

**Environmental Engineering**

**and Earth Sciences**

**EEES Department Seminar**

**Biotechnology-Driven Resource Recovery:**

**Advancing the Future of Environmental Engineering**

PRESENTED BY

**Chungheon Shin**

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**Abstract**

Wastewater, once considered a burden, is now recognized as a valuable resource with the potential to enhance environmental sustainability. Conventional treatment practices contribute significantly to energy consumption and greenhouse gas emissions, highlighting the need for a paradigm shift. This seminar explores how biotechnology and physicochemical processes can transform wastewater into a resource to improve energy, water, and food resilience. Microorganisms play a crucial role in source separation, capturing carbon and electrons from organic contaminants, while membrane-based physicochemical processes enhance separation efficiency and scalability. Looking ahead, this seminar will explore research directions in advancing biotechnology and developing predictive biological modeling platforms to drive the future of environmental engineering.

**Bio**

Chungheon Shin is the Director of Research at the Codiga Resource Recovery Center (CR2C), leading research projects at CR2C and Silicon Valley Clean Water on energy, water, and nutrient recovery. He earned his Ph.D. in Environmental Engineering from Inha University (South Korea), where he developed a net-energy-producing anaerobic membrane bioreactor to recover both clean water and energy from domestic wastewater. He was a postdoctoral scholar in the Department of Civil and Environmental Engineering at Stanford University.

**12:00 PM**

**Monday, February 3, 2025**

**Rich Lab Auditorium**

***“Attendance is mandatory for graduate students enrolled in EES 8610, EES 9610, and GEOL 8610”***