

**Department of Structural Engineering
University of California, San Diego
SE 290 Seminar**



Professor Greg Siemens
Department of Civil Engineering at Royal Military College Canada
Research Director in the GeoEngineering Center

**"Transparent Soil for Laboratory Investigations of Multi-phase Flow,
Carbon Dioxide Storage, and Heat Transport"**

Wednesday, April 11, 2018

12:00 pm - 12:50 pm, Center Hall, Room 214

<https://structures.ucsd.edu/seminars>

Abstract

Many experiments, field studies, and simulations are limited by the number of physical measurement points that can be contained within the study or used for comparison to a model. Even in highly instrumented experiments or field sites, a relatively small number of data points are available. Transparent soil, where the indices of refraction of the soil grains and the pore fluid are matched, overcomes this limitation in hydraulic, thermal, and mechanical experiments of geo-materials. Using digital cameras to capture transparent soil experiments allows for spatial resolution down to the millimeter scale of moisture content, temperature, and/or displacement across experimental domains. This highly visual presentation will describe development of transparent soil and display the high temporal and spatial resolution capabilities in multi-phase flow, carbon dioxide storage, and heat transport experiments.

Biography

Dr Greg Siemens is a Professor in the Department of Civil Engineering at Royal Military College of Canada and Research Director in the GeoEngineering Centre at Queen's-RMC. He trained at the University of Manitoba for his Bachelors and Phd. He is cross-appointed to the Civil Engineering Departments at Queen's University and University of British Columbia – Okanagan. Dr Siemens expertise is in unsaturated soil mechanics with focus on expansive soils, deep geologic repositories, cold regions, near-surface hydrology, and geosynthetics.

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*Sponsored by Professor John McCartney
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