

EEE Research Seminar

Date: April 16, 2024, at 10:30 AM

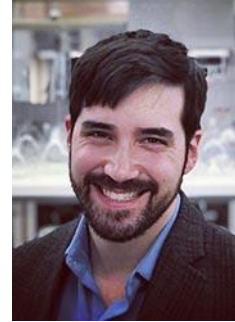
Location: POTR 234 (Fu Room)

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Sustainable Desalination for Addressing Water Scarcity: Achieving High Efficiency and Integrating with Renewables

Abstract

We are facing global water crises, with 2/3 of humanity expected to experience water scarcity. Water resources are tapped out, with half the world's population using all or almost all of their local renewable water from rainfall. To expand these resources, our main options are water reuse and desalination of saline sources. Both approaches usually involve desalination by reverse osmosis membranes, but can also include thermal processes. In this talk, I will discuss new configurations for more efficient reverse osmosis, alternative thermal configurations, and hybrids with renewable energy. By combining engineering process design and the nanoengineering of new materials, we can improve the energy efficiency and sustainability of these approaches, and help achieve metrics for cost competitiveness.

Bio

David Warsinger is an Assistant Professor at Purdue University, affiliated with Mechanical Engineering and the Birck Nanotechnology Center and Herrick Labs. David's research uses thermofluids and materials science for improving the performance and capabilities of sustainable technologies. His applications include research for desalination, water treatment, water harvesting, membrane science, and HVAC systems. David completed his PhD at MIT with John Lienhard and was a PostDoc at Yale University with Menachem Elimelech. David is a coauthor of over 110 scientific contributions, comprising journal papers, conference papers, patents, and book chapters. He has won 5 international awards for young scientists and receives over 1000 citations per year.