Mohan Qin

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Education

2017	Ph.D., Civil Engineering, Virginia Tech
2013	M.S., Environmental Engineering, Peking University
2010	B.S., Environmental Engineering, Shandong University

Professional Experience

2020-present	Assistant Professor, Department of Civil and Environmental Engineering, UW–Madison
2018-2019	Research Associate, Department of Chemical and Environmental Engineering, Yale University
2016-2017	Graduate Teaching Assistant, Department of Civil and Environmental Engineering, Virginia Tech
2014-2017	Graduate Research Assistant, Department of Civil and Environmental Engineering, Virginia Tech

Peer-Reviewed Publications

1. Sun, M., Qin, M., Wang, C., Weng, G., Huo, M., Taylor, A., Qu, J., Elimelech, M. "Electrochemical-Osmotic Process for Simultaneous Recovery of Electric Energy, Water, and Metals from Wastewater" *Environmental Science & Technology*, accepted.
2. Patel, S. K., Ritt, C., Deshmukh, A., Wang, Z., Qin, M., Epsztein, R., Elimelech, M. "The Relative Insignificance of Advanced Materials in Enhancing the Energy Efficiency of Desalination Technologies." *Energy & Environmental Science*, 2020.
3. Patel, S. K., Qin, M., Walker, W. S., Elimelech, M. "Energy Efficiency of Electro-Driven Brackish Water Desalination: Electrodialysis Significantly Outperforms Membrane Capacitive Deionization." *Environmental Science & Technology*, 2020, 54 (6), 3663-3677.
4. Qin, M., Deshmukh, A., Epsztein, R., Patel, S.K., Owoseni, O. M., Walker, W. S., Elimelech, M. "Comparison of Energy Consumption in Desalination by Capacitive Deionization and Reverse Osmosis." *Desalination*, 2019, 455: 100-114.
5. Epsztein, R., Shaulsky, E., Qin, M., Elimelech, M. "Activation Behavior for Ion Permeation in Ion-Exchange Membranes: Role of Ion Dehydration in Selective Transport." *Journal of Membrane Science*, 2019, 580: 316-326.
6. Zou, S., Qin, M., He, Z. "Tackle Reverse Solute Flux in Forward Osmosis towards Sustainable Water Recovery: Reduction and Perspectives." *Water Research*, 2018, 149: 362-374.
7. Qin, M., White, C., Zou, S., He, Z. "Passive Separation of Recovered Ammonia from Catholyte for Reduced Energy Consumption in Microbial Electrolysis Cells." *Chemical Engineering Journal*, 2018, 334: 2303-2307.6

8. Qin, M. and He, Z. "Resource Recovery by Osmotic Bioelectrochemical Systems towards Sustainable Wastewater Treatment." *Environmental Science: Water Research & Technology*, 2017, 3: 583-592. (Front Cover).
9. Yang, Y., Qin, M., Yang, X., He, Z. "Sustainable Operation of Osmotic Microbial Fuel Cells through Effective Reproduction of Polyelectrolyte Draw Solutes Facilitated by Cathodic pH Increase." *Journal of Cleaner Production*, 2017, 168.1: 1143-1149.
10. Qin, M., Liu, Y., Luo, S., Qiao, R., He, Z. "Integrated Experimental and Modeling Evaluation of Energy Consumption for Ammonia Recovery in Bioelectrochemical Systems." *Chemical Engineering Journal*, 2017, 327: 924-931.
11. Qin, M., Hynes, E.A., Abu-Reesh, I.M., He, Z. "Ammonium Removal from Synthetic Wastewater Promoted by Current Generation and Water Flux in an Osmotic Microbial Fuel Cell." *Journal of Cleaner Production*, 2017, 149: 856-862.
12. Zou, S., Qin, M., Moreau, Y., He, Z. "Nutrient-Energy-Water Recovery from Synthetic Sidestream Centrate Using a Microbial Electrolysis Cell-Forward Osmosis Hybrid System." *Journal of Cleaner Production*, 2017, 154: 16-25.
13. Yang, Y., Qin, M., Yang, X., He, Z. "Enhancing Hydrogen Production in Microbial Electrolysis Cells by *in situ* Hydrogen Oxidation for Self-Buffering pH through Periodic Polarity Reversal." *Journal of Power Sources*, 2017, 347: 21-28.
14. Qin, M., Abu-Reesh, I.M., He, Z. "Effects of Current Generation and Electrolyte pH on Reverse Salt Flux across Thin Film Composite Membrane in Osmotic Microbial Fuel Cells." *Water Research*, 2016, 105: 583-590.
15. Qin, M., Maza, W.A., Stratakes, B.M., Ahrenholtz, S.R., Morris, A.J., He, Z. "Nanoparticulate $Ni(OH)_2$ Films Synthesized from Macrocyclic Nickel (II) Cyclam for Hydrogen Production in Microbial Electrolysis Cells." *Journal of the Electrochemical Society*, 2016, 163: F437-F442.
16. Liu, Y., Qin, M., Luo, S., He, Z., Qiao, R. "Understanding Ammonium Transport in Bioelectrochemical Systems towards its Recovery." *Scientific Reports*, 2016, 6.
17. Qin, M., Molitor, H., Brazil, B., Novak, J.T., He, Z. "Recovery of Nitrogen and Water from Landfill Leachate by a Microbial Electrolysis Cell–Forward Osmosis System." *Bioresource Technology*, 2016, 200: 485-492.
18. Qin, M., Ping, Q., Lu, Y., Abu-Reesh, I.M., He, Z. "Understanding Electricity Generation in Osmotic Microbial Fuel Cells through Integrated Experimental Investigation and Mathematical Modeling." *Bioresource Technology*, 2015, 195: 194-201.
19. Lu, Y., Qin, M., Yuan, H., Abu-Reesh, I.M., He, Z. "When Bioelectrochemical Systems Meet Forward Osmosis: Accomplishing Wastewater Treatment and Reuse Through Synergy." *Water*, 2014, 7.1: 38-50.
20. Qin, M. and He, Z. "Self-supplied Ammonium Bicarbonate Draw Solute for Achieving Wastewater Treatment and Recovery in a Microbial Electrolysis Cell-Forward Osmosis-Coupled System." *Environmental Science & Technology Letters*, 2014, 1.10: 437-441.
21. Qin, M., Zhao, H., Ren, L., Wang, Z. "Study on the Coagulation Efficiency of Covalent Bonded Aluminum-Silicon Hybrid Flocculants." *Chinese Journal of Environmental Engineering*, 2014, 8.4: 1262-1266.

Conferences (* Presenter)

1. Qin, M.,* Patel, S. K., Walker, W. S., Elimelech, M. "Energy Efficiency of Electro-Driven Brackish Water Desalination: Electrodialysis Significantly Outperforms Membrane Capacitive

Deionization." NAMS 2020 Online Conference, May 18-21, 2020.

2. Qin, M.,* Deshmukh, A., Epsztein, R., Patel, S.K., Owoseni, O. M., Walker, W. S., Elimelech, M. "Comparison of Energy Consumption in Desalination by Capacitive Deionization and Reverse Osmosis." The 2019 AEESP Conference. May 14-16, 2019, Tempe, AZ. (Poster)
3. Qin, M. and He, Z.* "Osmotic Bioelectrochemical Systems: a New Approach for Nutrient-Energy-Water (NEW) Recovery from Wastewater." The 15th IWA World Conference on Anaerobic Digestion. October 17-20, 2017, Beijing, China. (Oral)
4. Qin, M.* and He, Z. "Coupled Microbial Electrolysis Cell-Forward Osmosis System for Sustainable Wastewater Treatment and Resource Recovery." The 254th ACS National Meeting. August 20-24, 2017, Washington D.C. (Poster)
5. Qin, M. and He, Z.* "Nutrient-Energy-Water (NEW) Recovery by Osmotic Bioelectrochemical Systems towards Sustainable Wastewater Treatment." The 254th ACS National Meeting. August 20-24, 2017, Washington D.C. (Oral)
6. Qin, M.,* Abu-Reesh, I.M., He, Z. "Controlling the Reverse Salt Flux in Osmotic Microbial Fuel Cells." The 2017 AEESP Conference. June 20-22, 2017, Ann Arbor, MI. (Poster)
7. Qin, M.,* Abu-Reesh, I.M., He, Z. "Effects of Bioelectricity Generation and Electrolyte pH on Reverse Salt Flux across Thin Film Composite Membrane in Osmotic Microbial Fuel Cells." 3rd Meeting of the North American branch of the ISMET. October 5-7, 2016, Stanford, CA. (Oral)
8. Qin, M.* and He, Z. "Osmotic Microbial Fuel Cells: A New Approach for Wastewater Treatment, Clean Water Extraction and Bioelectricity Generation." WaterJAM. September 12-15, 2016, Virginia Beach, VA. (Oral)
9. Qin, M.* and He, Z. "Sustainable Ammonium Recovery from Wastewater using Microbial Electrolysis Cells." WaterJAM. September 12-15, 2016, Virginia Beach, VA. (Poster)
10. Qin, M. and He, Z.* "Sustainable Ammonium Recovery from Wastewater by Using Bioelectrochemical Systems." Residuals and Biosolids. April 3-6, 2016, Milwaukee, WI. (Oral)
11. Qin, M.* and He, Z. "Osmotic Microbial Fuel Cells: A New Approach for Wastewater Treatment, Clean Water Extraction and Bioelectricity Generation." Virginia Tech 32nd GSA Research Symposium & Expo. March 23, 2016, Blacksburg, VA. (Oral)
12. Qin, M. and He, Z.* "Improving Wastewater Reuse Using Self-Supplied Ammonium Draw Solute in a Coupled Microbial Electrolysis Cell Forward Osmosis System." The 88th Annual Water Environment Federation Technical Exhibition and Conference (WEFTEC 2015). September 28-30, 2015, Chicago, IL. (Oral)
13. Qin, M.* and He, Z. "Self-supplied NH_3-CO_2 Draw Solute for Achieving Wastewater Treatment and Recovery in a Microbial Electrolysis Cell-Forward Osmosis-Coupled System." WaterJAM. September 14-17, 2015, Virginia Beach, VA. (Oral)
14. Qin, M.,* Maza, W.A., Stratakes, B.M., Ahrenholtz, S.R., Morris, A.J., He, Z. "Nanoparticulate $Ni(OH)_2$ Films Synthesized from Macrocyclic Nickel (II) Cyclam for Hydrogen Production in Microbial Electrolysis Cells." WaterJAM. September 14-17, 2015, Virginia Beach, VA. (Poster)
15. Qin, M.* and He, Z. "Self-supplied NH_3-CO_2 Draw Solute for Achieving Wastewater Treatment and Recovery in a Microbial Electrolysis Cell-Forward Osmosis-Coupled System." The 2015 AEESP Research and Education Conference. June 13-16, 2015, New Haven, CT. (Oral)
16. Qin, M. and He, Z.* "Recovering Ammonium Bicarbonate to Achieve Wastewater Treatment and Reuse in a Microbial Electrolysis Cell – Forward Osmosis Coupled System." Water and Energy 2015. June 8-10, 2015, Washington DC. (Oral)
17. Qin, M.* and He, Z. "Influence of Electricity Generation on Reverse Salt Flux in an Osmotic Microbial Fuel Cell." The 2nd NA-ISMET meeting. May 13-15, 2014. University Park, PA. (Poster)

Awards

- VA AWWA Graduate Student Scholarship, 2017
- Via Teaching Fellow, 2017
- 1st Place for Wastewater Presentation in Water JAM 2016
- The Graduate Student Assembly Travel Fund, 2016
- 2015 Innovation Award for Best Technological Advancement from International Society for Microbial Electrochemistry and Technology (ISMET)
- Finalist in BIG Pitch competition sponsored by Ocean Exchange and South Georgia University. 2015
- Third Runner-up in the Reclaim Video competition (Title: Reclaiming is to Recovery Nutrient, Energy and Water, All in One by Microbial Electrolysis Cell-Forward Osmosis). Mar. 2015

Service and Outreach

- Reviewer for journals: Environmental Science & Technology, Water Research, Journal of Cleaner Production, Science of the Total Environment, Biochemical Engineering Journal, etc.
- Volunteer in CEE Open House in Virginia Tech, 2017
- Rapporteur in NSF-AEESP Grand Challenges Workshop, 2016
- Demonstrator in Virginia Tech Science Festival, 2016
- Volunteer in the 4th USA Science and Engineering Festival, 2016