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Using Low-Cost Renewable Energy for Waste Valorization

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MONTCLAIR STATE UNIVERSITY

The Doctoral Program in Environmental Science & Management and MSU Sustainability Seminar Series Present:

Using Low-Cost Renewable Energy for Waste Valorization

WHEN: January 28, 4:00 pm WHERE: CELS 120 lecture hall

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Z. Jason Ren (@zjasonren) directs the WET Lab (Water & Energy Technologies) at Princeton. His lab analyzes reaction mechanisms and develop processes for energy and resource recovery during environmental processes such as wastewater treatment, environmental remediation, and water desalination (https://ren.princeton.edu). His group has published papers in Nature Energy, Nature Sustainability, Nature Climate Change, Science Advances, Environmental Science & Technology, Water Research, and other journals. Dr. Ren completed his Ph.D. in Environmental Engineering at Penn State University.

With renewable electricity costing 2 cents per kwh to even negative in some places during some periods, how to use cheap renewable energy to maximize waste valorization can become an interesting direction. In this talk, I will discuss some recent progress in identifying the synergy between microbial electrochemistry and photoelectrochemistry that led to the development of new materials and systems for spontaneous high rate H2 production from wastewater and sunlight. I will also report some development on functional hydrophobic gas transfer membrane electrodes that enabled specific resource recoveries from wastewater and CO2. While we have been focusing on energy-neutral wastewater treatment, I argue maybe we can start to think broadly on carbon-negative and dollar-positive wastewater treatment beyond energy production.

For more information please contact Dr. Yang Deng at dengy@mail.montclair.edu