

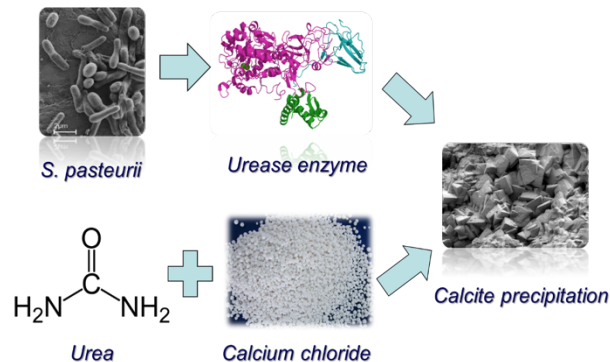
CEE691 Seminar Series in Spring 2017

The Department of Civil and Environmental Engineering
University of Hawaii at Manoa

Microbially Induced Calcium Precipitation (MICP): Opportunities and Challenges in Geotechnical Engineering

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Abstract Microbially induced calcium precipitation (MICP), a bacteria-induced bio-mineralization process, has started to be investigated extensively in civil, environmental and infrastructure engineering applications. The urea hydrolysis by indigenous or exotic urease-producing bacteria is one of the most commonly pathways for bio-mediated calcium carbonate precipitation. The produced calcium carbonate precipitation preferentially accumulates at particle-particle contacts. Therefore, it contributes to additional cementation at particle-particle contacts (pore throat). Because of this preference of cementation at pore throat locations, large pores are kept relatively open so that the change in permeability is rather small even though the cementation enhances the soil stiffness. Meanwhile, the nature of microorganisms and restricting environmental conditions (e.g., nutrients, oxygen, and temperature) may adversely affect the effectiveness of MICP when it is used in sub-surface condition. In this presentation, existing geotechnical applications of MICP are introduced, with benefits and limitations analyzed. Feasibility of this technique to address urgent challenges in Hawaii is also discussed.

Tuesday, February 7th
2:30 p.m. – 3:20 p.m.

Crawford Hall
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