 2019.
3. *Anushree Ghosh* and **John Fortner**, "Effect of Rhamnolipid on Aggregation and Deposition of Iron Oxide Nanoparticles," 256th ACS National Meeting, Boston, MA, 2018.
4. *Siyuan An*, Jiewei Wu, **John Fortner**, "Photoenhanced oxidation of graphene oxide in the presence of free chlorine," 255th ACS National Meeting, New Orleans, LA, 2018. **Invited Speaker.**
5. *Changwoo Kim*, Siyuan An, **John Fortner**, "PEI Functionalized Graphene Oxide for Enhanced Sorption and Rapid Photoreduction of Chromium (VI)," 255th ACS National Meeting, New Orleans, LA. 2018
6. *Changwoo Kim*, Junseok Lee, Daniel Schmucker, and **John D. Fortner**, "Engineered Superparamagnetic Nanomaterials as Draw solutes for Osmotic Pressure Driven Membrane Process" (poster) 2017 Mid-American Environmental Engineering Conference, Saint Louis, MO, October, 2017.
7. *Changwoo Kim* and **John D. Fortner**, "Quantifying Nanoparticle Stability and Aggregation Dynamics as a Function of Organic Coating Structure and Density" American Chemical Society, National Meeting, Washington DC, August 2017. *Oral presentation*
8. *Qingqing Zeng* and **John D. Fortner**, "Preparation and Characterization of Polysulfone Ultrafiltration Membrane with Fullerol Modification," Mid-American Environmental Engineering Conference, Southern Illinois University Edwardsville, October 2016. *Oral Presentation*

9. **Wenlu Li** and **John D. Fortner**, “Adsorption of Natural Organic Matter (NOM) onto Environmental Surfaces” American Chemical Society, National Meeting, San Diego, CA, March 2016. *Oral presentation*
10. **Wenlu Li** and **John D. Fortner**, “Engineered Superparamagnetic Iron Oxide Nanoparticles: Synthesis, Water Stabilization, and Interfacial Analysis with Model Environmental Surfaces,” The 8th National Conference on Environmental Chemistry, Guangzhou, China, November 2015. *Oral presentation*
11. **Wenlu Li** and **John D. Fortner**, “Aqueous Stabilization of Superparamagnetic Iron Oxide Nanoparticles (IONPs) for Environmental Sensing and Remediation Applications,” Seminar at State Key Lab of Biogeology and Environmental Geology, China University of Geosciences, Wuhan, China, November 2015. Host: Dr. Songhu Yuan. *Oral presentation*
12. **Wenlu Li** and **John D. Fortner**, “Nanoscale Engineered Superparamagnetic Iron Oxide for Advanced Environmental Applications,” Seminar at School of Environmental Science & Engineering, Huazhong University of Science and Technology, Wuhan, China, November 2015. Host: Dr. Jiakuan Yang. *Oral presentation*
13. **Wenlu Li** and **John D. Fortner**, “Engineering Superparamagnetic Magnetite Nanoparticles for Environmental Implications and Applications,” Seminar at Department of Chemistry, Tsinghua University, Beijing, China, September 2015. Host: Dr. Jinying Yuan. *Oral presentation*
14. **Siyuan An**, Jiewei Wu, **John D. Fortner**, “Photoenhanced Oxidation of Graphene Oxide in the Presence of Free Chlorine,” Mid-American Environmental Engineering Conference, University of Missouri, October 2015. *Oral presentation*
15. **Jiewei Wu** and **John D. Fortner**, “Elucidating Fundamental Molecular Pathways of C60 Transformations in Water,” American Chemical Society, National Meeting, Boston, MA, 2015. *Poster Presentation*
16. **Peng Liao**, Songhu Yuan, Chao Pan, **John Fortner**, Daniel Giammar, “Aggregation and Deposition of Organic Matter-Iron Colloids at Anoxic-Oxic Interfaces,” American Chemical Society, National Meeting, Boston, MA, 2015. *Oral presentation*
17. **Changwoo Kim**, Seung Soo Lee, Wenlu Li, **John D. Fortner**, “Engineering superparamagnetic metal oxide nanocrystals for chromium and arsenic sorption, and separation,” American Chemical Society, National Meeting, Boston, MA, 2015. *Oral Presentation*
18. **Anjuliee Mittelman**, **John D. Fortner**, Kurt Pennell, “Effects of ultra-violet light on silver nanoparticle mobility and dissolution,” American Chemical Society, National Meeting, Boston, MA, 2015. *Oral Presentation*
19. **Wenlu Li**, Seung Soo Lee, Jiewei Wu, Yi Jiang, Changwoo Kim, Carl Hinton, **John D. Fortner**, “Engineering superparamagnetic iron oxide nanocrystals for environmental applications,” American Chemical Society, National Meeting, Boston, MA, 2015. *Poster Presentation*
20. **Yi Jiang**, Wei-Ning Wang, Di Liu, Yao Nie, Wenlu Li, Jiewei Wu, Fuzhong Zhang, Pratim Biswas, **John D. Fortner**, “Engineered Crumpled Graphene Oxide Nanocomposite

- Membrane Assemblies for Advanced Water Treatment Processes,” Environmental Nanotechnology Gordon Research Conference, Mt. Snow, VT 2015. *Poster Presentation*
21. **Yi Jiang**, Ramesh Raliya, **John D. Fortner**, Pratim Biswas, “Aqueous Stability of Reduced Graphene Oxide: Effects of Surface Chemistry, Morphology and Humic Acid,” Environmental Nanotechnology Gordon Research Conference, Mt. Snow, VT 2015. *Poster Presentation*
 22. **Yi Jiang**, Ramesh Raliya, **John D. Fortner**, Pratim Biswas, “Aqueous Stability of Reduced Graphene Oxide: Effects of Surface Chemistry, Morphology and Humic Acid,” Association of Environmental Scientists and Engineering Professors (AEESP), Yale University, New Haven, CT. 2015. *Poster Presentation*
 23. **Wenlu Li**, Seung Soo Lee, Carl H. Hinton, Jiewei Wu, **John D. Fortner**, “Engineered Superparamagnetic Iron Oxide Nanoparticles for Uranyl Separation in Water,” American Chemical Society, National Meeting, Denver, CO, March 2015. *Oral Presentation*
 24. **Wenlu Li**, Carl H. Hinton, Seung Soo Lee, Jiewei Wu, Yi Jiang, **John D. Fortner**, “Surface Engineering Magnetic Nanoparticles for Aqueous Applications: Design and Characterization of Tailored Organic Bilayers,” American Chemical Society, National Meeting, Denver, CO, March 2015. *Oral Presentation*
 25. **Jiewei Wu**, Yining Ou, Adan Montoya, Wenlu Li, **John D. Fortner**, “Elucidating critical roles of light and electron acceptors during aqueous colloidal C₆₀ (nC₆₀) formation,” American Chemical Society, National Meeting, Denver, CO, March 2015. *Oral Presentation*
 26. **Jiewei Wu**, Lawrence Alemany, Denise Benoit, Wenlu Li, **John D. Fortner**, “Photoenhanced Chlorination of Hydroxylated Fullerene (Fullerol) in Water,” American Chemical Society, National Meeting, Denver, CO, March 2015. *Oral Presentation*
 27. **Dhruv Mitroo**, Peter Colletti, Michael Walker, Jiewei Wu, **John Fortner**, Brent Williams, “Atmospheric Aging of Fullerene Nanoparticles,” American Association for Aerosol Research, Orlando, FL, October 2014. *Oral Presentation*
 28. **Yi Jiang**, Di Liu, Wei-Ning Wang, Yao Nie, Wenlu Li, Jiewei Wu, Fuzhong Zhang, Pratim Biswas, **John D. Fortner**, “Crumpled graphene oxide nanocomposites for multifunctional water treatment membrane structures,” Mid-American Environmental Engineering Conference, Missouri University of Science and Technology, October 2014. *Oral Presentation*
 29. **Jiewei Wu** and **John D. Fortner**, “Photoenhanced chlorination of hydroxylated fullerene (Fullerenol) and C₆₀ aggregates (nC₆₀) in water,” American Chemical Society, National Meeting, San Francisco, CA, August 2014. *Oral Presentation*
 30. **Yi Jiang**, Wei-Ning Wang, Yao Nie, Siyuan An, Pratim Biswas, **John D. Fortner**, “Engineered crumpled graphene nanocomposites for photocatalytic environmental reduction applications,” American Chemical Society, National Meeting, San Francisco, CA, August 2014. *Oral Presentation*
 31. **Yi Jiang**, Di Liu, Wei-Ning Wang, Yao Nie, Wenlu Li, Jiewei Wu, Fuzhong Zhang, Pratim Biswas, **John D. Fortner**, “Crumpled graphene oxide nanocomposites for multifunctional water treatment membrane structures,” American Chemical Society, National Meeting, San Francisco, CA, August 2014. *Oral Presentation*

32. **Seung Soo Lee**, Wenlu Li, Minjung Cho, Paolo Decuzzi, Vicki L. Colvin, **John D. Fortner**, “Engineered nanocrystalline magnetic metal oxides for low-level environmental sensing and remediation,” American Chemical Society, National Meeting, Dallas, TX, April 2014. *Oral Presentation*.
33. **Yi Jiang**, Wei-Ning Wang, Pratim Biswas, **John D. Fortner**, “High Performance Crumpled Graphene-TiO₂ Photocatalysts for Water Treatment Technologies,” American Chemical Society, National Meeting, Dallas, TX, April 2014. *Oral Presentation*
34. **Lin Wang**, **John D. Fortner**, Daniel E. Giammar, “Trace element mobilization from shales as a function of fluid properties,” American Chemical Society, National Meeting, Dallas, TX, April 2014. *Oral Presentation*
35. **Jiewei Wu**, Kathy Peter, **John D. Fortner**, “Sunlight Enhanced, Oxidative Transformation of Hydrogenated Fullerene (Fullerane) in Water,” American Chemical Society, National Meeting, Dallas, TX, April 2014. *Poster Presentation*
36. **Lin Wang**, Begum Karakocak, **John Fortner**, Daniel Giammar, “Impact of Water Chemistry on Trace Element Mobilization from Shales,” Mid-American Environmental Engineering Conference, Washington University in St. Louis, October 2013. *Oral Presentation*
37. **Jiewei Wu**, Wenlu Li, Liza Petrie, Yi Jiang, **John D. Fortner**, “Reduction of Hydroxylated C₆₀ (Fullerenol) by Zn (0) in Water: Reaction Kinetics and Product Characterization,” Mid-American Environmental Engineering Conference, Washington University in St. Louis, October 2013. *Oral Presentation*
38. **Wenlu Li**, Seung Soo Lee, **John D. Fortner**, “Synthesis and Interfacial Analysis of Colloidally Stable Iron Based Metal Oxide Nanocrystals to Use as Environmental Sensors,” Mid-American Environmental Engineering Conference, Washington University in St. Louis, October 2013. *Oral Presentation*
39. **Lin Wang**, Begum Karakocak, **John D. Fortner**, Daniel Giammar, “Impact of Water Chemistry on Trace Element Mobilization from Shales,” Overcoming the Technical and Community Challenges of Hydraulic Fracturing for Shale Gas, Boulder, CO, August 2013. *Oral Presentation*
40. **D. E. Giammar**, L. Wang, **J. D. Fortner**, B. Karakocak, O. Yenigun, “Influence of Water Chemistry on Trace Element Mobilization from Fractured Shales,” Association of Environmental Engineering and Science Professor (AEESP) Meeting, Golden, CO, July 2013.
41. **Wenlu Li**, Jiewei Wu, and **John D. Fortner**, "Effects of Surface Chemistries and Environmental Aging on the Aggregation and Deposition Behaviors of Engineered Magnetite Nanocrystals in Aquatic Systems," American Chemical Society, National Meeting, New Orleans, LA, April 2013. *Oral Presentation*.
42. **Jiewei Wu**, Kathrine Peter, W. Li, **John D. Fortner**, “Chlorination of hydroxylated C₆₀ (Fullerenol) and C₆₀ aggregates (nC₆₀) in water: Reaction kinetics and product characterization,” American Chemical Society, National Meeting, New Orleans, LA, March 2013. *Oral Presentation* – **Outstanding Presentation Award** (Transformative Nanotechnologies: Energy and Environment, Solutions and Challenges)
43. **B. Begüm Karakoçak**, Agnes Terenyi, Andrew Martahus, **John D. Fortner**, Orhan Yenigün, “The Effect of Competing Anions on Arsenic Removal via Magnetite Nanoparticles,”

American Chemical Society, National Meeting, New Orleans, LA, March 2013. *Oral Presentation*

44. **Wenlu Li**, Di Liu, Jiewei Wu, **John D. Fortner**, “Engineered Magnetite Nanocrystals: Synthesis, Water Stabilization, and Interfacial Analysis with Model Environmental Surfaces,” Mid-America Environmental Engineering Conference, Southern Illinois University Edwardsville, October 2012. *Oral Presentation*
45. **Wenlu Li**, Di Liu, Jiewei Wu, **John D. Fortner**, “Engineered Magnetite Nanocrystals: Synthesis, Water Stabilization, and Interfacial Analysis with Environmental Surfaces,” American Chemical Society, National Meeting, Philadelphia, PA, August 2012. *Oral Presentation*
46. **Jiewei Wu**, Wenlu Li, Liza Petrie, Yi Jiang, **J. D. Fortner**, “Reduction of Hydroxylated C₆₀ (Fullerenol) by Zn(0) in Water: Reaction Kinetics and Product Characterization,” American Chemical Society, National Meeting, Philadelphia, PA, August 2012. *Poster Presentation*

INVITED WORKSHOP PARTICIPATION (2010 – present)

1. Modeling and Predicting Nanomaterial Risk, Institute for Resources, Environment, and Sustainability (IRES), University of British Columbia, Vancouver, CA, 2012, *Invited*
2. AEEESP Frontiers of Education in Environmental Engineering, St. Louis, MO, 2012, *Invited*

FUNDED RESEARCH PROJECTS

2022 (2)

Project Title: “Environmental Exposure and Cardiometabolic Disease”

PIs: Srivastava (Center PI, University of Louisville)

Funding Source: National Institute of Health / National Institute for Env. Health Sciences, P42 Superfund Research Program

Duration: 2022 – 2027

Amount: \$10,800,000 (\$800,000 in direct costs to **Fortner, Project Lead** (0.5 months/year salary support for project duration) and Hailiang Wang, coPI (Yale, Dept. Chemistry)

Project Title: “Emerging Water Contaminants: Investigating and Mitigating Exposures and Health Risks”

PIs: Vasiliou (Center PI, Yale)

Funding Source: National Institute of Health / National Institute for Env. Health Sciences, P42 Superfund Research Program

Duration: 2022 – 2027

Amount: \$6,000,000 (\$625,000 direct costs to Jaehong Kim (CEE, Yale) Project Lead and **Fortner coPI** (0.5 months/year salary support for project duration)

2021 (1)

Project Title: “ViCTER: Exposure to per- and polyfluoroalkyl substances (PFAS) and risk of cancer in children”

PIs: Metayer (PI) Vieira (coPI), Pollitt (coPI), **Fortner** (coPI), Bartell (coPI), Young (coPI)

Funding Source: National Institute of Health / National Institute for Env. Health Sciences

Duration: 2021 – 2024

Award Amount: \$1,917,515 (\$485,695 to Yale, Pollitt and Fortner, 0.27 months/year salary support each)

2020 (2)

Project Title: “Nanoscale Fertilizers for Foliar Micronutrient Delivery: Correlating Material Surface Chemistry with Plant Utilization Efficacy”

PIs: **Fortner** (PI)

Funding Source: Yale University (Bioscience Postdoctoral Fellowship)

Duration: 2020 – 2021

Award Amount: \$50,000 (no PI salary support)

Project Title: “BN-Based Composites and Nanostructures for Accelerated PFAS Photodegradation”

PIs: Wang (PI), **Fortner** (coPI, Yale), Senflte, Westerhoff,

Funding Source: NSF Engineering Research Center, Nanotechnology-Enabled Water Treatment (NEWT)

Duration: 2020

Award Amount: \$30,000 to Fortner (0.1 month per year salary support)

Project Title: “Supplemental, Trap-n-Zap: electrocatalytic eARPs to selectively treat nitrate & perfluorinated compounds”

PIs: Garcia-Segura (PI), **Fortner (coPI)**, Zimmerman (coPI), Walker (coPI), Westerhoff (coPI)

Funding Source: NSF Engineering Research Center, Nanotechnology-Enabled Water Treatment (NEWT)

Duration: 2020 – 2021

Award Amount: \$30,000 to Fortner (0.5 month per year salary support)

2019 (1)

Project Title: “Trap-n-Zap: electrocatalytic eARPs to selectively treat nitrate & perfluorinated compounds”

PIs: Garcia-Segura (PI), **Fortner (coPI)**, Zimmerman (coPI), Walker (coPI), Westerhoff (coPI)

Funding Source: NSF Engineering Research Center, Nanotechnology-Enabled Water Treatment (NEWT)

Duration: 2019 – 2020

Award Amount: \$100,000 (\$50,000 to Fortner, 0.5 month per year salary support)

2018 (3)

Project Title: “Development of Photoactive, Conducting Graphene-Based Membranes for Advanced Water Treatment”

PIs: **Fortner** (PI, WUSStL based) and D’Arcy (coPI)

Funding Source: International Center for Energy, Environment and Sustainability (WUSStL)

Duration: 2018 – 2019

Award Amount: \$30,000 (\$20,000 Fortner)

Project Title: “Impacts of Surface Coating Aging on the Fate, Transport, and Efficacy of Nanofertilizers During Foliar Application”

PIs: **Fortner** (PI, WUSStL based)

Funding Source: USDA

Duration: 2018 – 2022

Award Amount: \$492,767

Project Title: “3D Graphene-Based Nanocomposite Assemblies for Next Generation Water Treatment Membranes”

PI: **Fortner** (PI, WUStL based) and Biswas (coPI)

Funding Source: LEAP (WUStL)

Duration: 2018 – 2019

Award Amount: \$15,000

2017 (4)

Project Title: “Advanced Magnetic Nanoparticle Organic Hybrid Materials for CO₂ Sorption and Separation” – Project Extension (from 2016)

PIs: **Fortner** (PI, WUStL based)

Funding Source: Consortium for Clean Coal Utilization (CCCU), WUStL

Duration: 2017 – 2018

Award Amount: \$30,000

Project Title: “UNS: Collaborative Research: Effects of Nano-Bio Interactions on Nanoparticle Fate and Transport in Porous Media”

PIs: Pennell (PI, CEE Tufts Univ.); Capiro (coPI, CEE, Tufts Univ.); **Fortner** (coPI, WUStL based)

Funding Source: U.S. National Science Foundation

Duration: 2017 – 2020

Award Amount: \$400,000 (\$160,000 to Fortner)

Project Title: “Development and Demonstration of Novel Cobalt-based Magnetic Metal Oxide Nanocrystals for Advanced Catalytic Hydrogen Generation”

PIs: **Fortner** (PI)

Funding Source: Mindlin Foundation

Duration: 2017 – 2018

Award Amount: \$25,000

Project Title: “Development of Coupled Physicochemical and Biological Systems for In Situ Remediation of Perfluorinated Chemical and Chlorinated Solvent Groundwater Plumes”

PIs: Pennell (PI, CEE Tufts Univ.); Capiro (coPI, CEE, Tufts Univ.); **Fortner** (coPI, **Yale based**)

Funding Source: Strategic Environmental Research and Development Program (SERDP), U.S. Department of Defense

Duration: 2018 – 2022

Award Amount: \$899,000 (\$274,000 to Fortner, 0.5 months salary support per year)

2016 (3)

Project Title: “Development and Demonstration of Superparamagnetic Nanomaterials for Novel Flow-Through Separation and Recovery Processes for Metal/Metalloid Pollutants and Rare Earth Elements”

PIs: **Fortner** (PI); D. Gaimmar (coPI, EECE); Sadtler (coPI, Chemistry)

Funding Source: I-CARES, WUStL

Duration: 2016 – 2017

Award Amount: \$35,000 (\$12,500 Fortner)

Project Title: “Multifunctional 3D Graphene-Based Nanocomposite Assemblies for Advanced Water Treatment Membranes”

PIs: **Fortner** (PI)

Funding Source: Mindlin Foundation

Duration: 2016 – 2017

Award Amount: \$25,000

Project Title: “Supplemental to Engineered Iron and Manganese Oxide and Core Materials for Field Based Separation and Detection of Trace Metals”

PIs: **Fortner** (PI)

Funding Source: Army Corps of Engineering (Engineering Research and Development Center, ERDC)

Duration: 2016 – 2018

Award Amount: \$90,000

2015 (2)

Project Title: “Advanced Magnetic Nanoparticle Organic Hybrid Materials for CO₂ Sorption and Separation”

PIs: **Fortner** (PI)

Funding Source: Consortium for Clean Coal Utilization (CCCU), WUSTL

Duration: 2015 – 2016

Award Amount: \$45,000

Project Title: “CAREER: Development and Application of Crumpled Graphene Oxide-Based Nanocomposites as a Platform Material for Advanced Water Treatment”

PIs: **Fortner** (PI)

Funding Source: U.S National Science Foundation

Duration: 2015 – 2020

Award Amount: \$500,000

2014 (3)

Project Title: “Platform Nanoscale Sorbents for Advanced Separation and Recovery of Metals and Metalloids in Water”

PIs: **Fortner** (PI), D. Giammar (coPI)

Funding Source: U.S. National Science Foundation

Duration: 2014 – 2017

Award Amount: \$329,835 (\$170,000 to Fortner)

Project Title: “Engineering Next Generation Magnetic Fe₃O₄@BiOCl-ZnO Photocatalytic Nanocomposites for Water Treatment Applications”

PIs: **Fortner** (PI), P. Banerjee (coPI)

Funding Source: I-CARES, WUSTL

Duration: 2013 – 2014

Award Amount: \$25,000 (\$12,500 Fortner)

Project Title: “Atmospheric Photochemistry and the Hydrological Fate of Black Carbon Soot Particles”

PIs: B. Williams (PI); **Fortner** (coPI); S. Hayes (coPI); B. Kumfer (coPI)

Funding Source: I-CARES, WUSTL

Duration: 2013 – 2014

Award Amount: \$30,000 (\$5,000 Fortner)

2013 (2)

Project Title: “MRI: X-ray/Ultraviolet Photoelectron Spectrometer (XPS/UPS) Acquisition”

PIs: **Fortner** (PI), P. Banerjee (coPI), J. Catalano (coPI)

Funding Source: U.S. National Science Foundation

Duration: 2013 – 2014

Award Amount: \$521,043

Project Title: “Engineered Iron and Manganese Oxide and Core Materials for Field Based Separation and Detection of Trace Metals”

PI: **Fortner** (PI)

Funding Source: Army Corps of Engineering (Engineering Research and Development Center, ERDC)

Duration: 2013 – 2017

Award Amount: \$450,000

2012 (5)

Project Title: “Atmospheric Fullerene Chemistry: Elucidating Oxidative Pathways and Characterization of Corresponding Derivatives”

PIs: **Fortner** (PI) and B. Williams (coPI)

Funding Source: U.S. National Science Foundation

Duration: 2012 – 2015

Award Amount: \$300,000 (\$150,000 to Fortner)

Project Title: “Impacts of Surface Coating Aging on Nanomaterial Fate and Transport in Porous Media”

PIs: K. Pennell (PI, Tufts University), L. Abriola (coPI, Tufts University) and **J.D. Fortner** (coPI)

Funding Source: U.S. National Science Foundation

Duration: 2012 – 2015

Award Amount: \$310,000 (\$160,000 to Fortner, WUSTL)

Project Title: “Stabilized Nanoparticle Partitioning and Interfacial Behavior in Oil-Brine Systems”

PI: **Fortner** (PI)

Funding Source: American Chemical Society, Petroleum Research Fund (PRF)

Duration: 2012 – 2014

Award Amount: \$100,000

Project Title: “The energy-water nexus of emerging technologies for energy resource extraction: Impacts of shale hydraulic fracturing and geothermal energy production on the mobilization of trace elements”

PIs: **Fortner** (PI) and D. Giammar (coPI)

Funding Source: MAGEEP Abundant Clean Cost-effective Energy Systems for Sustainability (ACCESS), WUSTL

Duration: 2012 – 2014

Award Amount: \$70,000 (\$35,000 to Fortner)

Project Title: Ralph E. Powe Junior Faculty Enhancement Award, “Optimized Nanocrystalline Iron Oxide Core Structures for Actinide Separation and Analysis in Environmental Systems”

PI: **Fortner** (PI)

Funding Source: Oakridge Associated Universities
Duration: 2012 – 2013
Award: \$5,000

2011 (2)

Project Title: “Improving Water Treatment for Developing Communities through Engineered Nanoscale Materials and Processes”

PI: **Fortner** (PI)

Funding Source: I-CARES, WUSStL

Duration: 2011 – 2012

Award: \$38,000

Project Title: “Effects of Fullerene Morphology and Surface Chemistry on Contaminant-Fullerene Interactions”

PI: **Fortner** (PI)

Funding Source: International Young Scientist Fellowship, Chinese National Science Foundation

Duration: 2011 – 2012

Award: \$30,000 USD (funding supported research with and travel to Nankai University)

Other Select Research Activities (2010 – present)

2015

- Successful synchrotron beam time proposal, “Engineered Binary, Ternary, and Quaternary Ferrite Nanocrystals for Low-Level, Environmental Uranium Sensing: XAFS Characterization of U Adsorption Dynamics” The Advanced Photon Source, 12-BM, Argonne National Lab. Li and Kim attended.

2014

- Successful synchrotron beam time proposal, “Engineering Superparamagnetic Iron Oxide Nanoparticles for Environmental Treatment Applications: Fundamentally Defining Arsenic and Chromium Physical and Chemical Sorption Processes Through XAFS Analyses” The Advanced Photon Source, 12-BM, Argonne National Lab. Li, Kim, and Lee attended.

2013

- Successful synchrotron beam time proposal, “XAFS Investigation of Uranyl Association with Engineered, Water-Stabilized, Iron Oxide Nanoparticles: Effect of Surface Coatings,” The Advanced Photon Source, 12-BM, Argonne National Lab. Li, Lee, and Fortner attended.
- Successful synchrotron beam time proposal, “XAFS Investigation of Uranyl Association with Water-Stabilized Iron Ferrite Nanocrystals Engineered for Environmental Sensing and Remediation Applications,” The Advanced Photon Source, 10-BM-A, Argonne National Lab. Li and Lee attended.

2012

- Successful synchrotron beam time proposal titled, “XAFS Investigation of Uranyl Association with Water-Stabilized Iron Oxide Nanoparticles Engineered for Environmental Sensing Applications,” The Advanced Photon Source, 10-BM-A, Argonne National Lab. Li and Fortner attended.

- Shale Water Research Consortium (Houston, TX) Member, by invitation (President, Ross Tomson).

TEACHING AND ADVISING

2019 – present **Faculty**

Department of Chemical and Environmental Engineering, Yale University

ENVE 120 / ENAS 120: Introduction to Environmental Engineering

2021 (spring), 17 students enrolled (17 undergraduates)

2020 (spring), 33 students enrolled (33 undergraduates)

Syllabus and student evaluations available upon request

ENVE 438 / ENAS 648: Environmental Organic Chemistry

2022 (fall), 6 students enrolled (3 graduate, 3 undergraduate)

2022 (spring), 24 students enrolled (4 graduate, 20 undergraduate)

2020 (fall), 11 students enrolled (5 graduate, 5 undergraduates, 1 P/F)

2019 (fall), 19 students enrolled (10 graduate, 7 undergraduates, 2 audit)

Syllabus and student evaluations available upon request

2010 – 2018 **Faculty**

Department of Energy, Environmental and Chemical Engineering, Washington University in St. Louis

EECE 262: Introduction to Environmental Engineering

Syllabus available upon request

Student evaluation summaries and comparisons available upon request

EECE 448 / 548: Environmental Organic Chemistry

Syllabus available upon request

Student evaluation summaries and comparisons available upon request

EECE 499 International Experience, Budapest, Hungary (2016)

Syllabus available upon request

2002 – 2004 **Teaching Assistant**

Department of Civil and Environmental Engineering, Rice University

ENVI 201: Introduction to Environmental Engineering

2005 – 2007 **Research Advisor and Mentor**

Georgia Tech Environmental Engineering Research Internship Program (Summers)

Fortner Lab Members (2010 – Present)

Research Assistants (38) (Undergraduate level unless otherwise noted as ME student.)

Yale Associated (4):

Emilia Oliva (2021), Will Wang (2019 – 2020), Jodi Coburn (2019 – 2020), Alessandro Zulli (ME, 2019 – 2020, currently pursuing PhD at Yale)

WUStL Associated (34):

Samantha Cobb (2018), Yao Feng (summer 2018), Alicia Loecker (summer 2018), Zhiyao Li, WUStL (2018); Oscar Tapia, WUStL (2018); Daniel Schmucker, WUStL (2017 – 2018); Harrison Holmes, WUStL (summer 2017 – 2018); Bhushan Pawar, IIT Gandhinagar (summer 2017, pursuing PhD at Texas A&M); Amy Kieruzel, WUStL (summer 2017 – 2018); Nick Matteucci, WUStL (**NSF Graduate Fellowship winner**, summer 2017 – 2018, pursuing PhD at MIT); Flynn Walker, WUStL (summer 2016 – 2017); Trey Oldham, WUStL (2016 – 2017, PhD WUStL); Jiaqi Huang, WUStL EECE ME program (2016 – 2017); Kishan Patel, IIT Gandhinagar (summer 2016,); Kelly Kwan, Hong Kong University of Science and Technology (summer 2016); Maria Baquerizo, WUStL (summer 2015 – 2016); Hema Choudhary, IIT Gandhinagar (summer 2015); Isaac Furhman, University of Nebraska (summer 2015); Duolin Ding WUStL EECE ME program (summer 2015); Adan Montoya, WUStL (summer 2014 – 2015); Daniel Plants, Rice University (summer 2014); Brittany Luntz, WUStL (fall 2013, spring 2014); Cassandra Fagan, University of Massachusetts Amherst (summer 2013, NSF REU; PhD University of Texas, Austin); Christine Le, Brown University (summer 2013, NNIN NSF REU); Matt Epplin, University of Minnesota (summer 2013, PhD Emory University), Carl Hinton, WUStL (2013 – 2015, MS EECE 2014 – 2015); Elan Shatoff, Brandeis University (summer 2013, PhD Ohio State University); Kathy Peter, WUStL (2012 – 2013 **NSF Graduate Fellowship winner**; PhD University of Iowa); Andrew Martahus, WUStL (2012); Liza Petrie, WUStL (2010 – 2013); Ian MacKenzie, Geneva College (summer 2012, NNIN NSF REU, PhD University of North Carolina); Brittany Radke, UNLV (summer 2012, NSF REU); Lu Yang, WUStL (2011 – 2012); Cara Welker, Vanderbilt University (summer 2011, PhD Stanford University, **NSF Graduate Fellowship winner**); Bethany Klemetsrud, University of Minnesota (summer 2011, NSF REU, PhD Michigan Technological University)

Current Graduate Students (6):

1. Junseok Lee, PhD student, Department of Chemical and Environmental Engineering, Yale; year 4.
2. Bugra Sahin, PhD student, Department of Chemical and Environmental Engineering, Yale; year 3.
3. Cheldina Jean, PhD student, Department of Chemical and Environmental Engineering, Yale; year 3, co-advised with Prof. Julie Zimmerman.
4. Seung Hee Chae, PhD student, Department of Chemical and Environmental Engineering, Yale; year 2, co-advised with Prof. Jaehong Kim
5. Susanna Maisto, PhD student, Department of Chemical and Environmental Engineering, Yale; year 2.
6. Lydia Watt, PhD student, Department of Chemical and Environmental Engineering, Yale; year 1 (rotating)
7. Özce Durak, PhD student, Department of Chemical and Environmental Engineering, Yale; year 1 (rotating)

Current Postdoctoral Associates (2)

1. Dr. Seung Soo (Steve) Lee (Aug. 2021 – present), PhD in Chemistry, Rice University
2. Dr. EunTae Yun (Nov. 2021 – present), PhD in Environmental and Architectural Engineering, Korea University

Group Alumni (14) (2010 – present, WUSTL & Yale, including graduate students and postdoctoral fellows, 4 postdoctoral associates, 10 PhD students, 3 MS/ME students)

1. Anushree Ghosh, Department of Energy, Environmental and Chemical Engineering, WUSTL
PhD 2022
Thesis Title: Nano-Bio Interactions: Implications and Applications
Current position: Senior Scientist, Air Products
2. Qingqing Zeng, Department of Energy, Environmental and Chemical Engineering, WUSTL
PhD 2021
Thesis Title: Development and Evaluation of Advanced Carbon Nanomaterials for Water Treatment Applications
Current position: In transition
2. Ji-Soo Jang, (2020 – 2021), Postdoctoral Fellow, Yale University, co-advised with Prof. Meny Elimelech
Current position: Senior Research Scientist (tenure track), Korean Institute for Science and Technology (KIST), Electronic Materials Research Center
3. Changwoo Kim, Postdoctoral Fellow (2018-2021), WUSTL and Yale University
PhD 2018 (Department of Energy, Environmental and Chemical Engineering, Washington University in St. Louis)
Thesis Title: Towards Engineering Advanced Nanomaterials: Elucidating Fundamental Particle Behavior in Water and Critical Sorption Dynamics
Current Position: Assistant Professor, Gwangju Institute of Science and Technology, School of Earth Sciences and Environmental Engineering
4. Wenlu Li, Postdoctoral Fellow (2015-2020), WUSTL and Yale
PhD 2015 (Department of Energy, Environmental and Chemical Engineering, Washington University in St. Louis)
Thesis Title: Engineering Superparamagnetic Iron Oxides Nanoparticles for Environmental Applications.
Current position: Assistant Professor, Northwestern Polytechnical University, School of Ecology and Environmental Sciences
5. Siyuan An, Department of Energy, Environmental and Chemical Engineering, WUSTL
PhD 2018
Thesis Title: Graphene Oxides in Water: Characterization, Reactivity, and Application
Current Position: Discover Financial (Miami, FL)
6. Kelsey Haddod, Department of Energy, Environmental and Chemical Engineering, WUSTL (co-advised with Prof. Pratim Biswas)
PhD 2018
Thesis Title: Material Synthesis and Device Design for Sensor Arrays and their Application in the Analysis of Volatile Organic Compounds
Current Postion: WUSTL School of Medicine (studying to be an MD)
7. Yao Nei, Department of Energy, Environmental and Chemical Engineering, WUSTL (co-advised with Prof. Pratim Biswas)
PhD 2018
Thesis Title: Synthesis of Crumpled Graphene and Titanium Dioxide Based Nanomaterials and the Application to Carbon Dioxide Photoreduction

Current Position: Software Engineer, Amazon (St. Louis, MO)

8. Dr. Seung Soo Lee, Postdoctoral Fellow (2013-2016), WUSTL
Current position: Fortner Lab Research Scientist (2021 – present), previous position as Senior Research Scientist, Sensient Technologies (2016-2021, St. Louis, MO).
9. Yining Ou, Dept. of Energy, Environmental and Chemical Engineering, WUSTL
MS 2016
Thesis Title: Photoenhanced Oxidation of C₆₀ in Water: Exploring the Roles of H₂O₂ and Hydroxyl Radical Based Reactions
Current position: Zhongnan Engineering Corp., Ltd, (Changsha, Hunan, China).
10. Jiewei Wu, Dept. of Energy, Environmental and Chemical Engineering, WUSTL
PhD 2016
Thesis Title: Environmental Fullerene Chemistry: Elucidating Critical Reaction Pathways and Resulting Products in the Aqueous Phase
Current position: Senior Research Scientist, Pfizer (vaccine R&D div.), New York, NY
11. Yi Jiang, Dept. of Energy, Environmental and Chemical Engineering, WUSTL (co-advised with Prof. Pratim Biswas)
PhD 2016
Thesis Title: Crumpled Graphene Oxide: Aerosol Synthesis and Environmental Applications
Current position: Assistant Professor, Hong Kong Polytechnic University, Department of Civil and Environmental Engineering
12. Lin Wang, Dept. of Energy, Environmental and Chemical Engineering, WUSTL (co-advised with Prof. Dan Giammar)
PhD 2015
Thesis Title: Interfacial Chemistry of Trace Elements at Mineral Surfaces in Engineered Water Systems.
Current Position: Chief Program Officer, LaunchCode (St. Louis MO).
13. Peter Colletti, Dept. of Energy, Environmental and Chemical Engineering, WUSTL
MS 2014
Masters Research Topic: Environmental Fullerene Chemistry.
Current Position: Process Engineer at CVR Energy.
14. Agnes Tereyni, Dept. of Energy, Environmental and Chemical Engineering, WUSTL
MS 2012.
Masters Research Topic: Arsenic Removal with Engineered Nanoscale Magnetite.
Current Position: Principal Quality Assurance Specialist, Enlitic (Walnut Creek, CA)

SERVICE AND LEADERSHIP ACITIVITIES (2010 – Present)

Professional Memberships

- American Chemical Society (ACS)
- American Institute of Chemical Engineers (AIChE)
- American Society of Civil Engineers (ASCE), Associate Member (A.M.)
- Association of Environmental Engineering and Science Professors (AEESP)
- Royal Society of Chemistry (RSC)
- Sustainable Nanotechnology Organization (SNO)

Professional Editorial and Leadership Activities

Editorial

- Editorial Board Member (2022 – present) *Environmental Science: Nano*, Royal Society of Chemistry. 2020 impact factor (IF) = 9.47
- Associate Editor (2018 – 2022) *Environmental Science: Nano*, Royal Society of Chemistry. 2020 impact factor (IF) = 9.47

Board Membership and Service

- Advisory Board Member, Brown University, Environmental Engineering Program (2020 – present)
- Board on Chemical Sciences and Technology (BCST), U.S. National Academies of Sciences, Engineering, and Medicine (appointed 2020 – 2023)

Conference & Workshop Organization and Related Activities

- Lead organizer (with Prof Brent Williams) and host, “NSF CAREER Award Workshop and Panel” as part of the Association for Environmental Engineering and Science Professors (AEESP) Virtual Appetizer Event (in lieu of the biannual (physical) conference), July 2021.
- Discussion leader (focused on environmental applications), “2D Nanomaterials for Human Health and the Environment Sustainable,” a workshop, Sustainable Nanotechnology Organization (SNO) annual conference, San Diego, CA, Nov. 2019.
- Vice Chair (2019) and Chair (2021, which has been rescheduled for 2023) of the Environmental Nanotechnology Gordon Research Conference (GRC) (elected 2017).
- Session organizer, co-chair, and moderator, “Iron and Manganese Oxides: Their Formation, Structure, Reactivity, and Applications,” Division of Environmental Chemistry, 254th ACS National Meeting, Washington, D.C., August 2017.
- Lead organizer (with Profs Dan Giammar and Irene Lo), “Applied Environmental Nanotechnology Workshop” (WUSTL MAGEEP sponsored workshop), Hong Kong University of Science and Technology, June 2017.

- Session organizer and discussion leader, “New Directions & New Materials Session,” Environmental Nanotechnology Gordon Research Conference (GRC), West Dover, VT, June 2017.
- Conference organizer, “IWA Nano & Water Specialist Conference, Rice University, May 2016.
- Session chair and moderator, “Water and Water Systems,” Sustainable Nanotechnology Organization (SNO) annual meeting, Portland, OR, Nov. 2015.
- Session organizer, chair, and moderator, “Solving Pollution Problems Using Nanotechnology, Without Causing More Pollution,” Environmental Nanotechnology Gordon Research Conference (GRC), West Dover, VT, June 2015.
- Session chair and presided, “Nanotoxicology and Public Health in the Environment: Session 5-2 Nanotoxicity and Inflammation,” American Society of Mechanical Engineers (ASME), Fourth Global Congress on NanoEngineering for Medicine and Biology (NEMB), Minneapolis, MN, April 2015.
- Organized, co-chaired, and presided, “Environmental Nanotechnology Applications” Sessions 1-2, Sustainable Nanotechnology Organization (SNO), Boston, MA, November 2014.
- Organized, co-chaired, and presided, “Fundamental Research on Colloids and Nanomaterials in Aquatic Systems” (umbrella division for 3 symposia total), ACS Surface Science and Colloids Meeting, Riverside, CA, 2013.
- Organized, co-chaired, and presided, “Transformative Nanotechnologies: Energy and Environment, Solutions and Challenges” (symposium), Division of Environmental Chemistry, 245rd ACS National Meeting, New Orleans, LA, 2013. Selected as the *Environmental Science and Technology (ES&T) Highlighted Session*.
- Organized, co-chaired, and presided, “Environmental Applications and Ecological Implications of Nanotubes, Nanowires and Fullerenes” (symposium), Division of Environmental Chemistry, 243rd ACS National Meeting, San Diego, CA, March 2012.
- Organized, co-chaired, and presided, “Nanomaterials Interaction at Biological Interfaces” (symposium), Division of Environmental Chemistry, 243rd ACS National Meeting, San Diego, CA, March 2012.
- Session moderator, “Reactivity, Transformations and Detection of Natural and Engineering Nanomaterials in the Environment” (symposium), Division of Colloid and Surface Chemistry, 241st American Chemical Society (ACS) National Meeting, Anaheim, CA, March 2011.

Peer Review Participation

Select Journals: *ACS Nano; ACS Applied Materials and Interfaces, Environmental Science and Technology; Environmental Science and Technology Letters; Environmental Science: Nano; Environmental Pollution; Journal of the American Chemical Society; Langmuir; Materials Science; Nanoletters; Nature Nanotechnology, Water Research, among others.*

Research/Grant Funding Agencies: U.S. National Science Foundation (CBET programs: Environmental Engineering, Nano EHS; MRI); U.S. Department of Defense, Strategic Environmental Research and Development Program (SERDP)

Regional Service Activities (Greater St. Louis region)

Volunteer at the St. Louis Knowledge is Power Program (KIPP) Inspire Academy, a WUSTL chartered public school. Scientific mentoring involving weekly mentoring sessions/tutorials focused specifically on water resources and hydrologic cycles/systems and to compete in local Science Olympiad related competitions. (Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014).

Institutional Service Activities and Related Leadership Roles

Yale, Department of Chemical and Environmental Engineering (CEE)

- Director of Undergraduate Students (DUS), Environmental Engineering (2019 – present)
- Graduate Committee (including admissions and recruiting efforts), Environmental Engineering (2019 – present, committee chair 2020 – 2021)
- Faculty Lead, Diversity, Equity and Inclusion Committee for Culture and Climate (2020 – 2021)
- Chemical Engineering Faculty Search Committee (2019 – 2020)

WUSTL, Institutional

- Institute for Materials Science and Engineering Executive Facility Committee (2016 – 2019)

WUSTL, School of Engineering and Applied Sciences (SEAS)

- Elected SEAS Faculty Assembly Speaker (2017 – 2018)
- Elected SEAS Faculty Assembly Advisory Committee (2016 – 2018)
- Founding member / organizer of the School of Engineering and Applied Science Junior Faculty Organization (JSEAS) (2013 – 2016)

WUSTL, Department of Energy, Environmental, and Chemical Engineering (EECE)

- Environmental Engineering Major Committee responsible for developing and launching new major within EECE (2017 – 2018)
- Lead EECE faculty overseeing departmental shared equipment and facilities (2014 – 2018)
- Chair, Environmental Engineering Lecturer Search Committee (2016 – 2017)
- Multiscale Cluster Faculty Search Committee (2016 – 2017)
- Graduate Committee, Aquatic Cluster representative (2013 – 2018)
- Undergraduate and graduate recruiting service/organization:
 - School wide (SEAS), Departmental representative (2012 – 2018)
 - Organizer, EECE graduate student recruitment efforts/visit (2010 – 2017)
- Chemical Engineering Undergraduate Faculty Advisor, 15–20 advisees/year (2012 – 2018)
- EECE Faculty Alumni Coordinator (2011 – 2014)
- Metabolic Engineering Faculty Search Committee (2012 – 2013)
- Environmental Engineering Minor Committee and Advisor (2010 – 2018)

Ph.D. Thesis Committee Member (40 completed)

1. Student: Andrew J. Friedrich
Thesis Title: Trace Element Cycling During Iron(II)-activated Recrystallization of Iron(III) oxide Minerals
Department of Earth and Planetary Science, WUSTL
PI: Prof. Jeff Catalano
Completed: April 2012
2. Student: Sandor Kovacs
Thesis Title: Multi-Scale Modeling of Pigment-Protein Assemblies for Efficient Solar Energy Harvesting
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Cynthia Lo
Completed: August 2012
3. Student: Yi Yang
Thesis Title: Chemical Weathering of Feldspars under Ambient to Geologic Carbon Sequestration Conditions: Effects of Crystallographic Properties and Solution Chemistry
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Young-Shin Jun
Completed: June 2013
4. Student: Fei Wang
Thesis Title: Silicate Mineral Dissolution and Associated Carbonate Precipitation at Conditions Relevant to Geologic Carbon Sequestration
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Dan Giammar
Completed: August 2013
5. Student: Zimeng Wang
Thesis Title: Coupling of the Biogeochemical Cycles of Uranium and Manganese: Implications for the Fate and Transport of Uranium in Subsurface Environments
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Dan Giammar
Completed: September 2013
6. Student: Xiaofei Wang
Thesis Title: Fine Particle and Mercury Formation and Control During Coal Combustion
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Pratim Biswas
Completed: April 2014
7. Student: Samuel Snow
Thesis Title: Photochemistry and Photobiological Implications of Functionalized Fullerenes in Aqueous Systems
School of Civil and Environmental Engineering, Georgia Institute of Technology
PI: Prof. Jaehong Kim, Yale University (previously at Georgia Tech)
Completed: May 2014
8. Student: Vrajesh Mehta

Thesis Title: Dominant Mechanisms of Uranium(VI)-Phosphate Interactions in Subsurface Environments: An *in situ* remediation perspective
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Dan Giammar
Completed: July 2014

9. Student: Maria Stoica

Thesis Title: Toward Improved Computational Tools for Electronic Transport Analysis
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Cynthia Lo
Completed: December 2014

10. Student: Lin Wang

Thesis Title: Interfacial Chemistry of Trace Elements at Mineral Surfaces in Engineered Water Systems
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Profs. **John Fortner** and Dan Giammar
Completed: March 2015

11. Student: Anjuliee Mittelman

Thesis Title: The Effects of Surface Aging on Nanoparticle Fate and Transport in Natural and Engineered Porous Media
Department of Civil and Environmental Engineering, Tufts University
PI: Prof. Kurt Pennell
Completed: March 2015

12. Student: Chelsea Neil

Thesis Title: Understanding the Nano- and Macroscale Processes Impacting Arsenic Mobilization during Managed Aquifer Recharge using Reclaimed Wastewater
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Young-Shin Jun
Completed: May 2015

13. Student: Jessica Ray

Thesis Title: Interactions, Fate, and Transport of Natural and Engineered Nanoparticles and Colloids in Water and Wastewater Treatment Systems
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Prof. Young-Shin Jun
Completed: July 2015

14. Student: Wenlu Li

Thesis Title: Engineering Superparamagnetic Iron Oxides Nanoparticles for Environmental Applications
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner**
Completed: August 2015

15. Student: Yi Jiang

Thesis Title: Crumpled Graphene Oxide: Aerosol Synthesis and Environmental Applications
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner** and Pratim Biswas (co-advisors)

Completed: January 2016

16. Student: Jiewei Wu
Thesis Title: Environmental Fullerene Chemistry: Elucidating Critical Reaction Pathways and Resulting Products in the Aqueous Phase
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner**
Completed: January 2016
17. Student: Qingyun Li
Thesis Title: Calcium Carbonate Formation in Energy-Related Subsurface Environments and Engineered Systems
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Young-Shin Jun
Completed: August 2016
18. Student: Kyle Moor
Thesis Title: Development of Supported Fullerene Photosensitizers for Light-Activated Disinfection Technologies
Department of Chemical and Environmental Engineering, Yale University
PI: Jaehong Kim
Completed: August 2016
19. Student: Dhruv Mitroo
Thesis Title: Applications and Flow Visualization of a Potential Aerosol Mass Reactor
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Brent Williams
Completed: January 17, 2017
20. Student: Wei Xiong
Thesis Title: The Effect of Diffusive Transport on Mineral Carbonation in Geologic Carbon Sequestration
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Dan Giammar
Completed: April 10, 2017
21. Student: Zezhen Pan
Thesis Title: Sorption of Metal onto Natural Sediments and Engineered Iron Oxide Nanoparticles
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Dan Giammar
Completed: May 23, 2017
22. Student: Yujia Min
Thesis Title: Effects of SO₂ and Organic Compounds on Silicate and Aluminosilicate Dissolution and Carbonate Precipitation during Geological CO₂ Sequestration
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Young-Shin Jun
Completed: August 2017

23. Student: Haesung Jung
Thesis Title: Abiotic- and Biotic-Formation of Manganese Oxides and Their Fate in Environmental Systems
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Young-Shin Jun
Completed: October 2017

24. Student: Chao Pan
Thesis Title: Coupling of Oxidation-Reduction Reactions of Chromium, Iron and Manganese: Implications for the Fate and Mobility of Chromium in Aquatic Environments
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Daniel Giammar
Completed: November 2017

25. Student: Yu Gao
Thesis Title: Lignin Conversion to Value-added Products via Heterogeneous Catalysts
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Marcus Foston
Completed: February 2018

26. Student: Lijie Zhang
Thesis Title: Coupling of Geochemical Reactions and Geophysical Properties of Clay Minerals in Energy-related Subsurface Engineered Systems
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Young-Shin Jun
Completed: March 2018

27. Student: Tingying Xu
Thesis Title: Fundamental Controls on the Reactivity of Aluminum Oxide and Hydroxide Surfaces: Contributions of Surface Site Coordination States and Interfacial Water Structure
Department of Earth and Planetary Science, WUSTL
PI: Jeffrey Catalano
Completed: April 2018

28. Student: Elaine Denise Flynn
Thesis Title: The Impact of Small Organic Acids on Iron and Manganese Mineral Transformations and the Fate of Trace Metals
Department of Earth and Planetary Science, WUSTL
PI: Jeffrey Catalano
Completed: May 2018

29. Student: Yao Nei
Thesis Title: Synthesis of Crumpled Graphene and Titanium Dioxide Based Nanomaterials and the Application to Carbon Dioxide Photoreduction
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner** and Pratim Biswas
Completed: May 2018

30. Student: Ahmed Abokifa

Thesis Title: Developing Multi-Scale Models for Water Quality Management in Drinking Water Distribution Systems
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Pratim Biswas
Completed: May 2018

31. Student: Kelsey Haddad
Thesis Title: Material Synthesis and Device Design for Sensor Arrays and their Application in the Analysis of Volatile Organic Compounds
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner** and Pratim Biswas
Completed: June 2018
32. Student: Siyuan An
Thesis Title: Graphene Oxides in Water: Characterization, Reactivity, and Application
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner**
Completed: October 2018
33. Student: Changwoo Kim
Thesis Title: Towards Engineering Advanced Nanomaterials: Elucidating Fundamental Particle Behavior in Water and Critical Sorption Dynamics
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner**
Completed: November 2018
33. Student: Doyoon Kim
Thesis Title: Mechanisms of Calcium Phosphate Mineralization on Biological Interfaces and their Engineering Applications
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Young-Shin Jun
Completed: November 2018
34. Student: Yvonne Afriyie
Thesis Title: Solid-state NMR Study of Amorphous Aluminum Oxy-Hydroxide Thin Films
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Sophia Hayes
Completed: December 2018
35. Student: James Meyer
Thesis Title: Exploring Methodologies to Improve Lignin Utilization in Biorefineries
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Marcus Foston
Completed: March 2019
36. Student: Yunook Bae
Thesis Title: Lead Releasing from Lead Corrosion Scales on Lead Service Lines: Impact of Phosphate and Scale Composition on Lead Release
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: Dan Giammar
Completed: July 2019

37. Student: Tiffany R. Duhl
Thesis Title: Microbially-mediated transformations of chlorinated solvents and engineered nanomaterials in the subsurface: Implications for bioremediation, natural attenuation, fate and transport
Department of Civil and Environmental Engineering, Tufts University
PI: Natalie Capiro
Completed: August 2020
38. Student: Qianhong Zhu
Thesis Title: Electrochemical Hydrogen Peroxide Generation with Anthraquinone Chemistry for Advanced Oxidation Process
Department of Chemical and Environmental Engineering, Yale University
PI: Jaehong Kim
Completed: June 2021
39. Student: Qingqing Zeng
Thesis Title: Development and Evaluation of Advanced Carbon Nanomaterials for Water Treatment Applications
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner**
Completed: December, 2021
40. Student: Anushree Ghosh
Thesis Title: Nano-Bio Interactions: Implications and Applications
Department of Energy, Environmental and Chemical Engineering, WUSTL
PI: **John Fortner**
Completed: July, 2022