

2014-15 AEESP Distinguished Lecture Series

Dr. Bruce Logan

Energy Generation from Water: Just Add Salt

Professor Bruce E Logan is an Evan Pugh Professor, the Stan & Flora Kappe Professor of Environmental Engineering, and Director of the Engineering Energy & Environmental Institute at Penn State University. His current research efforts are in bioenergy production and the development of an energy sustainable water infrastructure. Dr. Logan has mentored over 110 graduate students and post docs, and is the author or co-author of over 380 refereed publications (h-index = 91) and several books. He is the founding Deputy Editor of the new ACS journal *Environmental Science & Technology Letters*, and a member of the US National Academy of Engineering (NAE), and a fellow of AAAS, the International Water Association (IWA), the Water Environment Federation (WEF), and the Association of Environmental Engineering & Science Professors (AEESP). Dr. Logan is a visiting professor at several universities including Newcastle University (England) and Tsinghua University (China), with ties to several other universities in Saudi Arabia,



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The amount of power that could be generated from the salinity difference between river water and seawater is ~2000 GW. The evaporation and condensation of thermal salt solutions, such as ammonium bicarbonate, could also enable the capture of more than 1000 GW of waste heat energy at industries and existing power plants in the US alone. Three technologies are primarily being investigated to capture energy from solutions with high and low salinities: pressure retarded osmosis (PRO), based on creating pressurized solutions that can power turbines; reverse electrodialysis (RED), where electrochemical potential is captured directly as electrical current using stacks of membranes; and capacitive mixing (CapMix) and battery like reactions that are used in cyclical charging and discharging processes to generate net electrical power. In this lecture, Dr. Logan will primarily focus on RED and Capmix, and show how these salinity gradient energy approaches can be used alone or integrated into different types of microbial electrochemical technologies such as microbial fuel cells. The use of these combined technologies could enable net power generation from wastewater treatment plants located on coastal sites.

February 27, 2015
10:00 AM to 1:00 PM
UCF Live Oak Event Center

Please Register at:

<https://ucfcece.wufoo.com/forms/2014-aeesp-distinguished-lecture-series-at-ucf/>

Student will have the opportunity to present their research during this lecture. Please indicate if you will be bringing a poster when you register.



University of Central Florida

Civil, Environmental & Construction Engineering Department

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