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**Next-Generation of Energy Efficient, Low Water Usage Heavy Oil Recovery Methods**

**Jalal Abedi**

**Wednesday, November 05, 2014**

**2:00 PM**

**Hungarian Section**

MOL Headquarter (Room #449-451 on the 4th floor)

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*Next-Generation of Energy Efficient, Low Water Usage Heavy Oil Recovery Methods’*

**Abstract:**

In-situ heavy oil recovery from oil-sand formations has become economically successful in the past two decades. Inventions and developments of recovery processes utilizing steam injection such as cyclic steam stimulation and steam assisted gravity drainage have contributed to this success. However, the major weak points of the current steam-based processes are their high-energy consumption, the large emission of greenhouse gases and the large consumption of fresh water. It has been found that the compound effects of solvents and heat on the viscosity of heavy oil can provide heavy crude production rates that could be equivalent to or higher than those from the injection of steam alone. In addition, solvent-assisted processes can also contribute to in situ upgrading, due to formation of two liquid phases, in order to produce the higher grades of oil than the original heavy oil. Thus, it is essential to determine the conditions that could potentially lead to situ upgrading.

Numerous schemes to utilize solvent and heat have been invented and patented. Each solvent-based process has showed promising results in laboratory-scale and pilot tests. However, there is a distinct lack of basic phase behavior data and mechanistic knowledge relevant to the solvent/heat-assisted recovery processes. The quantitative effects of solvent on bitumen viscosity, phase behaviors and transport mechanisms are also not well understood.

The objective of this talk is to provide quantitative mechanistic insights relevant to the solvent/heat assisted recovery processes. This knowledge is a prerequisite to the optimization of the solvent composition for the solvent injection processes.

**Biography:**

Jalal Abedi is a Professor of Chemical and Petroleum Engineering at the University of Calgary. He leads a world-class phase equilibrium research facility and a research group of twenty people that is involved in research related to experimental measurements of heavy oil/solvent/steam phase equilibrium and EOS modeling and simulation of transport processes. SHARP (solvent\heat- assisted recovery processes) research consortium is led by Dr. Abedi, who holds the NSERC Industrial Research Chair in Solvent Enhanced Recovery Processes. He has authored or co-authored more than 100 peer-reviewed papers.