Other - Enabling Process Innovation through Computation (EPIC) Seminar Series

Unconventional Oil and Gas Reservoir Modeling and Simulation

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Patrick F. Taylor Hall 1502
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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, the recovery of unconventional oil and gas (such as heavy oil, oil sands, tight oil and gas, and shale oil and 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 oil and 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 applications of recovery processes to heavy oilfields and shale gas reservoirs.

Attend online at: http://lsu.webex.com/meet/nandakumar

Speaker's Bio:

Dr. Zhangxing John Chen is a Professor in the Department of Chemical and Petroleum Engineering, currently holds the NSERC/AI-EES/Foundation CMG Industrial Research Chair in Reservoir Simulation and AITF (iCORE) Industrial Chair in Reservoir Modeling, and is Director, iCentre for Simulation & Visualization, University of Calgary. His Ph.D. (1991) is from Purdue University, USA. He was a professor and reservoir engineer at Xi'an Jiaotong University, Peking University, University of Minnesota, Texas A&M University, ExxonMobil, and Southern Methodist University (SMU).

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