The American Association of Petroleum Geologists (AAPG) and our suppliers, venues and services partners are committed to providing a clean and safe environment and experience for all our event participants. We remain alert to COVID-19 risks and are closely following and adapting to all applicable health and safety guidelines. While conditions vary between countries, cities, municipalities, and facilities, safeguarding measures you may encounter at AAPG events include physical distancing and masking, readily available hand sanitizer, enhanced cleaning and disinfecting protocols, temperature health checks and screenings, minimized touchpoints and cashless payment options.

As personal safety is a shared responsibility, we ask that all participants ensure that they are feeling well and in good health, with no fever or other symptoms related to COVID-19, before showing up at an AAPG event. Any specific delegate obligations will be published in pre-event communications and clearly displayed on signage throughout our venues. Given the ever-changing nature of the pandemic recovery, registrants will receive regular updates and instructions concerning the latest health and safety requirements.

Please be informed that, as per Abu Dhabi Government Guidelines, all workshop attendees must present a negative PCR test taken within 48 hours of the event and must be double vaccinated.

All attendees must also download the UAE’s official COVID-19 app called Al Hosn which must show an ‘E’ or a star to gain entry.

Please ensure to check travel guidelines for entry into Abu Dhabi here.

Please note that AAPG will be regularly monitoring and updating information concerning travel and entry requirements to the workshop.

**WHAT TO EXPECT FROM THE AAPG EXPERIENCE**

The key requirement for reducing uncertainty and risk in exploration and production is a rigorous understanding and quantification of geological processes and controls.

Fundamental research in geological process-based forward modeling started in the 1960s to 1970s in academia. However, the exploration industry has only recently started to more widely deploy geological process-based forward modeling. The initial focus has been on depositional modeling using diffusion, Navier-Stokes and hybrid geometric approaches, but more recently a diverse range of approaches is being adopted. They include fuzzy logic, cellular automata and various other reduced-complexity modeling approaches that produce output information on petrophysical, depositional, diagenetic and structural modeling and to geomechanical processes using finite element or discrete fracture network modeling based on post-burial mechanical stratigraphy and local/regional stress patterns. Geological process-based forward modeling has shown highly promising results for e.g., reservoir quality, seal integrity, and sweet spot prediction in complex play and trap settings but many challenges persist, including:

- Calibration of numerical input parameters specific to age, climate and structural settings.
- How to use physical experiments and outcrop reservoir analogue studies for model verification.
- Automated input parameter optimization.
- Multi-scale process-based models from basin to prospect, play and inter-well scale.
- Linking and integrating approaches for depositional, diagenetic and structural modeling.
- Integrating textural, diagenetic and fault/fracture-related poroperm models.
- Sensitivity analysis and quantitative risk assessment of multiple modeling realizations.
- Effective implementation in existing industry workflows.

In recent years, interest in geological process-based forward modeling has extended to the geothermal exploration industry and the CO2 storage industry, which face some comparable challenges in predicting subsurface rock parameters and their spatial distribution.

The proposed workshop will include invited experts and interested researchers from both industry and academia. We will concentrate on geological process-based forward modeling rather than on geostatistical modeling. Flow simulation, or hydrocarbon systems modeling. Five sessions spread over a period of 2 1/2 days will be dedicated to key challenges in geological process-based forward modeling, finishing with a concluding session to define a practical way forward.

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**TYPICAL PROGRAM COMMITTEE**

Rainer Zuhike [Chair]
Saoud Aramco

Dave Cantrell
Cantrell GeoLogic

Cédric M. John
Imperial College London

Nicolas Hawie
Independent Consultant

Frans van Buchem
KAUST

Scott Bowman
PetroDynamics

David Tang
Saudi Aramco

Peter Burgess
University of Liverpool

Daniel Tetzlaff
Westchase Software Corporation

**WORKSHOP OUTLINE**

Today’s oil and gas industry is increasingly turning toward complex stratigraphic-diagenetic and structural plays. Prediction and risking of reservoir heterogeneity, seal integrity and source rock sweet spots are becoming more important than ever before. Currently, prediction and risking rely primarily on stochastic geostatistical approaches, which have seen an impressive development over the last few decades. However, exploration of and production from increasingly complex plays has revealed higher levels of uncertainty in geostatistical reservoir models, because of a combination of factors:

- Statistical models do not fully capitalize on the geological information available.
- Prediction and risk assessment usually apply a single statistical approach.
- Different geostatistical approaches produce varying predictive models.
- Surface geological studies (lithostratigraphy) have proven highly pronounced rock heterogeneity.
- Multiple, concurrent processes with various feedback mechanisms control reservoir quality.

In order to meet current and future challenges of increasingly complex prospect and play types, the industry needs to develop new, additional approaches to reserve, seal and source rock prediction.

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**WORKSHOP GUIDELINES**

**FORMAT**

The workshop will be 3 days, consisting of oral presentations, poster presentations and breakout sessions where participants can discuss and investigate a specific theme that is of mutual interest. The first day will feature an inaugural keynote speech by a high-profile professional from the industry.

**ATTENDANCE**

Registrations are invited from all relevant disciplines with experience and/or knowledge of the subject areas being addressed in the workshop. Registrations will be accepted on a first-come, first-served basis.

**CALL FOR POSTERS**

You are invited to prepare a poster for presentation at the workshop. If you are interested in participating, please send a short abstract to cnavarro@aapg.org by 22 April 2022. All posters will be produced as pull-up banners and delivered by AAPG. There will be no other format available for poster display.

**REGISTRATION TYPES & FEES**

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Fees exclude 5% VATA

*To avail the Member rate you must be an active member of AAPG.
**To register as a Young Professional you must be under the age of 35 with less than 10 years of work experience.

**REGISTRATION DEADLINE**

To guarantee your seat, please make sure to register by 16 May 2022.

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**CANCELLATION POLICY**

AAPG will refund the tuition, less a $100 processing fee, if the request is received no later than 30 days prior to the workshop. Cancellations must be made in writing. The registrar will accept cancellation notices by telephone, but all such notices must be followed up by fax or e-mail. No refund will be made for cancellations received less than 30 days prior to a workshop being given. Nonpayment of tuition does not constitute automatic cancellation.

If no cancellation notice is received by 30 days prior to a workshop, participants are liable for full tuition. AAPG reserves the right to cancel a workshop if enrollment is insufficient to ensure proper effectiveness. Substitutions for individuals can be made at any time. A paid enrollment may be transferred one time to a future workshop if the request is received prior to the 30-day cut-off date.
Day 1 Monday 23rd May

07.30-08.30 Workshop Registration
08.30-08.40 Workshop Chair’s Welcome and Introduction
08.40-08.50 Inaugural Keynote
Ashraf Al-Tahini, Head of Upstream Research, Saudi Aramco

08.50-09.20 Technical Keynote
Dan Tetzlaff, Geoscience Research Manager, Westchase Software Corp
The Evolution of Geologic Process Models

09.20-09.50 Technical Keynote
Scott Bowman, President, PetroDynamics
Why Simulate Stratigraphy?

09.50-10.05 Coffee Break & Posters

Session 1: Current Applications, Lessons Learned and Challenges

Chair: Rainer Zuhlke, Saudi Aramco & Peter Burgess, University of Liverpool

10.05-10.35 Session Keynote
Didier Granjeon, IFPEN
3D Stratigraphic and Diagenetic Forward Modeling: Examples from Jurassic Carbonates, Central Saudi Arabia

10.35-11.00 Gérard Massonnet, TotalEnergies
Geological Process-Based Forward Modeling: Towards the Possibility of Meeting the Standard Requirements of Reservoir Modeling

11.00-11.25 Cedric Griffiths, Stramatol
Geoparametric Forward Modeling (GPBFM) for the 21st Century, Climate Change, New Energy Applications, and Education

11.25-11.40 Coffee Break & Posters

11.40-12.00 Poster Presentation Summary Session

12.00-13.00 Breakout Session

13.00-14.00 Session 2: Multi-Scale Calibration of Geological Processes

Chair: Nicolas Hawie, Independent Consultant & Scott Bowman, Petrodynamics

14.00-14.30 Session Keynote
Volker Wahrenkamp, KAUST
The Role of Hydrodynamics in Shaping Carbonate Depositional Systems and Sediment Distribution – Observations from Recent and Ancient, Shallow and Deep Basinal Settings

14.30-14.55 Nikolaos Michael, Saudi Aramco
Calibration of Input Parameters for Geological Process-Based Modeling – Depositional Units, Sediment Input and Paleobathymetry

14.55-15.05 Coffee Break & Posters

15.05-15.30 Andrew Davies, Halliburton
Use of an Integrated Earth Model for the Rapid Determination of Boundary Conditions

15.30-15.55 Ashley Harris, Chevron
Trust, but Verify: Parameter Calibration and Validation of Deep-Water Sand Delivery Processes in a Numerical Model

15.55-16.15 Poster Presentation Summary Session

16.15-17.15 Breakout Session

Day 2 Tuesday 24th May

Session 3: Modeling Approaches and Applications

Chair: Cédric M. John, Imperial College London & Frans van Buchem, KAUST

08.30-09.00 Session Keynote
Peter Burgess, University of Liverpool
An Overview of Numerical Stratigraphic Forward Modeling Approaches and Applications

09.00-09.25 Sergio Courtade, Schlumberger
Digital Geology Physics Based Simulation for the Next Generation G & G Integration

09.25-09.50 Samer Bou Daher, Beicip-Franlab
Integration of Forward Stratigraphic Modeling in Reservoir Geomodels: Approach and Benefits

09.50-10.05 Coffee Break & Posters

10.05-10.30 Andreas Miller, OMV Austria
Optimization of Stratigraphic Forward Models with Differential Evolution and Multi-Point Statistics

10.30-10.55 Peter Süss, University of Tuebingen
The Interplay Between Morphological Evolution and Stratigraphic Sequences in Foreland Basins

10.55-12.00 Breakout Session

12.00-13.30 Lunch

Session 4: Integration of Multiple Geological Processes and Approaches

Chair: Rainer Zuhlke, Saudi Aramco & Dan Tetzlaff, Westchase Software Corporation

13.30-14.00 Session Keynote
Cédric M. John, Imperial College London
Integration of Deep Learning into Forward Geologic Modeling: A Glimpse Over the Horizon

14.00-14.25 Assaf Hussein & Xavier Garcia-Teljeiro, Schlumberger
Integration of Geomechanics with Geological Process Forward Modeling

14.25-14.50 Sarah Baumgardner, Chevron
C-CROC: A Multi-process Numerical Model for Carbonate Reservoir Stratigraphy, Diagenesis, and Rock Properties

14.50-15.05 Coffee Break & Posters

15.05-15.30 Wisam AlKawai, Saudi Aramco
Integrated Process-Based Geologic Modeling Platform (IPGEM)

15.30-15.55 Hugo Bloem, Edinburgh University
Using Geological Process Models in Rapid Bayesian Inversion

15.55-16.20 Samer Bou Daher, Beicip-Franlab
Uncertainty and Risk Analysis in Forward Stratigraphic Modeling: Application to Reservoir and Source Rock

16.20-16.30 Coffee Break & Posters

16.30-17.30 Breakout Session

Day 3 Wednesday 25th May

Session 5: Case Studies and Applications

Chair: Scott Bowman, Petrodynamics & David Tang, Saudi Aramco

08.30-09.00 Session Keynote
Nicolas Hawie, Independent Consultant
Hybrid Reservoir Models: From Concepts to Applications

09.00-09.25 Frans van Buchem, KAUST
The Impact of Sea Level Variations on the Stratigraphic Architecture of Shallow Water T-Factory Carbonate Systems – A Case Study of the Early Cenomanian Nath Formation (Oman)

09.25-09.50 Peng Lu, Saudi Aramco
Process-Based Forward Diagenetic Modeling Applications in Carbonate Reservoirs

09.50-10.05 Coffee Break & Posters

10.05-10.30 Najib Al Wazzan, Kuwait Oil Company
Forward Stratigraphic Modeling of Mesozoic Marine Organic-Rich Deposits: The Jurassic Najmah Formation – Case Study

10.30-10.55 Khalid Hmoud, Saudi Aramco
Environmental Parameters from the Arabian Plate Especially from the Permian and/or Jurassic Formations

10.55-12.00 Breakout Session

12.00-13.00 Lunch

Session 6: Perspectives and Way Forward

13.00-15.00 Cédric M. John, Imperial College London & Nicolas Hawie, Independent Consultant

15.00-15.15 Workshop Wrap Up & Adjournment

Poster Presentations

Wei Wei, Beijing Research Center, Aramco Asia
Thermochemical Sulfate Reduction Model for H2S Concentration Prediction in Carbonate Gas Reservoirs

Xiawu Wang, Beijing Research Center, Aramco Asia
Numerical Modeling of Submarine Turbidity Currents on Linked Minibasins

Samer Bou Daher, Beicip-Franlab
Using Forward Stratigraphic Modeling (FSM) as Training Image in Multiple Point Geostatistics and Other Insights of FSM at Reservoir Scale

Samer Bou Daher, Beicip-Franlab
Regional Sequence Stratigraphic Evolution of the Apian Age Shuaiba Formation Carbonate System Using Forward Modeling Techniques: Implications for Reservoir Development and Play Fairway Identification

Sarah Robinson, Imperial College London
Understanding the Distribution of Organic and Inorganic Carbon of the Eagle Ford Group, Maverick Basin TX

Mahmoud El-Yamani, Imperial College London
Deciphering the Controlling Factors on the Evolution of Mid-Oceanic Atolls: New Insight from the Early Cretaceous Resolution Guyot (Mid-Pacific Mountain)

Ugha Almahmadi, North Oil Company, Qatar
Stratigraphic Forward Modeling of the Late Jurassic Tectono-Eustatic Impacts on the Cyclic Arab/Hith Deposit

Swez Snieder, University of Aberdeen
Using Stratigraphic Forward Modeling to Investigate Controls on Incision in the Taquir Distributive Fluvial System, Pananal, Brazil

TO REGISTER, PLEASE CLICK HERE

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