



DFNE 2021 – SESSION DESCRIPTIONS

DFN FUNDAMENTALS	GEOTHERMAL ENERGY
<ul style="list-style-type: none"> • Rock mass characterization • Geophysical and micro-seismic methods • Multi-porosity approaches for flow and solute transport • Discontinuity characterization methods • Synthetic rock mass strength and deformability • Rock block size and shape analysis • In situ and laboratory testing • Hybrid continuum / dis-continuum models • Numerical modelling of brittle fracture • Remote sensing (LiDAR and Photogrammetry) • Uncertainty and reliability in rock engineering 	<ul style="list-style-type: none"> • FORGE Project • LBNF/DUNE Research Lab • Geochemical DFN Models • Geothermal Energy from Sedimentary Basins • Coupled DFN Hydromechanics • HDR and EGS Stimulation Techniques • DFN Modeling of Subsidence
RADIOACTIVE WASTE MANAGEMENT	MINING
<ul style="list-style-type: none"> • Validation of the DFN Approach for Repository Licensing • Fractured Argillaceous Site Characterization • Fractured Crystalline Site Characterization • Channeling and Compartmentalization • Radionuclide Flow and Transport • Reactive Surface Area and Matrix Diffusion • DFN Approaches to Long-term Stability • Fractures, In Situ Stress, and Constructability • Canister Emplacement Hole and Cavern Resaturation • Safety Assessment in Fractured Rock • Discrete Fractures and Seismic Risk to Underground Facilities • Fracture Response to Climate Change and Glaciation 	<ul style="list-style-type: none"> • Large open pit mining • Deep underground mining • Blasting, Comminution, and Fragmentation • In Situ Leaching for Fractured Rocks • DFN Based Reserve Estimation • Rock bridges and en-echelon failure • Mine induced seismicity & rockbursts • Mine resource evaluation • Pillar stability • Block caving • Rock support & ground control • Subsidence
ENVIRONMENTAL	CIVIL ENGINEERING/INFRASTRUCTURE
<ul style="list-style-type: none"> • DNAPL Transport in Fractured Rocks • Bedrock Aquifers and Water Supply • Bioremediation of Fractured Aquifers • Multiple Porosity Approaches to Fractured Aquifers 	<ul style="list-style-type: none"> • Karst Hazards • Underground facilities • CO2 sequestration • Tunnels, slopes and foundations • Dam & hydro projects • Excavatability & TBM performance • Earthquake engineering & foundations • Natural & engineered rock slopes
SEISMIC RISK AND INDUCED SEISMICITY	OIL AND GAS
<ul style="list-style-type: none"> • DFN Modeling of Induced Seismicity • Risk Evaluation by the DFN Approach • Effective Stress Evolution in Fractured Rocks • Role of Faults and Natural Fractures in Seismic Risk 	<ul style="list-style-type: none"> • Naturally Fractured Reservoirs • Oil and Gas resource evaluation • Petroleum geomechanics • Hydraulic fracturing • Alternative stimulation approaches