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2024 - 2026

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2025 Q4 Technical Seminars

Northside
Baker Hughes
2001 Rankin Rd
Houston, TX 77073

NMR Study of Permeability and Kerogen in Organic-Rich Chalk
By: Dr. Philip Singer (Rice University)

Development And Baseline Comparison of a New Pulsed Neutron Spectroscopy Tool for Carbon-Oxygen Analysis And Three-Phase Saturation Monitoring
By: Dr. Toyli Anniyev (Baker Hughes)

Westside
SLB - 6350 West Sam Houston Parkway North
Houston, TX 77041

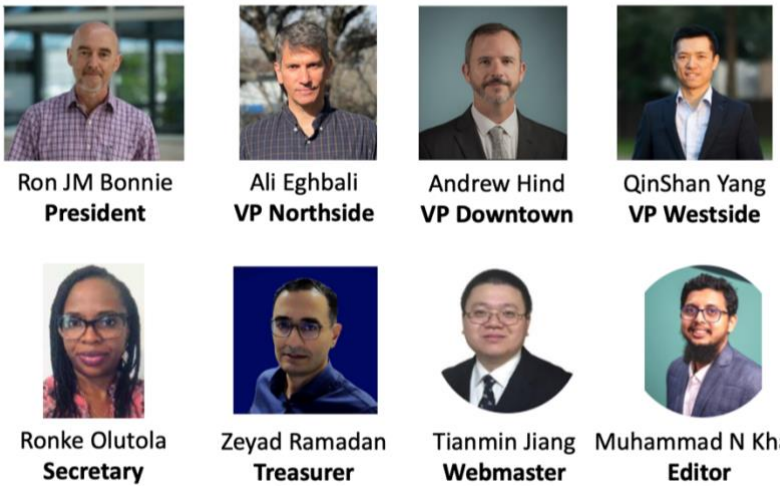
Asphaltene Clustering in A Black Oil Column Driven by Gas Addition, Explained via History Matching of Reservoir Charge
By Dr. Tarek S. Mohamed (SLB)

Automated Anomaly Detection of Multi-Metallic Tubulars in Well Integrity Logs Using Signal Mode Decomposition and Physics-Informed Decision Making
By Ze Wang (GOWell)

On the utility of the shear modulus in rock physics model development: robust workflows for compressible high porosity siliciclastic reservoirs
By Mark Kittridge (OXY)

Downtown
Virtual / webinar
Chevron building
1400 Louisiana St
Houston, TX - 77002

2024-2026 Executive Board



Presidents Corner Q4 2025

October 14, 2025

Dear Members of the SPWLA Houston Chapter

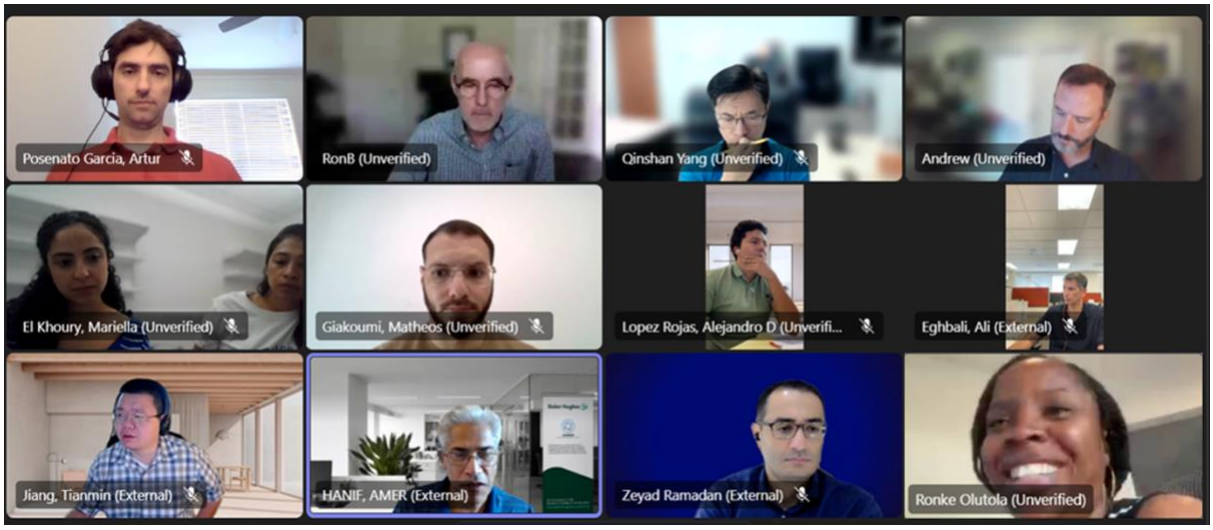
Time flies, we're already in Q4 of the year 2025 and fall is around the corner. The year so far and especially the months since our last Newsletter, have been extremely busy, hectic even and filled with uncertainty for many. The world as we once knew it is no more, change is inevitable (as the saying goes). The same is true for our industry, for our discipline(s). Developments in AI are happening at lightspeed and many companies are embracing the technology. As we all should. AI is not a substitute for knowledge and experience, but a great tool to do more, better and faster (for those, old enough to remember, sounds like The $6 million Man, no?).

Speaking of changes, we are very fortunate to have Andrew Hind join our Board as VP Downtown (look for his bio on our homepage https://spwla-houston.org/who-we-are.php).

Several exciting events on the horizon:

- as I'm writing this message, we're hours away from the deadline to submit abstracts for the 2026 Annual Symposium in Conroe. I hope you got yours in!
- next week, on the heels of the SPE ATCE 2025 Conference & Exhibition, the SPWLA NMR Special Interest Group is Reaching Full Polarization in an NMR Conference, to be held at the Halliburton Campus in Houston. There is still time to register; check for details under Future Events, below.
- The 2025 SPWLA Houston Chapter Technology Show is a go and will be held on December 5, 2025, also at the Halliburton Campus in Houston (thank you, SPWLA President Bob Gales). Take advantage of early bird pricing (expires November 5). Details under Future Events and on the Chapter's webpage (https://www.spwla-houston.org/event-detail.php?id=18).

Finishing with a shout-out to the '25–'26 Board of the University of Texas at Austin, Student Chapter, who joined us for our September Board meeting for introductions and strengthening existing ties.
Also in attendance International Board members Artur Posenato (VP Technology-Elect) and Amer Hanif (Regional Director North America I).



Ron J.M. Bonnie
Houston Chapter President.

Sponsors and Friends of the Houston Chapter Q4 2025

SPWLA Houston Chapter Networking Events Q4 2025

SPWLA Houston Chapter Networking Meeting, August 28, 2025

Our August 28 networking events was very well attended with several international guests, who were in town for a weeklong training at their corporate headquarter. This made for a very lively and varied conversation. Attendance on September 25 was no less and again, great discussions on a wide variety of topics, not all in the petrophysical domain.

Anyone is welcome to join us for an evening of networking, conversations, and community! Whether you're a Petrophysicist, Geologist, Geophysicist, Engineer, or Manager, this is a fantastic opportunity to connect with fellow professionals in a relaxed setting. No RSVP needed—just show up and mingle at your leisure.

Your last opportunity of 2025 to rub shoulders with fellow petrophysicists will be Thursday, October 23 from 5:00 – 8:00 pm at Cedar Creek Bar & Grill, 1034 West 20th Street, Houston, TX 77008.
Expect a larger than normal crowd, as many SPE-ATCE attendees are still in town and attendees of the 2025 NMR SIG Conference have been invited also.

SPWLA Houston Chapter Networking Meeting, September 25, 2025

SPWLA – Houston Chapter News		Q4 2025
Thursday, August 28th, 2025 11:30 am – 1:00 pm	**Baker Hughes, 2001 Rankin Rd, Houston, TX 77073**	Northside Technical Seminar & Lunch

NMR Study of Permeability and Kerogen in Organic-Rich Chalk

By: Dr. Philip Singer (Rice University)

Abstract

NMR relaxation and diffusion are exceptional techniques for studying the petrophysics of unconventional formations. In this talk, I present some unique petrophysical insights into Type II-S (i.e., marine origin with high organic-sulfur content) organic-rich chalk, including:

(a) Micro/macro pore-size and tortuosity anisotropy from restricted diffusion obtained from D-T2 maps at 2.3 MHz, permeability and permeability anisotropy from the Carman-Kozeny model, and insights into paleo-deposition cycles in the late Cretaceous.

(b) Quantification of solids (kerogen, bitumen, clay hydroxyls) and liquids (pore fluids, fluids dissolved in kerogen, clay bound water) using T1-T2 maps with solid-echo at 20 MHz, integration with RockEval data, H/C ratio of kerogen, kerogen swelling ratio, and kerogen nanopore size, all as a function of thermal maturity (i.e., depth).

Biography

Dr. Philip Singer is an Assistant Research Professor at the Department of Chemical and Biomolecular Engineering, Rice University in Houston TX. He joined Rice University in 2015 as a research scientist in the Hirasaki group, then became a faculty member in 2021. He received his master's degree in physics from the University of Oxford in 1997 and earned his doctorate in physics from the Massachusetts Institute of Technology in 2003. He completed his postdoctoral research from the Université Paris-Sud in 2005, after which he worked for 10 years as a research scientist at Schlumberger. His areas of interest are NMR in porous media, hydrogen geo-storage, carbon dioxide utilization/geo-storage, MD simulations, MRI contrast agents, and NMR in quantum materials.

SPWLA – Houston Chapter News		Q4 2025
Thursday, September 25th, 2025 11:30 am – 1:00 pm	**Baker Hughes, 2001 Rankin Rd, Houston, TX 77073**	Northside Technical Seminar & Lunch

Development And Baseline Comparison of a New Pulsed Neutron Spectroscopy Tool For Carbon-Oxygen Analysis And Three-Phase Saturation Monitoring

By: Dr. Toyli Anniyev (Baker Hughes)

Abstract

A new slim multi-detector pulsed neutron wireline logging tool has been developed for open-hole or cased hole formation evaluation saturation analysis and time lapse monitoring. With a greater neutron source output and high-spectral resolution gamma-ray detectors, the tool can be operated with reduced uncertainty or faster logging speeds. New fully programmable digital electronics provides a range of acquisition modes optimized for specific formation evaluation objectives.

Biography

Dr. Toyli Anniyev is Nuclear Domain Lead in Completions, Intervention and Measurement, Engineering and Technology group based in Houston, Texas. He joined Baker Hughes in 2011 as a research scientist. His interests include neutron generators, gamma ray and neutron detection techniques, nuclear tool design, signal processing and algorithm development. He received his MS degree from Moscow Institute of Physics and Technology and PhD degree from Stanford University, both in physics. He has coauthored more than 20 research publications and holds more than 10 patents.

SPWLA – Houston Chapter News		Q4 2025
Thursday, August 14th, 2025 11:30 am – 1:00 pm	**SLB, 6350 West Sam Houston Pkway N, Houston, TX 77041**	Westside Technical Seminar & Lunch

Asphaltene Clustering in A Black Oil Column Driven by Gas Addition, Explained via History Matching of Reservoir Charge

By Dr. Tarek S. Mohamed(SLB)

Abstract

A tilted-sheet, well-connected reservoir in the deepwater Gulf of Mexico/America exhibits bimodal and complex fluid distributions. The acquired measurements of methane isotope, asphaltene concentration, and solution gas-oil ratio (GOR) indicate a diffusional gradient of solution gas and lack of equilibrium in the top half of the oil column, whereas the bottom half of the oil column shows quasi-equilibrium and well-mixed oil. This startling distribution gives rise to an asphaltene clustering trend in the bottom half of the oil column, leading to large oil viscosity and asphaltene gradients toward the base of the oil column. Our objective is to model the fluid mixing dynamics, over geologic time, of separate gas and oil charges and the impact of a significant GOR increase on asphaltene spatial distributions. For the first time, we simultaneously model the development and dynamics of both asphaltene and GOR distributions over geologic time leading to present-day, bimodal measured fluid realizations. Geochemical evaluation of acquired fluid samples shows a significant amount of biogenic gas throughout the entire oil column where methane isotopes indicate that 50% of the solution gas in the bottom half of the oil column is biogenic, and where the biogenic gas fraction increases at the top half of the column. Furthermore, GOR measurements indicate significant variations in solution gas at the top half of the column, increasing by 6000 scf/bbl over 130 ft of height. This gradient is successfully matched with the diffusion equation. On the other hand, the lower half of the column shows a small GOR gradient that is matched locally with the cubic equation of state (EoS). Asphaltene concentrations respond to the high GOR in the top half of the column as asphaltenes are expelled with great efficiency toward the bottom half of the column, forming asphaltene clusters. Asphaltene clusters remain due to both increased asphaltene concentration and increased solution gas.

This process gives rise to a light-oil gradient of the asphaltenes in the top half, and a heavy-oil clustering gradient of asphaltenes in the bottom half of the column. Both gradients are not expected in a black-oil reservoir and are matched with corresponding models of Flory-Huggins-Zuo equation of state (FHZ EoS). The puzzling fluid distributions are explained and replicated by forward modeling of fluid mixing dynamic processes over geologic time: history matching of reservoir charge. Compositional reservoir simulation is used to model the addition of methane through a point source into an oil-saturated reservoir, resulting in the development of present-day GOR and asphaltene measurements

Biography

Tarek S. Mohamed (SLB) is an Interpretation Development Engineer and an Interdisciplinary Subsurface Scientist at SLB, working on various projects spanning reservoir engineering, petrophysics, and geophysics. He co-leads the development of the new direction of forward modeling reservoir fluid geodynamics (RFG) processes over geologic time using reservoir simulation, and history-matching reservoir charge as a new way to predict fluid spatial compositional distributions in untapped regions. Dr. Mohamed co-authored over 20 technical papers accepted by several organizations, including SPWLA, SPE, SEG, AAPG, and ACS, and published in peer-reviewed journals or presented at major energy conferences. His expertise includes reservoir numerical modeling and simulation, petrophysics and formation evaluation, data science and machine learning, reservoir characterization, and well-test analysis. He holds a PhD in Petroleum Engineering from the University of Texas at Austin, an MS in Petroleum Engineering and a Graduate Certificate in Data Science and Analytics from the University of Oklahoma, and a BS in Petroleum Engineering from Suez University. He received several technical awards and recognitions, including the 2025 SPWLA Young Professional Technical Achievement Award, as well as being selected as an SPWLA Global Distinguished Speaker for 2023-2024 and an SPWLA Regional Distinguished Speaker for North America for 2024-2025.

Thursday, September 11th, 2025 11:30 am – 1:00 pm	SLB, 6350 West Sam Houston Pkway N, Houston, TX 77041	Westside Technical Seminar & Lunch

Automated Anomaly Detection of Multi-Metallic Tubulars in Well Integrity Logs Using Signal Mode Decomposition and Physics-Informed Decision Making

By Ze Wang(GOWell)

Abstract

Anomaly detection using well integrity logs is crucial for multi-metallic tubular wells, as it helps save operators costly repairs and potential well abandonment. However, features such as collars and artifacts often obscure the signals of outer pipes, making anomaly interpretation particularly challenging. To address this issue, an automated anomaly detection method has been developed that effectively separates collars and corrosion signals from complex log results. This approach significantly enhances analysis accuracy and efficiency in wells with multiple tubulars, up to five layers. The anomaly detection method utilizes cased hole logging images obtained from a pulsed eddy current electromagnetic tool as input. It outputs the location information of collars and anomalies, respectively. The method comprises two steps—signal mode decomposition and the decision-making process. A novel approach, hierarchical multiresolution variational mode decomposition (HMVMD), is introduced to extract both anomaly-related and collar-related signals by decomposing the input into a set of frequency-based modes. The decision-making phase employs a decision tree designed based on Bayes' theorem, with the process simplified by Markovian modeling. Prior knowledge of cased hole completion is incorporated into the design to further refine results. Field trials in operational wells have been conducted to evaluate the proposed method. By distinguishing the thickness-related signal from raw data, previously obscured anomalies became interpretable. The method excels at denoising the data, effectively reducing noise interference by enhancing signal-to-noise ratio (SNR) up to 29 dB. It saves 90% of the time that log analysts spend manually differentiating collars, traditionally requiring several hours, thereby significantly optimizing the interpretation efficiency. In a five-pipe scenario, the results demonstrate detection accuracy rates of approximately 99% for the

inner three pipes. It maintains accuracy rates over 90% and 75% on the fourth and fifth pipes, respectively, where the SNR is low, and the outer-pipe signal is masked by the inner layers. In addition, it maintains high accuracy under complex well scenarios, such as those involving completion equipment and eccentricity. This new approach offers interpretation specialists an efficient and accurate anomaly analysis tool for multi-metallic tubulars.

Biography

Ze Wang is a research scientist at GOWell, specializing in cased hole well integrity and production logging. His research interests include algorithm development, data-driven solutions, signal processing, and numerical simulation for oil and gas applications. He also has research experience in unconventional reservoirs and carbon utilization and storage. Dr. Wang previously worked as a post-doctoral scholar at Missouri University of Science and Technology, USA. He holds PhD and MS degrees in petroleum engineering from Missouri University of Science and Technology and a BS degree in petroleum engineering from China University of Petroleum, China

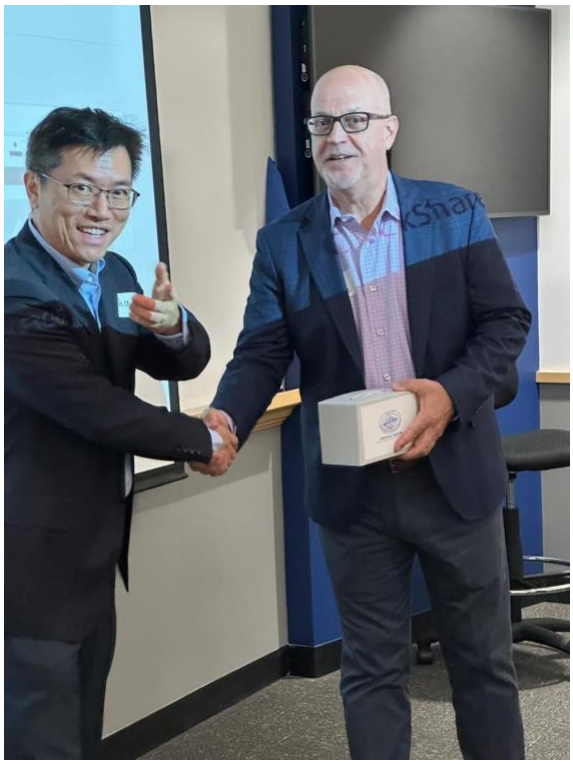
SPWLA – Houston Chapter News		Q4 2025
Thursday, October 10th, 2025 11:30 am – 1:00 pm	**SLB, 6350 West Sam Houston Pkway N, Houston, TX 77041**	Westside Technical Seminar & Lunch

On the utility of the shear modulus in rock physics model development: robust workflows for compressible high porosity siliciclastic reservoirs

By Mark Kittridge (OXY)

Abstract

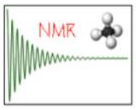
We describe a novel workflow for rock physics model development in high porosity (compressible) reservoir sands where seismic data are frequently used to identify reservoir presence, infer fluid type(s), and monitor dynamic (4D) reservoir behavior. We apply a stress dependent model that yields robust dry-rock moduli that are consistent with the mineral-based grain Poisson's ratio. The workflow is data-driven and model-based and relies on the shear modulus for fluid independent model calibration, enabling a wide range of well-based interpretive workflows. Core data, including representative analog measurements, provide independent model calibration when available. We highlight applications using high quality Gulf of America well data including model calibration, stress-dependent elastic properties, well-based rock physics close-the-loop (CtL), and show a clear example of time-lapse invasion affecting wellbore acoustic log data.



Biography

Mark is a Petroleum Engineer with over 37 years' experience in Petrophysics and Geophysics, delivering innovative technically rigorous reservoir characterization solutions across the E&P life cycle. With emphasis on multi-scale and multi-physics integration, I apply a data-driven and model-based approach to inform improved decision making in a complex 3D subsurface. Recognized industry and company expert in rock and fluid physics for robust geophysical seismic attribute interpretation, responsible for the development of methods and workflows deployed globally. His career includes relevant project work from five continents and professional experience including well operations, integrated reservoir studies, enhanced oil recovery, and physics of rocks for conventional (clastic, carbonate) and unconventional reservoirs. He is currently Principal and Manager of QI Geophysics at Oxy. Mark earned a MSc in Petroleum Engineering (The University of Texas at Austin) in 1988 and BSc and Professional degrees in Geological Engineering (Colorado School of Mines) in 1986.

Future Events – 2025 NMR SIG Congerence October 23 - 24, 2025



Reaching Full Polarization in an NMR Conference

REMINDER! Please no photos, videos, or any recordings of the technical content of this event throughout its duration. Thank you!!

Start	Session	Title	Presenting Author
		Day 1, October 23, 2025	
8:00 AM		**BREAKFAST (Provided on site) and NETWORKING**	
9:00 AM		**Introduction and HSE Moment Ron Bonnie & Ron Balliet**	
9:15 AM		**Invocation: Bob Gales, SPWLA President**	
			Affiliation (#)
9:30 AM	1a	NMR Study of Kerogen in Organic-Rich Chalk	Philip Singer[1]
9:50 AM	1b	NMR While Drilling: Overcoming Motion and Bandwidth Constraints via Proxy-Based Compression	Pierre Aerens[2]
10:10 AM	1c	Multidimensional Nuclear Magnetic Resonance Sensitivity Analysis	Nate Bachman[3]
10:30 AM		**BREAK 1 Morning**	
11:00 AM	2a	Effect of CO2 Chemical Reaction on Rock Pore Surface Morphology – A Laboratory Study	Gabriela Singer[2]
11:20 AM	2b	Using NMR and Triaxial-Induction Measurements for Well-Log Analysis of Anisotropic Shaly Sands	Ali Eghbali[4]
11:40 AM	2c	Practical Implementation of Sodium-23-NMR in Laboratory Core Analysis	Harry Xie[5]
12:00 PM		**LUNCH (PROVIDED ON SITE)**	
1:00 PM		**KEYNOTE PRESENTATION: SRIRAM SRINIVASAN**	
1:30 PM	3a	Eliminating First Echo Transient from CPMG in Inhomogeneous Magnetic Fields	Shin Utsuzawa[3]
1:50 PM	3b	Fast NMR Logging for Geothermal Wells	Tom Bradley[4]
2:10 PM	3c	Practical Applications for NMR Core Analysis	Mike Dick[6]
2:30 PM		**BREAK 2 AFTERNOON**	
3:00 PM	4a	High-Throughput Whole Core HSR-NMR Scanner	Jin-Hong Chen[7]
3:20 PM	4b	Resolving Heavy Oil Signatures in Clastic Reservoirs using BSS and AI-Driven Synthetic Modeling	Pedro Romero[8]
3:40 PM	4c	Integrating Acoustic PAR and NMR Rock Typing to Evaluate Dolomitization Effects on Carbonate Reservoir Quality	Zeyad Ramadan[3]
4:00 PM		**BREAK 3 AFTERNOON**	
4:30 PM		**Group Discussion – Questions and Comments**	
5:15 PM		**NON-SPONSORED DINNER with SPWLA Houston Chapter Social**	
		5pm – 8:30pm, Location Cedar Creek Bar & Grill	
		1034 W. 20th St., Houston, TX. 77008	

Start	Session	Title	Presenting Author
		Day 2, October 24, 2025	
8:00 AM		**BREAKFAST (Provided on site) and NETWORKING**	
9:00 AM		**Day 1 Summary & Further Ideas**	
			Affiliation (#)
9:20 AM	5a	Motion-Inclusive Inversion for Robust NMR Logging-While-Drilling under Magnetic Inhomogeneity	Yunke Liu[2]
9:40 AM	5b	Estimating Permeability of Carbonate Rocks from NMR T_2 Distribution using a Physics-Based Model	Behzad Ghanbarian[9]
10:00 AM	5c	Multi-TE and Multi-LF NMR Measurements to Address Challenges of the Evaluation of Complex Reservoirs	Anton Nikitin[10]
10:20 AM		**BREAK 1 Morning**	
10:50 AM	6a	Well Site NMR Measurements: from Cuttings to the Whole Core	Arcady Reiderman[11]
11:10 AM	6b	NMR Data as a Cornerstone for Unraveling Static and Dynamic Properties of Aeolian Reservoirs using a Multiple Matrix Porosity Saturation Height Model	Serge Galley[12]
11:30 AM	6c	Improving Geothermal Reservoir Assessment Through NMR Log Calibration with Core Data	Maciej Kozloski[2]
11:50 PM		**WRAP UP and RAFFLE PRIZES**	
12:00 PM		**LUNCH (PROVIDED ON SITE)**	

We look forward to seeing you all in person during the SPWLA NMR SIG!

Co-Chairs: Ron Bonnie, Stacey Althaus & Ron Balliet

SIG Committee: Ron Bonnie (NMR SIG President), Stacey Althaus (Aramco Americas), Radu Coman (Baker Hughes), Nate Bachman (SLB), Kris Farmer (CoreLab), Tianmin Jiang (ConocoPhillips), Abraham Simanjuntak (Nippon Oil), Boqin Sun (Chevron), Matthias Appel (Shell), Jesus Salazar (ConocoPhillips), Mike Dick (GIT), James Howard (DigiM), Zoya Heidari (UT), Mike Myers (UH), Ron Balliet (Halliburton).

Sponsors: To be Announced

Presenter Affiliations: (1) Rice University; (2) Halliburton; (3) SLB; (4) Baker Hughes; (5) Zealax Inc.; (6) Green Imaging Technology; (7) Aramco Americas; (8) Houston Christian University; (9) UT Arlington; (10) Ellington Geological Services; (11) Ecotek Corporation; (12) Shell

Future Events – 2025 Houston Technology Show December 5, 2025

More details: https://www.spwla-houston.org/event-detail.php?id=18).