



PIMS / AMI Seminar

Friday, February 1, 2013

3:00 p.m.

CAB 365



“Unconventional Oil and Gas Reservoir Modeling and Simulation”

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Abstract

Mathematical models have widely been used to predict, understand, and optimize complex physical processes in modeling and simulation of multiphase fluid flow in petroleum reservoirs. These models are important for understanding the fate and transport of chemical species and heat. With this understanding the models are then applied to the needs of the petroleum industry to design enhanced oil and gas recovery strategies.

While mathematical modeling and computer simulation have been successful in their applications to the recovery of conventional oil and gas, there exist a lot of challenges in their applications to unconventional oil and gas modeling. As conventional oil and gas reserves dwindle and oil prices rise, the recovery of unconventional oil and gas (such as heavy oil, oil sands, tight gas, and shale gas) is now the center stage. For example, enhanced heavy oil/oil sands recovery technologies are an intensive research area in the petroleum industry, and have recently generated a battery of recovery methods, such as cyclic steam stimulation (CSS), steam assisted gravity drainage (SAGD), vapor extraction (VAPEX), in situ combustion (ISC), hybrid steam-solvent processes, and other emerging recovery processes; horizontal well and hydraulic fracturing technologies have been very successful in the production of tight and shale gas reservoirs. This presentation will give an overview on challenges encountered in modeling and simulation of unconventional oil and gas reservoirs. It will also present some case studies for the applications of some recovery processes to heavy oilfields and shale gas reservoirs.

Refreshments will be served in CAB 649 at 2:30 p.m.