



# INTERNATIONAL GEOMECHANICS CONFERENCE

17-20 NOVEMBER 2025  
AL KHOBAR, SAUDI ARABIA

## CALL FOR ABSTRACTS

 **SUBMISSION DEADLINE**  
31 MAY 2025

[VIEW TOPICS & SUBMIT HERE](#)

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## CONFERENCE OVERVIEW

### GEOMECHANICS: INNOVATIONS AND SOLUTIONS FOR ENERGY SUSTAINABILITY AND RESILIENCE

Hosted by Saudi Aramco, the International Geomechanics Conference brings together leading experts from multiple industries and disciplines to explore cutting-edge innovations in geomechanics. Co-organized in collaboration with globally and regionally recognized geoscience and engineering societies, this year's theme highlights the critical role of geomechanics in addressing new energy challenges

#### Focus Areas:

- Multiphysics coupling (thermo-hydro-mechanical-chemical processes) for energy applications such as CCS, hydrogen storage, mineral mining, geothermal reservoirs, energy extraction, and environment.
- Advanced numerical modeling for fault reactivation, wellbore stability, and fracture mechanics under extreme conditions.
- Dynamic behaviors of subsurface materials under various loading and environmental conditions.
- Digital geomechanics & AI-driven modeling integrating big data, machine learning, and computational techniques for predictive geomechanics.
- Sustainability and risk management through geomechanical solutions for decarbonization, net-zero goals, and hazard mitigation.

*We invite all industry professionals, academia, and students who are interested to their present their findings, exchange ideas and share their challenges on all aspects related to geomechanics. Don't miss this opportunity to connect, collaborate, and contribute to the future of geomechanics!*

## ABSTRACT SUBJECTS

WE INVITE ORAL & POSTER SUBMISSIONS FOR THE FOLLOWING TOPICS:

### CO<sub>2</sub> SEQUESTRATION AND UTILIZATION

- Reservoir Characterization
- Experimental Characterization under Multiphysical Loading
- Geomechanics Based Risk Analysis
- Coupled Thermo-Poro-Mechanical & Geochemical Processes
- Containment Risks
- Thermal Effect & Modeling
- Induced Seismicity Risk
- Field Case Study & Monitoring Program for Geomechanical Risks
- AI & Data-driven Solutions for Modeling, Monitoring, & Management

### SUBSURFACE HYDROGEN AND ENERGY STORAGE

- Coupled Thermo-Chemo-Poro-Mechanical Modelling of Underground Storage
- Laboratory Characterization of Hydrogen Impact on Geomechanical Properties of Rocks
- Hysteresis & Stress Path Analysis During Underground Storage
- Characterization & Mitigation of Induced Seismic Risks
- Containment Risks
- Geomechanics Applications in Natural Hydrogen Exploration
- Seal Integrity for Hydrogen Storage & Exploration
- Geomechanics of Salt Caverns
- Geomechanical Evaluation of Faults & Fractures for Underground Storage
- Case Studies of Hydrogen & Gas Storage



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## FUNDAMENTAL GEOMECHANICS

- In-situ Stress
- Pore Pressure Prediction
- Rock Measurements & Characterization
- Time Dependent & Viscoplastic Rock Behavior
- Rock Physics, Digital Rock
- Shear Physics & Frictional Dynamics
- Structural Geomechanics, Tectonics
- Fault Hydromechanical Behavior – In-situ Data & Modelling
- Seal Capacity
- Coupled Thermo-Chemical-Hydro-Mechanical Processes
- AI & Data Science in Geomechanics
- Constitutive Modeling & Failure Criteria
- Fracture Mechanics
- Multi-scale Geomechanics: from Nano to Field
- Experimental Geomechanics: Lab Investigations
- Seismo-mechanics & Faults
- Wave Propagation & Rock Response

## GEOMECHANICS FOR GEOTHERMAL AND NEW ENERGIES SYSTEMS

- Deploying Geothermal Energy Around the Globe
- Case Studies & Future Technologies
- Enhanced Geothermal Systems (EGS): Design & Engineering
- Retrofitting Oil & Gas Wells – The New Frontier?
- Joint Development of Geothermal & Solution Mining
- Characterization & Mitigation of Induced Seismic Risks
- Drilling Mechanics in Geothermal Environments
- Advances in Closed-loop Geothermal System

## MINING ROCK MECHANICS

- Sustainable Mining of Rare Earth Elements
- Ore Genesis, Critical Elements & Rock Mass Variability
- Groundwater Resource Management
- Zero Waste Mining & the Circular Economy
- In-situ Mining
- Trends of Deeper, Hotter & Robotic Mining/Excavation
- Underground Batteries – Pumped Hydro & Compressed Air Energy Storage
- Surface Mining & In-pit Waste Disposal
- Rock Fragmentation Mining Techniques

## PETROLEUM GEOMECHANICS

- Wellbore Stability, Pore Pressure Prediction, Wellbore Strengthening
- Well Integrity, Casing Damage
- Completion Geomechanics
- Hydraulic Fracturing: Modeling, Lab, Monitoring, Diagnostics, Operations
- Sand Production, Sand Control & Management
- Realtime Geomechanics
- Natural Fracture Characterization
- Induced Seismicity
- 3D Coupled Reservoir Geomechanics for Field Development
- Production & Depletion Geomechanics
- Advancements in Geomechanical Monitoring Technologies
- Geomechanics for Carbonates
- Geomechanics for Tight Reservoirs & Unconventionals
- Geomechanics for Water Injection & Enhanced Oil Recovery
- Integrated Studies: Geology, Geophysics, Geomechanics, Engineering

## GEOTECHNICS AND ENVIRONMENT

- Advances in Soil Characterization
- Advances in Geotechnical Design of Energy Structures
- Geotechnics of Off-shore Energy Structures
- Geotechnics of Onshore & Offshore Energy Pipelines
- Urban Underground Space
- Urban & Marine Geophysics
- Geomechanics for Coastal Protection
- Intelligent Technology & Digital Underground
- Waste Disposal & Management
- Landslides & Engineering Slopes
- Geo-environmental Disaster Reduction
- Seismic & Earthquakes