

Sunxiang (Sean) Zheng, Ph.D.

Distinguished Post-doctoral Fellow
Andlinger Center for Energy and the Environment
Princeton University, Princeton, NJ, 08544
Cell: (301) 648-3722; **Email:** sunxiang@princeton.edu
Research Website: <https://scholar.princeton.edu/sunxiang>

EDUCATION

Ph.D. in Environmental Engineering, 2020
Department of Civil and Environmental Engineering, University of California, Berkeley

M.S. in Environmental Engineering, 2015
Department of Civil and Environmental Engineering, University of Maryland, College Park

B.S. in Environmental Engineering, 2013
Department of Civil Engineering, Zhejiang University of Technology, China

PROFESSIONAL APPOINTMENTS

Distinguished Postdoctoral Fellow, July 2020 - present
Andlinger Center for Energy and the Environment, Princeton University

Graduate Teaching Assistant, August 2017 - May 2018
CE 211A Environmental Physical-Chemical Processes
Department of Civil and Environmental Engineering, University of California, Berkeley

Graduate Teaching Assistant, August 2015 - December 2015
CE 290 Emerging Technologies for Water Sustainability
Department of Civil and Environmental Engineering, University of California, Berkeley

Graduate Teaching Assistant, January 2014 - May 2015
ENCE310 Introduction to Environmental Engineering
Department of Civil and Environmental Engineering, University of Maryland, College Park

FELLOWSHIPS, PRIZES AND AWARDS

- AEESP Outstanding Doctoral Dissertation Award – Honorable Mention, 2021
- Distinguished Postdoctoral Fellowship, Princeton University, 2020
- Elias Klein Founders' Travel Fund, North American Membrane Society, 2020
- Dean's Fellowship, University of Maryland at College Park, 2014/2015

SPONSORED RESEARCH

- **Sunxiang Zheng** (2020). Artificial water channels for aqueous phase separation and solar-assisted desalination. Funded by Molecular Foundry, Lawrence Berkeley National Laboratory.
- **Sunxiang Zheng** (2018). Applying layer-stacked membrane in aqueous separation and contaminant remediation. Funded by Molecular Foundry, Lawrence Berkeley National Laboratory.
- **Sunxiang Zheng** (2017). Achieving high-performance desalination membranes using two-dimensional (2D) materials. Funded by Molecular Foundry, Lawrence Berkeley National Laboratory.

- **Sunxiang Zheng** (2016). Understanding molecular transport in graphene oxide (GO) membranes. Funded by Molecular Foundry, Lawrence Berkeley National Laboratory.

FIRST-AUTHOR JOURNAL PUBLICATION (* stands for co-first author)

Google Citation: 1106 H-index: 14 Published Peer-reviewed Papers: 20 Researchgate Score:26.18

1. **Zheng, S.**, Yang, M., Chen, X., White, C., Hu, L., Ren Z., Upscaling 3D Engineered Trees for Off-Grid Desalination. *Environmental Science & Technology* **2022**.
2. Liu, Y., * **Zheng, S.** *, Gu, P., Ng, A.J., Wang, M., Wei, Y., Urban, J.J. and Mi, B. Graphene-polyelectrolyte multilayer membranes with tunable structure and internal charge. *Carbon*, **2020**, *160*, pp.219-227.
3. **Zheng, S.**, Tu, Q., Wang, M., Urban, J. J., & Mi, B. Correlating Interlayer Spacing and Separation Capability of Graphene Oxide Membranes in Organic Solvents. *ACS Nano*. **2020**, *14*, 6013-6023.
4. **Zheng, S.**, Tu, Q., Urban, J.J., Li, S., Mi, B. Swelling of graphene oxide membranes in aqueous solution: characterization of interlayer spacing and insight into water transport mechanisms. *ACS Nano*. **2017** Jun 12; *11*(6):6440-50.
5. **Zheng, S.**, Mi, B. Emerging investigators series: silica-crosslinked graphene oxide membrane and its unique capability in removing neutral organic molecules from water. *Environmental Science: Water Research & Technology*, **2016**, *2*(4), 717-725.
6. **Zheng, S.**, Yang, Q., Mi, B. Novel antifouling surface with improved hemocompatibility by immobilization of polyzwitterions onto silicon via click chemistry. *Applied Surface Science*, **2016**, *363*, 619-626.

COAUTHORED JOURNAL PUBLICATION

1. Chen, X.; He, S.; Falinski, M. M.; Wang, Y.; Li, T.; **Zheng, S.**; Sun, D.; Dai, J.; Bian, Y.; Zhu, X.; Jiang, J.; Hu, L.; Ren, Z. J., Sustainable off-grid desalination of hypersaline waters using Janus wood evaporators. *Energy & Environmental Science* **2021**, *14*, 5347-5357.
2. Liu, B.; Han, Q.; Li, L.; **Zheng, S.**; Shu, Y.; Pedersen, J. A.; Wang, Z., Synergistic Effect of Metal Cations and Visible Light on 2D MoS₂ Nanosheet Aggregation. *Environmental Science & Technology* **2021**, *55*(24), 16379-16389.
3. Zang, L.; Finnerty, C.; **Zheng, S.**; Conway, K.; Sun, L.; Ma, J.; Mi, B., Interfacial solar vapor generation for desalination and brine treatment: Evaluating current strategies of solving scaling. *Water Research* **2021**, *198*, 117135.
4. Zang, L., **Zheng, S.**, Wang, L., Ma, J., & Sun, L. Zwitterionic nanogels modified nanofibrous membrane for efficient oil/water separation. *Journal of Membrane Science*, **2020**, 118379.
5. Huang, Y., Shen, C., Tang, Z., Shi, T., **Zheng, S.** and Lin, L.. Mass loading-independent energy storage with reduced graphene oxide and carbon fiber. *ChemElectroChem*, **2019**,*6*(24), pp.6009-6015.
6. Nie, J., Huang, Q., Li, N., **Zheng, S.**, Wang, M., Meng, X., Mi, B. and Lin, L. Swelling characteristics and application of two-dimensional materials on hydrophilic quartz crystal resonant dew point sensor. *Sensors and Actuators B: Chemical*, **2019**; *298*, 126905.
7. Nie, J., Wu, Y., Huang, Q., Joshi, N., Li, N., Meng, X., **Zheng, S.**, Zhang, M., Mi, B., Lin, L. Dew point measurement using a carbon-based capacitive sensor with active temperature control. *ACS applied materials & interfaces*, **2018**, *11*(1), pp.1699-1705.
8. Mi, B., **Zheng, S.**, Tu, Q. 2D graphene oxide channel for water transport. *Faraday discussions*, **2018**, *209*, pp.329-340.
9. Jin, L., Wang, Z., **Zheng, S.**, Mi, B. Polyamide-crosslinked graphene oxide membrane for forward osmosis. *Journal of Membrane Science*. **2018**; *545*:11-8.

10. Wang, Z., Tu, Q., **Zheng, S.**, Urban, J.J., Li, S., Mi, B. Understanding the aqueous stability and filtration capability of MoS₂ membranes. *Nano letters*. **2017**; 17(12):7289-98.
11. Oh, Y., Armstrong, D. L., Finnerty, C., **Zheng, S.**, Hu, M., Torrents, A., Mi, B. Understanding the pH-responsive behavior of graphene oxide membrane in removing ions and organic micropollutants. *Journal of Membrane Science*, **2017**, 541, 235-243.
12. Liu, Z., An, X., Dong, C., **Zheng, S.**, Mi, B., Hu, Y. Modification of thin film composite polyamide membranes with 3D hyperbranched polyglycerol for simultaneous improvement in their filtration performance and antifouling properties. *Journal of Materials Chemistry A*, **2017**, 5(44), 23190-23197.
13. Kang, Y., **Zheng, S.**, Finnerty, C., Lee, M. J., Mi, B. Regenerable polyelectrolyte membrane for ultimate fouling control in forward osmosis. *Environmental science & technology*, **2017**, 51(6), 3242-3249.
14. Hu, M., **Zheng, S.**, Mi, B. Organic fouling of graphene oxide membranes and its implications for membrane fouling control in engineered osmosis. *Environmental science & technology*, **2016**, 50(2), 685-693.

SERVICE AND OUTREACH

- Reviewer for journals: Environmental Science & Technology (ACS), Carbon (Elsevier), Journal of Membrane Science (Elsevier), Desalination (Elsevier), ACS Applied Materials & Interfaces (ACS), Journal of Materials Chemistry A (RSC), etc.
- Session co-chair. CERC-WET 2019 Industrial Advisory Board Meeting.
- External Mentor for FIRST Lego League club members (6th and 7th-grade students from middle school), Silver Spring, MD. (November 2017)
- ENV seminar coordinator (September 2016 - December 2016). Department of Civil and Environmental Engineering, University of California, Berkeley.

INVITED TALKS

1. Invited seminar (2021) “Harvesting Natural Energy for Water Vaporization: A New Route Towards Sustainable Desalination” Andlinger Center for Energy and the Environment, Princeton University, July 15.
2. Invited seminar (2020) “Understanding and Optimizing the Nanostructure of Graphene Oxide Membrane for Enhanced Transport and Separation Performance” Physical and Life Sciences Directorate, Lawrence Livermore National Laboratory, January 22.

CONFERENCE PRESENTATIONS

1. Zheng, S., Tu, Q, Mi, B. (2020). “Interlayer spacing and separation performance of graphene oxide membranes in organic solvent.” 2020 North American Membrane Society Annual Meeting, Virtual, May 18-21.
2. Zheng, S., Yang, X., Mi, B. (2019). “Removal of neutral pharmaceuticals and PPCPs using graphene oxide membranes: Characterization of diffusion and partitioning coefficient of micropollutant in confined nanochannels.” 258th American Chemical Society National Meeting & Exposition, San Diego, CA, August 25-29.
3. Zheng, S., Wang, M., Mi, B.(2019).“Layer-by-layer assembled graphene oxide membrane with efficient swelling control through water-ethanol mixed system.” 258th American Chemical Society National Meeting & Exposition, San Diego, CA, August 25-29.

4. Zheng, S., Mi, B. (2019). "Understanding the Interlayer-spacing and Mass Transport Nexus of Graphene Oxide Membrane for Organic Solvent Nanofiltration" 2019 North American Membrane Society Annual Meeting, Pittsburgh, PA, May 11-15.
5. Zheng, S., Tu, Q, Mi, B. (2018). "Heterostructure Membranes Made from 2D Nanomaterials: Enabling Precise Control of Interlayer-Spacing." 255th American Chemical Society National Meeting & Exposition, New Orleans, LA, March 18-22.
6. Zheng, S., Urban, J., Tu, Q, Li, S., Mi, B. (2017). "Understand Graphene Oxide Membranes Swelling in Aqueous Solution." 11th International Congress on Membrane and Membrane Processes (ICOM), San Francisco, CA, July 29- August 4.
7. Zheng, S., Mi, B. (2016). "Potential of graphene membranes for enhanced removal neutral organic compounds." 251st American Chemical Society National Meeting & Exposition, San Diego, CA, March 13-17.
8. Zheng, S., Mi, B. (2015). "Silane cross-linked graphene oxide membrane with improved performance in forward osmosis." The Association of Environmental Engineering & Science Professors (AEESP) 2015 Conference, New Haven, CT, June 13-16.

PATENTS

- "Electrodeposited layered double hydroxide" Application number: 63243559 (Provisional), Inventors: **Sunxiang Zheng** and Claire E. White. Princeton University.
- "Modular 3D evaporators for water, organics, and mineral recovery" Application number: 63282429 (Provisional), Inventors: **Sunxiang Zheng**, Xi Chen and Zhiyong J. Ren. Princeton University.

SUGGESTED REFERENCES

1. Baoxia Mi
Associate Professor of Civil and Environmental Engineering, University of California, Berkeley
Relationship: Ph.D. Advisor
Phone: (510) 664-7446
Email: mib@berkeley.edu
2. David L. Sedlak
Plato Malozemoff Professor of Civil and Environmental Engineering, University of California, Berkeley
Relationship: Ph.D. Committee Chair and Collaborator
Phone: (510) 643-0256
Email: sedlak@ce.berkeley.edu
3. Zhiyong (Jason) Ren
Professor of Civil and Environmental Engineering and the Andlinger Center for Energy and the Environment, Princeton University
Relationship: Postdoc Advisor
Phone: (609) 258-7580
Email: zjren@princeton.edu
4. Claire E. White
Associate Professor of Civil and Environmental Engineering and the Andlinger Center for Energy and the Environment, Princeton University
Relationship: Postdoc Co-Advisor
Phone: (609) 258-6263
Email: whitece@princeton.edu