

Weekly Seminar: Spring 2011

Date: Friday, February 4, 2011

Time: 11:00 AM

Location: Gilman Hall 50 (Marjorie M. Fisher Hall)

Speaker: David DiCarlo

Title: *"Can Dynamic Multi-Phase Flow Models Describe Saturation Overshoot and Preferential Flow?"*

Abstract: Gravity driven preferential flow paths (fingers) can be observed when a dense viscous fluid displaces a lighter, less viscous fluid in a porous media; the classic example being water infiltrating a soil and displacing air. Interestingly, 3-D preferential flow only occurs under conditions when non-monotonic saturation profiles are observed during 1-D infiltration (also known as saturation overshoot). Neither preferential flow nor saturation overshoot can be described by traditional continuum multi-phase flow models. Instead, continuum models require additional extensions which are still open to much question. In this talk, we describe the extensive data set obtained on saturation overshoot in well sorted and compare it to proposed dynamic multi-phase flow extensions.

Bio: Dr. David DiCarlo is an Assistant Professor in the Department of Petroleum & Geosystems Engineering at the University of Texas at Austin. His research interests include: applying advanced experimental techniques (such as synchrotron radiation, CT scanning, and acoustical measurements) to understanding fluid flow in porous media; pore-scale physics, and preferential and compositional displacements. He has written over 40 refereed publications.