# RESERVOIR SYMPOSIUM

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*Reservoir Characterization for Energy Security*

## Discrete Fracture Network (DFN) Modeling & Applications

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### ABSTRACT

Known in the O&G and Mining industry as the Natural Fractures (NF) or Hydraulic Fractures (HF), these are integral parts of today's Subsurface Modeling Workflows.

Either in mining operations, conventional reservoirs development, unconventional reservoirs development, carbon storage development or in geothermal energy development Natural or Induced Fracture Networks do play a particularly significant role. Acting as a hydrocarbon storage-secondary porosity, enhanced reservoir permeability, drilling geohazards or caprock integrity risk, the Fracture Networks (FN) should be integrated into subsurface models to the best of our ability. Commonly used term for fractures representation within subsurface modeling workflows is "DFN Modeling" (Discrete Fracture Network Modeling).

As the main objective of any subsurface modeling, static, dynamic or geomechanical coupled simulation is to build representative subsurface model with the goal of being utilized in filed developments as: planning, risk mitigation, history matching or production forecast tool, representative DFN's are integral components of any subsurface modeling workflow. The uncertainty in DFN Modeling starts with fractures characterization uncertainty and progresses within 3D DFN Modeling Workflow itself. Minimizing that uncertainty contributes to overall uncertainty and filed developments cost reduction.

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