

QILIN LI

Department of Civil and Environmental Engineering
Rice University, MS-519
6100 Main Street
Houston, TX, 77005

Telephone: (713)348-2046

Fax: (713)348-2026

Email: qilin.li@rice.edu

Education

Ph.D. in Environmental Engineering

October 2002

University of Illinois at Urbana-Champaign, Urbana, Illinois

MS in Environmental Engineering

August 1999

University of Illinois at Urbana-Champaign, Urbana, Illinois

BE in Environmental Engineering

July 1995

Tsinghua University, Beijing, P. R. China

Professional Experience

Mar. 2017 – present	Professor, Rice University
May 2023 – present	Founder and Scientific Advisor, Geolithium LLC.
Jan. 2023 – present	Co-editor, Desalination
Jan. 2019 – present	Founder and Scientific Advisor, SolMem LLC.
Oct. 2016 – 2019	USEPA Science Advisory Board, Environmental Engineering subcommittee
Jan. 2016 – 2020	Associate Editor, Water Research
Sept. 2015 – present	Associate Director for Research, NSF Nanosystems Engineering Research Center for Nanotechnology Enabled Water Treatment
Jul. 2014 – Nov. 2017	Chair, IWA Nano and Water Specialty Group management committee
Jan. 2013 – present	Responsible Editor, Frontier of Environmental Science and Engineering
Jul. 2011 – Mar. 2017	Associate Professor, Rice University
Jan. 06 – June 2011	Assistant Professor, Rice University
Apr. 09 – Jul. 09	NRC Summer Faculty Fellow, USEPA National Exposure Research Laboratory
Jan. 04 – Dec. 05	Assistant Professor, Oregon State University
Sept. 02 – Dec. 03	Post-doctoral Research Associate, Yale University
Aug. 97 – Aug. 02	Graduate research assistant, University of Illinois at Urbana-Champaign
Sept. 95 – Feb. 97	Graduate research assistant, Tsinghua University

Honors and Awards

Global Prize for Innovation in Desalination finalist (2023), American-made Challenges: Geothermal Lithium Extraction Prize competition finalist (2023), American-made Challenges: Solar Desalination Prize competition semifinalist (2021), CAPEES/Nonova Frontier Research Award (2021), AIChE South Texas Section Best Applied Paper Award (2021), International Water Association Fellow, 2nd place, the 3rd Environmental Technology Innovation and Entrepreneurship Competition (Beijing, 2018), Hershel M. Rich Invention Award (2018, Rice University), Tech Idol Competition Winner (2017 American Water Summit), Pengcheng Scholar (2016 – 2019, Tsinghua University), Super Reviewer Award (Environmental Science & Technology), Roy E. Campbell Faculty Development Award, Excellence in Review Award (Environmental Science & Technology), Water Quality and Technology Conference Best Student Paper Award (with graduate student Alison Harris), Association of Environmental Engineering and Science Professors/Parsons Engineering Science Best Doctoral Thesis Award

Professional Membership

American Chemical Society, American Society of Civil Engineers, American Water Works Association, Association of Chinese American Professors in Environmental Engineering and Science, Association of Environmental Engineering and Science Professors, Chinese Association of Professionals in Science and Technology, International Water Association, North American Membrane Society

Peer Reviewed Journal Publications (total citation = 20643, h-index = 63, i10-index = 132)

Google Scholar profile: <https://scholar.google.com/citations?user=XyTFV0kAAAAJ&hl=en>

1. Zhu, Y., Yan, Y.; Feng, Y.; Liu, Y., Lin, C-Y, Ai, Q., Zhai, T., Shin, B., Xu, R., Shen, H., Fang, Q., Zhang, X.; Bhagwandin, D., Han, Y., Zhu, H., Glavin, N., Ajayan, P., Li, Q., Lou, J. A General Synthesis Method for Covalent Organic Framework and Inorganic 2D Materials Hybrids. *Precision Chemistry* (accepted).
2. Tian, X., Zhang, J., Rigby, K., Rivera, D.J., Gao, G., Liu, Y., Yifan, Z., Zhai, T., Stavitski, E., Muhich, C., Kim, J., Li, Q., Lou, J. Tuning local atomic structures in MoS₂ Based catalysts for electrochemical nitrate reduction. *Small*, 2024, 2310562. <https://doi.org/10.1002/sml.202310562>.
3. Fan, S., Zhou, Q., Liu, C., Li, C., Ye, P., Tao, Y., Shao, H., Long, M., Zhang, Q., Li, Q., Guo, X. Rational design of dynamic fibre membrane for sustainable biofouling control. *Nature Water*, 2024, 2: 161-171.
4. dos Santos, A.J., Shen, H., Lanza, M.R.V., Li, Q., Garcia-Segura S. Electrochemical oxidation of surfactants as an essential step to enable greywater reuse. *Environmental Technology and Innovation*. 2024, 34: 103563. <https://doi.org/10.1016/j.eti.2024.103563>
5. Rajwade, K., Li, Q., Perreault, F. Electrochemical Silica Removal from Carbon Nanotubes Surfaces: Energy Consumption and Removal Mechanisms. *Colloids and Surfaces A: Physicochemical and Engineering Aspects*. 2024, 685: 133284. <https://doi.org/10.1016/j.colsurfa.2024.133284>
6. Wang, B., Chen, Y., Samba, J., Heck, K., Huang, X., Lee, J., Metz, J., Bhati, M., Fortner, J., Li, Q., Westerhoff, P., Alvarez, P.J.J., Senftle T.P., Wong, M.S.* Surface Hydrophobicity of Boron Nitride Promotes PFOA Photocatalytic Degradation. *Chemical Engineering Journal*, 2024, 483: 149134, <https://doi.org/10.1016/j.cej.2024.149134>.
7. Feng, Y., Huang, X., Wu, Z., Wang, H., Zuo, K., Li, Q.* Polarity Modulation Enhances Electrocatalytic Reduction of Nitrate by Iron Nanocatalysts. *ES&T Engineering*. 2024, 4(4): 928-937. <https://doi.org/10.1021/acsestengg.3c00507>
8. Sharma, M.K., Muhammad, A., He, Z., Younas, M., Sameti, M., Rezakazemi, M., Li, Q.* Understanding the Phenomena of negative vapor flux in nanophotonics-enhanced solar membrane distillation. *Chemical Engineering Journal*, 2024, 483:149005. <https://doi.org/10.1016/j.cej.2024.149005>.
9. Mulinari, J.*, Feng, Y., Huang, X., Shen, H., Ambrosi, A., Di Luccio, M., Li, Q., Hotza, D., Oliveira, J.V., In-situ Immobilization of Lipase on α -Alumina Membrane for Oil Fouling Control and Cleaning. *Separation and Purification Technology*, 2024, 330: 124593. <https://doi.org/10.1016/j.seppur.2023.124593>
10. Liu, L., Zhou, X., Dueñas-Osorio, L., Stadler, L., Li, Q.* Hybrid Wastewater Treatment and Reuse Enhances Urban Water System Resilience to Disruptive Incidents. *Nature Water*, 2023, 1: 1048 – 1058. <https://doi.org/10.1038/s44221-023-00166-6>

11. Zuo, K., Garcia-Segura, S., Cerrón-Calle, G.A., Chen, F.Y., Tian, X., Wang, X., Huang, X., Wang, H., Pedro, J.J. A., Lou, J., Elimelech, M., Li, Q.* Electrified Water Treatment: Fundamentals and Roles of Electrode Materials. *Natural Reviews Materials*, 2023, 8: 472-490. <https://doi.org/10.1038/s41578-023-00564-y>
12. Zhou, X., Dueñas-Osorio, L., Doss-Gollin, J., Liu, L., Stadler, L., Li, Q.* Meso-scale Modeling of Distributed Water Systems Enables Policy Research. *Water Resources Research*, 2023, 59(5): e2022WR033758. <https://doi.org/10.1029/2022WR033758>
13. Ali, M.E.A., Elbakry, S., Aboelfadl, M.*, Shawky, H., Li, Q., Perreault, F.*, Preparation and Characterization of Carbon Black Coated Membranes for the Treatment of Saline Water by Membrane Distillation. *Journal of Coatings Technology and Research*, 2023, 20: 1477-1488. <https://doi.org/10.1007/s11998-023-00759-6>
14. Mulinari, J.* Ambrosi, A., Feng, Y., He, Z., Huang, X., Li, Q., Di Luccio, M. Hotza, D., Oliveira, J.V., Polydopamine-assisted one-step immobilization of lipase on α -Alumina Membrane for fouling control in the treatment of oily wastewater. *Chemical Engineering Journal*, 2023, 459: 141516. <https://doi.org/10.1016/j.cej.2023.141516>
15. Zuo, K., Zhang, X., Huang, X., Oliveira, E.F., Guo, H., Zhai, T., Wang, W., Alvarez, P.J.J., Elimelech, M., Ajayan, P.M., Lou, J., Li, Q.* Ultrahigh resistance of hexagonal boron nitride to mineral scale formation. *Nature Communication*. 2022, 13: 4523. <https://doi.org/10.1038/s41467-022-32193-4>
16. Said, I.A., Fuentes, N., and Li, Q.* Energy recovery in electrified capacitive deionization systems for wastewater treatment and desalination: A comprehensive review. *Chemical Engineering and Processing-Process Intensification*. 2022, 178: 109030. (<https://doi.org/10.1016/j.cep.2022.109030>)
17. Chen, X., Han, W., Patel, M., Wang, Q., Li, Q., Zhao, S., Jia, W.* Inactivation of a Pathogenic NDM-1-Positive *Escherichia coli* Strain and the Resistance Gene bla(NMD-1) by TiO₂/UVA Photocatalysis. *Science of the Total Environment*, 2022, 846: 157369. <https://doi.org/10.1016/j.scitotenv.2022.157369>
18. Rolf, J., Cao, T., Huang, X., Boo, C., Li, Q., Elimelech, M.* Inorganic scaling in membrane desalination: models, mechanisms, and characterization methods. *Environmental Science and Technology*, 2022, 56(12): 7484-7511. <https://doi.org/10.1021/acs.est.2c01858>
19. Gil, E., Huang, X., Zuo, K., Kim, J., Rincón, S., Rivera, J.M., Ranjbari, K., Perreault, F., Alvarez, P., Zepeda, A., Li, Q.* A Polysulfone/Cobalt Metal-Organic Framework Nanocomposite Membrane with Enhanced Water Permeability and Fouling Resistance. *ACS Applied Polymer Materials*, 2022, 4(5): 3532 – 3542. <https://doi.org/10.1021/acsapm.2c00132>
20. Chen, J., Zuo, K., Li, Y., Huang, X., Hu, J., Yang, Y., Wang, W., Chen, L., Jain, A., Verduzco, R., Li, X., and Li, Q.* Eggshell Membrane Derived Nitrogen Rich Porous Carbon for Selective Electrosorption of Nitrate from Water. *Water Research*, 2022, 216: 118351. <https://doi.org/10.1016/j.watres.2022.118351>
21. Duchanois, R.M., Herianian, M., Yang, J., Porter, C.J., Li, Q., Zhang, X., Verduzco, R., Elimelech, M.* Designing Polymeric Membranes with Coordination Chemistry for High-precision Ion Separations. *Science Advances*, 2022, 8(9): eabm9436. (DOI: 10.1126/sciadv.abm9436)
22. Xiong, F., Wen, D.* and Li, Q. Calcium-Mediated Regulation Promotes the Biofilm Formation of Two Novel Pyridine-Degrading Bacteria. *Frontiers in Environmental Science*, 2022, 10: 815528. <https://doi.org/10.3389/fenvs.2022.815528>
23. Mulinari, J.*, Ambori A., de Mello Innocentini M.D., Feng, Y., Li, Q., Di Luccio M., Hotza, D., Oliveira J.V. Lipase immobilization on alumina membranes using a traditional and a nature-inspired method for active degradation of oil fouling. *Separation and Purification Technology*, 2022, 287: 120527. <https://doi.org/10.1016/j.seppur.2022.120527>

24. Wu, J.-C., Chuang, Y.-H., Liou, S.-Y.-H., Li, Q., Hou, C.-H.* In Situ Engineering of Highly Conductive TiO₂/Carbon Heterostructure Fibers for Enhanced Electrocatalytic Degradation of Water Pollutants. *Journal of Hazardous Materials*, 2022, 429: 128328. <https://doi.org/10.1016/j.jhazmat.2022.128328>
25. Rice, D., Rajwade, K., Zuo, K., Bansal, R., Li, Q., Garcia-Segura, S., and Perreault, F.* Electrochemically-Active Carbon Nanotube Coatings for Biofouling Mitigation: Cleaning Kinetics and Energy Consumption for Cathodic and Anodic Regimes. *Journal of Colloid and Interface Science*, 2021, 603: 391-397. <https://doi.org/10.1016/j.jcis.2021.06.090>
26. Zuo K., Wang, K., DuChanois, R.M., Fang Q., Deemer, E.M., Huang, X., Xin, R., Said, I.A., He, Z., Feng, Y., Walker, S.W., Lou, J., Elimelech, M., Huang, X. and Li, Q.* Selective Membranes in Water and Wastewater Treatment: Role of Advanced Materials. *Materials Today*, 2021, 50: 526-532. <https://doi.org/10.1016/j.mattod.2021.06.013>
27. Westerhoff, P.*, Alvarez, P.J.J., Kim, J., Li, Q., Alabastri, A., Halas, N., Villagran, D., Zimmerman, J., Wong, M.S. "Utilizing the Broad Electromagnetic Spectrum and Unique Nanoscale Properties for Chemical-Free Water Treatment", *Current Opinion in Chemical Engineering*, 2021, 33: 100709. <https://doi.org/10.1016/j.coche.2021.100709>
28. Wu, Z.Y., Karamad, M., Yong X., Huang, Q., Cullen, D.A., Zhu, P., Xia, C., Xiao, Q., Shakouri, M., Chen, F.Y., Kim, J.Y., Xia, Y., Heck, K., Hu, Y., Wong, M.S., Li, Q., Gates, I., Siahrostami, S., Wang, H. Electrochemical Ammonia Synthesis via Nitrate Reduction on Fe Single Atom Catalyst. *Nature Communication*, 2021, 12: 2870. <https://doi.org/10.1038/s41467-021-23115-x>
29. Said, I.A., Fuentes, N., He, Z., Xin, R., Zuo, K., Walker, S.W. and Li, Q. Treatment of Brackish Water Reverse Osmosis Brine Using Only Solar Energy. *Environmental Science: Water Research & Technology*, 2021, 7(10): 1840-1851. <https://doi.org/10.1039/D1EW00291K>
30. Chen, Y.-R., Xin, R., Huang, X., Zuo, K., Tung, K.-L.*, Li, Q.* Wetting resistant photothermal nanocomposite membranes for direct solar membrane distillation. *Journal of Membrane Science*. 2021, 620: 118913. <https://doi.org/10.1016/j.memsci.2020.118913>
31. Xiong, F., Zhao, X., Wen, D. and Li, Q.* Effect of N-acyl-homoserine lactones-based quorum sensing on biofilm formation sludge characteristics, and bacterial community during the start-up of bioaugmented reactors. *Science of the Total Environment*, 2020, 735: 139449 <https://doi.org/10.1016/j.scitotenv.2020.139449>
32. Ma, J., Gao, T., He, Y., Zuo, K., Li, Q., and Liang, P. Enhanced Charge Efficiency and Electrode Separation Utilizing Magnetic Carbon in Flow Electrode Capacitive Deionization. *ACS ES&T Engineering*, 2020, 1(3): 340-347. <https://doi.org/10.1021/acsestengg.0c00044>
33. Zuo, K. Wang, W., Deshmukh, A., Jia, S., Guo, H., Xin, R., Elimelech, M., Ajayan, P.M.*, Lou, J.*, and Li, Q.* Multifunctional Nanocoated membranes for high-rate electrothermal desalination of hypersaline waters. *Nature Nanotechnology*, 2020, 15(12): 1025-1032. <https://doi.org/10.1038/s41565-020-00777-0>
34. Zuo, K. Wang, W., Deshmukh, A., Jia, S., Guo, H., Xin, R., Elimelech, M., Ajayan, P.M.*, Lou, J.*, and Li, Q.* Publisher correction: Multifunctional Nanocoated membranes for high-rate electrothermal desalination of hypersaline waters. *Nature Nanotechnology*, 2020, 15(12): 1065. <https://doi.org/10.1038/s41565-020-00806-y>
35. Huang, X., Li, C., Zuo, K., and Li, Q.* Predominant effect of material surface hydrophobicity on gypsum scale formation. *Environmental Science & Technology*, 2020, 54(23): 15395-15404. <https://doi.org/10.1021/acs.est.0c03826>
36. Zuo, K., Huang, X., Liu, X., Garcia, E.M.G., Kim, J., Jain, A., Chen, L., Liang, P., Zepeda, A., Verduzco, R., Lou, J., Li, Q.* A hybrid metal-organic framework-reduced graphene oxide nanomaterial for selective removal of chromate from water in an electrochemical process. *Environmental Science & Technology*, 2020, 54(20): 13322-13332 (DOI: 10.1021/acs.est.0c04703)

37. Chen, L., Wang, W., Fang, Q., Zuo, K., Hou, G., Ai, Q., Li, Q., Ci, L., and Lou, J.* High Performance Hierarchically Nanostructured Graphene Oxide/Covalent Organic Framework Hybrid Membranes for Stable Organic Solvent Nanofiltration. *Applied Materials Today*, 2020, 20: 100791 <https://doi.org/10.1016/j.apmt.2020.100791>
38. Garcia-Segura, S. Qu, X., Alvarez, P.J.J., Chaplin, B.P., Chen, W., Crittenden, J.C., Feng, Y., Gao, G., He, Z., Hou, C.-H., Hu, X., Jiang, G., Kim, J.-H., Li, J., Li, Q., Ma, J., Ma, J., Nienhauser, A.B., Niu, J., Pan, B., Quan, X., Ronzani, F., Villagran, D., Waite, D.T., Walker, S.W., Wang, C., Wong, M.S., Westerhoff, P.* “Opportunities for Nanotechnology to Enhance Electrochemical Treatment of Pollutants in Potable Water and Industrial Wastewater -A perspective”, *Environmental Science: Nano*, 2020, 7(8): 2178-2194. <https://doi.org/10.1039/D0EN00194E>
39. Said, I.A., Chomiak, T.R., He, Z. and Li, Q.* Low-cost High-Efficiency Solar Membrane Distillation for Treatment of Oil Produced Waters. *Separation and Purification Technology*, 2020, 250: 117170. <https://doi.org/10.1016/j.seppur.2020.117170>
40. Said, I.A., Fuentes, N., He, Z., Xin, R., Zuo, K. and Li, Q.* Low-cost desalination of seawater and hypersaline brine using nanophotonics enhanced solar energy membrane distillation. *Environ. Sci.: Water Res. Technol.* 2020, 6: 2180-2196. <https://doi.org/10.1039/D0EW00254B>
41. Said, I.A., Chomiak, T.R., Floyd, J. and Li, Q.* Sweeping Gas Membrane Distillation (SGMD) for Wastewater Treatment, Concentration, and Desalination: a Comprehensive Review. *Chemical Engineering and Processing-Process Intensification*, 2020, 153: 107960. <https://doi.org/10.1016/j.cep.2020.107960>
42. Habib, Z., Lee, C.-G., Li, Q., Khan, S.J.*, Nasir, M.A., Jamal, Y., Huang, X., Javed, H. Bi-polymer Electrospun Nanofibers Embedding Ag₃PO₄/P25 Composite for Efficient Photocatalytic Degradation and Anti-microbial Activity. *Catalysts*. 2020, 10(7): 784. <https://doi.org/10.3390/catal10070784>
43. Liu, L., Lopez, E., Duenas-Osorio, L., Stadler, L., Xie, Y., Alvarez, P.J.J., Li, Q.* The importance of system configuration for distributed direct potable water reuse. *Nature Sustainability*, 2020, 3(7): 548-555. <https://doi.org/10.1038/s41893-020-0518-5>
44. Su, H., Wei, Y., Qu, X., Yu, C., Li, Q., Alvarez, P.J.J. and Long, M.* Mechanistic inference on the reaction kinetics of phenols and anilines in carbon nanotubes-activated peroxydisulfate systems: pp-LFERs and QSARs analyses. *Chemical Engineering Journal*. 2020, 385: 123923. <https://doi.org/10.1016/j.cej.2019.123923>
45. Rice, D., Ghadimi, S.J., Barrios, A.C., Henry, S., Walker, S.W., Li, Q. and Perreault, F.* Scaling Resistance in Nanophotonics-Enabled Solar Membrane Distillation. *Environmental Science & Technology*. 2020, 54 (4): 2548–2555. (DOI: 10.1021/acs.est.9b07622)
46. Xu, F., Yao, Y., Alvarez, P.J.J., Li, Q., Fu, H., Yin, D., Zhu, D. and Qu, X.* Specific ion effects on the aggregation behavior of aquatic natural organic matter. *Journal of colloid and interface science*. 2019, 556: 734-742. (DOI: 10.1016/j.jcis.2019.09.001)
47. Said, I.A., Wang, S. and Li, Q.* Field Demonstration of a Nanophotonics-Enabled Solar Membrane Distillation Reactor for Desalination. *Industrial & Engineering Chemistry Research*, 2019, 58 (40): 18829-18835. (DOI: 10.1021/acs.iecr.9b03246).
48. Han, X., Wang, W., Zuo, K., Chen, L., Yuan, L., Liang, J., Li, Q., Ajayan, P.M., Zhan, Y., Lou, J.* Bio-derived Ultrathin Membrane for Solar Driven Water Purification. *Nano Energy*, 2019, 60: 567 – 575. (DOI: 10.1016/j.nanoen.2019.03.089)
49. Zhang, T., Lowry, G.V., Caprio N.L., Chen, J., Chen, W., Chen, Y., Dionysiou, D. D., Elliot, D.W., Ghoshal, S., Hofmann, T., Hsu-Kim, H., Hughes, J., Jiang, C., Jiang, G., Jing, C., Kavanaugh, M., Li, Q., Liu, S., Ma, J., Pan, B., Phenrat, T., Qu, X., Quan, X., Saleh, N., Vikesland, P.J., Wang, Q., Westerhoff, P., Wong, M.S., Xia, T., Xing, B., Yan, B., Zhang, L., Zhou, D., Alvarez, P.J.J. In situ Remediation of Subsurface Contamination: Opportunities and Challenges for Nanotechnology and

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50. Loeb, S.K., Kim, J., Jaing, C., Early, L.S., Wei, H., Li, Q., Kim, J.H.* Nanoparticle Enhanced Interfacial Solar Photothermal Water Disinfection Demonstrated in 3-D Printed Flow-through Reactors. *Environ. Sci. & Technol.* 2019 53(13): 7621-7631. (DOI: 10.1021/acs.est.9b01142)
 51. Kim, J., Jain, A., Zuo, K., Verduzco, R., Walker, S., Elimelech, M., Zhang, Z., Zhang, X., Li, Q.* Removal of Calcium Ions from Water by Selective Electrosorption Using Target Ion Specific Nanocomposite Electrode. *Water Research*, 2019 (160): 445-453. (DOI: 10.1016/j.watres.2019.05.016)
 52. Jain, A., Weather, C., Kim, J., Meyer, M.D., Walker, S., Li, Q. and Verduzco, R.* Self Assembled, Sulfonated Pentablock Copolymer Cation Exchange Coatings for Membrane Capacitive Deionization. *Mol. Syst., Des. Eng.*, 2019 (00): 1-9. (DOI: 10.1039/c8me00115d)
 53. Loeb, S.K., Alvarez, P.J.J., Brame, J.A., Cates, E.L., Choi, W.Y., Crittenden, J., Dionysiou, D.D., Li, Q., Li-Puma, G., Quan, X., Sedlak, D., Waite, T.D., Westerhoff, P., Kim, J.H. The Technology Horizon for Photocatalytic Water Treatment: Sunrise or Sunset. *Environmental Science & Technology*, 2019, 53(6): 2937-2947. (DOI: 10.1021/acs.est.8b05041)
 54. Zin, G., Wu, J., Rezzadori, K., Petrus, J.C.C., Di Cluccio, M. and Li, Q.* Modification of Hydrophobic Commercial PVDF Microfiltration Membranes into Superhydrophilic Membranes by the Mussel-Inspired Method with Dopamine and Polyethyleneimine. *Separation and Purification Technology*, 2019, 212: 641-649. (DOI: 10.1016/j.seppur.2018.10.014)
 55. Su, H., Yu, C., Zhou, Y., Gong, L., Li, Q., Alvarez, P.J.J. and Long, M.* Quantitative Structure-Activity Relationship for the Oxidation of Aromatic Organic Contaminants in Water by TAML/H₂O₂. *Water Research*, 2018, 140: 354-363. (DOI: 10.1021/acs.est.5b03078)
 56. Yu, P., Zaleski, A., Li, Q., He, Y., Mapili, C., Pruden, A., Alvarez, P.J.J., Stadler, L.B.* Elevated Pathogenic Indicator Bacteria and Antibiotic Resistance Genes after Hurricane Harvey's Flooding in Houston. *Environmental Science and Technology Letters*, 2018, 5(8): 481-486. (DOI: 10.1021/acs.estlett.8b00329)
 57. Qi, L., Song, C., Wang, T., Li, Q., Hirasaki, G.J. and Verduzco, R.* Polymer Coated Nanoparticles for Reversible Emulsification and Recovery of Heavy Oil. *Langmuir*, 2018, 34: 6522 – 6528. (DOI: 10.1021/acs.langmuir.8b00655)
 58. Zuo, K., Kim, J., Jain, A., Wang, T., Verduzco, R., Long, M. and Li, Q.* Novel Composite Electrodes for Selective Removal of Sulfate by the Capacitive Deionization Process. *Environmental Science & Technology*, 2018, 52: 9486 – 9494. (DOI: 10.1021/acs.est.8b01868)
 59. Li, M., Yang, Y., He, Y., Mathieu, J., Yu, C., Li, Q., Alvarez, P.J.J.* Detection and Cell Sorting of Pseudonocardia Species by Fluorescence in situ Hybridization and Flow Cytometry Using 16s rRNA-Targeted Oligonucleotide Probes. *Applied Microbiology and Biotechnology*, 2018, 102(7): 3375-3386. (DOI: 10.1007/s00253-018-8801-3)
 60. Lee, C.G., Javed, H., Zhang, D., Kim, J., Westerhoff, P., Li, Q., Alvarez, P.J.J.* Porous Electrospun Fibers Embedding TiO₂ for Adsorption and Photocatalytic Degradation of Water Pollutants. *Environmental Science and Technology*, 2018, 52, 7: 4285 - 4293. (DOI: 10.1021/acs.est.7b06508)
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 62. Jain, A., Kim, J., Owoseni, O.M., Weaters, C., Caña, D., Zuo, K., Walker, W.S., Li, Q.*, and Verduzco, R.* Aqueous-Processed, High-Capacity Electrodes for Membrane Capacitive

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64. Zheng, L., Xu, X., M. Long and Li, Q.* Humic Acid Mediated Visible Light Degradation of Phenol on Phosphate-modified and Nafion-modified TiO₂ Surfaces. *Chinese Journal of Catalysis*. 2017 (38): 2076 – 2084. (DOI: 10.1016/S1872-2067(17)62951-6)
65. Guo, X.*, Yun, H., Zhang, M., Li, Q., Zhou, Q., Shao, H., Hu, W., Li, C., Fan, S. Adsorption of Low-Molecular-Weight Amines in Aqueous Solutions to Zeolites: An Approach to Impeding Low-Molecular-Weight Amines from Regenerating *N*-Nitrosamines. *Industrial and Engineering Chemistry Research*, 2017, 56(42): 12024 – 12031. (DOI: 10.1021/acs.iecr.7b01948)
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Patents and Patent Applications

1. John Allen Floyd, Ibrahim Abdallah, Ze He, Jinjian Wu, Qilin Li. Spiral wound multi-effect membrane distillation module. US Patent App. 18/016,003. 2023/8/31
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3. Jun Lou, Qilin Li, Weipeng Wang, Kuichang Zuo, JIA Shuai, and Weibing Chen. Method of making hexagonal boron nitride coatings and compositions and methods of using same. US Patent App. 17/974,297. 2023/4/27
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Conference Keynote Talks and Invited Seminars/Presentations

1. Distributed wastewater reuse: towards a hybrid urban water supply system design. Nature Water Webinar series, January 11, 2024.
2. Achieving Selectivity in Membrane Processes: Beyond Size and Donnan Exclusion. **(Keynote)** International Conference on the Cooperation and Integration of Industry, Education, Research and Application: Low-carbon Governance and Ecological Restoration of Complex System in Yellow River Basin, Taiyuan, China. December 14, 2023.
3. Nanophotonics Enhanced Solar Membrane Distillation: from Lab to Commercialization. **(Keynote)** 2023 International Conference on the Cooperation and Integration of Industry, Education, Research and Application: Environmental Engineering, Hangzhou, China, December 12, 2023.
4. A Novel Thin Film Composite Structure for Monovalent Selective Ion Exchange Membranes. **(Keynote)**. The 5th IWA Resource Recovery Conference, Shenzhen China, Nov. 1-3, 2023.
5. Electrically Conducting Membrane Coatings with Grafted Stimuli-Responsive Block Copolymer Brushes Inhibit Mineral Scale Formation. **(Keynote)** The 10th IWA Membrane Technology Conference. Washington University, St. Louis, MO, July 23-26, 2023.
6. Achieving Ion Selectivity in Electrosorption. **(Keynote)** The 6th Battery Deionization and Electrochemical Separation Conference, Taipei, Taiwan, July 2-6, 2023.
7. Multifunctional Nanocomposite Membranes and Thin Films for Water Treatment and Reuse: from Lab to Commercialization. **(Invited Talk)** 2023 Environmental Nanotechnology GRC, Newry Maine, June 4-6, 2023.
8. Multifunctional Nanocomposite Coatings for Desalination and Water Treatment: Technical Solutions to Integrated Water Management. **(Invited Panel Presentation)** 2022 NSF Nanoscale Science and Engineering Grantee Conference, December 8, 2022 (Virtual)
9. Achieving Ion Selectivity in Membrane Processes: Beyond Size and Donnan Exclusion. **(Invited Talk)**. 2022 Gordon Research Conference on Membrane: Materials and Processes. Aug. 1, 2022, New London, NH, USA
10. Application of Electrified Membranes in Desalination and Fouling/Scaling Control. **(Keynote)** Conference on Emerging Wastewater Treatment Technology & Environmental Nanotechnology, July 19 – 20, Taipei, Taiwan.
11. Solar Desalination of Hypersaline Wastewater: Opportunities and Challenges. **(Keynote)** The 26th ACS Annual Green Chemistry and Engineering Conference. June 7, 2022, Reston, VA, USA.
12. Reducing energy consumption in desalination: advanced materials and novel processes. **(Keynote)** AIChE 2022 Spring Meeting and 18th Global Congress on Process Safety. April 13, 2022, San Antonio, TX, USA

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13. Multifunctional Nanocomposite Coatings for Desalination and Water Treatment: Technological Solutions to Integrated Water Management. (**Keynote**). IWA Water in Industry 2021 Conference. Aug. 23-25, 2021, Nanjing, China.
 14. Multifunctional Nanocomposite Coatings for Desalination and Water Treatment: Technological Solutions to Integrated Water Management. (**Invited seminar**) Department of Civil and Environmental Engineering, University of Tennessee, Knoxville. Feb. 25, 2021.
 15. Multifunctional nanocomposite coating for desalination and water purification (**Invited seminar**). Department of Chemical and Environmental Engineering, Yale University, Oct. 21, 2020.
 16. Advanced materials for desalination and water purification (**Plenary**). International Conference and Emerging Wastewater Treatment Technologies. National Taiwan University, July 29, 2020.
 17. Multifunctional nanocomposite coating for desalination and water purification (**Keynote**). The 2019 African Materials Research Society Meeting, Arusha, Tanzania. December 9-13, 2019.
 18. Integrated Water and Wastewater Infrastructure: Technologies and System Configurations (**Panelist**), Andlinger Center for Energy and the Environment Annual Meeting. Princeton University, Princeton NJ. Nov. 8, 2019.
 19. Nanotechnology for Water Treatment: Low Energy Desalination and Water Purification (**Invited Seminar**). National Institute of Clean and Low Carbon Energy, Beijing, China. Nov. 6, 2019.
 20. Nanotechnology for Water Treatment: Low Energy Desalination and Water Purification (**Plenary**) The 6th International Conference on Environmental Simulation and Pollution Control. Tsinghua University, Beijing, China. Nov. 5, 2019.
 21. Multifunctional nanocomposite coating for desalination and water purification (**Keynote**). The 258th ACS National Meeting, San Diego, CA. Aug. 28, 2019.
 22. Integrated Water and Wastewater Infrastructure: Technologies and System Configurations (**Keynote**). The 10th Chinese Eco-environmental Chemistry Conference, Tianjin, China. Aug. 16, 2019.
 23. Nanotechnology for Water Treatment: Low Energy Desalination and Water Purification (**Invited Seminar**). Shangdong University, Qingdao, China, Aug. 14, 2019.
 24. Future Urban Supply: A Systems Approach (**Keynote**). The 5th International Conference on Environmental Pollution and Health, Harbin, China, Aug. 6, 2019.
 25. Nanotechnology for Water Treatment: Low Energy Desalination and Water Purification (**Plenary**). The 6th Chinese Environmental Scholar Forum, Rice University, Houston TX. June 1, 2019.
 26. Nanotechnology for Water Treatment: Low Energy Desalination and Water Purification (**Invited Seminar**). University of Kentucky, Lexington, KY, March 20, 2019.
 27. Nanotechnology Enabled Low Energy Desalination Methods (**Invited Speaker**), ASME Workshop on Recent Advances in Water Collection and Purification using Bio/Nanotechnology, Pittsburgh, PA Oct. 13, 2018.
 28. Novel Nanocomposite Electrodes for Selective Ion Removal in the Capacitive Deionization Process (**Taiwan Ministry of Science and Technology Sponsored Lecture**). National Taiwan University, Taiwan, July 16, 2018.
 29. Selective Electrosorption: A New Approach to Ionic Contaminant Removal (**Invited Seminar**), Tsinghua University Shenzhen Graduate School, July 6, 2018.
 30. Heteroaggregation between Engineered Nanomaterials and Naturally Occurring Colloids: Characterization and Impact on ENM Transport (**Keynote**). The 4th International Conference on Environmental Pollution and Health, Tianjin, China, May 20, 2018.

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31. Novel Nanocomposite Electrodes for Selective Ion Removal in the Capacitive Deionization Process (**Keynote**). The 4th International Conference on Environmental Pollution and Health, Tianjing, May 20, 2018.
 32. Impact of Hurricane Harvey on Distribution of Chemical and Microbiological Contaminants (**Invited speaker**). Urban Flooding and Infrastructure Conference: Moving Forward from Harvey. Rice University, February 21, 2018.
 33. Nanotechnology Based Approaches for Controlling Membrane Biofouling. University of Houston, October 13, 2017.
 34. Nanotechnology Based Approaches for Controlling Membrane Biofouling. University of Pittsburgh, September 15, 2017.
 35. Nanophotonics Enabled Direct Solar Membrane Distillation: Towards Off-grid Desalination and Water Purification. (**Outstanding Scholar Seminar Series**) Beijing University, June 20, 2017.
 36. Antibiotic Resistant Genes in a Bench-Scale Aerobic Membrane Bioreactor. International Forum on Antibiotics and Antibiotic Resistant Genes. (**Keynote**) Nanjing University, June 14-16, 2017.
 37. Nanophotonics Enhanced Membrane Distillation: Potentials and Limitations. The 14th IWA Leading Edge Conference on Water and Wastewater Treatment Technologies. (**Keynote**) Florianopolis, Brazil, May 29 – June 2, 2017.
 38. Nanophotonics Enabled Direct Solar Membrane Distillation: Towards Off-grid Desalination and Water Purification. (**Keynote**) TechConnect Conference, May 14-17, 2017.
 39. Nanophotonics Enabled Direct Solar Membrane Distillation: Towards Off-grid Desalination and Water Purification. (**Keynote**) Water Resources Research Institute Annual Meeting, Durham, NC, March 15, 2017.
 40. Nanophotonics Enabled Direct Solar Membrane Distillation: Towards Off-grid Desalination and Water Purification. (**Invited seminar speaker**) University of Michigan, March 7-9, 2017.
 41. Treating alternative water sources using nanotechnology. (**Keynote**) NNI Webinar on Water Sustainability through Nanotechnology: Increasing Water Availability. December 7, 2016.
 42. Low Energy Desalination Enabled by Nanotechnology. (**Invited seminar speaker**) Texas Tech University, November 14, 2016.
 43. Nanotechnology Enabled Water Treatment: A New Approach to Water Supply. (**Invited seminar speaker**) Lamar University, October 7, 2016.
 44. New mechanistic and predictive model for ion adsorption equilibrium in capacitive deionization. (**Keynote**) The 252nd ACS National Meeting. Philadelphia, PA. Aug. 21-25, 2016.
 45. Nanotechnology Enabled Water Treatment: A New Approach to Water Supply. (**Invited seminar speaker**) Yuehua Water Company, July 22, 2016.
 46. Nanotechnology for Low Energy Desalination: Beyond Reverse Osmosis. (**Invited seminar speaker**) Tsinghua University Shenzhen Graduate School. July 15, 2016.
 47. Nanotechnology Enabled Water Treatment: A New Approach to Water Supply. (**Invited seminar speaker**) School of Environment, Tsinghua University. June 21, 2016.
 48. Nanotechnology for Low Energy Desalination: Beyond Reverse Osmosis. (**Invited seminar speaker**) US Army Corps of Engineers, Engineer Research and Development Center. March 23, 2016.
 49. Nanotechnology for Low Energy Desalination: Beyond Reverse Osmosis. (**Invited seminar speaker**) Texas A&M University Kingsville, March 11, 2016.

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50. Nanosystems Engineering Research Center for Nanotechnology Enabled Water Treatment Systems. **(Keynote)** Energy and Environment Workshop, Houston TX. Dec. 9, 2015.
 51. Photothermal Nanocomposite Membranes for Low Energy Desalination. **(Keynote)** The 8th National Conference on Environmental Chemistry. Guangzhou, China. Nov. 5, 2015.
 52. Nanocomposite Membranes: Improving Energy Efficiency in Desalination. **(Keynote)** The First International Forum on Water/Wastewater Treatment Related Nanotechnology. Shenzhen, China, Nov. 5, 2015.
 53. Nanotechnology for Desalination: Beyond Reverse Osmosis. **(Keynote)** 2015 Gordon Research Conference on Environmental Nanotechnology. Mount Snow, VT, U.S.A. June 21-26, 2015.
 54. Nanotechnology for Low Energy Desalination. **(Keynote)** 2015 IWA Nano & Water Regional Conference. Dalian, China, May 20-23, 2015.
 55. Nanotechnology Enabled Low Energy Desalination. **(Invited seminar speaker)** July 25, 2015, Sichuan University, Chengdu, China
 56. Nanotechnology Enabled Low Energy Desalination. **(Invited seminar speaker)** July 20, 2015, Harbin Institute of Technology, Harbin, China
 57. Membrane Fouling: Mechanisms and Control Strategies. **(Invited seminar speaker)** July 8, 2015, Shangdong University, Jinan, China.
 58. Nanotechnology Enabled Low Energy Desalination. **(Invited seminar speaker)** May 25, 2015, Shanghai Jiaotong University, Shanghai, China.
 59. Nanotechnology based strategies for membrane biofouling control. **(Invited seminar speaker)** Jan. 30, 2015, University of Texas at San Antonio, San Antonio, TX.
 60. Biofouling and Nanotechnology Based Control Strategies. **(Invited seminar speaker)** July 7, 2014, Universidade Federal de Santa Catarina, Florianopolis, Brazil
 61. Biofouling and Nanotechnology Based Control Strategies. **(Invited seminar speaker)** June 6, 2014, Nanjing University, Beijing, China
 62. Biofouling and Nanotechnology Based Control Strategies. **(Invited seminar speaker)** June 12, 2014, Tsinghua University, Beijing, China
 63. Photochemical Transformation of nC₆₀ and MWCNTs in the Aqueous Environment: Mechanisms and Impact on Transport Behaviors. **(Invited seminar speaker)** University of Notre Dame, Notre Dame, IN. Jan. 20, 2014.
 64. Water-energy nexus: a global challenge that requires local solutions. **(Keynote)** The 2013 Water Management and Nano Energy Summit. November 13-14, 2013, Houston TX.
 65. Application of nano- and bio- technologies in membrane biofouling control. **(Keynote)** The 246th ACS national meeting. September 8-12, 2013, Indianapolis, IN.
 66. Nanotechnology for Water Management in Energy Production. **(Invited seminar speaker)** SINOPEC Beijing Research Institute of Chemical Industry. Beijing, China. August 2, 2013,
 67. Advances in Membrane Fouling Research and Fouling Control Strategies. **(Invited seminar speaker)** Tsinghua University. Beijing, China. July 31, 2013.
 68. Membrane Biofouling and Nanotechnology Based Control Approaches. **(Invited seminar speaker)** Institute of Process Engineering, Chinese Academy of Sciences. Beijing, China. July 30, 2013.

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69. Challenges in Water Management for Shale Gas Production in the US. **(Keynote)** Workshop on Environmental Protection Technology of Shale Gas Industry Development. Chengdu, China. July 22-23, 2013.
 70. Photochemical Transformation of nC₆₀ and COOH-MWCNTs: Mechanisms and Impact on Transport Properties. **(Keynote)** IWA Symposium of Environmental Nanotechnology. April 24-26, 2013, Nanjing, China
 71. Fate and Risks of Nanomaterials. Understanding and Managing Nanotechnologies in Water Systems workshop. **(Keynote)** IWA World Water Congress and Exhibition. Busan, Korea. Sept. 17-21, 2012.
 72. Advances in Nano-scale Science and Engineering: Potential Application in Wastewater Treatment and Reuse. **(Keynote)** Frontiers of Membrane and Nano-membrane Technologies in Reuse and Desalination workshop. IWA World Water Congress and Exhibition, Sept., 17-21. 2012.
 73. Membrane Fouling and Control: From Organics to Bacteria. **(Invited seminar speaker)** Tsinghua University, June 20, 2012
 74. Fate and Transport of carbon nanomaterials in the environment: Impact of NOM and Sunlight. **(Invited seminar speaker)** Peking University, June 19, 2012.
 75. Fate and Transport of carbon nanomaterials in the environment: Impact of NOM and Sunlight. **(Invited seminar speaker)** Beijing Normal University, June 18, 2012.
 76. Nanotechnology Based Approaches for Biofouling Control. **(Keynote)** The 2011 IWA Nano and Water Conference. Ascona, Switzerland, May 13-15, 2011.
 77. Impact of sunlight and humic acid on the aggregation kinetics of nC₆₀. **(Keynote)** The 6th International Conference on Sustainable Water Environment. Newark, Delaware, July 29-31, 2010.
 78. Effect of polymer flocculants on microfiltration of surface water. **(Keynote)** The 6th International Conference on Sustainable Water Environment. Newark, Delaware, July 29-31, 2010.
 79. Fate and transport of carbon nanomaterials in the aqueous environment: Impact of NOM and Sunlight. **(Invited seminar speaker)** Texas A&M University, Kingsville, March 7, 2010.
 80. Nanotechnology Enabled Water Treatment. **(Keynote)** Rice 360 Global Health Technologies Symposium. Houston, Texas, November 6, 2009.
 81. Membrane Fouling and Fouling Control. **(Keynote)** Petroleum Environmental Research Forum annual meeting. Houston, Texas, November 18, 2009.
 82. Environmental Application and Implication of Nanotechnology. **(Invited seminar speaker)** Department of Chemical and Biomolecular Engineering, Rice University. August 27, 2009.
 83. Using Metals and Metal Oxide Nanoparticles in Water Filtration Membranes to Reduce Bacterial Adhesion and Enhance Virus Removal. **(Keynote)** Engineering Conferences International Symposium Series on Advanced Membrane Materials. Trondheim, Norway, June 7-12, 2009.
 84. Nanotechnology Enabled Water Treatment. **Gloya Breakfast Speaker**, Texas Water Conference. Galveston, Texas, April 17, 2009.
 85. Fate, Transport and Toxicity of nC₆₀ in the Aqueous Environment. **(Invited seminar speaker)** Texas A&M University at Galveston, March 31, 2009.
 86. Impact of NOM on the Fate, Transport and Toxicity of C₆₀ Fullerene Nanoparticles. **(Invited seminar speaker)** University of California at Los Angeles. March 3, 2009.
 87. Fate, Transport and Toxicity of nC₆₀ in the Aqueous Environment. **(Invited seminar speaker)** University of Texas at Austin, February 4, 2009.

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88. Impact of NOM on the Fate, Transport and Toxicity of C₆₀ Fullerene Nanoparticles. (**Invited seminar speaker**) University of Cincinnati. November 14, 2008.
 89. Impact of NOM on the Fate, Transport and Toxicity of C₆₀ Fullerene Nanoparticles. (**Invited seminar speaker**) University of Hong Kong. Hong Kong, China. October 24, 2008.
 90. Impact of NOM on the Fate, Transport and Toxicity of C₆₀ Fullerene Nanoparticles. NSF Center of Advanced Materials for Purification of Water with Systems, (**Invited seminar speaker**) University of Illinois at Urbana-Champaign. Urbana, Illinois. October 3, 2008.
 91. Impact of NOM on the Fate, Transport and Toxicity of C₆₀ Fullerene Nanoparticles. (**Invited seminar speaker**) Hong Kong University of Science and Technology. Hong Kong, China. August 15, 2008.
 92. Membrane Fouling in Reverse Osmosis and Nanofiltration: A Multi-scale Study on Fouling Mechanisms. (**Invited seminar speaker**) University of Houston. Houston, Texas. February 20, 2008.
 93. Nanotechnology Enabled Water Treatment. (**Keynote**) Texas Water Summit. San Antonio, Texas. December 3, 2007.
 94. Membrane Fouling in Reverse Osmosis and Nanofiltration: A Multi-scale Study on Fouling Mechanisms. (**Invited seminar speaker**) University of Delaware. Newark, Delaware. June 28, 2007.
 95. Chemical Cleaning of NF Membranes Fouled by Natural Organic Matter, Effect of Solution Chemistry. (**Invited talk**) AWWA Water Quality Technology Conference. Québec City, Québec, Canada, November 6-10, 2005.
 96. Fouling and Chemical Cleaning of Nanofiltration Membranes: Effects of Solution Chemistry and Foulant Interactions. (**Invited seminar speaker**) NSF Center of Advanced Materials for Purification of Water with Systems, University of Illinois at Urbana-Champaign. Urbana, Illinois. November 12, 2005.
 97. Fouling and Chemical Cleaning of Nanofiltration Membranes: Effects of Solution Chemistry and Foulant Interactions. (**Invited seminar speaker**) McGill University, Montreal, Canada. November 10, 2005.
 98. Fouling and Chemical Cleaning of NF Membranes: Measurements and Mechanisms. (**Invited seminar speaker**) Tsinghua University, Beijing, China. September 3, 2005.
 99. Fouling and Chemical Cleaning of NF Membranes: Measurements and Mechanisms. Rice University, Houston, Texas. December 2, 2004.
 100. Interactions of Natural Organic Matter and Polymeric Membrane Surface: Mechanisms of Membrane Fouling and Cleaning. (**Invited seminar speaker**) University of Illinois at Urbana-Champaign. Urbana, Illinois. May 15, 2003.

Research grants

1. Investigation on Fouling of NF and RO Membranes by Complex Suspensions Containing Colloids and Dissolved Organic Macromolecules. Role: PI. Source: NSF. Project period: 07/01/2006 – 06/30/2009. Amount: \$250,000
2. Genomics-based determination of nanoparticle toxicity—structure-function analysis. Role: co-PI. Source: USEPA. Project period: 04/15/2007 – 04/14/2010. Amount: \$200,000.
3. Leaching of Metals from Aquifer Soils during Infiltration of Reclaimed Water of Low Ionic Strength: Determination of Kinetics and Potential Mitigation Strategies. Role: PI. Source: WaterReuse Foundation. Project period: 05/01/2007 – 10/31/2008. Amount: \$150,000.

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4. A Systematic Study on the Effect of Polymer Coagulants on Membrane Filtration Processes. Role: PI. Source: Pall Corporation. Project period: 01/01/2008 – 12/31/2011. Amount: \$135,000.
 5. Fate and transport of carbon based nanomaterials in porous media. Role: PI. Source: NSF Center for Biological and Environmental Nanotechnology. Project period: 09/01/2006 – 08/31/2007. Amount: \$75,000.
 6. Environmental chemistry and ROS generation by carbon based nanomaterials. Role: PI. Source: NSF Center for Biological and Environmental Nanotechnology. Project period: 09/01/2007 – 08/31/2010. Amount: \$275,000.
 7. Monitoring Engineered Nanoparticles in the Environment. Role: co-PI. Source: Shell Center of Sustainability. Project period: 07/01/2008 – 06/31/2009. Amount: \$40,000.
 8. Sustainable Water Infrastructure for Improving Public Health Protection. Role: PI. Source: Shell Center of Sustainability. Project period: 01/01/2010 – 6/31/2011. Amount: \$41,000.
 9. Bio-inspired Hierarchical Surfaces with Tailored Mechanical Properties for Environmentally Benign Control of Biofouling. Role: co-PI. Source: Shell Center of Sustainability. Project period: 01/01/2010 – 12/31/2010. Amount: \$40,000.
 10. Reactive Nanoparticles for Chem-Bio Decontamination. Role: co-PI. Source: US Navy. Project period: 02/01/2010 – 06/30/2011. Amount: \$200,000.
 11. Evaluating short and long-term efficacy of silver nanoparticle embedded antimicrobial surface coating. Role: PI. Source: DuPont Industrial Coating Solutions. Project period: 01/01/2011 – 08/17/2012. Amount: \$43,000
 12. Interactions of Natural Organic Matter with C60 Fullerene and their Impact on C60 Transport, Bioavailability and Toxicity. Role: PI. Source: USEPA. Project period: 12/01/2008 – 11/31/2012. Amount: \$399,995.
 13. Review of nanomaterials research and relevance for water reuse. Role: PI. Source: WateReuse Foundation. Project period: 5/1/2011 – 4/1/2012. Amount: \$24,741
 14. GOALI: A New Strategy for Biofouling Control of Water Filtration Membranes Using D-Amino Acids. Role: PI. Source: NSF. Project period: 1/1/2012 – 12/31/2015. Amount: \$349,998
 15. Self-sustained portable capacitive deionization device for water purification. Role: co-PI. Source: Shell center for sustainability. Project period: 1/1/2012 – 12/31/2012. Amount: \$39,000.
 16. A cost-effective nanotechnology for water treatment in developing world. Role: co-PI. Source: United Nation Food and Agriculture Organization. Project period: 1/1/2012 – 6/30/2013. Amount: \$50,000.
 17. Potential of engineered surface micro- and nano-structures for mediating bacterial adhesion and biofilm formation (Phase I). Role: PI (through Beijing University). Source: National Science Foundation of China. Project period: 1/1/2013-12/31/2014. Award amount: ¥20,000.
 18. Shale gas hydraulic fracturing flowback water treatment technologies. Role: PI. Source: China National Petroleum Corporation. Project period: 4/15/2013 – 10/14/2014. Amount: \$64,920.
 19. Hybrid bioelectrochemical-capacitive deionization process for simultaneous removal of organic contaminants and salts from hydraulic fracturing flowback water. Role: PI. Source: BP. Project period: 8/1/2013 – 12/31 2015. Amount: \$150,000.
 20. Nanosystems Engineering Research Center for Nanotechnology Enabled Water Treatment (NEWT). Role: co-PI. Source: NSF. Project period: 8/1/2015 – 7/31/2020. Amount: \$18,500,000.

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21. NSF PIRE - Halting Environmental Antimicrobial Resistance Dissemination (HEARD). Role: co-PI of Rice subaward. Source: NSF/Virginia Tech. Project period: 10/1/2015 – 8/31/2020. Rice subaward amount: \$768,790.
 22. NSFC Overseas Research Collaboration Grant: Impact of Engineered Surface Patterns on Bacterial Adhesion, Biofilm Formation and Microbial Community Evolution (Phase II). Role: PI (through Beijing University). Source: Nation Natural Science Foundation of China. Project period: 1/1/2016 – 12/31/2019. Amount: ¥2,000,000.
 23. Feasibility of Direct Solar Membrane Distillation for Small POU Water Purification. Role: PI. Source: Localized Water Solution. Project period: 1/1/2016 – 4/30/2016. Amount: \$28,500.
 24. SBIR Phase II: Energy Efficient COD Removal and De-nitrification for Re-circulating Aquaculture Facilities with a Combined Bio-electrochemical Processes. Role: PI. Source: NSF/Cambrain. Project period: 6/1/2016 – 5/31/2017. Amount: \$49,999.
 25. Nanophotonics Enhanced Direct Solar Membrane Distillation Process for Desalination of Water. Role: Rice subaward PI. Source: DOE SBIR. Project period: 6/13/2016 – 3/12/2017. Award amount: \$47,992.
 26. Developing Quantitative Modeling Tools for Design and Performance Assessment of Integrated Water Management Systems: a U.S.-China Joint Research Project. Role: PI. Source: NSF. Project period: 7/1/2017 – 6/30/2021. Award amount: \$500,000.
 27. Prototype Design of a Portable Water Purification Device Based on Nanophotonics Enabled Direct Solar Membrane Distillation. Role: PI. Source: Localized Water Solutions. Role: PI. Project period: 3/1/2017 – 2/28/2018. Amount: \$38,000.
 28. Rapid: Assessment and treatment of flood-contaminated water sources and hot-spots of microbial contaminants in post-Harvey Houston. Role: co-PI. Source: NSF. Project period: 9/12/2017 – 9/5/2017. Amount: \$199,880.
 29. HERE: Impacts of Flood Damage on Airborne Fungi and Bacteria in Homes after Harvey. Role: co-PI. Source: Rice University. Project period: 11/15/2017 – 11/14/2018. Amount: \$50,000.
 30. Low Cost Desalination Using Nanophotonics Enhanced Direct Membrane Distillation. Role: PI. Project period: 10/1/2018 – 9/30/2022. Amount: \$2,376,063.
 31. A Pilot Study of Integrated Resource Management on Rice University Campus: Towards Sustainable Urban Food, Energy and Water Infrastructures. Role: PI. Source: Rice University IDEA. Project period: 1/1/2019 – 12/31/2019. Amount: \$75,000.
 32. Multifunctional conductive coatings to enable solar membrane distillation applications in desalination brine management. Role: co-PI. Source: NAS. Project period: 8/1/2019 – 7/31/2021. Amount: \$200,000.
 33. Development of large scale photothermal membranes for solar membrane distillation. Role: PI. Source: Localized Water Solutions, SolMem. Project period: 5/15/2019 – 8/31/2020. Amount: \$130,000.
 34. Nanosystems Engineering Research Center for Nanotechnology Enabled Water Treatment (NEWT) (renewal). Role: co-PI. Source: NSF. Project period: 8/1/2020 – 7/31/2025. Award amount: \$18,750,000.
 35. SBIR Phase I: Low Cost Solar Membrane Distillation for Irrigation Drainage Management and Alternative Agriculture Water Sources. Role: co-PI. Source: USDA. Project period: 9/1/2020 – 4/30/2021. Award amount: \$100,000.

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36. SBIR Phase I: Low-cost high-efficiency solar desalination. Role: co-PI. Source: NSF. Project period: 4/1/2021 – 3/31/2022. Award amount: \$250,000.
 37. Treating wastewater using onsite waste heat from fryer water vapor. Role: PI. Source: Pepsico. Project period: 8/1/2021 – 7/31/2022. Award amount: \$75,000.
 38. Stimuli Responsive Block Copolymer Brush Grafted Carbon Nanotube Coating for Active Mineral Scaling Control. Role: PI. Source: Department of Interior. Project period: 9/21/2021 – 3/20/2023. Award amount: \$473,865.
 39. Direct Concentrated Sunlight Driven Multi-effect Membrane Distillation for Low Cost Desalination. Role: co-PI. Source: Department of Interior. Project period: 10/1/2021 – 9/30/2023. Award amount: \$482,292.
 40. Nanomaterial solutions for treatment of liquids in sanitation. Role: PI. Source: Bill and Malinda Gates Foundation. Project period: 11/3/2021 – 10/28/2022. Award amount: \$555,383.
 41. Integrating functional materials, advanced manufacturing, and architectural design in sustainable building technologies. Role: co-PI. Source: Rice University Faculty Initiative Fund. Project period: 9/1/2021 – 12/31/2022. Amount: \$49,939.
 42. Bench-scale evaluation of electrothermal membrane distillation for extraction of water from dialysis effluent. Role: PI. Source: Baxter. Project period: 8/1/2022 – 7/31/2023. Amount: \$150,000.
 43. SBIR Phase II: Low-Cost Solar Membrane Distillation for Irrigation Drainage Management and Alternative Agriculture Water Sources. Role: co-PI. Source: USDA. Project period: 9/1/2022 – 8/30/2024. Award amount: \$750,000.
 44. Ion Exchange Membranes with Tunable Monovalent versus Divalent Ion Permselectivity to Maximize Water Recovery in Desalination. Role: PI. Source: Department of Interior. Project period: 1/31/2024 – 7/31/2025. Award amount: \$318,052.
 45. Development of liquid treatment systems for use in household sanitation. Role: PI. Source: Department of Interior. Project period: 11/1/2023 – 10/31/2025. Award amount: \$2,043,525.

Professional Services

Editorial positions

1. Editor, Desalination, 2023 - present
2. Associate Editor, Water Research, 2016 - 2020
3. Editor, Frontier of Environmental Science and Engineering, 2013 - present
4. Guest editor, special issue on Nanotechnology for water and wastewater treatment, Water Research
5. Editor, Proceedings of the 3rd International Conference of Environmental Science and Technology, 2007

Professional committee services

6. Member, EPA Science Advisory Board, Environmental Engineering Committee, 2016 - 2019
7. Chair, management committee, nanotechnology specialty group of the International Water Association (IWA), 2014- 2018
8. President (2013), officer (2007- 2012), Board member (2007 – present), Association of Chinese American Professors of Environmental Engineering and Science (CAPEES).

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9. Member, management committee, nanotechnology specialty group of the International Water Association (IWA), 2011- 2014, 2019 - present
 10. Member, Association of Environmental Engineering and Science Professors (AEESP) Student Service Committee, 2008 – 2013
 11. Member, Association of Environmental Engineering and Science Professors (AEESP) Doctoral Dissertation Awards Committee, 2008 – 2013
 12. Member, Association of Environmental Engineering and Science Professors (AEESP) Education Committee, 2010 – 2013
 13. Member, Association of Environmental Engineering and Science Professors (AEESP) International Outreach Committee, 2011 – present
 14. Member, American Water Works Association (AWWA) Membrane Research Committee, 2004-2006
 15. Member, Project Advisory Committee, WaterReuse Foundation, 2009 - present
 16. Member, SPE R&D committee

Conference and session organizer

17. Conference Chair, The 6th Chinese Environmental Scholar Forum, May 21 – June 2, 2019, Houston TX.
18. Organization Committee Chair, The 2016 IWA Nano and Water Specialist Conference: Addressing the Water-Energy-Food Nexus, May 16-18, 2016, Houston TX
19. Co-organizer, The 1st International Forum on Water/Wastewater Treatment Related Nanotechnology. Shenzhen, China, Nov. 5, 2015.
20. Co-organizer, Workshop on Advanced Materials and Technologies Enabling Integrated Water Management. The 8th National Conference on Environmental Chemistry. Guangzhou, China. Nov. 5, 2015.
21. Organizer, the 2009 AEESP Conference Academic Career Workshop, 2009
22. Organizer, the Rice-Tsinghua-HKU Forum on Sustainable Urban Water Supplies, 2007 - 2008
23. Symposium organizer, *the 252nd ACS national meeting (2016), the 250th ACS national meeting (2015), the 13th International Conference on Surface and Colloid Science [ICSCS] and the 83rd ACS Colloid and Surface Science Symposium (2009), 233rd ACS national meeting (2007)*
24. Session Chair, *the 10th IWA Membrane Technology Conference (2023), the 6th Battery Deionization and Electrochemical Separation Conference (2023), the 5th International Conference on Environmental Pollution and Health (2018), the 13th IWA LET conference (2016), the 252nd ACS national meeting (2016), the 250th ACS national meeting (2015), the 86th ACS Colloids and Surface Science Symposium, the 6th International Conference on Sustainable Water Environment, the 13th International Conference on Surface and Colloid Science [ICSCS] and the 83rd ACS Colloid and Surface Science Symposium (3 sessions, 2009), 233rd ACS national meeting (2007); 232nd ACS national meeting (2006); 1st and 2nd International Conference on Environmental Science and Technology (2005, 2006)*

Review services

25. Reviewer for more than 20 journals, including *Nature Nanotechnology, Nature Communication, Science Advances, Materials Today, Environmental Science and Technology, ACS ES&T Engineering, Environmental Chemistry and Toxicology, Journal of Membrane Science, Water Research, Langmuir, Separation and Purification Technology, Separation Science and Technology, Journal of Photochemistry and Photobiology A: Chemistry, Environmental Engineering Science,*

Desalination, Journal of American Water Works Association, Water Science and Technology, ACSE Journal of Environmental Engineering, Carbon, Water Environment Research, Frontiers in Environmental Science and Engineering.

26. Expert panelist: NSF, EPA, NIEHS, DOE, NASA, USDA, USBR, NAS, WaterReuse Foundation, etc.
27. Expert reviewer for funding agencies in Canada, Switzerland, Denmark, Belgium, Finland, Israel, Singapore, Korea, Saudi Arabia, Hong Kong, Ukraine, Israeli, China, Brazil.