

Anaerobic membrane bioreactors as a next-generation technology to address the food-energy-water nexus

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Brannon Andersen (brannon.andersen@furman.edu) came to Furman in 1994 after completing his Ph.D. at Syracuse University. He is a biogeochemist that studies how human activities have transformed the landscape and altered the biogeochemical cycles of carbon and nitrogen. Most of his research focuses on the impacts of urbanization on biogeochemical processes in rivers and the impacts of farm management on soil organic carbon and nitrogen content. He has also published over 28 journal articles/book chapters and has been awarded over \$2 million in external grants. Dr. Andersen is chair of the department (2009-2014, 2016 - present), was named

the Henry and Ellen Townes Professor of Earth and Environmental Sciences (1998-2000), a South Carolina Independent Universities and Colleges Teacher of Excellence (2008), the Howard Hughes Medical Institute Distinguished Undergraduate Research Mentor (2010), and has received the Council on Undergraduate Research Geosciences Division Undergraduate Research Mentor Award (2017). Dr. Andersen is also an Adjunct Professor in the Department of Environmental Engineering and Earth Sciences at Clemson University and an Academic Council Member of the Institute of Political Ecology in Zagreb, Croatia. For the 2014-2015 academic year, Dr. Andersen was a visiting professor and Fulbright Scholar at the University of Zadar in Zadar, Croatia.

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Gary Amy (gamy@clemson.edu) is presently Dean's Distinguished Professor in the College of Engineering and Science at Clemson University where he is coordinating the Water-Energy Consortium. He is also Visiting Professor in the Chemical and Biomolecular Engineering Department at the National University of Singapore as well as Emeritus Professor, and Former Director, in the Water Desalination and Reuse Center at the King Abdullah University of Science and Technology (KAUST). Prior to KAUST, he held faculty positions at the Technical University of Delft, the University of Colorado at Boulder, and the University of Arizona. Over a career of almost 40 years, Dr. Amy's main areas of expertise have been in drinking water treatment and wastewater reclamation/reuse, with specific expertise in membrane rejection and fouling, selective adsorption, natural organic matter characterization, disinfection by-product formation and control, and natural systems. Dr. Amy's present research focus is on low-energy membrane-based desalination technologies. He has published over 400 articles in refereed publications, and supervised more than 50 PhD students. Dr. Amy is the recipient of the 2017 A. P. Black Research Award from the American Water Works Association.

Sean Norman (rsnorman@mailbox.sc.edu) is a molecular microbial ecologist and an associate professor in the Department of Environmental Health Sciences at the University of South Carolina. He received a MS in Environmental Studies from the College of Charleston, and a PhD in molecular microbiology from the Marine Biomedicine and Environmental Science Center at the Medical University of South Carolina. In 2006, he completed a postdoctoral research fellowship at the School of Environmental and Biological Sciences at Rutgers University before moving to USC in 2006. His research program broadly focuses on using molecular--based approaches to examine how microorganisms influence ecosystem and human health. His laboratory is currently examining the links between climate change and microbial communities to better understand how climate alters ecosystems. A second research foci of his lab is examining local and global patterns of microbial antibiotic resistance gene flow to better understand the socio--ecological coupling of resistance. To explore these foci, Dr. Norman's lab

relies mostly on high throughput DNA sequencing methodologies, requiring the development of bioinformatic and high performance computing methods of data analysis.

David Ladner (ladner@clemson.edu) joined the Department of Environmental Engineering and Earth Sciences at Clemson University in 2010 after completing a PhD in Environmental Engineering at the University of Illinois at Urbana-Champaign and a postdoc at Arizona State University. The Ladner research group studies physical-chemical processes for applications such as the removal of pesticides from drinking water, the removal of salt from seawater, the dispersion of oil in spill remediation, and the treatment of high-strength industrial wastewater. We specialize in automated and remotely-deployable membrane filtration systems and computational fluid dynamics (CFD) modeling for process design. The ultimate goal is to increase sustainability and resiliency by lowering energy and life-cycle costs in drinking water and wastewater infrastructure.