Stanford



Meagan Mauter

Associate Professor Civil & Environmental Engineering, Senior Fellow at the Woods Institute for the Environment and at the Precourt Institute for Energy

Civil and Environmental Engineering

CONTACT INFORMATION

- **Alternate Contact**

  Timothy Tsung - Program Administrator

  Email ttsung2@stanford.edu

  Tel 650-725-2382

Bio

BIO

Professor Meagan Mauter directs the Water & Energy Efficiency for the Environment Lab (WE3Lab) with the mission of supporting affordability, resiliency, and sustainability in water-energy infrastructure systems. We develop and implement computational tools that guide robust infrastructure planning, prioritize technology innovation and investment, and unlock system flexibility.

Professor Mauter also serves as the research director for the National Alliance for Water Innovation (NAWI), a $235-million DOE Energy-Water Desalination Hub addressing water security challenges in the United States. The Hub targets research and development of energy-efficient and cost-competitive solutions for integrating non-traditional source waters into the water supply portfolio.

Prior to joining the faculty at Stanford, she served as an Energy Technology Innovation Policy Fellow at the Belfer Center for Science and International Affairs and the Mossavar Rahmani Center for Business and Government at the Harvard Kennedy School, and as an Associate Professor of Engineering & Public Policy, Civil & Environmental Engineering, and Chemical Engineering at Carnegie Mellon University.

Professor Mauter holds bachelors degrees in Civil & Environmental Engineering and History from Rice University, a Masters of Environmental Engineering from Rice University, and a PhD in Chemical and Environmental Engineering from Yale University. Prior to joining the faculty at Stanford, she served as an Energy Technology Innovation Policy Fellow at the Belfer Center for Science and International Affairs and the Mossavar Rahmani Center for Business and Government at the Harvard Kennedy School of Government and as an Associate Professor of Engineering & Public Policy, Civil & Environmental Engineering, and Chemical Engineering at Carnegie Mellon University.

ACADEMIC APPOINTMENTS

- Associate Professor, Civil and Environmental Engineering
- Senior Fellow, Stanford Woods Institute for the Environment
- Senior Fellow, Precourt Institute for Energy

ADMINISTRATIVE APPOINTMENTS

- Research Director, National Alliance for Water Innovation, (2018- present)

HONORS AND AWARDS

- Sustainable Chemistry & Engineering Lectureship Award, American Chemical Society (2021)
- Walter L. Huber Civil Engineering Research Prize, American Society of Civil Engineers (2021)
- Outstanding Reviewer, Environmental Science: Water Research & Technology (2018)
- Awardee, James J. Morgan Environmental Science & Technology Early Career Award Lectureship (2017)
- Co-Organizer and Participant, German American Frontierse of Engineering Symposium (2017)
- Participant, Arab-American Frontiers of Science, Engineering, and Medicine (2017)
- Recipient, Dean of Engineering Early Career Fellow (2017)
- Participant and Speaker, US-EU Frontiers of Engineering Symposium (2016)
- Recipient, NSF CAREER Award, Environmental Engineering (2016)
- Recipient, ASCE ExCEEd Teaching Fellowship Award (2016)
- Recipient, George Tallman Ladd Research Award (2016)
- Recipient, North American Membrane Society (NAMS) Young Membrane Scientist Award (2015)
- Participant, National Academy of Engineering, Frontiers of Engineering Symposium (2012)
- Recipient, AWWA Academic Achieve Award, 1st Place Doctoral Dissertation (2012)
- Recipient with Honorable Mention, AEESP Outstanding Doctoral Dissertation Award (2012)
- Fellow, NSF Science Engineering and Education for Sustainability (SEES) (2011-2012)
- Recipient, AWWA Abel Wolman Fellowship (2009-2011)
- Recipient, NSF Graduate Research Fellowship (2006-2009)
- Recipient, US EPA GRO Fellowship (2004-2006)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- Editorial Advisory Board, Environmental Science & Technology Letters (2020 - present)
- Editorial Advisory Board, ACS ES&T Engineering (2020 - present)
- Editorial Advisory Board, ACS Sustainable Chemistry and Engineering (2018 - present)
- Co-Chair, North American Membrane Society Annual Meeting (2017 - 2019)
- Advisory Board Member, Advanced Sustainable Systems (2016 - present)
- Editor, Sustainable Production and Consumption (2016 - present)
- Early Career Advisory Board Member, ACS Sustainable Chemistry and Engineering (2016 - 2018)

PROFESSIONAL EDUCATION

- PhD, Yale University , Chemical and Environmental Engineering (2011)
- MS and M. Phil, Yale University , Chemical and Environmental Engineering (2007)
- MEE, Rice University , Environmental Engineering (2006)
- BS, Rice University , Civil & Environmental Engineering (2006)
- BA, Rice University , History (2006)

Teaching

COURSES

2026-27

- Environmental Engineering Seminar: CEE 269 (Aut)
- Modern Modeling Techniques for Water and Wastewater Systems: CEE 273T (Aut)
- Water Innovation & Investment: CEE 173W, CEE 273W, EARTHSYS 173W, EARTHSYS 273W (Win)

2025-26

- Water Innovation & Investment: CEE 273W (Win)

2023-24

- Modern Modeling Techniques for Water and Wastewater Systems: CEE 273T (Sum)

STANFORD ADVISEES

Doctoral Dissertation Reader (AC)

Ariana Hofelmann, Aniket Verma, Keani Willebrand

Postdoctoral Faculty Sponsor

Fletcher Chapin, Sampriti Chattopadhyay, Christopher Laliwala, Laxmicharan Samineni, Nitish Ranjan Sarker, Carson Tucker, Haochi Wu

Doctoral Dissertation Advisor (AC)

Sinan Abi Farraj, Daly Wettermark

Master's Program Advisor

Zhicheng Hai, Haiyuan Liu, Alexa Wells

Doctoral Dissertation Co-Advisor (AC)

Gina Kittleson

Doctoral (Program)

Sinan Abi Farraj, Caroline Adkins, Olivia Baird, Sabi Can Ruso

Publications

PUBLICATIONS

- **How much can we save? Upper bound cost and emissions benefits from commercial and industrial load flexibility** *ENVIRONMENTAL RESEARCH-ENERGY*
  Rao, A. K., Chapin, F. T., Musabandesu, E., Sakthivelu, A., Tucker, C., Wettermark, D., Mauter, M. S.
  2026; 3 (4)

- **Ontology and LLM-based Extraction of Wastewater Unit Process Data from Permit Documents for Improved Sector-Level Cost and Emissions Analysis** *ENVIRONMENTAL ENGINEERING SCIENCE*
  Wettermark, D., Rouffet, C., Chapin, F. T., Ramirez, A. C., Mauter, M. S.
  2026

- **Water treatment research opportunities at synchrotron and neutron user facilities** *NATURE WATER*
  Landsman, M. R., Hesse, S. A., Aydogan-Gokturk, P., Yao, C., Bechtel, H. A., Dudchenko, A. V., Hexemer, A., Jiang, Z., Katz, L. E., Kumar, M., Urban, V. S., Waluyo, I., Mauter, et al
  2026; 4 (10): 1244-1258

- **Valuing regional coordination of nutrient discharge management** *NATURE WATER*

Farraj, S., Rao, A. K., Mauter, M. S.
2026

- **Retail Electricity Costs and Emissions Incentives Are Misaligned for Commercial and Industrial Power Consumers.** *Environmental science & technology*
  Chapin, F. T., Rao, A. K., Sakthivelu, A., Tucker, C. I., David, E., Chen, C. S., Musabandesu, E., Mauter, M. S.
  2026; 60 (34): 23958-23970
- **Retail ElectricityCosts and Emissions IncentivesAre Misaligned for Commercial and Industrial Power Consumers** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Chapin, F. T., Rao, A. K., Sakthivelu, A., Tucker, C. I., David, E., Chen, C. S., Musabandesu, E., Mauter, M. S.
  2026
- **Enhancing household water end-use estimates from low time-resolution smart meter data via stochastic discrete event modeling and Bayesian inference** *WATER RESEARCH X*
  Fang, X., Zhang, J., Mauter, M. S., Cominola, A., Lu, Z.
  2026; 31
- **Demand response event simulator and risk-aware bidding tool for industrial customers** *APPLIED ENERGY*
  Sakthivelu, A., Chapin, F. T., Bolorinos, J., Mauter, M. S.
  2026; 409
- **Expedited desalination permitting enables adaptive planning and water system cost reduction** *ENVIRONMENTAL RESEARCH: INFRASTRUCTURE AND SUSTAINABILITY*
  Zaniolo, M., Fletcher, S. M., Mauter, M. S.
  2026; 6 (1)
- **Incorporating corrosion design constraints in desalination process optimization: A case study in mechanical vapor compression** *DESALINATION*
  Tucker, C. I., Amusat, O. O., Atia, A. A., Dudchenko, A., Bartholomew, T., Mauter, M. S.
  2026; 621
- **Using Bayesian Inference and Flowpipe Construction to Bound Predictions of Biogas Production at Wastewater Treatment Plants**
  Chapin, F., Varma, A., Akinwande, S., Mauter, M., Sankaranarayanan, S.
  edited by Damiani, F., Farrell, M.
  SPRINGER INTERNATIONAL PUBLISHING AG.2026: 182-201
- **Acquirium: Toward Interoperable Data Driven Applications in Water Treatment Systems**
  Saka, U., Chapin, F. T., Paul, L., Anwar, A., Struck, S., Mauter, M. S., Fierro, G., ACM
  ASSOC COMPUTING MACHINERY.2026: 218-229
- **Measuring impacts of California agri-environmental programs using field-scale satellite data** *ENVIRONMENTAL RESEARCH LETTERS*
  Wong, C. A., Abramson Sklarin, W. S., Mauter, M. S., Lobell, D. B.
  2026; 21 (1)
- **PyPES: A data and metadata schema for portable water system models** *ENVIRONMENTAL MODELLING & SOFTWARE*
  Chapin, F. T., Liu, Y., Mauter, M. S.
  2026; 196
- **Editorial overview: Transforming water technologies in the United States: Insights from the National Alliance for Water Innovation** *CURRENT OPINION IN CHEMICAL ENGINEERING*
  McCutcheon, J. R., Mauter, M.
  2025; 50
- **Optimizing Distribution Controls for Safe, Affordable, Low-Carbon Water Supply** *WATER RESOURCES RESEARCH*
  Musabandesu, E., Mauter, M. S.
  2025; 61 (9)
- **Field-scale mapping of California crop water productivity to inform water management in critically overdrafted groundwater basins** *ENVIRONMENTAL RESEARCH LETTERS*
  Wong, C. A., Lobell, D. B., Mauter, M. S.

2025; 20 (7)

- **Load-Shifting Strategies for Cost-Effective Emission Reductions at Wastewater Facilities.** *Environmental science & technology*
  Chapin, F. T., Wettermark, D., Bolorinos, J., Mauter, M. S.
  2025
- **Optimizing Desalination Operations for Energy Flexibility** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Rao, A. K., Atia, A. A., Knueven, B., Mauter, M. S.
  2024
- **Valuing energy flexibility from water systems** *NATURE WATER*
  Rao, A. K., Bolorinos, J., Musabandesu, E., Chapin, F. T., Mauter, M. S.
  2024; 2 (10): 1028-1037
- **Quantifying the Value of Technology and Policy Innovation in Water Resource Portfolios** *EARTHS FUTURE*
  Zaniolo, M., Fletcher, S., Mauter, M. S.
  2024; 12 (5)
- **Electricity and natural gas tariffs at United States wastewater treatment plants.** *Scientific data*
  Chapin, F. T., Bolorinos, J., Mauter, M. S.
  2024; 11 (1): 113
- **The Future of Municipal Wastewater Reuse Concentrate Management: Drivers, Challenges, and Opportunities.** *Environmental science & technology*
  Finnerty, C. T., Childress, A. E., Hardy, K. M., Hoek, E. M., Mauter, M. S., Plumlee, M. H., Rose, J. B., Sobsey, M. D., Westerhoff, P., Alvarez, P. J., Elimelech, M.
  2024; 58 (1): 3-16
- **Integrated Energy Flexibility Management at Wastewater Treatment Facilities.** *Environmental science & technology*
  Bolorinos, J., Mauter, M. S., Rajagopal, R.
  2023
- **Assessing the economic viability of unconventional rare earth element feedstocks** *NATURE SUSTAINABILITY*
  Fritz, A. G. G., Tarka, T. J. J., Mauter, M. S. S.
  2023
- **Novel method for accurately estimating membrane transport properties and mass transfer coefficients in reverse osmosis** *JOURNAL OF MEMBRANE SCIENCE*
  Liang, Y., Dudchenko, A., Mauter, M. S.
  2023; 679
- **Multi-scale planning model for robust urban drought response** *ENVIRONMENTAL RESEARCH LETTERS*
  Zaniolo, M., Fletcher, S., Mauter, M. S.
  2023; 18 (5)
- **Fixing the desalination membrane pipeline.** *Science (New York, N.Y.)*
  McCutcheon, J. R., Mauter, M. S.
  2023; 380 (6642): 242-244
- **Inadequacy of current approaches for characterizing membrane transport properties at high salinities** *JOURNAL OF MEMBRANE SCIENCE*
  Liang, Y., Dudchenko, A. V., Mauter, M. S.
  2023; 668
- **FIND: A Synthetic weather generator to control drought Frequency, Intensity, and Duration** *ENVIRONMENTAL MODELLING & SOFTWARE*
  Zaniolo, M., Fletcher, S., Mauter, M.
  2023; 172
- **High-Resolution Carbon Accounting Framework for Urban Water Supply Systems.** *Environmental science & technology*
  Liu, Y., Mauter, M. S.
  2022

- **Energy-Optimal Siting of Decentralized Water Recycling Systems.** *Environmental science & technology*
  Liu, Y., Sim, A., Mauter, M. S.
  2021
- **High-impact innovations for high-salinity membrane desalination.** *Proceedings of the National Academy of Sciences of the United States of America*
  Dudchenko, A. V., Bartholomew, T. V., Mauter, M. S.
  2021; 118 (37)
- **Marginal energy intensity of water supply** *ENERGY & ENVIRONMENTAL SCIENCE*
  Liu, Y., Mauter, M. S.
  2021
- **Cost Comparison of Capacitive Deionization and Reverse Osmosis for Brackish Water Desalination** *ACS ENVIRONMENTAL SCIENCE AND TECHNOLOGY ENGINEERING*
  Liu, X., Shanbhag, S., Bartholomew, T., Whitacre, J. F., Mauter, M. S.
  2021; 1 (2): 261-273
- **Build back wiser.** *Science (New York, N.Y.)*
  Mauter, M. S.
  2021; 373 (6562): 1417
- **Desalination for a circular water economy** *ENERGY & ENVIRONMENTAL SCIENCE*
  Mauter, M. S., Fiske, P. S.
  2020; 13 (10): 3180–84
- **Neural networks for estimating physical parameters in membrane distillation** *JOURNAL OF MEMBRANE SCIENCE*
  Dudchenko, A. V., Mauter, M. S.
  2020; 610
- **Optimization Framework to Assess the Demand Response Capacity of a Water Distribution System** *JOURNAL OF WATER RESOURCES PLANNING AND MANAGEMENT*
  Liu, Y., Barrows, C., Macknick, J., Mauter, M.
  2020; 146 (8)
- **Quantifying uncertainty in groundwater depth from sparse well data in the California Central Valley** *ENVIRONMENTAL RESEARCH LETTERS*
  Quay, A. N., Hering, A. S., Mauter, M. S.
  2020; 15 (8)
- **Assessing the demand response capacity of US drinking water treatment plants** *APPLIED ENERGY*
  Liu, Y., Mauter, M. S.
  2020; 267
- **Environmentally significant shifts in trace element emissions from coal plants complying with the 1990 Clean Air Act Amendments** *ENERGY POLICY*
  Gingerich, D. B., Zhao, Y., Mauter, M. S.
  2019; 132: 1206–15
- **Computational framework for modeling membrane processes without process and solution property simplifications** *JOURNAL OF MEMBRANE SCIENCE*
  Bartholomew, T. V., Mauter, M. S.
  2019; 573: 682–93
- **The role of nanotechnology in tackling global water challenges** *NATURE SUSTAINABILITY*
  Mauter, M. S., Zucker, I., Perreault, F., Werber, J. R., Kim, J., Elimelech, M.
  2018; 1 (4): 166–75
- **Economic and policy drivers of agricultural water desalination in California's central valley** *AGRICULTURAL WATER MANAGEMENT*
  Welle, P. D., Medellin-Azuara, J., Viers, J. H., Mauter, M. S.

2017; 194: 192–203

- **Osmotically assisted reverse osmosis for high salinity brine treatment** *DESALINATION*
  Bartholomew, T. V., Mey, L., Arena, J. T., Siefert, N. S., Mauter, M. S.
  2017; 421: 3–11
- **Air Emissions Damages from Municipal Drinking Water Treatment Under Current and Proposed Regulatory Standards** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Gingerich, D. B., Mauter, M. S.
  2017; 51 (18): 10299–306
- **High-resolution model for estimating the economic and policy implications of agricultural soil salinization in California** *ENVIRONMENTAL RESEARCH LETTERS*
  Welle, P. D., Mauter, M. S.
  2017; 12 (9)
- **Management and dewatering of brines extracted from geologic carbon storage sites** *INTERNATIONAL JOURNAL OF GREENHOUSE GAS CONTROL*
  Arena, J. T., Jain, J. C., Lopano, C. L., Hakala, J., Bartholomew, T. V., Mauter, M. S., Siefert, N. S.
  2017; 63: 194–214
- **Spatially resolved air-water emissions tradeoffs improve regulatory impact analyses for electricity generation** *PROCEEDINGS OF THE NATIONAL ACADEMY OF SCIENCES OF THE UNITED STATES OF AMERICA*
  Gingerich, D. B., Sun, X., Behrer, A., Azevedo, I. L., Mauter, M. S.
  2017; 114 (8): 1862–67
- **Magnetically Directed Two-Dimensional Crystallization of OmpF Membrane Proteins in Block Copolymers** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Klara, S. S., Saboe, P. O., Sines, I. T., Babaei, M., Chiu, P., DeZorzi, R., Dayal, K., Walz, T., Kumar, M., Mauter, M. S.
  2016; 138 (1): 28–31
- **Visual-Analytics Bridge Complexity and Accessibility for Robust Urban Water Planning** *WATER RESOURCES RESEARCH*
  Zaniolo, M., Mauter, M. S., Fletcher, S. M.
  2025; 61 (4)
- **Fisher Discriminant Analysis for Extracting Interpretable Phenological Information From Multivariate Time Series Data** *IEEE JOURNAL OF SELECTED TOPICS IN APPLIED EARTH OBSERVATIONS AND REMOTE SENSING*
  Doherty, C. T., Mauter, M. S.
  2025; 18: 3371-3384
- **Component innovations for lower cost mechanical vapor compression.** *Water research*
  Tucker, C. I., Bartholomew, T. V., Dudchenko, A. V., Mauter, M. S.
  2024; 260: 121950
- **Multicriteria Suitability Index for Prioritizing Early-Stage Deployments of Wastewater-Derived Fertilizers in Sub-Saharan Africa.** *Environmental science & technology*
  Wong, C. A., Lobell, D. B., Mauter, M. S.
  2023
- **Fouling of Reverse Osmosis Membrane with Effluent Organic Matter: Componential Role of Hydrophobicity** *ACS ES&T WATER*
  Stein, N., Sharon-Gojman, R., Mauter, M. S. S., Bernstein, R., Herzberg, M.
  2023
- **Microporous Polyethersulfone Membranes Grafted with Zwitterionic Polymer Brushes Showing Microfiltration Permeance and Ultrafiltration Bacteriophage Removal.** *ACS applied materials & interfaces*
  Qin, J., Ziemann, E., Bar-Zeev, E., Bone, S. E., Liang, Y., Mauter, M. S., Herzberg, M., Bernstein, R.
  2023
- **Comparative Infrared Microscopy for Measuring Membrane Thermal Conductivity and Validating Theoretical Heat Transport Models** *ACS ES&T ENGINEERING*
  Liu, T., Mauter, M. S.

2023

- **Aqueous Bromide Discharges from US Coal-Fired Power Plants: Points of Origin, Concentration Ranges, and Effluent Treatment Costs** *ENERGY & FUELS*
  Fritz, A. G., Able, C., Mauter, M. S., Grol, E.
  2023
- **Unraveling pH Effects on Ultrafiltration Membrane Fouling by Extracellular Polymeric Substances: Adsorption and Conformation Analyzed with Localized Surface Plasmon Resonance.** *Environmental science & technology*
  Ran, N., Sharon-Gojman, R., Larsson, S., Gillor, O., Mauter, M. S., Herzberg, M.
  2022
- **Effects of meteorological and land surface modeling uncertainty on errors in winegrape ET calculated with SIMS** *IRRIGATION SCIENCE*
  Doherty, C. T., Johnson, L. F., Volk, J., Mauter, M. S., Bambach, N., McElrone, A. J., Alfieri, J. G., Hipps, L. E., Prueger, J. H., Castro, S. J., Alsina, M., Kustas, W. P., Melton, et al
  2022
- **Effects of meteorological and land surface modeling uncertainty on errors in winegrape ET calculated with SIMS.** *Irrigation science*
  Doherty, C. T., Johnson, L. F., Volk, J., Mauter, M. S., Bambach, N., McElrone, A. J., Alfieri, J. G., Hipps, L. E., Prueger, J. H., Castro, S. J., Alsina, M. M., Kustas, W. P., Melton, et al
  2022; 40 (4-5): 515-530
- **Heat transfer innovations and their application in thermal desalination processes** *JOULE*
  Liu, T., Mauter, M. S.
  2022; 6 (6): 1199-1229
- **Guidance on Nusselt Number Correlation Selection in Membrane Distillation** *ACS ES&T ENGINEERING*
  Dudchenko, A. V., Hardikar, M., Anand, A., Xin, R., Wang, R., Gopu, C., Mauter, M. S.
  2022
- **Recommendations for Advancing FAIR and Open Data Standards in the Water Treatment Community** *ACS ES&T ENGINEERING*
  Quay, A. N., Fiske, P. S., Mauter, M. S.
  2022; 2 (3): 337-346
- **Carbon Benefits of Drinking Water Treatment Electrification** *ACS ES&T ENGINEERING*
  Gingerich, D. B., Liu, J., Mauter, M. S.
  2022; 2 (3): 367-376
- **Technology Baselines and Innovation Priorities for Securing Water Supply** *ACS ES&T ENGINEERING*
  Mauter, M. S., Dionysiou, D. D., Kim, J.
  2022; 2 (3): 271-272
- **Desalination Process Design Assisted by Osmotic Power for High Water Recovery and Low Energy Consumption** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Touati, K., Dudchenko, A., Mauter, M. S., Rahaman, M.
  2022; 10 (7): 2409-2419
- **Technoeconomic Assessment of a Sequential Step-Leaching Process for Rare Earth Element Extraction from Acid Mine Drainage Precipitates** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Fritz, A. G., Tarka, T. J., Mauter, M. S.
  2021; 9 (28): 9308-9316
- **The Economic Infeasibility of Salinity Gradient Energy via Pressure Retarded Osmosis** *ACS ES&T ENGINEERING*
  Newby, A. N., Bartholomew, T., Mauter, M. S.
  2021; 1 (7): 1113-1121
- **Competing Ion Behavior in Direct Electrochemical Selenite Reduction** *ACS ES&T ENGINEERING*
  Zou, S., Mauter, M. S.
  2021; 1 (6): 1028-1035
- **Cost optimization of multi-stage gap membrane distillation** *JOURNAL OF MEMBRANE SCIENCE*

Dudchenko, A., Bartholomew, T., Mauter, M. S.
2021; 627

- **Cost and energy intensity of US potable water reuse systems** *ENVIRONMENTAL SCIENCE-WATER RESEARCH & TECHNOLOGY*
  Sim, A., Mauter, M. S.
  2021; 7 (4): 748–61
- **Real-time feedback improves multi-stakeholder design for complex environmental systems** *ENVIRONMENTAL RESEARCH COMMUNICATIONS*
  Guo, N., Davis, A., Mauter, M., Whitacre, J.
  2021; 3 (4)
- **Energy and CO2 Emissions Penalty Ranges for Geologic Carbon Storage Brine Management.** *Environmental science & technology*
  Bartholomew, T. V., Mauter, M. S.
  2021
- **Direct Electrochemical Pathways for Selenium Reduction in Aqueous Solutions** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Zou, S., Mauter, M. S.
  2021; 9 (5): 2027–36
- **Performance Loss of Activated Carbon Electrodes in Capacitive Deionization: Mechanisms and Material Property Predictors.** *Environmental science & technology*
  Liu, X., Shanbhag, S., Natesakhawat, S., Whitacre, J. F., Mauter, M. S.
  2020
- **Foulant Adsorption to Heterogeneous Surfaces with Zwitterionic Nanoscale Domains** *ACS APPLIED POLYMER MATERIALS*
  Dudchenko, A., Bengani-Lutz, P., Asatekin, A., Mauter, M. S.
  2020; 2 (11): 4709–18
- **Cost optimization of high recovery single stage gap membrane distillation** *JOURNAL OF MEMBRANE SCIENCE*
  Bartholomew, T. V., Dudchenko, A. V., Siefert, N. S., Mauter, M. S.
  2020; 611
- **Flue Gas Desulfurization Wastewater Composition and Implications for Regulatory and Treatment Train Design.** *Environmental science & technology*
  Gingerich, D. B., Mauter, M. S.
  2020
- **Impact of module design on heat transfer in membrane distillation** *JOURNAL OF MEMBRANE SCIENCE*
  Dudchenko, A. V., Hardikar, M., Xin, R., Joshi, S., Wang, R., Sharma, N., Mauter, M. S.
  2020; 601
- **Bacterial biofilm formation on ion exchange membranes** *JOURNAL OF MEMBRANE SCIENCE*
  Herzberg, M., Pandit, S., Mauter, M. S., Oren, Y.
  2020; 596
- **Magnetic Field-Induced Alignment of Nanofibrous Supramolecular Membranes: A Molecular Design Approach to Create Tissue-like Biomaterials.** *ACS applied materials & interfaces*
  Radvar, E. n., Shi, Y. n., Grasso, S. n., Edwards-Gayle, C. J., Liu, X. n., Mauter, M. S., Castelletto, V. n., Hamley, I. W., Reece, M. J., S Azevedo, H. n.
  2020
- **Understanding and mitigating performance decline in electrochemical deionization** *CURRENT OPINION IN CHEMICAL ENGINEERING*
  Liu, X., Shanbhag, S., Mauter, M. S.
  2019; 25: 67–74
- **Managing high salinity brines from geological carbon sequestration**
  Mauter, M.
  AMER CHEMICAL SOC.2019
- **Trace Element Mass Flow Rates from US Coal Fired Power Plants** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*

Sun, X., Gingerich, D. B., Azevedo, I. L., Mauter, M. S.
2019; 53 (10): 5585–95

- **Zwitterionic copolymer additive architecture affects membrane performance: fouling resistance and surface rearrangement in saline solutions** *JOURNAL OF MATERIALS CHEMISTRY A*
  Kaner, P., Dudchenko, A. V., Mauter, M. S., Asatekin, A.
  2019; 7 (9): 4829–46
- **Mechanisms of Humic Acid Fouling on Capacitive and Insertion Electrodes for Electrochemical Desalination** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Liu, X., Whitacre, J. F., Mauter, M. S.
  2018; 52 (21): 12633–41
- **Cost Optimization of Osmotically Assisted Reverse Osmosis** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Bartholomew, T., Siefert, N. S., Mauter, M. S.
  2018; 52 (20): 11813–21
- **Fundamental challenges and engineering opportunities in flue gas desulfurization wastewater treatment at coal fired power plants** *ENVIRONMENTAL SCIENCE-WATER RESEARCH & TECHNOLOGY*
  Gingerich, D. B., Grol, E., Mauter, M. S.
  2018; 4 (7): 909–25
- **Outstanding Reviewers for Environmental Science: Water Research & Technology in 2017** *ENVIRONMENTAL SCIENCE-WATER RESEARCH & TECHNOLOGY*
  Bagley, D., Chung, N., He, Z., Julian, T., Lee, Y., Mauter, M., Nghiem, L., Rodrigues, D., Wammer, K., Ward, B., Zhang, Q.
  2018; 4 (6): 760
- **ACS Sustainable Chemistry & Engineering Virtual Special Issue on Systems Analysis, Design, and Optimization for Sustainability** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Cabezas, H., Mauter, M. S., Shonnard, D., You, F.
  2018; 6 (6): 7199
- **Air Emission Reduction Benefits of Biogas Electricity Generation at Municipal Wastewater Treatment Plants** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Gingerich, D. B., Mauter, M. S.
  2018; 52 (3): 1633–43
- **Technoeconomic Optimization of Emerging Technologies for Regulatory Analysis** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Gingerich, D. B., Bartholomew, T. V., Mauter, M. S.
  2018; 6 (2): 2370–78
- **Retrofitting the Regulated Power Plant: Optimizing Energy Allocation to Electricity Generation, Water Treatment, and Carbon Capture Processes at Coal-Fired Generating Facilities** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Gingerichi, D. B., Mauter, M. S.
  2018; 6 (2): 2694–2703
- **Ion Transport and Competition Effects on NaTi₂(PO₄)₃ and Na₄Mn₉O₁₈ Selective Insertion Electrode Performance** *LANGMUIR*
  Shanbhag, S., Bootwala, Y., Whitacre, J. F., Mauter, M. S.
  2017; 33 (44): 12580-12591
- **Characterizing convective heat transfer coefficients in membrane distillation cassettes** *JOURNAL OF MEMBRANE SCIENCE*
  Leitch, M. E., Lowry, G. V., Mauter, M. S.
  2017; 538: 108–21
- **Influence of Electric Fields on Biofouling of Carbonaceous Electrodes** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Pandit, S., Shanbhag, S., Mauter, M., Oren, Y., Herzberg, M.
  2017; 51 (17): 10022–30
- **Computing the Diamagnetic Susceptibility and Diamagnetic Anisotropy of Membrane Proteins from Structural Subunits** *JOURNAL OF CHEMICAL THEORY AND COMPUTATION*

Babaei, M., Jones, I. C., Dayal, K., Mauter, M. S.
2017; 13 (6): 2945–53

- **Allocating Damage Compensation in a Federalist System: Lessons from Spatially Resolved Air Emissions in the Marcellus** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Behrer, A., Mauter, M. S.
  2017; 51 (7): 3600–3608
- **Working on environmental challenges as an engineer gone wrong**
  Mauter, M.
  AMER CHEMICAL SOC.2017
- **Accurately determining convective heat transfer coefficients in membrane distillation cassettes**
  Mauter, M., Leitch, M., Lowry, G.
  AMER CHEMICAL SOC.2017
- **Nanotechnology for sustainable food production: promising opportunities and scientific challenges** *ENVIRONMENTAL SCIENCE-NANO*
  Rodrigues, S. M., Demokritou, P., Dokoozlian, N., Hendren, C., Karn, B., Mauter, M. S., Sadik, O. A., Safarpour, M., Unrine, J. M., Viers, J., Welle, P., White, J. C., Wiesner, et al
  2017; 4 (4): 767–81
- **Air emission implications of expanded wastewater treatment at coal-fired generators**
  Gingerich, D., Sun, X., Behrer, A., Azevedo, I., Mauter, M.
  AMER CHEMICAL SOC.2016
- **Techno-economic assessment of desalination technology for application in agriculture**
  Welle, P., Azuara, J., Viers, J., Mauter, M.
  AMER CHEMICAL SOC.2016
- **Multi-objective optimization model for minimizing cost and environmental impact in shale gas water and wastewater management**
  Bartholomew, T., Mauter, M.
  AMER CHEMICAL SOC.2016
- **Relating charge efficiency and ion removal in electrochemical deionization systems**
  Shanbhag, S., Whitacre, J., Mauter, M.
  AMER CHEMICAL SOC.2016
- **Modeling convective and diffusive mass transport in capacitive deionization electrodes**
  Iddya, A., Mauter, M., Shanbhag, S.
  AMER CHEMICAL SOC.2016
- **Trace element allocation across air pollution control devices in coal fired power plants**
  Sun, X., Gingerich, D., Azevedo, I., Mauter, M.
  AMER CHEMICAL SOC.2016
- **Multiobjective Optimization Model for Minimizing Cost and Environmental Impact in Shale Gas Water and Wastewater Management** *ACS SUSTAINABLE CHEMISTRY & ENGINEERING*
  Bartholomew, T. V., Mauter, M. S.
  2016; 4 (7): 3728–35
- **Surface Wetting Study via Pseudocontinuum Modeling** *JOURNAL OF PHYSICAL CHEMISTRY C*
  Makaremi, M., Jhon, M. S., Mauter, M. S., Biegler, L. T.
  2016; 120 (21): 11528–34
- **Bacterial Nanocellulose Aerogel Membranes: Novel High-Porosity Materials for Membrane Distillation** *ENVIRONMENTAL SCIENCE & TECHNOLOGY LETTERS*
  Leitch, M. E., Li, C., Ikkala, O., Mauter, M. S., Lowry, G. V.
  2016; 3 (3): 85–91
- **The Origins of Low Efficiency in Electrochemical De-Ionization Systems** *JOURNAL OF THE ELECTROCHEMICAL SOCIETY*
  Shanbhag, S., Whitacre, J. F., Mauter, M. S.

2016; 163 (14): E363-E371

- **Influence of surface charge on the rate, extent, and structure of adsorbed Bovine Serum Albumin to gold electrodes** *JOURNAL OF COLLOID AND INTERFACE SCIENCE*
  Beykal, B., Herzberg, M., Oren, Y., Mauter, M. S.
  2015; 460: 321–28
- **Electrodeposited MnO₂ For Pseudocapacitive Deionization: Relating Deposition Condition and Electrode Structure to Performance** *ELECTROCHIMICA ACTA*
  Walker, P. J., Mauter, M. S., Whitacre, J. F.
  2015; 182: 1008-1018
- **Quantity, Quality, and Availability of Waste Heat from United States Thermal Power Generation** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Gingerich, D. B., Mauter, M. S.
  2015; 49 (14): 8297–8306
- **Crosslinked poly(ethylene oxide) containing siloxanes fabricated through thiol-ene photochemistry** *JOURNAL OF POLYMER SCIENCE PART A-POLYMER CHEMISTRY*
  Kusuma, V. A., Roth, E. A., Clafshenkel, W. P., Klara, S. S., Zhou, X., Venna, S. R., Albenze, E., Luebke, D. R., Mauter, M. S., Koepsel, R. R., Russell, A. J., Hopkinson, D., Nulwala, et al
  2015; 53 (13): 1548–57
- **Water Treatment Capacity of Forward-Osmosis Systems Utilizing Power-Plant Waste Heat** *INDUSTRIAL & ENGINEERING CHEMISTRY RESEARCH*
  Zhou, X., Gingerich, D. B., Mauter, M. S.
  2015; 54 (24): 6378–89
- **Investment optimization model for freshwater acquisition and wastewater handling in shale gas production** *AICHE JOURNAL*
  Yang, L., Grossmann, I. E., Mauter, M. S., Dilmore, R. M.
  2015; 61 (6): 1770–82
- **Risks and risk governance in unconventional shale gas development.** *Environmental science & technology*
  Small, M. J., Stern, P. C., Bomberg, E., Christopherson, S. M., Goldstein, B. D., Israel, A. L., Jackson, R. B., Krupnick, A., Mauter, M. S., Nash, J., North, D. W., Olmstead, S. M., Prakash, et al
  2014; 48 (15): 8289-8297
- **Regional Variation in Water-Related Impacts of Shale Gas Development and Implications for Emerging International Plays** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Mauter, M. S., Alvarez, P. J. J., Burton, A., Cafaro, D. C., Chen, W., Gregory, K. B., Jiang, G., Li, Q., Pittock, J., Reible, D., Schnoor, J. L.
  2014; 48 (15): 8298–8306
- **Expert Elicitation of Trends in Marcellus Oil and Gas Wastewater Management** *JOURNAL OF ENVIRONMENTAL ENGINEERING*
  Mauter, M. S., Palmer, V. R.
  2014; 140 (5)
- **Emerging Pollutants - Part II: Treatment** *WATER ENVIRONMENT RESEARCH*
  Keen, O. S., Bell, K. Y., Cherchi, C., Finnegan, B. J., Mauter, M. S., Parker, A., Rosenblum, J. S., Stretz, H. A.
  2014; 86 (10): 2036–96
- **Modular polymerized ionic liquid block copolymer membranes for CO2/N-2 separation** *JOURNAL OF MATERIALS CHEMISTRY A*
  Adzima, B. J., Venna, S. R., Klara, S. S., He, H., Zhong, M., Luebke, D. R., Mauter, M. S., Matyjaszewski, K., Nulwala, H. B.
  2014; 2 (21): 7967–72
- **Surface Cell Density Effects on Escherichia coli Gene Expression during Cell Attachment (vol 47, pg 6223, 2013)** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Mauter, M. S., Fait, A., Elimelech, M., Herzberg, M.
  2013; 47 (15): 8991
- **Surface Cell Density Effects on Escherichia coli Gene Expression during Cell Attachment** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Mauter, M., Fait, A., Elimelech, M., Herzberg, M.

2013; 47 (12): 6223–30

- **Emerging Pollutants - Part II: Treatment** *WATER ENVIRONMENT RESEARCH*
  Bell, K. Y., Bandy, J., Finnegan, B. J., Keen, O., Mauter, M. S., Parker, A., Sima, L. C., Stretz, H. A.
  2013; 85 (10): 2022–71
- **Stable Sequestration of Single-Walled Carbon Nanotubes in Self-Assembled Aqueous Nanopores** *JOURNAL OF THE AMERICAN CHEMICAL SOCIETY*
  Mauter, M. S., Elimelech, M., Osuji, C. O.
  2012; 134 (9): 3950–53
- **New Perspectives on Nanomaterial Aquatic Ecotoxicity: Production Impacts Exceed Direct Exposure Impacts for Carbon Nanotoubes** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Eckelman, M. J., Mauter, M. S., Isaacs, J. A., Elimelech, M.
  2012; 46 (5): 2902–10
- **Antifouling Ultrafiltration Membranes via Post-Fabrication Grafting of Biocidal Nanomaterials** *ACS APPLIED MATERIALS & INTERFACES*
  Mauter, M. S., Wang, Y., Okemgbo, K. C., Osuji, C. O., Giannelis, E. P., Elimelech, M.
  2011; 3 (8): 2861–68
- **Nanocomposites of Vertically Aligned Single-Walled Carbon Nanotubes by Magnetic Alignment and Polymerization of a Lyotropic Precursor** *ACS NANO*
  Mauter, M. S., Elimelech, M., Osuji, C. O.
  2010; 4 (11): 6651–58
- **Templated alignment of single-walled carbon nanotubes in polymer films**
  Mauter, M. S., Elimelech, M., Osuji, C.
  AMER CHEMICAL SOC.2010
- **Single-walled carbon nanotube (SWNT) composite membranes for reduction of biofouling in water treatment**
  Mauter, M. S., Elimelech, M.
  AMER CHEMICAL SOC.2010
- **Microbial Cytotoxicity of Carbon-Based Nanomaterials: Implications for River Water and Wastewater Effluent** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Kang, S., Mauter, M. S., Elimelech, M.
  2009; 43 (7): 2648–53
- **Bacterial toxicity of carbon-based nanomaterials: Implication for natural and engineered aquatic system**
  Kang, S., Mauter, M. S., Elimelech, M.
  AMER CHEMICAL SOC.2009
- **Physicochemical determinants of multiwalled carbon nanotube bacterial cytotoxicity** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Kang, S., Mauter, M. S., Elimelech, M.
  2008; 42 (19): 7528–34
- **Environmental applications of carbon-based nanomaterials** *ENVIRONMENTAL SCIENCE & TECHNOLOGY*
  Mauter, M. S., Elimelech, M.
  2008; 42 (16): 5843–59

PRESENTATIONS

- Research Priorities and Recent Progress at the Food-Water Nexus (2018)
- Magnetically Directed Two-Dimensional Crystallization of Membrane Proteins in Block Copolymers (2018)
- Leveraging High Resolution Information for Sustainable Food Energy Water Systems (2018)
- Retrofitting the Regulated Power Plant: Integrated health, environmental, and climate decision making for infrastructure investments (2018)
- Assessing the Technoeconomic Feasibility of Agricultural Water Desalination (2018)
- Assessing the Technoeconomic Feasibility of Agricultural Water Desalination (2018)

- High Resolution Information for Sustainable Food Energy Water Systems (2017)
- Zwitterionic Co-Polymer Adsorption Resistance: Surface Heterogeneity and Surface Energy Effects, Applications of Quartz Crystal Microbalance Techniques in Environmental Science and Energy (2017)
- Remote Sensing for Sustainable and Resilient Food Energy and Water Systems (2017)
- Designing for Sustainble and Resilient Food Energy and Water Systems (2017)
- Sustaining Californian Agricultural Systems through High Resolution Water Quality Analysis and Novel Desalination Technologies (2017)
- Challenges and Opportunities in High Salinity Brine Treatment (2017)
- The Evolving Role of Engineering in Addressing Environmental Grand Challenges (2017)
- Working on Environmental challenges as an "Engineer Gone Wrong" (2017)
- Innovations in Water Treatment and Aqueous Emissions Control (2017)
- Redesigning the Regulated Power Plant: Aqueous Emissions Control Through Innovation in Policies, Processes, and Materials (2017)
- Processes and Materials for High Salinity Brine Treatment (2016)
- Redesigning the Regulated Power Plant (2016)
- Magnetically Directed Two-Dimensional Crystallization of Membrane Proteins in Block Copolymers (2016)
- Integrated Planning for Emissions Reductions at Coal Fired Power Plants (2016)
- Processes and Materials for Aqueous Separations with Low Temperature Heat (2016)
- Integrated Decision Making for Sustainable Energy Water and Agricultural Systems (2016)
- Integrated Decision Making for Water, Energy, and Agricultural Systems (2016)
- Grand Challenges and Opportunities for Meeting Water Demand in a Carbon Constrained World (2016)
- Assessing the Feasibility of Using Low Temperature Heat to Meet Water Treatment Demand: A Consideration of Policy, Process, and Economic Constraints (2015)
- Informing Responsible Water Management in Unconventional Well Development: Tools from Engineering and Public Policy (2015)
- Evaluating the Techno-Economic Feasibility of Waste-heat Driven Water Treatment at Electric Power Generation Facilities (October 2015)
- Valuing (Nano) Technology's Benefits for Agriculture: A Techno-Economic Assessment of Agricultural Water Desalination in the Central Valley of CA (October 2015)
- Magnetically Directed Self-Assembly for the Fabrication of Ultra-Selective Membrane Materials (2015)
- Frontiers in Water Technology (2015)
- Policies and Processes for Meeting Water Demand in an Energy Constrained World (2015)
- Antifouling Materials for Membrane Separations (2015)
- Technology and Management Practices to Minimize the Impacts of Shale Gas Extraction in the Marcellus (2015)
- Sustainably Engineering Water and Energy Systems for the 21st Century (2015)
- Technology and Management Practices to Minimize the Impacts of Shale Gas Extraction in the Karoo (2015)
- Holistic Approaches to Managing Produced Water from Unconventional Extraction (2014)
- Policies, Processes, and Materials for Energy Efficient Separations (2014)
- Materials and Processes to Meet Desalination Demand in an Energy Constrained World (2014)
- Shale Gas Water Management: Risks and Challenges (2014)
- Optimizng the Shale Gas Extraction Process to Minimize Environmental Externalities (2014)
- Organic Nanomaterials: An Emerging Tool for Water Treatment (2014)
- Water Energy nexus: Challenges and Perspectives (2014)
- Materials and Processes to Meet Desalination Demand in an Energy Constrained World (2014)
- Monitoring for Public Health in the Shale Gas Industry (2014)

- Antecedents and Effects of Company Behavior in Energy Technology Development: Insighs from the Solar and Shale Gas Industries (2014)
- Company Behavior in Operations and Waste Management Influences Regional Impacts of Shale Gas Development (2013)
- Novel Membrane Architectures for Produced Water Treatment (2013)
- Risk Perception and Industry Response to Marcellus Produced Water Management (2013)
- Environmental Impacts of Produced Water Management in the Marcellus (2013)
- Implications of Firm Behavior for Water and Wastewater Management in the Marcellus (2013)
- Firm Level Management Practices to Minimize Impacts from Produced Water Management in the Marcellus (2012)
- Advances in Membrane Materials for Water Treatment (2013)
- Self-Assembled Materials for Membrane Separations (2012)
- Templated Alignment of Single Walled Carbon Nanotubes in Aqueous Nanopores (2012)
- Stable Sequestration of Single-Walled Carbon Nanotubes in Nanometer-Scale Aqueous Channels (2012)
- Nanomaterials for Membrane-Based Water Treatment (2012)
- Applications and Implications of Nanomaterials for Membrane-Based Water Treatment (2011)
- Nanomaterials for Water Treatment: Emerging Applications, Continuing Challenges (2011)
- Nanomaterials for Membrane-Based Water Treatment Applications (2010)