Weekly Seminar: Spring 2011

Date: **Friday, February 11, 2011**

Time: 11:00 AM
Location: Gilman Hall 50 (Marjorie M. Fisher Hall)
Speaker: Markus Hilpert (Johns Hopkins University)
Title: *"Incorporation of Dynamic Contact Angle into Models for Two-Phase Flow in Porous Media."*

Abstract

Traditional Darcy-scale theories for two-phase flow in porous media assume that the capillary pressure is in equilibrium, even though simple laboratory experiments have shown that this assumption may not always be appropriate. In recent years, the traditional theory has been modified in several ways in order to allow for a nonequilibrium capillary pressure. None of these approaches represents the effects of a dynamic contact angle that occurs at the pore scale.

I will present new analytical solutions for two-phase flow in capillary tubes that account for a dynamic contact angle. I will also present a theory that is based on the Green-Ampt approach and that accounts for the effects of a dynamic contact angle at the Darcy scale. This new theory describes column infiltration experiments that cannot be fully described by the traditional Green-Ampt approach.