

## **Advanced Computational Algorithms for modeling Hydraulic Fracturing Operations**

The revolution in the oil and gas industry brought about by the advent of non-conventional reservoirs has come accompanied with immense technical challenges. Chief among them is the ability to extract the sought hydrocarbons in a commercially-viable manner while minimizing environmental impact. The extraction of oil and gas from non-conventional tight shale reservoirs has been enabled by the so-called hydraulic fracturing process. At present this process is very costly in terms of energy consumption, use of massive quantities of water, sands and chemical. The lack of adequate simulation tools to analyze the mechanisms of rock fracturing as found in the complex environments of tight-shale reservoirs has been attributed as one of the main limitations in hydraulic fracturing science and engineering. The main objective of this symposium is to gather experts in the fields of computational fracture mechanics, rock mechanics, large-scale simulation and coupled flow-poromechanics to assess current state of the art in this area, its limitations, as well as discuss a possible path forward.

Papers submissions are encouraged in any area relevant to the simulation of hydraulic fracturing.