Yi Jiang

Assistant Professor
Department of Civil and Environmental Engineering
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Education

Ph.D., Energy, Environ. & Chemical Eng., Washington University in St. Louis, 2016
M.S., Environmental Sciences, Peking University, 2010
B.E., Environmental Engineering, Huazhong University of Science & Technology, 2007

Professional Experience

2017.07 - present Assistant Professor Hong Kong Polytechnic University

2017.02 - 2017.07 Postdoctoral Researcher Harvard University
Research Topic: *Development of Engineered Water Nanostructures for Environmental Application*
Advisor: Philip Demokritou

2016.05 - 2017.01 Postdoctoral Researcher Washington University in St. Louis
2011.08 - 2016.05 Graduate Research Assistant Washington University in St. Louis
Thesis: *Crumpled Graphene Oxide: Aerosol Synthesis and Environmental Applications*
Advisors: John Fortner and Pratim Biswas

2010.06 - 2011.07 Research Associate Tsinghua University Innovation Institute

2007.09 - 2010.06 Graduate Research Assistant Peking University
Thesis: *Electrochemical Oxidation of Phenolic Compounds at Boron-doped Diamond Anodes*
Advisor: Jinren Ni

Research Interests

Environmental nanotechnology

- Aerosol-assisted approaches for synthesis of nanoparticles and thin films (e.g., carbon nanomaterials, metal oxides, and hybrids)
- Environmental implications of nanomaterials (aggregation, deposition, and transformation in aquatic environments)

Advanced water treatment

- Graphene-enabled water treatment membranes
- Electrochemical oxidation of emerging organic contaminants with novel electrodes
- Photocatalytic reduction of oxyanions
- Adsorption of metal ions and organic contaminants

Honors & Awards

- CH2M AEESP Outstanding Doctoral Dissertation Award, 2017
- Environmental Chemistry Graduate Student Award, American Chemical Society, 2016
- Doctoral Student Research Award, Washington University in St. Louis, 2015
- Travel Grant, Gordon Research Conference on Environmental Nanotechnology, 2015
- Charles & Marlene Buescher Graduate Fellowship Honoring Dr. D.W. Ryckman, 2011
- Graduate Academic Excellence Scholarship, Peking University, 2007-2010
- Selected Participant, Inspire Antarctica Expedition, 2009
- Highest Graduation Honor (top 3%), Huazhong University of Science & Technology, 2007

Publications

Peer-reviewed publications

1. **Jiang, Y**.; Raliya, R.; Liao, P.; Biswas, P.; Fortner, J. D., Graphene oxides in water: assessing stability as a function of material and natural organic matter propterties. *Environ. Sci.:Nano.* **2017**,4 (7), 1484-1493.
2. **Jiang, Y.***; Zhu, X.; Xing, X., Electrochemical oxidation of phenolic compounds at boron-doped diamond anode: structure-reactivity relationships. *J. Phys. Chem. A.* **2017**, 121 (22), 4326–4333. (*****corresponding author)
3. Liao, P.; Li, W.; Wang, D.; **Jiang, Y**.; Fortner, J.D.; Yuan, S., Effect of reduced humic acid on the transport of ferrihydrite nanoparticles under anoxic conditions. *Water Res.* **2017**, 109, 347-357.
4. Hu, Y.; Wang, Y.; Jiang, H.; Li, Y.; Cohen, T.; **Jiang, Y.**; Wang, B.; Zhang, L.; Biswas, P.; Li, C., Engieering the outermost layers of TiO_2 nanoparticles using in situ Mg doping in a flame aerosol reactor. *AIChE J*. **2017**, 63 (3), 870-880.
5. **Jiang, Y.,** Biswas, P.; Fortner, J. D., A review of recent developments in graphene-enabled water treatment membranes. *Environ. Sci.: Water Res. Technol.* **2016**, 2 (6), 915-922. (ES:WRT Recent Hot Article)
6. **Jiang, Y.**; Raliya, R.; Fortner, J. D.; Biswas, P., Graphene oxides in water: correlating morphology and surface chemistry with aggregation behavior. *Environ. Sci. Technol.* **2016**, 50 (13), 6964–6973.
7. **Jiang, Y**.; Liu, D.; Cho, M.; Lee, S.; Zhang, F.; Biswas, P.; Fortner, J. D., In situ photocatalytic synthesis of Ag nanoparticles (nAg) by crumpled graphene oxide composite membranes for filtration and disinfection applications. *Environ. Sci. Technol.* **2016,** *50* (5), 2514-2521.
8. Nie, Y.; Wang, W.-N.; **Jiang, Y.;** Fortner, J. D.; Biswas, P., Aminated reduced graphene oxide-titanium dioxide nanocomposites for simultaneous carbon dioxide adsorption and photoreduction. *Catal. Sci. Technol.* **2016**, 6 (16), 6187-6196. (Back Cover Article)
9. **Jiang, Y**.; Wang, W.-N.; Liu, D.; Nie, Y.; Li, W.; Wu, J.; Zhang, F.; Biswas, P.; Fortner, J. D., Engineered crumpled graphene oxide nanocomposite membrane assemblies for advanced water treatment processes. *Environ. Sci. Technol.* **2015,** *49* (11), 6846-6854.

10. **Jiang, Y.**; Wang, W.-N.; Biswas, P.; Fortner, J. D., Facile aerosol synthesis and characterization of ternary crumpled graphene–TiO_2–magnetite nanocomposites for advanced water treatment. *ACS Appl. Mater. Interfaces* **2014,** *6* (14), 11766-11774.
11. Wang, W.-N.; **Jiang, Y**.; Fortner, J. D.; Biswas, P., Nanostructured graphene-titanium dioxide composites synthesized by a single-step aerosol process for photoreduction of carbon dioxide. *Environ. Eng. Sci.* **2014,** *31* (7), 428-434.
12. Wang, W.-N.; **Jiang, Y**.; Biswas, P., Evaporation-induced crumpling of graphene oxide nanosheets in aerosolized droplets: confinement force relationship. *J. Phys. Chem. Lett.* **2012,** *3* (21), 3228-3233.
13. Xing, X.; Zhu, X.; Li, H.; **Jiang, Y**.; Ni, J., Electrochemical oxidation of nitrogen-heterocyclic compounds at boron-doped diamond electrode. *Chemosphere* **2011**, 86(4), 368-375.
14. Zhu, X.; Ni, J.; Xing, X.; Li, H.; **Jiang, Y.**, Synergies between electrochemical oxidation and activated carbon adsorption in three-dimensional boron-doped diamond anode system. *Electrochim. Acta* **2011,** *56* (3), 1270-1274.
15. **Jiang, Y.**; Zhu, X.; Li, H.; Ni, J., Effect of nitro substituent on electrochemical oxidation of phenols at boron-doped diamond anodes. *Chemosphere* **2010,** *78* (9), 1093-1099.
16. Li, H.; Zhu, X.; **Jiang, Y.**; Ni, J., Comparative electrochemical degradation of phthalic acid esters using boron-doped diamond and Pt anodes. *Chemosphere* **2010,** *80* (8), 845-851.
17. Zhu, X.; Ni, J.; Wei, J.; Xing, X.; Li, H.; **Jiang, Y.**, Scale-up of BDD anode system for electrochemical oxidation of phenol simulated wastewater in continuous mode. *J. Hazard. Mater.* **2010,** *184* (1-3), 493-498.
18. Zhu, X.; Ni, J.; Li, H.; **Jiang, Y.**; Xing, X.; Borthwick, A. G., Effects of ultrasound on electrochemical oxidation mechanisms of *p*-substituted phenols at BDD and PbO_2 anodes. *Electrochim. Acta* **2010,** *55* (20), 5569-5575.
19. Yuan, S.; Xi, Z.; **Jiang, Y.**; Wan, J.; Wu, C.; Zheng, Z.; Lu, X., Desorption of copper and cadmium from soils enhanced by organic acids. *Chemosphere* **2007,** *68* (7), 1289-1297.

In review/preparation

1. **Jiang, Y.**; Zeng, Q.; Biswas, P.; Fortner, J. D., Graphene oxide functionalized polysulfone ultrafiltration membranes: shape matters. In preparation for *Environ. Sci.:Nano.*
2. Vaze, N.#; **Jiang, Y.#**; Mena, L.; Zhang, Y.; Bello, D.; Leonard, S.; Morris, A.; Eleftheriadou, M.; Pyrgiotakis., G.; Demokritou, P An integrated electrolysis – electrospray – ionization antimicrobial platform using Engineered Water Nanostructures (EWNS) for food safety applications. Submitted to *Int. J. Food Microbiol.* (**# equal contribution**)
3. Lu, L.; Hu, Y.; Jiang, H.; Wang, Y.; **Jiang, Y.**; Huang, S.; Niu, X.; Biswas, P.; Li, C., Ultra-high lithium storage by synergistic effect of doping of mesoporous structure for multi-shell $LiMn_2O_4$ cathode, Submitted to *Chem. Eng. J.*
4. Liao, P.; Li, W.; **Jiang, Y**.; Wu, J.; Yuan, S; Fortner, J.D.; Giammar, D., Formation, aggregation, and deposition dynamics of NOM-iron colloids at anoxic-oxic interfaces. Submitted to *Environ. Sci. Tech.*
5. Li, W.; Liao, P.; Oldham, T.; **Jiang, Y.**; Pan, C.; Giammar, D.; Fortner, J.D., Surface partitioning dynamics of natural organic matter onto model environmental surfaces. To be submitted to *Water. Res.*

6. Xing, X.; Zhu, X.; **Jiang, Y**.; Li, H.; Ni, J., Maximization of current efficiency for organic pollutants oxidation at BDD, Ti/SnO_2-Sb/PbO_2, and Ti/SnO_2-Sb Anodes. Submitted to *Chem. Eng. J.*
7. Zeng, Q.; **Jiang, Y.**; Fortner, J. D., Preparation and characterization of polysulfone ultrafiltration membrane with fullerol modification. In preparation for *J. Membr. Sci.*

Book Chapters

1. Contributing author. Transformation: case studies of innovation cities, 2011, Tsinghua University Press: Beijing, China. (In Chinese)
2. Contributing author. From Strategy to Action: An overview of sustainable development in the European Union, 2008, Social Sciences Academic Press: Beijing, China. (In Chinese)

Presentations

Seminars

1. Huazhong University of Science & Technology, Wuhan, China, December, 2016
   Crumpled graphene oxide: aerosol synthesis and environmental applications
2. China University of Geosciences, Wuhan, China, June, 2016
   Crumpled graphene oxide: aerosol synthesis and environmental applications
3. Washington University in St. Louis, St. Louis, MO, United States, March, 2016
   Crumpled graphene oxide: aerosol synthesis and environmental applications

Selected Conference Presentations

1. Gordon Research Conference on Environmental Nanotechnology, Mount Snow Resort, VT, United States. June, 2015
   Aqueous stability of reduced graphene oxide: effects of surface chemistry, morphology, and humic acids [Poster]
   Engineered crumpled graphene oxide nanocomposite membrane assemblies for advanced water treatment processes [Poster]
2. AEESP Research and Education Conference, New Haven, CT, United States. June, 2015
   Aqueous stability of reduced graphene oxide: effects of surface chemistry, morphology, and humic acids [Poster]
3. Mid-America Environmental Engineering Conference, Missouri S&T, Rolla, MO, United States. November, 2014
   Engineered crumpled graphene oxide nanocomposite membrane assemblies for advanced water treatment processes [Oral]
4. 248th ACS National Meeting, San Francisco, CA, United States. August, 2014.
   Engineered crumpled graphene nanocomposites for photocatalytic environmental reduction applications [Oral]
   Crumpled graphene oxide nanocomposites for multifunctional water treatment membrane structures [Oral]
5. 247th ACS National Meeting, Dallas, TX, United States. March, 2014.
   High performance crumpled graphene-TiO_2 photocatalysts for water treatment technologies [Oral]

Patents

Jiang, Y.; Fortner, J. D., Biswas, P.; Wang, W.-N., Composite Nanostructures Having a Crumpled Graphene Oxide Shell. International Patent Application PCT/US2015/021084

Teaching Experience

***Teaching Assistant** (3)*

1. Environmental Organic Chemistry (EECE 448/548, Fall 2014)
   Washington University UG/GR course, Instructor: John Fortner
2. Environmental Engineering Laboratory (E63 408A/508A, Spring 2013)
   Washington University UG/GR course, Instructor: Young-shin Jun and Zimeng Wang
3. Chemical Engineering Thermodynamics (ChE 320, Fall 2012)
   Washington University UG course, Instructor: Brent Williams

***Student Mentoring** (8)*

Lucas Pepe Mena (Spring 2017, Harvard/U. Sao Paulo UG), Qingqing Zeng (Fall 2015, WUSTL EECE PhD), Sung Yoon Jung (Fall 2015, WUSTL EECE PhD), Isaac Fuhrman (Summer 2015, U. Nebraska-Lincoln UG), Daniel Plants (Summer 2014, Rice U. UG), Yao Nie (Fall 2013, WUSTL EECE PhD), Siyuan An (Fall 2013, WUSTL EECE PhD), Christine Le (Summer 2013, Brown U. UG)

Journal Review (15)

Chemosphere; Desalination and Water Treatment; Energy & Fuels; Environmental Science & Technology; Industrial & Engineering Chemistry Research; Journal of Aerosol Science; Journal of Electroanalytical Chemistry; Journal of Hazardous Materials; Materials Science in Semiconductor Processing; Nanomaterials and Nanotechnology; New Journal of Chemistry; RSC Advances; Separation and Purification Technology; Ultrasonics Sonochemistry; Water, Air, & Soil Pollution

Professional Affiliation

Member, Assoication of Environmental Engineering & Science Professors	2017-present
Member, American Chemical Society	2012-present
Member, Geochemical Society	2013-2014