

Environmental Engineering Candidate Seminar

Cheng Li, Ph.D.

Faculty Research Associate
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Dr. Cheng Li is a faculty research associate in the benthic biogeochemistry lab of Distinguished Professor Clare E. Reimers at the College of Earth, Ocean, Atmospheric Science in Oregon State University (OSU). He is an environmental engineer who is enthusiastic about investigating and enriching novel microorganisms dwelling in the sediment that can donate and accept electrons extracellularly. By manipulating the activities of these microbes through a pair of electrodes, measurable electrical current can be captured at the scale from nano- to centimeter and applied to assorted purposes of environmental engineering including wastewater treatment, bioremediation, resource recovery, and renewable energy generation. He received his doctoral degree in 2017 at the Department of Biological & Ecological Engineering in OSU under the guidance of Dr. Hong Liu. The focus of his dissertation was the electrical conductivity of microbial biofilms in anaerobic wastewater treatment systems.

Research Seminar

Monday, February 7, 2022
11:00 AM - 12:00 PM
ENGR 326

Utilizing the Power of Direct Extracellular Electron Transfer to Create a Sustainable Future

Direct extracellular electron transfer (DEET) is an important process for microorganisms and for engineers to harness the energy within microbial metabolism. In this seminar, I will introduce state-of-the-art engineering efforts that study cable bacteria and microbial fuel cells. Cable bacteria are a type of filamentous microorganisms that perform centimeter-scale DEET in the topmost layer of sediment. The unprecedented long-range bioelectric current can be utilized to remediate our environment. Meanwhile, microbial fuel cells are devices that capture the electric current from the DEET of microorganisms. The utilization of MFCs can generate renewable energy to support remote aquatic sensors, reduce energy consumption in wastewater treatment, and even capture the electrogenic microorganisms.

Teaching Seminar

Monday, February 7, 2022
3:30 PM - 4:30 PM
UWRL 301

Microbial Fuel Cells in Wastewater Engineering

Microbial fuel cells (MFCs) is an anaerobic wastewater treatment technology that can alleviate the need for aeration during treatment and generate electricity from oxidizing the organics. In this lecture, we will introduce the fundamental theory behind MFCs, illustrate the current development, and show how to estimate the energy that can be recovered from producing electricity.

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