

**EAGE**

EUROPEAN  
ASSOCIATION OF  
GEOSCIENTISTS &  
ENGINEERS



# Sixth EAGE Workshop on Naturally Fractured Rocks

25-29 OCTOBER 2026 • AL KHOBAR, SAUDI ARABIA

- **Programme**

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## TECHNICAL COMMITTEE

The Technical Programme Committee is essential to this workshop, empowering EAGE to drive innovation and technical progress across the global scientific community

|                                    |                                           |
|------------------------------------|-------------------------------------------|
| Mandefro B Woldeamanuel (Co-Chair) | Aramco                                    |
| Pascal Richard (Co-Chair)          | PR Geology                                |
| Ahmed Baghdadi                     | Baker Hughes                              |
| Michael Welch                      | DTU                                       |
| Yuri Panara                        | ENI                                       |
| Thomas Finkbeiner                  | KAUST                                     |
| Israa Abu-Mahfouz                  | KFUPM                                     |
| Prof. Stephan Matthai              | Melbourne University                      |
| Gamal Sultan                       | SLB                                       |
| Hamid Nick                         | Technical University of Denmark (DTU)     |
| Soliva Roger                       | University of Montpellier                 |
| Niccolo Menegoni                   | University of Pavia                       |
| Vincenzo La Bruna                  | Federal University of Rio Grande do Norte |
| Mattia Martinelli                  | ENI                                       |
| Jeffer Caldeira                    | Petrobras                                 |

## WORKSHOP OVERVIEW

About the event - Please join us for a continuation of the successful workshop series on Naturally Fractured Rocks (NFR) to be held in Kingdom of Saudi Arabia in Q4 2026 under the theme "Naturally Fractured Rocks for Sustainable Energy - can virtual reality and other emerging technologies help improve our characterization for understanding and modeling of subsurface fluid movements?". The workshop will offer a field trip to the famous Dammam dome, where oil was discovered in 1938. The workshop also offers a 2-day Joint Short Course about Integrated Fracture Reservoir Characterization and Modelling and Multi-phase Flow, Upscaling and the Construction of Fractured Reservoir Models by Prof. Stephan K. Matthai & Dr. Pascal D. Richard.

We invite reservoir engineers, (hydro) geologists, geophysicists, rock and geo-mechanics specialists, geo-modelers, researchers and more to attend and contribute to this workshop. The integrated discipline approach continues to be a key added value to this workshop series.

## STRATEGIC PROGRAMME

### Opening Address Speaker



#### Ahmed Al Otaibi

Director in Gas Reservoir Characterization Department  
*Aramco*

### Keynote Speakers



#### Stephan Matthai

Professor for Geotechnical Engineering  
*University of Melbourne*  
Keynote Title: Fluid Inertia, Flow dynamics, Fluid Rheology in Natural Fracture Networks



#### Mokhles Mezghani

Senior Research Science Consultant  
*Aramco*  
Keynote Title: Artificial Intelligence for Geological Rock Sample Analysis



#### Pascal Richard

Structural Geologist  
*PR Geology*  
Keynote Title: Accessing the Inaccessible: How Virtual Reality Reveals the Previously Unseen



#### Niccolo Menegoni

Assistant Professor  
*University of Pavia*  
Keynote Title: Fracture Quantification from Digital Outcrops: Automation, Precision and Subsurface Scaling



## SHORT COURSES

Joint Short Course (Integrated Fracture Reservoir Characterization and Modelling and Multi-phase Flow, Upscaling and the Construction of Fractured Reservoir Models - Prof. Stephan K. Matthai & Dr. Pascal D. Richard) Wednesday, 28 October 2026 and Thursday, 29 October 2026.



**Stephan Matthai**

Professor for Geotechnical Engineering  
University of Melbourne



**Pascal Richard**

Structural Geologist  
PR Geology

## GENERAL INFORMATION

### Venue Information

Venue: voco al Khobar | Sultana 1 & 2 Ballroom  
Address: Dhahran Road, Al-Thuqbah, King Abdullah Street, Al Khobar Saudi Arabia  
Website: [https://www.ihg.com/voco/hotels/us/en/al-khobar/dhako/hoteldetail?cm\\_mmc=GoogleMaps\\_-\\_VX\\_-\\_SA\\_-\\_DHAKO](https://www.ihg.com/voco/hotels/us/en/al-khobar/dhako/hoteldetail?cm_mmc=GoogleMaps_-_VX_-_SA_-_DHAKO)  
Contact: +966 13 512 5555

### How to Get There: Transportation

voco al Khobar is conveniently located approximately 69 kilometers from King Fahad International Airport (DMM). The journey typically takes 43 minutes depending on traffic.

### By Hotel Airport Shuttle:

Please provide your flight details to the hotel's reservation team at least 24 hours in advance.

### By Taxi or Ride-Sharing:

Airport taxis - Readily available 24/7 at the designated taxi stand outside the Arrival terminal.  
Ride sharing - Apps like Careem and Uber operate in Saudi Arabia.

## EAGE Registration Desk

We encourage delegates to visit the EAGE Registration Desk to learn about membership benefits and upcoming events to make the most of your EAGE involvement. We welcome feedback on EAGE's activities for us to improve upon our membership services.

### Badge collection will open at the following times:

|                 |                            |                                        |
|-----------------|----------------------------|----------------------------------------|
| 25 October 2026 | 8:00 am - 8:30 am (UTC +3) | Sultana 1 & 2 Ballroom, voco Al Khobar |
| 26 October 2026 | 8:00 am - 8:30 am (UTC +3) | Sultana 1 & 2 Ballroom, voco Al Khobar |
| 27 October 2026 | 8:00 am - 8:30 am (UTC +3) | Sultana 1 & 2 Ballroom, voco Al Khobar |
| 28 October 2026 | 8:00 am - 8:30 am (UTC +3) | Sultana 1 & 2 Ballroom, voco Al Khobar |
| 29 October 2026 | 8:00 am - 8:30 am (UTC +3) | Sultana 1 & 2 Ballroom, voco Al Khobar |

## Upload Desk

If you have any questions about the technical programme or wish to upload their presentation slides on-site, please refer to EAGE Staff at the AV Console at the following times. Speakers are encouraged to upload/email their presentation slides in advance of the session.

### Upload Onsite

|                    |                            |                                        |
|--------------------|----------------------------|----------------------------------------|
| 26-27 October 2026 | 8:00 am - 8:45 am (UTC +3) | Sultana 1 & 2 Ballroom, voco Al Khobar |
|--------------------|----------------------------|----------------------------------------|

## Luncheon

|                 |                             |                                                 |
|-----------------|-----------------------------|-------------------------------------------------|
| 25 October 2026 | TBC (UTC +3)                | Horizon Restaurant, Lobby Level, voco Al Khobar |
| 26 October 2026 | 1:10 pm - 2:10 pm (UTC +3)  | Horizon Restaurant, Lobby Level, voco Al Khobar |
| 27 October 2026 | 12:05 pm - 1:05 pm (UTC +3) | Horizon Restaurant, Lobby Level, voco Al Khobar |
| 28 October 2026 | TBC (UTC +3)                | Horizon Restaurant, voco Al Khobar              |
| 29 October 2026 | TBC (UTC +3)                | Horizon Restaurant, Lobby Level, voco Al Khobar |

## Workshop Dinner

All workshop delegates are cordially invited to the Workshop Dinner | Please RSVP your attendance upon registering for the workshop online

|                 |                            |     |
|-----------------|----------------------------|-----|
| 27 October 2026 | 7:00 pm - 9:00 pm (UTC +3) | TBC |
|-----------------|----------------------------|-----|



### Lost & Found

Lost and found items will be placed at the EAGE Registration Desk located at Sultana 1 & 2 Ballroom, voco Al Khobar.

### Medical Assistance

In case of a medical emergency, please alert EAGE staff immediately.

### Emergency Contact

In the event of an emergency, please dial 911 for Saudi Arabia's Emergency Response Services to reach the Police, Fire Department or Ambulance services. For guests with hearing or speech impairments, assistance can be requested via the SMS Emergency Service by sending a text message to 911.

### Photo and Video Regulations

Photography and video/audio recording of any kind are strictly prohibited in the technical sessions.

EAGE strives to bring you the greatest and latest of scientific and technical advances. Due to the importance of the technical content, EAGE upholds a photography and videography policy, in an endeavour to protect these leading-edge technologies.

### Wi-Fi

Delegates may connect to free Wi-Fi at the venue. Wifi details will be provided onsite.

### Deliverables

The following are included in the delegate fee

- Access to workshop technical sessions
- Daily Luncheon
- Daily Morning and Afternoon refreshments
- Workshop Dinner
- Event proceedings via EAGE's EarthDoc (for EAGE members only)
- Complimentary EAGE Membership will be included for the remainder of 2026 (for fully paid non-members)



## TECHNICAL PROGRAMME

### Oral Presentations | Sunday 25 October 2026

#### DAY 1

|       |                               |
|-------|-------------------------------|
| 08:00 | Registration & Welcome Coffee |
| 09:00 | Dammam Dome Field Trip        |
| 14:00 | Virtual Reality Demo          |

### Oral Presentations | Monday 26 October 2026

#### DAY 2

|       |                                                                                                           |
|-------|-----------------------------------------------------------------------------------------------------------|
| 08:00 | Registration and Welcome Coffee                                                                           |
| 08:30 | HSSE by voco® Al Khobar                                                                                   |
| 08:35 | Welcome by Workshop Co-Chairs Dr. Mandefro Belayneh Woldeamanuel (Aramco) & Pascal D. Richard (PRgeology) |
| 08:45 | Opening Address: Ahmed Al Otaibi (Director in Gas Reservoir Characterization Department - Aramco)         |

#### SESSION 1: New Insights into NFR Part I

Session Chairs: Niccolo Menegoni (University of Pavia) & Gamal Sultan (SLB)

|       |                                                                                                                                                                                                                                                                                        |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 09:15 | Keynote 1 - Fluid Inertia, Flow dynamics, Fluid Rheology in Natural Fracture Networks - Stephan Matthai (University of Melbourne)                                                                                                                                                      |
| 09:45 | The Impact of Mapping Dissolution Features in Subsurface Carbonates in Reducing Subsurface Uncertainty - M. Belayneh Woldeamanuel <sup>1*</sup><br><sup>1</sup> Aramco                                                                                                                 |
| 10:05 | Integrated Seismic Imaging and Fracture Characterization for Naturally Fractured Carbonate Reservoirs, Kohat-Potwar Basin, Pakistan - A. Asghar <sup>1*</sup> , Z. Hussain <sup>1</sup> , A.H. Palekar <sup>1</sup> , S. Iqbal <sup>1</sup><br><sup>1</sup> Pakistan Petroleum Limited |

#### POSTER SESSION

|       |                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:25 | Lightning Session                                                                                                                                                                                                                                                                                                                                                                                                                            |
|       | <b>Structural and Sedimentological Analysis of Block 7, Using OBM/UBI Logs: Evidence from the Aigrette-1 Well</b> - B. Dahmane <sup>1*</sup> , D. T'Varah <sup>2</sup> , R. Bissaya <sup>3</sup><br><sup>1</sup> Boumerdes University, Faculty of Hydrocarbon and chemistry;<br><sup>2</sup> Nouakchott University, Faculty of Sciences and Technology;<br><sup>3</sup> Department of Earth Sciences, University of Yaounde 1, Cameroon      |
|       | <b>Structural and geological controls on hydrogen generation and migration in Taoudeni Basin carbonates: a Mali-Mauritania study.</b> - B. Dahmane <sup>1*</sup> , T. Dahmane <sup>1</sup><br><sup>1</sup> 4G, Geology Department, Faculty of Sciences and technology, Nouakchott University; <sup>2</sup> 4G, Geology Department, Faculty of Sciences and technology, Nouakchott University                                                 |
|       | <b>Petrophysical Characterization of the Chinguetti Field, Coastal Basin, Mauritania</b> - B. Dahmane <sup>1*</sup> , C. Hamouni <sup>2</sup> , D. T'Varah <sup>2</sup><br><sup>1</sup> Boumerdes University, Faculty of Hydrocarbon and chemistry;<br><sup>2</sup> Nouakchott University, Faculty of Sciences and Technology                                                                                                                |
|       | <b>Integrated 3D Seismic-Core Analysis for Fractured Reservoir Characterization in the Chinguetti Oil Field (MSGBC Basin)</b> - B. Dahmane <sup>1*</sup> , D. T'Varah, S.M. Dahi <sup>2</sup><br><sup>1</sup> Boumerdes University, Faculty of Hydrocarbon and chemistry;<br><sup>2</sup> Nouakchott University, Faculty of Sciences and Technology, Géosciences; <sup>3</sup> Nouakchott University, Faculty of sciences and technology, 4G |
|       | <b>Outcrop-derived Mechanical Stratigraphy and Conceptual Fracture Model of the Lower Cretaceous Shu'aiba Formation</b> - R. Iakusheva <sup>1*</sup> , N. Menegoni <sup>2</sup> , Y. Panara <sup>1</sup> , S. Patino Guaneme <sup>1</sup> , V. Vahrenkamp <sup>1</sup><br><sup>1</sup> KAUST; <sup>2</sup> University of Pavia                                                                                                               |

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## Oral Presentations | Monday 26 October 2026

|                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 10:25                                                                                                                     | <b>Explicit integration of seismic fracture lineaments into reservoir models: Towards improved history match</b> - D. Chaudhuri <sup>1</sup> , D. Nanda <sup>1*</sup><br><sup>1</sup> Rezlytix Technologies Private Limited                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                                                                                                                           | <b>Characterization of Fracture Storage Capacity and Flow Potential for Carbonate Reservoirs Enabled by Digital Rock Physics</b> - F. Alsinan <sup>1*</sup> , A. Kazak <sup>1</sup> , A. Alsinan <sup>1</sup><br><sup>1</sup> Aramco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                                                                                                                           | <b>Stress Constraints and Hydraulic Fracture Conductivity in the Jizan Group, Saudi Arabia: Implications for CO<sub>2</sub> Mineralization</b> - N.F. Corzo Rivera <sup>1</sup> , N. Menegoni <sup>3</sup> , D. Bero <sup>2</sup> , J. Fedorik <sup>4</sup> , S. Arkadaskiy <sup>4</sup> , Z. Ahmed <sup>4</sup> , N. Kunnummal <sup>4</sup> , E.H. Oelkers <sup>5</sup> , M. Marchesi <sup>6</sup> , M. Addassi <sup>2</sup> , A. Omar <sup>2</sup> , S.R. Gislason <sup>5</sup> , G. Bjornsson <sup>7</sup> , A. Afifi <sup>2</sup> , H. Hoteit <sup>2</sup> , T. Finkbeiner <sup>2*</sup><br><sup>1</sup> University Of Campinas (unicamp); <sup>2</sup> King Abdullah University of Science and Technology (KAUST); <sup>3</sup> University of Pavia; <sup>4</sup> Environmental Protection Department, Saudi Aramco; <sup>5</sup> Institute of Earth Sciences, University of Iceland; <sup>6</sup> Dipartimento di Scienze della Terra, Sapienza Università di Roma; <sup>7</sup> Warm Arctic ehf |
|                                                                                                                           | <b>Salinity Contrast for Deploying High-Resolution Resistivity Imaging in Subsurface Formation</b> - M. Belayneh Woldeamanuel <sup>*</sup> , M. Aljaseem, M. Gouda<br><sup>1</sup> Saudi Aramco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 10:35                                                                                                                     | <b>AM Coffee Break - Foyer</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>SESSION 2: Tools &amp; Methods Part I</b><br>Session Chairs: Israa Abu-Mahfouz (KFUPM) & Ahmed Baghdadi (Baker Hughes) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 11:05                                                                                                                     | <b>Keynote 2 - Artificial Intelligence for Geological Rock Sample Analysis</b> - Mokhles Mezghani (Aramco)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 11:35                                                                                                                     | <b>Fault zones: How detailed do we need to model them?</b> - P.D. Richard <sup>1*</sup> , B. Lu <sup>2</sup> , G. Chen <sup>2</sup> , N. Menegoni <sup>3</sup> , T. Finkbeiner <sup>4</sup><br><sup>1</sup> PRgeology; <sup>2</sup> Dimue Technologies; <sup>3</sup> University of Pavia, Department of Earth and Environmental Sciences; <sup>4</sup> Physical Sciences & Engineering Division, King Abdullah University of Science and Technology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 11:55                                                                                                                     | <b>Integrated Fracture Characterization and Modeling in the Majiagou Formation Carbonates, Ordos Basin</b> - J. Li <sup>1*</sup> , X. Zhang <sup>2</sup> , B. Zhao <sup>3</sup> , P. Richard <sup>4</sup> , B. Lu <sup>2</sup> , X. Luo <sup>3</sup><br><sup>1</sup> Nanjing University; <sup>2</sup> Dimue Technologies; <sup>3</sup> Northwest University; <sup>4</sup> PRGeology                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 12:15                                                                                                                     | <b>Fracture Characterization and Well Test Response Analysis of Carbonate Reservoirs in Northern China</b> - B. Zhao <sup>1*</sup> , J. Li <sup>2</sup> , X. LUO <sup>1</sup> , B. LU <sup>3</sup> , X. ZHANG <sup>3</sup><br><sup>1</sup> Northwest University; <sup>2</sup> Nanjing University; <sup>3</sup> Dimue Technologies                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 12:35                                                                                                                     | <b>Calibrating Natural Fracture Networks from Lost Circulation Data: A Geomechanically-Constrained DFN Workflow</b> - N. Tripathi <sup>1*</sup><br><sup>1</sup> Saudi Aramco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 12:55                                                                                                                     | <b>Discussion Session</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 13:10                                                                                                                     | <b>Lunch Break - Horizon Restaurant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>SESSION 3: Application Domains Part I</b><br>Session Chairs: Mandefro B Woldeamanuel (Aramco) & Michael Welch (DTU)    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 14:10                                                                                                                     | <b>Dynamic Fracture Indicators and Injector–Producer Connectivity in Carbonate Reservoirs</b> - R. Gutierrez <sup>1*</sup><br><sup>1</sup> SLB                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 14:30                                                                                                                     | <b>Optimizing mud-cap strategy leveraging downhole equivalent static density measurements during total-losses– A Cretaceous carbonate case study</b> - A. Baghdadi <sup>1*</sup> , S. Sen <sup>2</sup><br><sup>1</sup> Baker Hughes, Saudi Arabia; <sup>2</sup> Baker Hughes, India                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 14:50                                                                                                                     | <b>3D Coupled Geomechanical Modeling of Fault Reactivation under Tectonic Stress and Fluid Flow</b> - O. Hamid <sup>1*</sup> , M. Qureshi<br><sup>1</sup> Saudi Aramco; <sup>2</sup> Exploration application services Dept                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 15:10                                                                                                                     | <b>Integrated Fracture Characterization and Dynamic Modeling of Tight Sandstone Reservoirs in the Sirte Basin, Libya</b> - A. Grada <sup>1</sup> , H. Zekri <sup>1*</sup> , Y. Alborki <sup>2</sup> , J. Sultan <sup>1</sup><br><sup>1</sup> SLB; <sup>2</sup> WOC                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 15:30                                                                                                                     | <b>PM Coffee Break</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## Oral Presentations | Monday 26 October 2026

|                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                        |
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| <b>SESSION 4: Application Domains Part II</b><br>Session Chairs: Pascal Richard (PR Geology) & Thomas Finkbeiner (KAUST) |                                                                                                                                                                                                                                                                                                                                                                                        |
| 16:00                                                                                                                    | <b>Fracture Domain Characterization Using Multi-Well Pressure Transient Analysis and 3D Geomechanical Modelling</b> - A. Alnasser <sup>1*</sup> , L. N. Alhussain <sup>1</sup> , A. A. Alsanaa <sup>1</sup> , O. Hamid <sup>1</sup> , O. E. Camarago <sup>1</sup><br><sup>1</sup> Saudi Aramco                                                                                         |
| 16:20                                                                                                                    | <b>Multi-Disciplinary Fracture Characterization and Calibrated DFN Modelling in a Stacked Carbonate System: Awali Field (Bahrain)</b> - L. Micarelli <sup>1*</sup> , A. Abousetta <sup>2</sup> , R. Alsaffar <sup>2</sup> , O. Gast <sup>1</sup> , T. Piolle <sup>1</sup> , A. Radhi <sup>2</sup> , J. Robert <sup>1</sup><br><sup>1</sup> Beicip-Franlab; <sup>2</sup> Babco Upstream |
| 16:40                                                                                                                    | <b>Enhancing Reservoir Modeling with Integrated Geomechanical Fracture Characterization and Prediction</b> - Q. Li <sup>1*</sup> , A. Nashari <sup>1</sup> , M. Qureshi <sup>1</sup><br><sup>1</sup> Saudi Aramco                                                                                                                                                                      |
| 17:00                                                                                                                    | <b>Automated Fracture Detection in Unwrapped 360° Core Images Using the Segmentation-Models-PyTorch Framework</b> - M. Abdrabu <sup>1*</sup> , T. Seers, E. Rayev, N. Malki<br><sup>1</sup> Saudi Aramco                                                                                                                                                                               |
| 17:20                                                                                                                    | <b>Can Fractures Deform? Folded Calcite Veins in Mudrocks as a Record of Early Diagenetic Compaction and Burial</b> - I. Abu-Mahfouz <sup>*</sup><br><sup>1</sup> KFUPM                                                                                                                                                                                                                |
| 17:40                                                                                                                    | <b>Discussion Session &amp; Closing Remarks</b>                                                                                                                                                                                                                                                                                                                                        |
| 18:00                                                                                                                    | <b>Close of Day 2</b>                                                                                                                                                                                                                                                                                                                                                                  |
| 18:00                                                                                                                    | <b>Informal Discussion around Virtual Reality &amp; any other topics</b>                                                                                                                                                                                                                                                                                                               |

## Oral Presentations | Tuesday 27 October 2026

|                                                                                                                                     |                                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>DAY 3</b>                                                                                                                        |                                                                                                                                                                                                                                                                |
| 08:00                                                                                                                               | <b>Registration and Welcome Coffee</b>                                                                                                                                                                                                                         |
| 08:30                                                                                                                               | <b>Welcome by Workshop Co-Chairs Dr. Mandefro Belayneh Woldeamanuel (Aramco) &amp; Pascal D. Richard (PRgeology)</b>                                                                                                                                           |
| <b>SESSION 5: Application Domains Part III</b><br>Session Chairs: Rayan Kanfar (DGS) & Prof. Stephan Matthai (Melbourne University) |                                                                                                                                                                                                                                                                |
| 08:35                                                                                                                               | <b>Keynote 3 - Accessing the Inaccessible: How Virtual Reality Reveals the Previously Unseen</b> - Pascal Richard (PR Geology)                                                                                                                                 |
| 09:05                                                                                                                               | <b>From Loss Control to Permeability Enhancement: Geomechanical Strategies for Naturally Fractured Carbonates, Middle East</b> - A. Baghdadi <sup>1*</sup><br><sup>1</sup> Baker Hughes                                                                        |
| 09:25                                                                                                                               | <b>Borehole Image Integration for Water Shut-Off and Production Enhancement in Naturally Fractured Tight Sandstones</b> - A. Grada <sup>1*</sup> , H. Zekri <sup>1</sup> , Y. Alborki <sup>2</sup> , Sultan <sup>1</sup><br><sup>1</sup> SLB; <sup>2</sup> WOC |
| 09:45                                                                                                                               | <b>Contrast of Natural and Tectonic Fractures: Seismic Evidence from the Saudi Arabia</b> - A. Muzaffar <sup>1*</sup> , H. Muhammad <sup>1</sup> , A.K. Abdul Aziz <sup>1</sup><br><sup>1</sup> Saudi Aramco                                                   |
| 10:05                                                                                                                               | <b>Understanding Fracture Controlled Heterogeneity in Carbonates Through Integrated Borehole Image and Sonic Imaging</b> - O. Akinyose <sup>1</sup> , M. Al Mubarak <sup>2*</sup> , C. Cavalleri <sup>2</sup><br><sup>1</sup> Saudi Aramco; <sup>2</sup> SLB   |
| 10:25                                                                                                                               | <b>Discussion Session</b>                                                                                                                                                                                                                                      |
| 10:40                                                                                                                               | <b>AM Coffee Break</b>                                                                                                                                                                                                                                         |

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## Oral Presentations | Tuesday 27 October 2026

| SESSION 6: Application Domains Part IV                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Session Chairs: Mandefro B Woldeamanuel (Aramco) & Israa Abu-Mahfouz (KFUPM) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 11:10                                                                        | <b>Geothermal project fault zone characterization and modeling, Lausanne area, Switzerland</b> - P.D. Richard <sup>1*</sup> , N. Giroud <sup>2</sup> , C. Volery <sup>2</sup> , B. Deriaz <sup>2</sup> , N. Olry <sup>2</sup> , A. Hürlimann <sup>3</sup> , A. Hürlimann <sup>3</sup> , N. Menegoni <sup>4</sup> , B. Lu <sup>5</sup> , T. Finkbeiner <sup>6</sup><br><sup>1</sup> PRGeology; <sup>2</sup> GEOL SA; <sup>3</sup> Pro-Gaia Invest SA; <sup>4</sup> University of Pavia, Department of Earth and Environmental Sciences; <sup>5</sup> Dimue Technologies; <sup>6</sup> Physical Sciences & Engineering Division, King Abdullah University of Science and Technology                                                      |
| 11:30                                                                        | <b>Subsurface characterization of fracture networks for CO<sub>2</sub> mineralization in altered basalts, SW Saudi Arabia</b> - N. Menegoni <sup>1,2*</sup> , J. Fedorik <sup>3</sup> , Y. Panara <sup>2</sup> , D. Berno <sup>2</sup> , M. Addassi <sup>2</sup> , A. Omar <sup>2</sup> , E. Oelkers <sup>2,4</sup> , A. Afifi <sup>2</sup> , H. Hoteit <sup>2</sup> , S. Arkadaskiy <sup>3</sup> , N. Kunnumal <sup>3</sup> , Z. Ahmed <sup>3</sup> , S. Gislason <sup>4</sup> , G. Bjornsson <sup>5</sup> , T. Finkbeiner <sup>2</sup><br><sup>1</sup> University of Pavia; <sup>2</sup> King Abdullah University of Science and Technology; <sup>3</sup> Saudi Aramco; <sup>4</sup> University of Iceland; <sup>5</sup> Warm Arctic |
| 11:50                                                                        | <b>Discussion Session</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 12:05                                                                        | <b>Lunch Break - Horizon Restaurant</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| SESSION 7: New Insights into NFR Part II                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Session Chairs: Gamal Sultan (SLB) & Mattia Martinelli (Eni S.p.A)           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| 13:05                                                                        | <b>Keynote 4 - Fracture Quantification from Digital Outcrops: Automation, Precision and Subsurface Scaling</b> - Niccolo Menegoni (University of Pavia)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| 13:35                                                                        | <b>Selecting hydraulic fracturing methods for wells in tight and naturally fractured gas reservoirs: a geomechanics workflow</b> - K. Xia <sup>1*</sup> , A. Qahtani<br><sup>1</sup> Saudi Aramco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 13:55                                                                        | <b>Clumped Isotope Thermometry and Stable Isotope of Carbonate Veins, Wadi Nakhar, Oman Mountains</b> - M. Moustafa <sup>1*</sup> , M.A.K. El-Ghali <sup>1</sup> , I.A. Abbasi <sup>1</sup> , A. Herlambang <sup>2</sup> , M. Qasim <sup>1</sup> , M. Farfour <sup>1</sup> , S. Al Shaaibi <sup>1</sup> , M.S. Al-Jabri <sup>1</sup><br><sup>1</sup> Department of Earth Sciences, College of Science, Sultan Qaboos University; <sup>2</sup> King Fahd University of Petroleum and Minerals, Department of Geosciences, College of Petroleum Engineering and Geosciences, Dhahran                                                                                                                                                     |
| 14:15                                                                        | <b>Insights of Fracture Characterizations for Well Placement in Tight Gas Reservoirs</b> - W. Wang <sup>1</sup> , T. Sodagar <sup>1</sup> , M.J. Mahdi <sup>1</sup> , E.A. Halawani <sup>1*</sup><br><sup>1</sup> Saudi Aramco                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 14:35                                                                        | <b>Microfractures, layer-bound fractures and unconfined fractures: Insights from modelling and observation</b> - M. Welch <sup>1*</sup><br><sup>1</sup> Danish Technical University                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| 14:55                                                                        | <b>Sub-Seismic Fracture Characterization from seismic curvature: Mitigating Pitfalls via Textural Attributes and DFN calibration</b> - M. Martinelli <sup>1*</sup> , L. Bianchin <sup>1</sup> , R. Lorenzet <sup>1</sup> , C. Albertini <sup>1</sup><br><sup>1</sup> Eni S.p.A                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 15:15                                                                        | <b>Discussion Session</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| 15:30                                                                        | <b>PM Coffee Break</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## Oral Presentations | Tuesday 27 October 2026

| SESSION 8: Tools & Methods Part II                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Session Chairs: Pascal Richard (PR Geology) & Thomas Finkbeiner (KAUST) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 16:00                                                                   | <b>Enhancing Mechanical Earth Model Quality via Micro-Rebound Testing: A High-Resolution Approach</b> - N. Almelaian <sup>1*</sup><br><sup>1</sup> Saudi Aramco                                                                                                                                                                                                                                                                                                       |
| 16:20                                                                   | <b>PRfrac: An Integrated Platform for Fracture Characterization and Discrete Fracture Network Modelling</b> - P.D. Richard <sup>1*</sup> , J. Zhang <sup>2</sup> , B. Lu <sup>2</sup> , G. Chen <sup>2</sup> , J. Li <sup>2</sup><br><sup>1</sup> PRGeology; <sup>2</sup> Dimue Technologies                                                                                                                                                                          |
| 16:40                                                                   | <b>QuantaFrac: An Integrated 3D Workflow for Quantitative Fracture Characterization from Digital Outcrop Models</b> - S. Patino-Guaneme <sup>1*</sup> , V. Vahrenkamp <sup>1</sup><br><sup>1</sup> King Abdullah University of Science and Technology                                                                                                                                                                                                                 |
| 17:00                                                                   | <b>A Holistic Review of Understanding Fracture Behavior Across Reservoir Development Stages</b> - G. Sultan <sup>1*</sup> , M. Lal Khaitan <sup>2</sup> , D. Solohaga <sup>2</sup> , M. Dernaika <sup>3</sup> , B. Mansour <sup>3</sup> , R. Plateaux <sup>2</sup> , S. Siddiqi <sup>3</sup> , E. Siqueira Muniz <sup>3</sup><br><sup>1</sup> SLB; <sup>2</sup> SLB; <sup>3</sup> SLB                                                                                 |
| 17:20                                                                   | <b>Integrated LWD Conventional and High-Resolution Micro-Resistivity Imaging Tools Enable Optimized Well Placement and Completions Design</b> - M. Fouda <sup>1</sup> , A. Awadh <sup>1</sup> , T. Gezeeri <sup>2*</sup><br><sup>1</sup> Halliburton; <sup>2</sup> Kuwait Oil Company                                                                                                                                                                                 |
| 17:40                                                                   | <b>Integrated Seismic Attributes and ML Approaches for Fracture Characterization in the Teapot Dome Naturally Fractured Reservoir</b> - M. Khan <sup>1*</sup> , S.S. Ali <sup>1</sup> , H. Khan <sup>1</sup> , S. Awfi <sup>1</sup><br><sup>1</sup> Saudi Aramco                                                                                                                                                                                                      |
| 18:00                                                                   | <b>Integrated Seismic and Machine Learning Approach for Fault Architecture and Structural Deformation Analysis: Application to CO<sub>2</sub> Storage</b> - M. Aljaseem <sup>1*</sup> , I. Abu-Mahfouz <sup>2</sup> , F.Z. Benkhatab <sup>2</sup> , M. Khan <sup>2</sup><br><sup>1</sup> Aramco; <sup>2</sup> KFUPM                                                                                                                                                   |
| 18:20                                                                   | <b>Vein extraction using deep learning in 2D digital outcrop models of the Natih Formation in Oman</b> - A.E. Sanchez Garcia <sup>1*</sup> , D. Wamriew <sup>1</sup> , N. Menegoni <sup>2</sup> , P. Richard <sup>3</sup> , T. Finkbeiner <sup>1</sup><br><sup>1</sup> King Abdullah University Of Science And Technology, Physical Science and Engineering; <sup>2</sup> University of Pavia, Department of Earth and Environmental Sciences; <sup>3</sup> PRGeology |
| 18:40                                                                   | <b>Discussion Session &amp; Closing Remarks</b>                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 19:00                                                                   | <b>Close of Day 3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 19:00                                                                   | <b>Informal Discussion around Virtual Reality &amp; any other topics</b>                                                                                                                                                                                                                                                                                                                                                                                              |

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## Joint Short Course | Wednesday 28 October 2026

| DAY 4 |                                                                                                                                                                                                                                    |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08:00 | <b>Joint Short Course (Integrated Fracture Reservoir Characterization and Modelling and Multi-phase Flow, Upscaling and the Construction of Fractured Reservoir Models - Prof. Stephan K. Matthai &amp; Dr. Pascal D. Richard)</b> |

## Joint Short Course | Thursday 29 October 2026

| DAY 5 |                                                                                                                                                                                                                                    |
|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 08:00 | <b>Joint Short Course (Integrated Fracture Reservoir Characterization and Modelling and Multi-phase Flow, Upscaling and the Construction of Fractured Reservoir Models - Prof. Stephan K. Matthai &amp; Dr. Pascal D. Richard)</b> |

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