

# The 2018 ARMA-DGS Workshop Agenda

April 3-5, 2018. Bahrain

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## Day 1. Geomechanics Training

**Profs. Mark Zoback (Stanford), Maurice Dusseault (U of Waterloo), John McLennan (U of Utah).**

8:00 Welcome (Gang Han)

8:10 – 10:10 Stress and Pore Pressure in Hydraulic Fracturing (Prof. Zoback)

10:10 – 10:40 Coffee Break and Exhibits

10:40 – 11:00 Rethinking brittleness- Extrinsic and Intrinsic Rock Mass Properties (Prof. Zoback)

11:00 – 12:00 Modeling and Hydraulic Fracturing Geomechanics (Prof. Dusseault)

12:00 – 13:00 Lunch and Exhibits

13:00 – 14:30 Modeling and Hydraulic Fracturing Geomechanics (Prof. Dusseault)

14:30 – 15:00 Coffee Break and Exhibits

15:00 – 17:00 Workflow for Stimulation Design (Prof. McLennan)

17:00 Adjourn

18:30 - 20:30 Opening Receptions, Exhibits, and Welcome Dinner (Sponsored by [Saudi Aramco](#))

## Day 2 AM. Operator Perspectives

**Chairs: Adel Qahtani (SAO), Juan Chavez Florez (PDO)**

8:00-10:00 Operator Perspectives I


- Eight Years in Unconventional Geomechanics – The Good, The Bad and The Ugly (Xu Li, Shell),

- A new approach to estimate Acoustic Anisotropic Elastic Properties for Unconventional Reservoir - A case study in the Ordovician and Silurian - Northern Arabia Basin. (Francis Elisabeth, SAO)
- Data Accuracy and Reliability on Model Robustness for Stress and Strength Predictions: Challenges and Solutions (Christopher Germay, ADNOC)
- 3D Fracable Sweet Spot Modeling (Adel Gahtani, Osman Hamid, SAO)
- Horizontal Wells Hydraulic Fracturing from Tight HPHT to Multilayer Differential Depleted Gas Accumulations in Oman (Juan Chavez Florez, PDO)
- Claudia Patricia Teran, YPF, Application of Geomechanics to select area of production in The Orejano Field, Argentina.

10:00-10:30 Coffee Break and Exhibit

10:30-12:00 Operator Perspectives II

- Bedding Planes Corridors controls Hydraulic Fracturing Initiation and Propagation (Abdelwahab Noufal, ADNOC)
- Kirk Bartko, SAO, A Systematic completion approach in overcoming fracture initiation pressures
- Critical Look at Fracture Diagnostic through a Lens of a Geomechanicist: Oman Experience (Anastasia Dobroskok, Shell)
- The Role of Rock Mechanics in Supporting Hydraulic Fracturing Treatments (Salem Algarni, Mohammad Alqam, Antonio Santagati, SAO)

12:00 – 13:00 Keynote Lunch (Sponsored by [Golder Associates](#)  )

- Mechanical Specific Energy for Drilling (John McLennan, University of Utah)

## Day 2 PM. Technology Highlights

**Chairs: Brice Lecampion (EPFL Switzerland), Thomas Finkbeiner (KAUST)**

13:00 – 14:40 Technology Highlights I

- Experimental Investigation of Hydraulic Fracture Initiation and Propagation in Opalinus Shale (Omar Al-Dajani, Herbert Einstein, MIT)
- Hydraulic Fracturing in Unconventional Reservoirs: Mechanisms and Processes (Ahmad Ghassemi, OU)
- Testing Stimulation Concepts for an Enhanced Geothermal System (EGS) in a Deep Mine: the U.S. EGS Collab Project (Joe Morris, LLNL)
- Experimental and Numerical Study of Fracturing in Coal Seams (Haojie Lian, Weiguo Liang, Taiyuan University of Technology, China)
- A Novel Method to Characterize BIOT's Coefficient in Unconventionals (Munir Aldin, MetaRock)

14:40 – 15:10 Coffee Break and Exhibit

15:10 – 16:30 Technology Highlights II

- Numerical Investigation of Hydraulic Fracturing during Multi-Stage Stimulation (Branko Damjanac, Itasca)
- Using 3D Discrete Fracture Network Approaches for Efficient Geomechanically Coupled Hydraulic Fracture Simulation (Paul LaPointe, Golder)
- FracProp: Stochastic Fracture Propagation Modeling (Rita L Sousa, Mohammad Abdulla, Masdar Institute, UAE)

- Notching Technique for Openhole Fracturing: from Theory to Field Trial (Gallyam Aidagulov, Schlumberger)

16:30 – 18:00 Social with Exhibitors

18:30 - Social Activities (TBA)

### **Day 3 AM. Case Studies**

**Chairs: Anastasia Dobroskok (Shell), Tony Addis (Rockfield)**

8:00 – 10:00 Case Studies I

- Geomechanical Challenges for Unconventional Reservoirs in the Middle East and Asia: What We Know and What We Don't Know? (Hai Liu, Schlumberger)
- The role of Geomechanics in evaluating and accessing deep tight gas opportunities in two different unconventional settings (Latifa Qobi, Practical Geomechanics)
- The Importance of Coupling Wellbore Hydraulic and Simultaneous Fracture Propagation in Multistage Design (Brice Lecampion, EPFL Switzerland)
- Geomechanical Challenges & Optimization of Hydraulic Fracturing in Tight Reservoirs - A Middle Eastern Perspective (Satya Perumalla, BHGE)
- Comprehensive Characterization of an Unconventional Reservoir with Application to Hydraulic Fracturing (Thomas Finkbeiner, KAUST)
- Experimental and Field Studies on Supercritical CO<sub>2</sub> Fracturing of Shale Gas Reservoir (Haiyan Zhu, Southwest Petroleum University, China)

10:00 – 10:30 Coffee Break and Exhibit

10:30 – 12:15 Case Studies II

- Stimulation Simulation – Where is the Value? (Tobias Hoeink, BHGE)
- Influence of Geomechanics on Hydraulic Fracturing from Perforation to Fracture Tip (Adam Bere, Rockfield)
- Anisotropic Damage Mechanics for Modeling Hydraulic Fracturing in a Layered Naturally Fractured Reservoir (Ahmed Quenes, FracGeo)
- Simulating Hydraulic Fracturing using Anisotropic Elastic-Plastic-Damage Model (Rashid K. Abu Al-Rub, Oraib Al-Ketan, Hazem Mubarak, Masdar Institute, UAE)
- Water Injection Fracturing - Caprock Integrity and Height Containment (Mohammad Nassir, Dale Walters, CGG)

12:15 – 13:15 Lunch and Exhibit

### **Day 3 PM. Collaboration Discussions**

**Chairs: Maurice Dusseault (U of Waterloo), Ahmed Fataierge (SAO)**

13:15 – 15:00 Top list of operation challenges and technology developments

15:00 – 15:30 Coffee Break and Exhibit

15:30 – 16:30 Collaboration Opportunities

16:30 – 17:00 Closing Mark: Value of Hydraulic Fracturing Technologies (Gang Han)