Mengqiao Li

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Contact Information

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Education

The George Washington University 01/2019 – present
Department of Civil and Environmental Engineering
Ph.D. in Environmental Engineering **Professor Danmeng Shuai**
Research Focus: Transformation of engineered nanomaterials in aquatic systems and rational design of novel catalysts in nanoscales

University of Science and Technology of China 09/2015 – 11/2018
Hefei National Laboratory for Physical Sciences at the Microscale
M.Sc. in Chemistry **Professor Yujie Xiong**
Thesis: Designing TiO_2-supported PdPt alloys for photocatalytic water-donating selective alkyne semihydrogenation

University of Science and Technology of China 09/2011 – 06/2015
School of the Gifted Young
B.Sc. in Material Physics **Professor Yi Xie**
Thesis : Photocatalytic properties of ultrathin two-dimensional nanosheets of $GaSe_1 - xS_x$

Publications

- **M. Li**$^{\|}$, Q. Zheng$^{\|}$, D. P. Durkin, H. Chen*, D. Shuai*, Achieving continuous solar-driven photocatalytic production of Hydrogen Peroxide *via* chlorine-doped graphitic carbon nitride. On submission
- **M. Li**, H. Shen, T. Diba, M. Zhang, J. M. Zara, N. Altan-Bonnet, D. Shuai*, Toxicity evaluation of fresh and aged graphitic carbon nitride: Transformation processes make a difference. On submission
- H. Shen, A. J. Gulbrandson, S. Park, **M. Li**, D. Shuai, P. C. Trulove, D. P. Durkin*, Antimicrobial biocomposites fiber-welded with lignocellulose containing silver nanoparticles. On submission
- M. Zhang, S. Ghosh, **M. Li**, N. Altan-Bonnet*, D. Shuai*, Emerging pathogens of vesicle-cloaked virus clusters resist disinfection. On submission
- **M. Li**, D. Liu, X. Chen, Z. Yin, H. Shen, A. Aiello, K. R. McKenzie Jr, N. Jiang, X. Li, M. J. Wagner, D. P. Durkin*, H. Chen*, D. Shuai*, Radical-driven decomposition of graphitic carbon nitride nanosheets: light exposure matters. *Environ. Sci. Technol.*, **2021**, 55: 12414.
- C. Zhang, Y. Li*, **M. Li**, D. Shuai, X. Zhou, X. Xiong, C. Wang*, Q. Hu, Continuous photocatalysis *via* photo-charging and dark-discharging for sustainable environmental remediation: Performance, mechanism, and influencing factors. *J. Hazard. Mater.*, **2021**, 420: 126607.
- Z. Zhou, **M. Li**, C. Kuai, Y. Zhang, V. F. Smith, F. Lin, A. Aiello, D. P. Durkin*, H. Chen*, D. Shuai*, Fe-based single-atom catalysis for oxidizing contaminants of emerging concern by activating peroxides. *J. Hazard. Mater.*, **2021**, 418: 126294.
- Y. Feng, L. Tao, Y. He, Q. Jin, C. Kuai, Y. Zheng, **M. Li**,Q. Hou, Z. Zheng, F. Lin*, and H. Huang*, Chemical-enzymatic fractionation to unlock the potential of biomass-derived carbon materials for sodium ion batteries. *J. Mater. Chem. A*, **2019**, 7: 26954.
- **M. Li**, H. Huang, J. Low, C. Gao, R. Long*, Y. Xiong*, Recent progress on electrocatalyst and photocatalyst design for nitrogen reduction. *Small Methods*, **2019**, 3: 1800388.
- **M. Li**, N. Zhang, R. Long*, W. Ye, C. Wang, Y. Xiong*, PdPt alloy nanocatalysts supported on TiO_2: maneuvering metal-Hydrogen interactions for light-driven and water-donating selective alkyne semihydrogenation. *Small*, **2017**, 13: 1604173.

- N. Zhang, X. Li, Y. Liu, R. Long, **M. Li**, S. Chen, Z. Qi, C. Wang, L. Song, J. Jiang, Y. Xiong*, Defective tungsten oxide hydrate nanosheets for boosting aerobic coupling of amines: synergistic catalysis by oxygen vacancies and Brønsted acid sites. *Small*, **2017**, 13: 1701354.

* Corresponding authors
‖ Equal contribution

Patent

- Y. Xiong **M. Li**, N. Zhang, R. Long, Methods of light-driven and water-donating selective alkyne semihydrogenation. CN 106905113 B *Small*, **2017**, 13: 1604173.

Honors and Awards

- C. Ellen Gonter Environmental Chemistry Award 2021
- SNO (Sustainable Nanotechnology Organization) Student Award 2021
- ACS-CSW (Chemical Society of Washington) Student Travel Award 2021
- Graduate Research Assistantship 2019 – 2021
- Stipend Fellowship 2019 – 2021
- National Scholarship for Graduate Students (top 5%) 2017
- First-class Academic Scholarship 2015 – 2017
- HFNL Fellowship 2015 – 2017
- 2011 Excellent New Student Award 2011

Conference Presentations

- 2021 SNO (Sustainable Nanotechnology Organization) Conference **M. Li**, D. Liu, X. Chen, Z. Yin, H. Shen, A. Aiello, K. R. McKenzie Jr, N. Jiang, X. Li, M. J. Wagner, D. P. Durkin, H. Chen, D. Shuai, *Insight into the role of light exposure in radical-driven decomposition of graphitic carbon nitride* **Poster**
- 2021 ACS Fall C. Ellen Gonter Graduate Student Award Symposium **(Invited)**, **M. Li**, D. Liu, X. Chen, Z. Yin, H. Shen, A. Aiello, K. R. McKenzie Jr, N. Jiang, X. Li, M. J. Wagner, D. P. Durkin, H. Chen, D. Shuai, *Radical-driven decomposition of graphitic carbon nitride: light exposure matters* **Oral**
- 95th ACS Colloid and Surface Science Symposium, **M. Li**, D. Shuai, *Dilemma of activity and stability: Intrinsic photoreactivity promotes 2D nanomaterial decomposition under radical attack* **Oral**
- 2021 ACS Spring, **M. Li**, D. Liu, X. Chen, Z. Yin, H. Shen, A. Aiello, K. R. McKenzie Jr, N. Jiang, X. Li, M. J. Wagner, D. P. Durkin, H. Chen, D. Shuai, *Radical-driven decomposition of graphitic carbon nitride: light exposure matters* **Oral**
- 2021 ACS Spring, Z. Zhou, **M. Li**, C. Kuai, Y. Zhang, V. F. Smith, F. Lin, A. Aiello, D. P. Durkin, H. Chen, D. Shuai, *Single-Atom Catalysis for Oxidizing Contaminants of Emerging Concern via High-Valent Fe Species* **Poster**
- 2018 CCS in Hangzhou, **M. Li**, Y. Xiong, *PdPt alloy nanocatalysts supported on TiO_2: maneuvering metal-hydrogen interactions for light-driven and water-donating selective alkyne semihydrogenation* **Poster**

Research Experience

Graduate Research Assistant, The George Washington University

Supervisor: Professor Danmeng Shuai 01/2019 – present

- Fate and transformation of graphitic carbon nitride nanosheets in aquatic environments
- Toxicity study of fresh and aged graphitic carbon nitride nanosheets
- Applications of single-atom catalysts in environmental remediation
- Fabrication of bioactive membranes for indoor air purification

Graduate Research Assistant, University of Science and Technology of China

Supervisor: Professor Yujie Xiong 09/2015 – 11/2018

- Photocatalytic CO_2 conversion by controlled hierarchical nanostructures
- Photocatalytic hydrogen transfer from water for selective alkyne semihydrogenation with the TiO_2-$Pd_xPt_1 - x$ hybrid structures
- Catalytic properties of defective $WO_3{\cdot}H_2O$ nanosheets for aerobic couplings reactions

Undergraduate Research, University of Science and Technology of China

Supervisor: Professor Yi Xie & Professor Xiaodong Zhang 09/2013 – 06/2015

- Photocatalytic water splitting through ultrathin two-dimensional nanosheets of $GaSe_1 - xS_x$
- National training program of innovation and entrepreneurship for undergraduates: photothermal properties of ultrathin two-dimensional nanosheets of transition metal chalcogenides

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Teaching Experience

- Teaching assistant for Environmental Engineering I (CE 3520) 2022 Spring
- **Guest Lecturer**: Introduction to membrane filtration and membrane reactors 2021 Fall
- Teaching assistant for Principles of Environmental Engineering (CE 6503) 2021 Fall
- **Guest Lecturer**: Introduction to photocatalysts and associated applications 2021 Spring
- Assisting in Environmental Engineering Laboratory 2021 Spring
- Assisting in Environmental Engineering I: Water Resources and Water Quality (CE 3520) 2020 Spring
- In-home and online tutoring for high school students 2012 – 2018

Professional Service

Journal Reviewer

- Journal of Hazardous Materials
- Journal of Controlled Release
- RSC Advances
- Ecotoxicology and Environmental Safety
- Environmental Nanotechnology, Monitoring & Management
- Materials Letters
- Chinese Chemical Letters
- Chemical Journal of Chinese Universities

Characterization Skills

- Transmission Electron Microscopy
- Scanning Electron Microscopy
- Confocal Laser Scanning Microscopy