

EAGE

EUROPEAN
ASSOCIATION OF
GEOLOGISTS &
ENGINEERS



Fifth EAGE Workshop on Rock Physics

**ADVANCEMENTS IN ROCK PHYSICS:
EMBRACING THE FOURTH INDUSTRY REVOLUTION**

10-12 FEBRUARY 2020 • MILAN, ITALY

- **Programme**

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WORKSHOP OVERVIEW

Following the success of the previous editions, EAGE is planning a fifth Rock Physics workshop to take place in Milan from 10-12 February 2020. The workshop will be a great opportunity to gain insight on the recent advances in rock physics modelling and its applications in exploration, development and reservoir monitoring. As rock physics becomes an ever more important part of integrated modelling and interpretation workflows, this workshop will focus on the interaction with other disciplines and geophysical domains, as well as on some key trending aspects in rock physics modelling such as anisotropy, uncertainty and modelling of tight and fractured rocks. This workshop will also look ahead at how artificial intelligence techniques will impact the current industry practices and help overcoming some of the key challenges faced by the rock physics community today.

TOPICS & TECHNICAL SESSIONS

1. Unconventional Resources
2. Artificial Intelligence / Machine Learning
3. Integration of Multi-Physical Data
4. Quantitative Seismic Interpretation & Uncertainty
5. Experimental Rock Physics
6. EOR and Time-Lapse Rock Physics
7. Rock Physics Modelling

TECHNICAL PROGRAMME

Oral Presentations | Monday 10 February

BLU CONFERENCE ROOM	
08:00	Registration & Morning Coffee
08:50	HSSE
09:00	Welcome and Workshop Aims (Co-Chairs)
09:15	KN01 - Rock Physics Directions at the Age of Big Data and Digital Technology - R. Bachrach ^{1*} ¹ Schlumberger
10:00	Coffee Break
Session 1: Artificial Intelligence / Machine Learning Session Chairs: C. Leone (Schlumberger) & R. Saberi (CGG)	
10:30	RP01 - Combining Rock Physics and Machine Learning for Optimized Reservoir Characterization - J. Downton ¹ , O. Collet ^{1*} , T. Colwell ¹ , D. Hampson ¹ ¹ CGG
10:55	RP02 - Machine Learning Approach to Predict Variations of Compressional Wave Velocity as Function of Pressure in Carbonates - T. Olayiwola ^{1*} , A. El-Husseiny ² , M. Mahmoud ³ , A.W. Ali ⁴ ¹ College of Petroleum Engineering and Geosciences, King Fahd University of Petroleum and Minerals; ² College of Petroleum Engineering and Geosciences, King Fahd University of Petroleum and Minerals; ³ College of Petroleum Engineering and Geosciences, King Fahd University of Petroleum and Minerals; ⁴ Center for Integrative Petroleum Research, King Fahd University of Petroleum and Minerals



11:20	RP03 - Use of Scalable IT Platform Technologies for Screening EOR materials in Digital Rocks - R. Neumann Barros Ferreira ^{1*} , R. Giro ¹ , M. Engel ¹ , M. Steiner ¹ ¹ IBM Research
11:45	RP04 - Porosity and Permeability Prediction from Geophysical Logs using Artificial Neural Networks of an Indian Reservoir - P. Chattopadhyay ^{1*} , T. Chatiya ¹ , N. Vedanti ² ¹ Indian Institute of Technology Roorkee; ² CSIR-National Geophysical Research Institute
12:10	Lunch Break
Session 2: Quantitative Seismic Interpretation & Uncertainty Session Chairs: B. Ciurlo (Eni S.p.A.) & R. Saberi (CGG)	
13:30	RP05 - Mind the Gap Between Petrophysics and Rock Physics: Petro-Elastic Facies for Driving Reservoir Modeling - G. Carrasquero ^{1*} , M. Fervari ¹ , R.L. Tagliamonte ¹ , C. Tarchiani ¹ ¹ Eni S.p.A.
13:55	RP06 - Integrated Petrophysics and Rock Physics workflow validated by Well to Seismic Tie and AVO Modelling - M. Talib ^{1*} , M.Z.A. Durrani ¹ , A. Mathur ² , R.P.A. Bekt ² , J. Ting ² ¹ Pakistan Petroleum Limited; ² CGG
14:20	RP07 - Application of Data-Driven Rock Physics Trends for Prospect De-risking: From Basin Scale Analysis to Reservoir Discovery - G. Carrasquero ^{1*} , A. Amato Del Monte ¹ , F. Luoni ¹ ¹ Eni S.p.A.
14:45	RP08 - Rock Physics and Inversion Case Study of Lower Mannville Lithic Channel - an Interpreter Perspective - V. Baranova ¹ , A. Mustaqeem ¹ , D. Kondrat ^{2*} ¹ PETRO-EXPLORERS INC.; ² Rockyview GeoServices Inc.
15:10	Coffee Break
Session 3: Integration of Multi-Physical Data Session Chairs: M. Ellis (Schlumberger) & P. Belem (UNIS)	
15:30	RP09 - Characterizing the Composition and Water Saturation of Chalk through GPR and P-wave Velocity - H. Yuan ^{1*} , N. Lars ¹ , A.Z. Abdu ¹ ¹ University of Copenhagen
15:55	RP10 Identification of Shale Distribution Type Using Rock Physics Template and Seismic - B. Khadem ¹ , M.R. Saberi ² ¹ Amirkabir University of Technology (Tehran Polytechnic) ² CGG
16:20	RP11 - Impact of Conductive Metal Particles on Water Saturation Estimations - T. Alshaikhmubarak ² , A. Marzoug ² , P. Zhang ¹ , W. Abdallah ^{1*} ¹ Schlumberger Dhahran Carbonate Research Center; ² Saudi Aramco
16:45	Panel Discussion
17:30	Close of Day
18:00	Icebreaker Reception

Oral Presentations | Tuesday 11 February

BALLROOM	
09:00	Morning Coffee
09:30	KN02 - Rock Physics Modeling of 4D Rock Physics Templates Constrained by Burial history – North Sea Demonstrations - P. Avseth ^{1*} , I. Leacock ¹ , T. Veggeland ² ¹ Dig Science; ² Vår Energi
Session 4: EOR and Time-Lapse Rock Physics Session Chairs: C. Leone (Schlumberger) & A. El Husseiny (KFUPM)	
10:22	RP12 - Simulation to Seismic: A Case Study through Efficient Rock Physics and 3D Convolutional Modelling - J. Butt ^{1*} , M. Chapelle ¹ , M. Paydayesh ¹ , M. Shadrina ¹ , V. Korakas ² , D. Anestoudis ² ¹ Schlumberger; ² Energiean
10:25	Extended Coffee Break and Poster Session A
11:10	RP14 - Time-lapse Rock Physics from Well to Reservoir Scale: An Example from an EOR Field - D. Mastellone ^{1*} , C. Rizzetto ¹ ¹ Eni S.p.A.
11:25	RP16 - Four-phase Relative Permeability Formulation for Surfactant Flooding Modeling - B. Samson ^{1*} , M. Shaykhattarov ¹ ¹ Schlumberger
12:00	Lunch Break
Session 5: Rock Physics Modelling Session Chairs: K. Koryakova (Ikon Science) & M. Ellis (Schlumberger)	
13:05	RP17 - Effective Medium Model in Shales and Sandstones at Multifrequency Observations - R.N. Pertiwi ^{1*} , D. Iacopini ¹ , D. Healy ¹ ¹ University of Aberdeen
13:30	RP18 - Variability of the Free Parameters in Rock Frame Models for Sandstones - H. Amini ^{1*} ¹ Heriot-Watt University
13:55	Coffee Break
14:20	RP19 - A Rock Physics Workflow to Simulate Matrix Mineralogy Effects on AVO Models - C. Panzeri ^{1*} , B. Ciurlo ¹ , F. De Finis ¹ ¹ Eni S.p.A.
14:45	RP20 - An Optimized Digital Rock Physics Workflow for Elastic Moduli Estimation of Sandstones with Dispersed Clay - J. Liang ^{1*} , S. Glubokovskikh ¹ , B. Gurevich ^{1,2} , M. Lebedev ¹ , S. Vialle ¹ , A. Yurikov ³ ¹ Curtin University; ² CSIRO Energy; ³ DownUnder GeoSolutions
15:10	Panel Discussion
16:00	Close of Day
19:30	Workshop Dinner

Poster Presentations | Tuesday 11 February

FOYER	
Extended Coffee Break and Poster Session A	
14:10	P01 - Comparison of Zeroth-Order Far-Field Green's Function Between Connected and Isolated Porosities - A. Ghosh ^{1*} , E. Chesnokov ¹ ¹ University Of Houston
14:20	P02 - Comparison of Shear Estimation using Rock Physics Modeling and Multi-Linear Regression Validated by Well-tie and AVO - G.C. Tay ¹ , A. Mathur ^{2*} ¹ Petronas Carigali Sdn Bhd; ² CGG

14:30	P03 - An Experimental Approach to Link Klinkenberg Permeability to Pore Size Distribution in Coals - M. Mukherjee ^{1*} , S. Misra ¹ ¹ Indian Institute of Technology, Kanpur.
14:40	P04 - Rock Model Corrected S-wave Velocity Prediction - Example from the Norwegian Sea - E.H. Jensen ^{1*} , Å. Drottning ¹ ¹ Rock Physics Technology AS

Oral Presentations | Wednesday 12 February

BLU CONFERENCE ROOM	
08:30	Coffee Break
09:00	KN03 - Rock Physics of Unconventional Shale: Wireline Data and Theory - J. Dvorkin ^{1*} , J. Walls ² ¹ KFUPM; ² Halliburton
Session 6: Unconventional Resources Session Chairs: R. Saberi (CGG) & C. Leone (Schlumberger)	
09:30	RP21 - A Thermal-Maturation Dependent Elastic Rock Physics Template for Organic-Rich Mudrocks: Construction and Application - M.A. Al Ibrahim ^{1*} , T. Mukerji ¹ , A. Hosford Scheirer ¹ ¹ Stanford University
09:55	RP23 - Integrated Rock Physics and Seismic Modeling of Igneous Reservoirs - O. Rabbel ^{1*} , J.B. Spacapan ² , P. Betlem ³ ¹ University of Oslo; ² Y-TEC; ³ The University Center in Svalbard
10:20	Extended Coffee Break and Poster Session B
11:05	RP24 - Cost-Effective Reservoir Characterization Based on Drill Cuttings to Enhance Completion and Production of Lateral Wells - F. Allo ^{1*} , C.V. Ly ² ¹ CGG; ² CGG
11:30	RP25 - Brittleness Estimation and Anisotropy Analysis of Lower Silurian Qusaiba Shale, Saudi Arabia - A. Mustafa ^{1*} , A. Abdulraheem ¹ , M.O. Abouelresh ¹ ¹ King Fahd University of Petroleum & Minerals (KFUPM), KSA
11:55	Panel Discussion
12:45	Lunch & Close of Workshop

Poster Presentations | Wednesday 12 February

FOYER	
Extended Coffee Break and Poster Session B	
10:20	P05 - Iterative Coupled Geomechanics Model with Reservoir Simulator Model - S. RazaviZadeh ¹ , A. Nakhaee ^{2*} ¹ Department of Petroleum Engineering, Kish International Campus, University of Tehran; ² Institute of Petroleum Engineering, School of Chemical Engineering, College of Engineering, University of Tehran
10:30	P06 - Identifying the Predominant Pore Directions in a Porous Medium: An Application to Reservoir Rock Core Samples - W. Roque ^{1*} , E. Ferreira Neto ¹ , G. Oliveira ¹ , M. Santos ¹ ¹ Petroleum Engineering Modelling Laboratory, Federal University of Paraíba
10:40	P07 - Seismic Modelling of Virtual Outcrops: Application of Rock Physics Beyond the Borehole - P. Betlem ^{1*} , O. Rabbel ³ , I. Lecomte ² , K. Senger ¹ ¹ Department of Arctic Geology, University Centre in Svalbard; ² Department of Earth Science, University of Bergen; ³ Department of Geosciences, University of Oslo

SOCIAL PROGRAMME

Icebreaker Reception

Monday 10 February, 18:00 – 20:00hrs
The Penthouse - Radisson Blu Hotel Milan

Workshop Dinner

Tuesday 11 February, 19:30 - 21:30
Ristorante Chiuma's Milano
Via Gallarate, 55/57, 20151 Milano MI

IMPORTANT DATES

Registration Open	1 September 2019
Registration Close	3 February 2020

REGISTRATION FEES

REGISTERED AND PAID	FROM 1 SEPTEMBER UNTIL 1 JANUARY	FROM 2 JANUARY - 3 FEBRUARY	ONSITE
EAGE Green Member	€ 945	€ 1.045	€ 1.045
EAGE Bronze/Silver/ Gold Member	€ 795	€ 895	€ 895
EAGE Platinum Member	€ 795	€ 795	€ 795
EAGE Student Green Member	€ 425	€ 475	€ 475
EAGE Bronze/ Silver/Gold Student Member	€ 400	€ 450	€ 450
Non-member*	€ 995	€ 1.095	€ 1.095
Student Non-member*	€ 450	€ 500	€ 500

All fees are in Euros (€). One Euro of your total registration fee is donated to the EAGE Green Fund.

Please note: The deadlines are following the Local Time in the Netherlands.

Members please note: To qualify for the member registration fee, your EAGE membership dues for 2020 must have been paid and confirmed. The processing time for membership applications or renewals is 10 working days.

To qualify for the reduced student registration fee:

- Students must be enrolled in a full time study programme at a recognized university or institute
- The registration must be accompanied by a copy of a student ID card and/or official proof of enrolment.

Please note: Student non-members cannot be older than 34 years of age (when registering). The non-member fee includes EAGE membership for the remainder of 2020.

Please note that EAGE reserves the right to cancel the short course or workshop due to low participation. In this case, payment will be refunded in full.



VENUE

The Fifth EAGE Workshop on Rock Physics will be held at the **Radisson Blu Hotel Milan**

Address: Via Villapizzone, 24, 20156 Milano MI, Italy

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CONTACT US!

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See you in Milan!

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