

RESUME – David A. Ladner

PERSONAL DATA

Associate Professor
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EDUCATION

Ph.D., University of Illinois at Urbana-Champaign, 2009, Environmental Engineering
M.S., University of Illinois at Urbana-Champaign, 2005, Environmental Engineering
B.S., New Mexico Institute of Mining and Technology, 2003, Environmental Engineering

PROFESSIONAL REGISTRATION

Engineer in Training (EIT), Arizona, 2010.

PROFESSIONAL EXPERIENCE

Clemson University, 2016-present, Associate Professor of Environmental Eng.
Clemson University, 2010-2016, Assistant Professor of Environmental Eng.
Arizona State University, 2009-2010, Postdoctoral Research Associate

MEMBERSHIPS

Member, American Water Works Association, AWWA (2005-)
Member, North American Membrane Society, NAMS (2007-)
Member, Association of Environmental Engineering and Science Professors,
AEESP (2009-)
Member, American Chemical Society, ACS (2011-)
Member, International Water Association, IWA (2010-2011)

PROFESSIONAL ACTIVITIES

Member, Student Services Committee, AEESP (2009-present)
Member, University Student Activities Committee, AWWA (2012-present)
Chair, Student Services Committee, AEESP (2012-2015)
Vice-Chair, Student Services Committee, AEESP (2011-2012)

PUBLICATIONS

Refereed Journal Publications and Book Chapters

(This list with hyperlinks is available at <https://cecas.clemson.edu/ladnergroup/publications.php>)

At Clemson

Ersan, M.S., Ladner, D.A., Karanfil, T. "The control of N-nitrosodimethylamine, Halonitromethane, and Trihalomethane precursors by Nanofiltration." *Water Research*, **105**, 274-281 (2016).

Amaral, P.; Partlan, E.; Li, M.; Lapolli, F.; Mefford, O.T.; Karanfil, T.; Ladner, D.A. "Superfine powdered activated (S-PAC) coatings on microfiltration membranes: Effects of milling time on contaminant removal and flux." *Water Research*, **100**, 429-438 (2016).

Partlan, E.; Davis, K.; Ren, Y.; Apul, O.G.; Mefford, O.T.; Karanfil, T.; Ladner, D.A. "Effect of bead milling on chemical and physical characteristics of activated carbons pulverized to superfine sizes." *Water Research*, **89**, 161-170 (2016).

Wang, B., Geitner, N.K., Davis, T.P., Ke, P.C., Ladner, D.A., Ding, F. "Deviation From the Unimolecular Micelle Paradigm of PAMAM Dendrimers Induced by Strong Inter-Ligand Interactions." *The Journal of Physical Chemistry C*, **119**, 19475-19484 (2015).

Ersan, M.S., Ladner, D.A., Karanfil, T. "N-Nitrosodimethylamine (NDMA) Precursors Leach from Nanofiltration Membranes." *Environmental Science & Technology Letters*, **2**, 66-69 (2015).

Geitner, N.K., Wang, B., Andorfer, R., Ladner, D.A., Ke P.C., Ding, F. "Structure–Function Relationship of PAMAM Dendrimers as Robust Oil Dispersants." *Environmental Science & Technology*, **48**, 12868-12875 (2014).

Steele, M.M., Anctil, A., Ladner, D.A. "Integrating algaculture into small wastewater treatment plants: Process flow options and life cycle impacts." *Environmental Science: Processes & Impacts*, **16**, 1387-1399 (2014).

Xie, P., Murdoch, L., Ladner, D.A. "Hydrodynamics of sinusoidal spacers for improved reverse osmosis performance." *Journal of Membrane Science*, **453**, 92-99 (2014).

Geitner, N.K., Powell, R.R., Bruce, T., Ladner, D.A., Ke, P.C. "Effects of dendrimer oil dispersants on *Dictyostelium discoideum*." *RSC Advances*, **3**, 25930-25936 (2013).

Ellerie, J.R., Apul, O., Karanfil, T., Ladner, D.A. "Comparing graphene, carbon nanotubes, and superfine powdered activated carbon as adsorptive coating

materials for microfiltration membranes.” *Journal of Hazardous Materials*, **261**, 91-98 (2013).

Lewis, D.O., Ladner, D.A., Karanfil, T. “Source water and microfiltration plant manganese control study.” *Journal American Water Works Association*, **105**, E480-E495 (2013).

Ladner, D.A., Bolyard S.C., Apul, D., Whelton, A.J. “Navigating the Academic Job Search for Environmental Engineers: Guidance for Job Seekers and Mentors.” *Journal of Professional Issues in Engineering Education and Practice*, **139**, 211-217 (2013).

Smith, M., Barnard, C., Ladner, D.A. “Functionalized nanoparticles as removable membrane coatings.” in *Novel Solutions to Water Pollution*, S. Ahuja, and K. Hristovski, eds., ACS Symposium Series, American Chemical Society, Washington, D.C., 1123, 189-203 (2013).

Geitner, N.K., Bhattacharya, P., Steele, M., Chen, R., Ladner, D.A., Ke, P.C. “Understanding dendritic polymer-hydrocarbon interactions for oil dispersion.” *RSC Advances*, **2**, 9371-9375 (2012).

Bhattacharya, P., Conroy, N., Rao, A.M., Powell, B.A., Ladner, D.A., Ke, P.C. "PAMAM dendrimer for mitigating humic foulant." *RSC Advances*, **2**, 7997-8001 (2012).

At Clemson, based on PhD and postdoctoral work

Kiser, M.A., Ladner, D.A., Hristovski, K.D., Westerhoff, P. "Nanomaterial transformation and association with fresh and freeze-dried wastewater activated sludge: Implications for testing protocol and environmental fate." *Environmental Science and Technology*, **46**, 7046-7053 (2012).

Ladner, D.A., Steele, M., Weir, A., Hristovski, K., Westerhoff, P. "Functionalized nanoparticle interactions with polymeric membranes." *Journal of Hazardous Materials*, **211-212**, 288-295 (2012).

Reed, R., Ladner, D., Higgins, C.P., Westerhoff, P., Ranville, J. "Solubility of nano-zinc oxide in environmentally and biologically important matrices." *Environmental Toxicology and Chemistry*, **31**, 93–99 (2012).

Vardon, D.R., Clark, M.M., and Ladner, D.A., "The potential of laser scanning cytometry for early warning of algal blooms in desalination plant feedwater," *Desalination*, **277**, 193-200 (2011).

Prior to Clemson

Ladner, D.A., Vardon, D.R., Clark, M.M., "Effects of shear on microfiltration and ultrafiltration fouling by marine bloom-forming algae," *Journal of Membrane Science*, **356**, 33-43 (2010).

Ba, C., Ladner, D.A., Economy, J., "Using polyelectrolyte coatings to improve fouling resistance of a positively charged nanofiltration membrane," *Journal of Membrane Science*, **347**, 250-259 (2010).

Ladner, D.A., Subramani, A., Kumar, M., Adham, S.S., Clark, M.M., "Bench-scale evaluation of seawater desalination by reverse osmosis," *Desalination*, **250**, 490-499 (2010).

Ladner, D.A., Lee, B.W., Clark, M.M., "Laser scanning cytometry for enumeration of fluorescent microspheres," *Journal / American Water Works Association*, **99**, 110-117 (2007).

Conference Proceedings, Peer-reviewed

Steele, M.M., Ladner, D.A., Anctil, A. "Net Environmental Benefit Approach to Life Cycle Assessment for Algalculture Integration at Wastewater Treatment Plants." *Proceedings of LCA XIII*, Orlando, FL (October, 2013).

Conference Proceedings, Non-peer-reviewed

Singh, R., Asif, A.A., Venayagamoorthy, G.K., Lakhtakia, A., Abdelhamid, M., Alapatt, G.F., Ladner, D.A. "Emerging Role of Photovoltaics for Sustainably Powering Underdeveloped, Emerging, and Developed Economies." (Key Note Address) *Proceedings of the 2nd International Conference on Green Energy and Technology (ICGET)*, Dhaka, Bangladesh (September, 2014).

Ellerie, J.R., Ladner, D.A. "Adsorptive activated carbon coatings for ultrafiltration membranes," *Proceedings of the Water Quality Technology Conference (WQTC)*, American Water Works Association (November, 2011).

PRESENTATIONS

Oral presentations

Ladner, D.A.; Holtmann, K.; Al-Dulaimi, R.; Bui, K.; Degen, J.; Dove, M.; Gallimore, N.; Knapp, M.; Markley, A.; Mettlen, H.; Shugart, R.; Vatalaro, A. "Mapping South Carolina drinking water quality for alignment with health-record databases in epidemiological studies." Platform presentation at the South Carolina Water Resources Conference, Columbia, SC (October, 2016).

Quinter, K.; Tidwell, V.; Carraway, E.; Ladner, D.A. "Integrated water-energy planning in the Eastern Interconnection." Platform presentation at the South Carolina Water Resources Conference, Columbia, SC (October, 2016).

Ladner, D.A.; Holtmann, K.; Al-Dulaimi, R.; Bui, K.; Degen, J.; Dove, M.; Gallimore, N.; Knapp, M.; Markley, A.; Mettlen, H.; Shugart, R.; Vatalaro, A. "Mapping South Carolina drinking water quality for alignment with health-record databases in epidemiological studies." Platform presentation at the South Carolina Water Resources Conference, Columbia, SC (October, 2016)

Liu, J.; Ladner, D.A. "Bench-scale automatic ceramic membrane filtration system." Platform presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2016).

Roehl, E.A.; Ladner, D.A.; Daamen, R.C.; Cook, J.B. "Empirical Modeling of a Reverse Osmosis System to Quantify Causes of Fouling." Platform presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2016).

Ladner, D.A.; Tu, Y.; Steele, M.; Carpenter, K.; Bourne, K.; Brown, M.; Geitner, N.; Wang, B.; Ke, P.C.; Ding, F.; Salehi, M.; Whelton, A.; Powers, S. "Disseminating Oil Spill Knowledge through an Exhibit at the Estuarium." Platform presentation at the Oil Spill and Ecosystem Science Conference, Tampa, FL (February, 2016).

Partlan, E.; Li, M.; Ayerle, P.; Ladner, D.A. "Membrane Filtration of Colloidal Activated Carbon: Considerations for Optimization of Head Loss Reduction and Small Molecule Adsorption." Platform presentation at the Membrane Technology Conference & Exposition, San Antonio, TX (February, 2016).

Xie, P.; Murdoch, L.; Ladner, D.A. "Comparison of computational fluid dynamics (CFD) and experimental data for fouling mitigation with sinusoidal reverse osmosis spacers." Platform presentation at the Membrane Technology Conference & Exposition, San Antonio, TX (February, 2016).

Partlan, E.; Davis, K.; Ren, Y.; Apul, O.; Mefford, O.T.; Karanfil, T.; Ladner, D.A. "Effects of Bead Milling on Activated Carbon Characteristics: Trends in Superfine PAC." Platform presentation at the Water Quality Technology Conference, Salt Lake City, UT (November, 2015).

Ladner, D.A.; Amaral, P.; Partlan, E.; Li, M.; Davis, K.; Ren, Y.; Karanfil, T. "Effects of S-PAC milling on membrane coating performance in microfiltration." Platform presentation at the Water Quality Technology Conference, Salt Lake City, UT (November, 2015).

Ladner, D.A. "Environmental Engineering on Planet Earth." Keynote lecture at the SURI closing ceremony, Benedict College, Columbia, SC (July, 2015).

Ladner, D.A.; Carpenter, K.; Bourne, K.; Tu, Y.; Wang, B.; Geitner, N.K.; Ke, P.C.; Ding, F.; Powers, S.; Salehi, M.; Whelton, A.J. "Toward biocompatible oil spill dispersants through dendritic polymers." Platform presentation at the Association of Environmental Engineering and Science Professors (AEESP) biannual conference, New Haven, CT (June, 2015).

Xie, P.; Murdoch, L.C.; Ladner, D.A. "Fouling mitigation in reverse osmosis with sinusoidal spacers and visualization of the membrane fouling process with modeling." Platform presentation at the North American Membrane Society (NAMS) annual meeting, Boston, MA (June, 2015).

Steele, M.; Sims, R.; Ladner, D.A.; Anctil, A. "Toward sustainability in wastewater treatment: Comparing life cycle impacts of algaculture and conventional systems." International Symposium on Sustainable Systems and Technology, Dearborn, MI (May 2015).

Ersan, M.; Ladner, D.A.; Karanfil, T. "The Removal of DBP Precursors Using Nanofiltration." Platform presentation at the South Carolina Environmental Conference (SCEC), Myrtle Beach, SC (March, 2015).

Partlan, E.T.; Ladner, D.A. "Superfine carbon and microfiltration for adsorption of trace contaminants: Effects of water quality, chemical addition, and system configuration." Platform presentation at the South Carolina Environmental Conference (SCEC), Myrtle Beach, SC (March, 2015).

Partlan, E.T.; Ladner, D.A. "Dissolved carbon dioxide for reverse osmosis membrane cleaning." Platform presentation at the Membrane Technology Conference, Orlando, FL (March, 2015).

Li, M.; Partlan, E.T.; Ladner, D.A. "Effects of natural organic matter on contaminant removal by superfine powdered activated carbon coupled with microfiltration membranes." Platform presentation at the Water Quality Technology Conference (WQTC), New Orleans, LA (November, 2014).

Steele, M.; Sims, R.; Ladner, D.A.; Anctil, A. "Algaculture at wastewater treatment plants: feasibility and life cycle impacts." Platform presentation at Algal Biomass, Biofuels, and Bioproducts, Santa Fe, NM (June, 2014).

Xie, P.; Murdoch, L.; Ladner, D.A. "Sinusoidal spacers for mitigating fouling in reverse osmosis." Platform presentation at the North American Membrane Society Annual Meeting, Houston, TX (June 2014).

Ladner, D.A.; Li, M.; Partlan, E.T.; Karanfil, T. "Effects of super-fine powdered activated carbon on microfiltration membranes." Platform presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2014).

Partlan, E.T.; Ladner, D.A. "Removal of Inorganic Scale from RO Membranes Using Dissolved CO₂." Platform presentation at the AWWA/AMTA Membrane Technology Conference & Exposition, Las Vegas, NV (March, 2014).

Ladner, D.A.; Tu, Y.; Xie, P.; Ulmer, R.; Goins, R.; Geitner, N.K.; Ke, P.C.; Salehi, M.; Powers, S.; Whelton, A.J. "Dendritic polymers as oil spill dispersants: Effectiveness and toxicity compared to Corexit 9500." Platform presentation at the Gulf of Mexico Oil Spill & Ecosystem Science Conference, Mobile, AL (January, 2014).

Geitner, N.K.; Powell, R.; Bruce, T.; Ladner, D.A.; Ding, F.; Ke, P.C. "The effects of dendrimer oil dispersants on *Dictyostelium discoideum*." Platform presentation at the Sustainable Nanotechnology Organization Conference, Santa Barbara, CA (November, 2013).

Ladner, D.A.; Partlan, E.T.; Li, M.; Crumbley, A.M.; Bilchak, C.R.; Mefford, O.T.; Karanfil, T. "Interactions of Super-Fine Powdered Activated Carbon and Graphene Adsorbents with Microfiltration and Ultrafiltration Membranes." Platform presentation at the Water Quality Technology Conference (WQTC), Long Beach, CA (November 2013).

Ladner, D.A.; Partlan, E.T.; Li, M.; Apul, O.; Mefford, O.T.; Karanfil, T. "Balancing adsorption kinetics and NOM competition with energy requirements for small-particle adsorbent-membrane systems." Platform presentation at the Association of Environmental Engineering and Science Professors (AEESP) Education and Research Conference, Golden, CO (July, 2013).

Xie, P.; Ladner, D.A. "Reducing concentration polarization with sinusoidal spacers: Computational modeling and experimental verification." Platform presentation at the North American Membrane Society annual meeting, Boise, ID (June, 2013).

Steele, M.M.; Ladner, D.A.; Anctil, A. "Net environmental benefit LCA: Integrating algae at WWTPs." Platform presentation at the Algal Biomass Biofuels and Bioproducts conference, Toronto, ON, Canada (June, 2013).

Ladner, D.A.; Carey, D.; Mobley, C. "Deploying QR codes to educate water consumers about the water-energy nexus through their mobile devices." Platform presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2013).

Xie, P.; Ladner, D.A. "Sinusoidal Spacers for Concentration Polarization Mitigation in RO Desalination." Platform presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2013).

Ladner, D.A. "Composite nanoparticles and dendritic polymers as regenerable membrane coatings for trace contaminant removal and fouling control." Invited

presentation at the University of South Alabama, Department of Civil Engineering, Mobile, AL (November, 2012).

Ladner, D.A.; Ellerie, J.; Smith, M.A.; Richards, C.; Baker, D.; Karanfil, T.K. "Carbonaceous nanomaterials, composite inorganic/organic nanoparticles, and dendritic polymers as regenerable membrane coatings for trace contaminant removal and fouling control." Platform presentation at the American Chemical Society Fall National Meeting, Philadelphia, PA (August, 2012).

Smith, M.; Ladner, D.A. "Composite nanoparticles as regenerable coatings on reverse osmosis membranes." Platform presentation at the 22nd North American Membrane Society Annual Meeting, New Orleans, LA (June 2012).

Ellerie, J.; Ladner, D.A. "Adsorptive carbon coatings for ultrafiltration membranes." Platform presentation at the American Water Works Association Annual Conference and Exhibition, Dallas, TX (June 2012).

Xie, P.; Ladner, D.A. "Sinusoidal- and helical-flow spacers for fouling mitigation and energy reduction in RO desalination." Platform presentation at the American Water Works Association Annual Conference and Exhibition, Dallas, TX (June 2012).

Smith, M.; Barnard, C.; Ladner, D.A. "Functionalized nanoparticles as removable membrane coatings," Platform presentation at the American Chemical Society Fall National Meeting, Denver, CO (August, 2011).

Ladner, D.A.; Steele, M.M.; Weir, A.; Hristovski, K.; and Westerhoff, P. "Nanoparticle rejection by microfiltration and ultrafiltration membranes," Platform presentation at the International Conference on the Environmental Implications of Nanotechnology, Los Angeles, CA (May, 2010).

Ladner, D.A.; Jurevis, J.D.; and Clark, M.M. "Characterization of a highly fouling fraction of algogenic organic matter in low- and high-pressure membrane filtration," Platform presentation at the Water Quality Technology Conference, American Water Works Association, Seattle, WA (November 2009).

Ladner, D.A.; Vardon, D.R.; and Clark, M.M. "Effects of shear on microfiltration and ultrafiltration fouling by bloom-forming algae in a seawater desalination treatment train," Platform presentation at the Membrane Technology Conference, American Water Works Association, Memphis, TN (April 2009).

Ladner, D.A.; Vardon, D.R.; Kumar, M.; and Clark, M.M. "Fouling by Algogenic Organic Matter in Seawater Reverse Osmosis Desalination," Platform presentation at the Annual Conference and Exhibition, American Water Works Association, Atlanta, GA (July 2008).

Ladner, D.A.; Kumar, M.; Adham, S.S.; and Clark, M.M. "Bench-Scale Studies to Characterize Organic Foulants in Seawater Reverse Osmosis Desalination," Platform presentation at the 17th Annual Meeting of the North American Membrane Society, Chicago, IL (May 2006)

Ladner, D.A.; Thompson, K.; Lee, B.; and Clark, M.M. "Indirect membrane integrity monitoring using online fluorescence based bacteria detection," Platform presentation at the 15th Annual Meeting of the North American Membrane Society, Honolulu, HI (July 2004).

Poster presentations

Jacobs, R.; Partlan, E.; Ladner, D.A. "Hydrothermal Carbonization of Glucose for the Production of Particles to Model S-PAC Membrane Breakthrough." Poster presentation at the Clemson University Research Experience for Undergraduates (REU) Poster Session, Clemson, SC (July, 2016).

Partlan, E.; Amaral, P.; Brown, M.; Ladner, D.A. "Microfiltration membranes coated with superfine powdered activated carbon (S-PAC) for the removal of trace contaminants." Poster presentation at the AWWA Annual Conference and Exposition, Chicago, IL (June, 2016).

Xie, P.; Ladner, D.A. "Computational Fluid Dynamics Simulations of Forward Osmosis in Drinking Water Treatment." Poster presentation at the AWWA Annual Conference and Exposition, Chicago, IL (June, 2016).

Idarraga-Mora, J.; Childress, A.; Ladner, D.A.; Rao, A.; Husson, S. "Mechanical enhancement of thin-film nanocomposite membranes using helically-coiled carbon nanotubes for engineered osmosis." Poster presentation at the North American Membrane Society (NAMS) annual meeting, Bellevue, WA (May, 2016).

Malakian, A.; Weinman S.; Monk, R.; Boateng, L.; Sarupria, S.; Ladner, D.A.; Husson, S. "Understanding the roles that patterning and chemistry play on membrane fouling." Poster presentation at the North American Membrane Society (NAMS) annual meeting, Bellevue, WA (May, 2016).

Bai, L.; Li, C.; Pales, A.; Huibers, B.; Ladner, D.A.; Daigle, H.; Darnault, C. "Wettability Behavior of Crude Oil-Silica Nanofluids-Sandstone Systems." Poster presentation at EGU 2016, Vienna, Austria (April, 2016).

Partlan, E.; Amaral, P.; Li, M.; Ladner, D.A. "Activated Carbon Coatings on Microfiltration Membranes as Mini Packed Bed Reactors." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2016).

Xie, P.; Murdoch, C.; Ladner, D.A. "Computational Fluid Dynamics (CFD) Simulations of Forward Osmosis (FO) and Pressure Retarded Osmosis (PRO)."

Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2016).

Holtman, K.; Mettlen, H.; Knapp, M.; Ladner, D.A. "Correlating water quality and kidney stone incidence in South Carolina." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2016).

Carpenter, K.; Bourne, K.; Wang, B.; Ding, F.; Ladner, D.A. "Hyperbranched Polymers as Oil Dispersants: Influence of Salinity, pH, and Concentration on Dispersion Effectiveness." Poster presentation at the Oil Spill and Ecosystem Science Conference, Tampa, FL (February, 2016).

Sarupria, S.; Husson, S.M.; Ladner, D.A.; Battiato, I. "DMREF: An integrated multiscale modeling and experimental approach to design fouling-resistant membranes." Materials Genome Initiative Annual Meeting, Bethesda, MD (January, 2016).

Bai, L.; Li, C.; Darnault, C.J.G.; Korte, C.; Ladner, D.A.; Daigle, H. "Wetting and Interfacial Tension Dynamics of Oil-Nanofluids-Surface Minerals System," Poster presentation at the AGU Fall Meeting, San Francisco, CA (December, 2015).

Xie, P.; Murdoch, L.; Ladner, D.A. "Mitigating membrane fouling with sinusoidal spacers." Poster presentation at the Water Quality Technology Conference, Salt Lake City, UT (November, 2015).

Xie, P.; Murdoch, C.; Ladner, D.A. "Sinusoidal Spacers for Mitigating Fouling in Reverse Osmosis." Poster presentation at WEFTEC, Chicago, IL (September, 2015).

Brown, M.; Amaral, P.; Ladner, D.A. "Evaluating the use of powdered activated carbon associated with microfiltration for the removal of trace contaminants in water treatment." Poster presentation at the South Carolina Environmental Conference (SCEC), Myrtle Beach, SC (March, 2015).

Cai, J.; Ladner, D.A. "Hollow fiber microfiltration bench scale experiments." Poster presentation at the South Carolina Environmental Conference (SCEC), Myrtle Beach, SC (March, 2015).

Steele, M.; Anctil, A.; Ladner, D.A. "Sustainable wastewater treatment in small communities: Comparing life cycle impacts of algaculture and conventional systems." Poster presentation at the South Carolina Environmental Conference (SCEC), Myrtle Beach, SC (March, 2015).

Ersan, M.S.; Ladner, D.A.; Karanfil, T. "Reducing the formation of disinfection byproducts using nanofiltration." Poster presentation at the South Carolina Environmental Conference (SCEC), Myrtle Beach, SC (March, 2015).

Xie, P.; Murdoch, L.; Ladner, D.A. "Sinusoidal Spacers for Mitigating Fouling in Reverse Osmosis." Poster presentation at the South Carolina Environmental Conference (SCEC), Myrtle Beach, SC (March, 2015).

Partlan, E.T.; Ladner, D.A. "Microfiltration of superfine carbon for drinking water treatment: Effects of source water characteristics and coagulants." Poster presentation at the Membrane Technology Conference, Orlando, FL (March, 2015).

Ersan, M.S.; Ladner, D.A.; Karanfil, T. "The Release of NDMA Precursors from Nanofiltration Membranes and Their Cleaning." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2014).

Li, M.; Ladner, D.A. "Effects of Natural Organic Matter on Contaminant Removal by Superfine Powdered Activated Carbon Coupled with Microfiltration Membranes." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2014).

Tu, Y.; Xie, P.; Steele, M.M.; Ladner, D.A.; Geitner, N.K.; Ke, P.C.; Ding, F. "Dendritic Polymers as Biocompatible Dispersants for Oil Spill Mitigation." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2014).

Xie, P.; Murdoch, L.; Ladner, D.A. "Sinusoidal Spacers for Mitigating Concentration Polarization and Biofouling in Reverse Osmosis." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2014).

Geitner, N.K.; Powell, R.R.; Bruce, T.F.; Andorfer, R.E.; Ladner, D.A.; Ding, F.; Ke, P.C. "Effects of Dendrimer Oil Dispersants on *Dictyostelium discoideum*." Poster presentation at the Gulf of Mexico Oil Spill & Ecosystem Science Conference, Mobile, AL (January, 2014).

Ladner, D.A.; Xie, P.; Tu, Y.; Geitner, N.K.; Powers, S.; Whelton, A.; Ke, P.C. "Dendritic polymers as oil spill dispersants: Effectiveness and toxicity compared to Corexit 9500A." Poster presentation at the Association of Environmental Engineering and Science Professors (AEESP) Education and Research Conference, Golden, CO (July, 2013).

Partlan, E.; Ladner, D.A. "Dissolved CO₂ - An alternative for cleaning inorganic scale from RO membranes." Poster presentation at the North American Membrane Society (NAMS) annual meeting, Boise, ID (June, 2013).

Laird, C.; Steele, M.M.; Ladner, D.A. "Bioprospecting to discover local algae for biofuel production." Poster presentation at the 8th Annual ACC Meeting of the Minds, Winston-Salem, NC (April, 2013).

Steele, M.M.; Anctil, A.; Ladner, D.A. "Net Environmental Benefit Approach To Life Cycle Assessment For Algal Integration At Wastewater Treatment Plants." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2013).

Li, M.; Ladner, D.A. "Effects of aggregation state on flux reduction by superfine powdered activated carbon on microfiltration membranes." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2013).

Partlan, E.; Ladner, D.A. "Dissolved CO₂ – An Alternative for Cleaning Inorganic Scale from RO Membranes." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2013).

Tu, Y.; Xie, P.; Geitner, N.K.; Ke, P.C.; Ladner, D.A. "Dendritic polymers as biocompatible oil spill dispersants: molecular interactions and effectiveness." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2013).

Ladner, D.A.; Geitner, N.K.; Steele, M.M.; Xie, P.; Bhattacharya, P.; Chen, R.; Whelton, A.; Powers, S.; Ke, P.C.; "Dendritic polymers as biocompatible oil spill dispersants." Poster presentation at the Gulf of Mexico Oil Spill & Ecosystem Science Conference, New Orleans, LA (February, 2013).

Steele, M.; Carey, D.; Ladner, D.A. "Mixotrophic growth of *Chlorella protothecoides* for wastewater treatment: Effects of retention time on membrane harvesting, treatment, and productivity." Poster presentation at The 2nd International Conference on Algal Biomass, Biofuels and Bioproducts, San Diego, CA (June 2012).

Majahan, P.; Sun, Y.; Ladner, D.A. "Enabling renewable-energy driven reverse osmosis desalination using integrated compressed gas energy storage—bench-scale experiments and modeling." Poster presentation at the CleanTech Conference and Showcase 2012, Santa Clara, CA (June 2012).

Carey, D.; Steele, M.; Ladner, D.A. "Algal dewatering by microfiltration: membrane flux improvement with NaCl addition in a stirred filtration unit." Poster presentation at The 2nd International Conference on Algal Biomass, Biofuels and Bioproducts, San Diego, CA (June 2012).

Mahajan, P.; Sun, Y.; Ladner, D.A. "Enabling wind-energy driven reverse osmosis desalination using integrated compressed gas energy storage—bench-scale experiments and modeling." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March 2012).

Xie, P.; Ladner, D.A. "Sinusoidal- and Helical-Flow Spacers for Energy Reduction and Fouling Mitigation in Reverse Osmosis Desalination." Poster

presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March 2012).

Partlan, E.; Ladner, D.A. "Reverse Osmosis under Transient Power Conditions: A look at membrane concentration polarization behavior when the transmembrane pressure is dynamic." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March 2012).

Carey, D.; Steele, M.; Wolniak, R.; Cotterman, T.; Ladner, D.A. "Algae dewatering by microfiltration: effect of growth stage on filtration and membrane flux improvement by NaCl flocculation." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March 2012).

Steele, M.; Carey, D.; Mistry, P.; Ladner, D.A. "Assessing and reducing energy requirements for membrane-based algal biomass harvesting." Poster presentation at the AEESP Education and Research Conference, Tampa, FL (July, 2011).

Xie, P.; Ladner, D.A. "Helical-flow reverse osmosis membrane modules for reduced energy consumption and fouling control." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2011).

Ellerie, J.; Ladner, D.A.; "Adsorptive activated carbon coatings on ultrafiltration membranes for trace contaminant removal." Poster presentation at the South Carolina Environmental Conference, Myrtle Beach, SC (March, 2011).

Ladner, D.A.; Jurevis, J.A.; Clark, M.M.; "Conditioning films formed by algal biopolymers in seawater reverse osmosis desalination," Poster presentation at the 7th Leading Edge Conference on Water and Wastewater Technologies, International Water Association, Phoenix, AZ (June, 2010).

Ladner, D.A.; Steele, M.M.; Weir, A.; Hristovski, K.; and Westerhoff, P. "Nanoparticle rejection by microfiltration and ultrafiltration membranes," Poster presentation at the International Conference on the Environmental Implications of Nanotechnology, Los Angeles, CA (May, 2010).

Ladner, D.A.; Clark, M.M. "Characterization of Reverse Osmosis Membrane Foulants in Seawater Desalination," Poster presentation at the EPA Graduate Fellowship Conference, Washington, DC, (2006).

HONORS AND AWARDS

Distinguished Service Award for outstanding service as Chair of the Student Services Committee of AEESP, 2016.

Membrane Treatment Best Paper award from the Journal of the American Water Works Association. Awarded for the paper Lewis, D.O., Ladner, D.A., Karanfil, T. "Source water and microfiltration plant manganese control study." *Journal American Water Works Association*, **105**, E480-E495 (2013).

Membership Award from the South Carolina Section of the American Water Works Association, 2013.

Certificate of Merit from the American Chemical Society (ACS) for our presentation entitled "Functionalized nanoparticles as removable membrane coatings" at the Fall 2011 meeting in Denver, CO. Graduate student Meg Smith and REU student Carley Barnard were coauthors.

Best Student Paper Award, Membrane Technology Conference, Memphis, TN, (2009).

Larson Aquatic Research Support (LARS) Scholarship, American Water Works Association (AWWA), (2005).

Cramer Award, New Mexico Institute of Mining and Technology, (2003).

Paige Ashman Award, NMIMT Department of Environmental Engineering, (2003).

SPONSORED RESEARCH

Industrial Assessment Center, "Energy Efficiency for the Growing South Carolina Manufacturing Industries," Department of Energy, Co-Principal Investigator, \$1,605,518, (\$176,607), (2016-2021).

"Development of a Field-Deployable Membrane Bioreactor/Separator for Rendering Facility Wastewater Treatment," Animal Co-products Research and Education Center (ACREC), Principal Investigator, \$39,911, (\$37,000), (2016-2017).

"DMREF: Collaborative Research: An Integrated Multiscale Modeling and Experimental Approach to Design Fouling-Resistant Membranes," National Science Foundation (NSF), Co-Principal Investigator, \$969,089, (\$319,799), (2016-2020).

"Pollution Prevention (P2) in an Economy-Energy-Environment (E3) Partnership in South Carolina," Environmental Protection Agency (EPA), Co-Principal Investigator, \$160,000, (\$32,000), (2015-2017).

"EAGER: UVC microbial inactivation within model water treatment membrane modules via X-ray-driven radioluminescence," National Science Foundation (NSF), Co-Principal Investigator, \$64,214, (\$16,054), (2015-2016).

"High-performance membranes for engineered osmosis," National Science Foundation (NSF), Co-Principal Investigator, \$359,066, (\$35,907), (2015-2019).

“REU Site: Interfaces and Surfaces,” National Science Foundation (NSF), Co-Investigator, \$330,000, (\$10,890), (2015-2018).

“Partnerships for Sustainability: Pollution Prevention Education and Assessment,” Environmental Protection Agency (EPA) Region 4 and Duke Energy, Co-Principal Investigator, \$120,000, (\$30,000), (2014-2016).

“Coupling small-particle adsorbents with membranes for trace-contaminant removal in water treatment,” National Science Foundation (NSF), Principle Investigator, \$325,285, (\$130,114), (2012-2016).

“Dendritic Polymers as Biocompatible Dispersants for Oil Spill Remediation,” Environmental Protection Agency (EPA), Principal Investigator, \$500,000, (\$250,000), (2012-2016).

“QR Codes as a sustainability research tool,” Clemson University Research Grant Committee (URGC), Principal Investigator, \$9,163, (\$4,582), (2012).

“REU Site: Advanced Functional Membranes,” National Science Foundation, Senior Investigator (1 of 5), \$326,731, (\$16,337), (2011-2013).

“Phytoplankton (Red Tide) Fouling of Pretreatment and Reverse Osmosis Membranes in Seawater Desalination,” Funding agreement #04201, U.S. Department of Energy, administered by the Water Research Foundation, Co-principal Investigator, \$150,000, (\$150,000), (2009-2010).

“Characterization of Membrane Foulants in Seawater Reverse Osmosis Desalination.” Funding agreement #05FC811169, U.S. Bureau of Reclamation, (Lead author under PI), \$125,000 (\$100,000), (2005 to 2006).

OTHER SPONSORED ACTIVITY

“Utilization of Dissolved CO₂ for the Prevention and Removal of Foulants from Reverse Osmosis Membranes—Research Fellowship for Erin Partlan,” National Water Research Institute and the American Membrane Technology Association, \$10,000, (\$10,000), (2014-2016).

Post-Doctoral Fellow Support for investigations into “The Society – Water Nexus.” \$50,000, (\$25,000), (2014-2015).

“TIGER: DMREF: Computer Aided Design of Antifouling Membranes for Water Purifications,” Large proposal development grant from the College of Engineering and Science, \$10,000, (\$3,000), (2014-2015).

“Separate growth Environments for Optimization of Nutrient Use in Algal Culturing Systems – Graduate Research Fellowship for Muriel Steele,” National Science Foundation (NSF), \$126,000, (\$126,000), (2012-2015).

“Characterization of Reverse Osmosis Membrane Foulants in Seawater Desalination,” U.S. Environmental Protection Agency STAR Doctoral Fellowship #91678301-0. \$20,000 per year stipend, \$6,000 per year tuition and fees, \$5,000 per year expense allowance, (2006-2009).

POSTDOCTORAL SCHOLAR ADVISING

Current Postdocs

Boateng, Linkel, “Computer Modeling to Design Fouling-Resistant Membranes,” (November 2015 –). (Co-advised by Sapna Sarupria and Scott Husson)

Previous Postdocs

Apul, Onur, “Functionalizing dendritic polymers to decrease toxicity for oil spill dispersion applications,” (October 2014 – March 2015).

Singh, Dhananjay, “Development of pressure retarded osmosis (PRO) membranes for energy production with salinity gradients,” (April 2014 – May 2015). (Co-advised by Scott Husson)

GRADUATE STUDENT ADVISING

Doctoral Graduates

Xie, Peng, (PhD), “Simulation of reverse osmosis and osmotically driven membrane processes,” (December 2016).

Steele, Muriel M., (PhD), “Quantifying sustainability in wastewater treatment: Examples in algaculture,” (August 2016).

Masters Graduates

Carpenter, Kristen (MS), “Hyperbranched polymers as biocompatible oil dispersants: Influence of salinity, pH, and concentration on dispersion effectiveness,” (August 2016).

Brown, Misty (MS), “Desorption kinetics of trace organic contaminants and natural organic matter from superfine powdered activated carbon,” (August 2016).

Quinter, Kayla (MS), “Evaluating water withdrawals and water availability for projected thermoelectric power growth in the Eastern Interconnection of the United States,” (August 2016).

- Liu, Jiayu (MS non-thesis), "Automated bench-scale ceramic membrane testing system," (May 2016).
- Cai, Jiankun (MS non-thesis), "Effect of Water Quality Parameters on Membrane Fouling in Algae Harvesting with Crossflow Microfiltration," (December 2015).
- Burdette, Benjamin (MS non-thesis), "Chloride to sulfate mass ratio analysis at the Witty Adkins water treatment plant," (May 2015).
- King, Valton (MS non-thesis), "Energy requirements for algal harvesting from wastewater treatment processes," (May 2015).
- Tu, Ying (MS), "Dendritic polymers as biocompatible oil spill dispersants: Effectiveness and mechanisms with crude oil," (August 2014).
- Li, Mengfei (MS), "Effects of natural organic matter on contaminant removal by superfine powdered activated carbon coupled with microfiltration membranes," (August 2014).
- Sawant, Aniruddha (MS non-thesis), "Hydrothermal carbonization of algae," (May 2014).
- Partlan, Erin (MS), "Dissolved carbon dioxide for scale removal in reverse osmosis," (December 2013).
- Sun, Ying (MS), "Modifying reverse osmosis for compatibility with wind power," (August 2013).
- Zhou, Minjie (MS non-thesis), "Continuous algal culture crossflow filtration," (May 2013).
- Mahajan, Pooja (MS), "Reverse osmosis desalination with integrated compressed air energy storage: Conceptual design and modeling," (December 2012).
- Smith, Megan, (MS), "Functionalized nanoparticles as removable coatings for reverse osmosis membranes," (August 2012).
- Ellerie, Jaclyn, (MS), "Carbonaceous adsorbents as coatings for ultrafiltration membranes," (May 2012).
- Carey, Dan (MS non-thesis), "Membrane fouling mechanisms during algal microfiltration: can monovalent salts improve flux?" (May 2012).
- Mistry, Pooja (MS non-thesis), "Characterization of Milliken Eminus material for algal biofuel separations," (December 2011).

Current Graduate Advising

Partlan, Erin (PhD), "Interactions of superfine powdered activated carbon with microfiltration membranes," (Expected graduation: 2017).

Zhou, Zuo (PhD), "Computational modeling of patterned membranes for fouling control," (Expected graduation: 2020).

Sharmin, Rasna (MS), "Exploring computational design of fouling-resistant membranes," (Visiting student from Technical University of Munich; Expected graduation: 2017).

Batts, Joseph (MS, Co-advisor), "Design of a ceramic membrane lab-on-a-pallet for rendering plant wastewater treatment," (Expected graduation: 2017).

Guerrero, Victoria (MS), "Dissolved CO₂ for fouling control in membrane systems," (Expected graduation: 2018).

Qi, Weiming (MS), "Automation of a ceramic membrane lab-on-a-pallet for rendering plant wastewater treatment," (Expected graduation: 2018).

Other Advising

Amaral, P. (PhD, Co-advisor) "Avaliacao da utilizacao de carvao ativado em po supe4rfino (S-CAP) associado a membrana de microfiltracao (MF) na remocao de atrazina de aqua de abastecimento." Federal University of Santa Catarina, (August 2016).

TEACHING

Courses Taught (Beginning Fall 2010)

EES 3030, Water Treatment, F14, F15, F16.

EES 4020/6020, Water and Wastewater Treatment, team-taught with David Freedman F11, F12, F13; solo taught S14, S15.

EES 4030 (aka EES 3050 for F14 and after), Water and Wastewater Treatment Laboratory (team-taught with David Freedman), F11, F12, F13, F14, F15, (team-taught with Sudeep Popat (F16).

EES 4750, Environmental Engineering Capstone Design, S13, S14, S15, S16, S17.

EES 4850/6850, Hazardous Waste Management, S11.

EES 4860/6860, Pollution Prevention and Industrial Ecology, F10, F11, F12.

EES 4900 (and ENGR 1900), Leading for our Environment and Future (LEAF) Creative Inquiry (team-taught with Jennifer Goree, Leidy Klotz, Catherine Mobley, and Brenden Kendall), F11, S12, F12, S13.

EES 4900, Kidney Stone Correlations with Water Quality in South Carolina, F15, S16, F16, S17.

EES 8020, Principals of Environmental Engineering, F15, F16.

EES 8830, Special Topic: Membrane Processes, F11.

ENGR 1900, Freshman Engineering Creative Inquiry, F10, F11.

UNIVERSITY AND PUBLIC SERVICE

Committees

Department: Member, Undergraduate Program Committee (2010-)
Member, Faculty Search Committees, (2011-2017)
Theme Leader, Clemson Water Energy Consortium, (2014-)

Other Service

Faculty Advisor, American Water Works Association, Student Chapter (2011-)

Updated January 7, 2017.