

PETROPHASE 2024



LEADING SUSTAINABLE ENERGY SOLUTIONS 2024

MERIDA, YUCATAN, MEXICO

August 11-15, 2024, Fiesta Americana Mérida Hotel

FINAL TECHNICAL PROGRAM

<https://petrophase2024.com/ftp>

SUNDAY AUGUST 11TH

YUCATAN - II ROOM



I. ORAL PRESENTATIONS:



SUNDAY AUGUST 11TH

YUCATAN - II ROOM



STUDENTS' CONFERENCE ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
11:30-12:00 PM	Jimmy Castillo Central U. of Venezuela Keynote Lecture	Asphaltene and their subfraction interactions and the impact in aggregation
12:00-12:20 PM	Fernanda Paludetto Pelaquim et al.	1. Investigating Asphaltene Aggregation and Chemical Characteristics: Insights Derived through Experimental Approaches
12:20-12:40 PM	María F. Mercado-Villamizar et al.	2. Synthesis of rGO-supported nanocatalysts and their application in renewable diesel production
12:40-13:00 PM	Silvia A. Pedraza-Rodriguez et al.	3. Tracking Crude Oil's Compositional Changes Caused by Solar Radiation Using FT-ICR-MS

13:00-15:00 LUNCH / NETWORKING

15:00-15:20 PM	Evelyn J. Calderon-Florez et al.	4. Prediction of the total acid number (TAN) of crude oils from ATR-FTIR spectroscopy using the gradient boosting method
15:20-15:40 PM	Frank E. Viveros et al.	5. Hydrogen Storage in Depleted Gas Reservoirs using Methane Cushion Gas: An Interfacial Tension and Pore Scale Study
15:40-16:00 PM	Lizeth T. Calderón- Hernández et al.	6. Photoelectrocatalytic hydrogen production using GO@TiO ₂ and GO@Bi ₂ O ₃ composites as photocatalysts

SUNDAY AUGUST 11TH

YUCATAN - II ROOM



STUDENTS' CONFERENCE ORAL PRESENTATIONS



TIME

SPEAKER

TITLE

16:00-16:20 PM

Lady J. Giraldo et al.

7. Development and evaluation of carbon quantum dot materials synthesized from agro-waste for enhancement of the carbonated water injection process for CCUS and EOR

16:20 – 16:30 PM

Socrates Acevedo

Best Student Paper Award Ceremony



16:30-19:00 CONFERENCE
REGISTRATION



19:00-21:30 CONFERENCE OPENING &
RECEPTION COCKTAIL



MONDAY AUGUST 12TH

YUCATAN - II ROOM



UPGRADING & FOULING SESSION ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
08:00-08:30 AM	Francesco Coletti HEXXCELL LTD., London Keynote Lecture	Hybrid AI digital twins for heat exchanger fouling analytics and crude blending guidance
08:30-08:50 AM	Jose Beleno et al.	8. Partial Upgrading of Bitumen Through Deasphalting and Visbreaking
08:50-09:10 AM	Jimena L. Gomez-Delgado et al.	9. Revolutionizing Heavy Crude Recovery: Unleashing the Power of Graphene Oxide for Enhanced Oil Recovery
09:10-09:30 AM	Zhen Hou et al.	10. Modeling Chemical Processes to Produce Sustainable Aviation Fuel via Aspen HYSYS Molecule-Based (MB) Petroleum Refining
09:30-09:50 AM	Giuseppe Della Sala et al.	11. Reduction of carbon dioxide emissions and fuel oil consumption due to fouling control for a Crude Unit (Presentation/Professional/Upgrading and Fouling)
09:50-10:10 AM COFFEE BREAK		
10:10-10:30 AM	Aaron Smith et al.	12. Evidence Asphaltene Precipitates Foul in an Intermediate State

MONDAY AUGUST 12TH

YUCATAN - II ROOM



PETROLEUM PROPERTIES SESSION ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
10:30-11:00 AM	Yosadara Ruiz-Morales IMP, Mexico City Keynote Lecture	Application of Molecular Orbital Transitions Calculations to Elucidate and Validate Asphaltene Molecular Structures, and Development of Asphaltene Interfacial Science Analyzed by Mesoscale Simulations.
11:00-11:20 AM	Callum J. Hutchinson et al.	13. Structure-Stability Relationships of Model Asphaltene Compounds: Implications of Sulfur Heteroatom Functionality
11:20-11:40 AM	Estelle Deguillard et al.	14. Asphaltenes Flocculation Study Using Coarse Grain Simulations
11:40-12:00 PM	Nelson Gutierrez-Niño et al.	15. Effect of Magnetic Graphene Oxide and Microwave on the Viscosity of a Heavy Oil
12:00-12:20 PM	Andrey Stoporev et al.	16. Management of Hydrate Formation: a Way to Flow Assurance or Hydrate-based Energy Storage?
12:20-12:40 PM	Saugata Gon et al.	17. Asphaltene Solubility Predictor Tool: Prediction of Asphaltene Instability under High Pressure and Temperature Conditions

MONDAY AUGUST 12TH

YUCATAN - II ROOM



PETROLEUM PROPERTIES SESSION

ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
12:40-13:00 PM	Estrella Rogel et al.	18. Correlating the Solubility Profile with Asphaltene Composition and Structure Accessed by Several Analytical Methods

13:00-15:00 LUNCH / NETWORKING

HYDROGEN & RENEWABLES SESSION

ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
15:00-15:30 PM	Cesar Patiño-Juarez ECOPETROL, Colombia Keynote Lecture	Flows and Energy in the Ecosystem of Our Planet. An H2 Integration: Subsurface and Surface
15:30-15:50 PM	Salimi & Speranza et al.	19. Modelling Equilibrium and Transport Properties of Hydrogen Mixtures for a Low Carbon Energy Transition
15:50-16:10 PM	Evgeniya Hristova et al.	20. Hydrogen production from residual aluminum and wastewater as an attractive on-demand green energy solution



MONDAY AUGUST 12TH

YUCATAN - II ROOM



HYDROGEN & RENEWABLES SESSION ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
16:10-16:30 PM	Saif Al Ghafr et al.	21. Hydrogen Liquefaction: An Overview of the Fundamental Physics, Engineering Practice, Economic Viability, and Future Opportunities
16:30-16:50 PM	Carlos Roa-Duarte et al.	22. Experimental Combustion Tests carried out in a Mobile Laboratory of H ₂ -Natural Gas Mixtures at Different Altitudes Above Sea Level
16:50-17:10 PM	Estrella Rogel et al.	23. Analytical Chemistry for The Energy Transition: Challenges and Opportunities
17:10-17:30 PM	Sai Reddy Pinappu et al.	24. Renewable Fuels Processing Challenges & Solutions
17:30-17:50 PM	Tayo Fagade et al.	25. Evaluation of the Suitability of Sample Containers for Hydrogen Sampling
17:50-18:10 COFFEE BREAK		
18:10-18:30 - SPONSORS 1 		
18:30-18:50 - SPONSORS 2 		

PETROPHASE2024

LEADING SUSTAINABLE ENERGY SOLUTIONS 2024
MERIDA, YUCATAN, MEXICO

MONDAY AUGUST 12TH

FINAL TECHNICAL PROGRAM

YUCATAN – I ROOM



18:50 – 21:00 PM
POSTER SESSION (YUCATAN-I ROOM)



TUESDAY AUGUST 13TH

YUCATAN - II ROOM



07:00-13:00 CONFERENCE TOUR TO CHICHEN-ITZA



13:00-15:00 LUNCH / NETWORKING

CCUS SESSION
ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
15:00-15:30 PM	Eduardo Luna-Ortiz PACE LTD., London Keynote Lecture	CCUS: A perspective on trends and technical challenges for fast deployment
15:30-15:50 PM	Herbert Loria et al.	26. Validation of Thermophysical Properties and Phase Behavior for Flow Assurance of CO ₂ -rich Systems in CCS Using a General Equation of State
15:50-16:10 PM	V. Porras et al.	27. Amine-functionalized graphene oxide as a CO ₂ capture material.
16:10-16:30 PM	Elahe Rostaminikool et al.	28. Advanced Thermodynamic Modelling for Phase Equilibrium and Thermophysical Properties Determination in CO ₂ -rich Streams: An In-Depth Comparative Study of Equations of State within CCUS Operations
16:30-16:50 PM	Charlie Van Der Geest et al.	29. Debate on the concentration limit of trace impurities in CCS. Are current limits a necessary constrain or a conservative approach?

TUESDAY AUGUST 13TH

YUCATAN - II ROOM



CCUS SESSION ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
16:50-17:10 PM	Francisco Lopez-Linares et al.	30. Greenhouse Gas Footprint Reduction and CO2 Conversion Technologies to High-Value Products for Downstream
17:10-17:30 PM	Edris Joonaki et al.	31. Phase Behaviour Analysis of CO2-rich Streams Using a Novel Flow Assurance Technology – ThermoQuartz ResoSense



WEDNESDAY AUGUST 14TH

YUCATAN - II ROOM



FLOW & PRODUCTION ASSURANCE SESSION-I ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
08:00-08:30 AM	Nagu Daraboina U. of Tulsa Keynote Lecture	Paraffin Deposition Prediction and Mitigation: Connecting Laboratory Testing to the Field Application
08:30-08:50 AM	Duy Nguyen et al.	32. To Stick or Not to Stick, that is the Question! - Adhesion Energy Concept
08:50-09:10 AM	Herbert Loria et al.	33. Modeling Asphaltene Precipitation with an Advanced Equation-of-State and its Application in an Edge Solution
09:10-09:30 AM	Francisco Vargas et al.	34. Systematic Screening of Solvents for Asphaltene Deposit Remediation
09:30-09:50 AM	Ivan Moncayo-Riascos et al.	35. Effect of the temperature on the asphaltene onset pressure (AOP) from Molecular dynamics (MD), Monte Carlo Simulation (MC), Cubic-Plus Association (CPA) Equation of State (EoS), and Neuronal Networks: A case of study of live crude oil
09:50-10:00 COFFEE BREAK		
10:00-10:20 AM	Ariadni Elmaloglou et al.	36. Evaluating the performance of foam created by CO ₂ -switchable surfactants at reservoir conditions

WEDNESDAY AUGUST 14TH

YUCATAN - II ROOM



FLOW & PRODUCTION ASSURANCE SESSION-I ORAL PRESENTATIONS

TIME	SPEAKER	TITLE
10:20-10:40 AM	Nicolas Passade-Boupat et al.	37. Foaming of organic liquids : from advancement in theoretical understanding to practical applications in flow assurance
10:40-11:00 AM	Andrey Stoporev et al.	38. Management of Hydrate Formation: a Way to Flow Assurance or Hydrate-based Energy Storage?

WEDNESDAY AUGUST 14TH

YUCATAN - II ROOM



FLOW & PRODUCTION ASSURANCE SESSION-II ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
11:00-11:20 AM	Karl H. Hoffman et al.	39. Novel Use of Artificial Intelligence (AI) and Machine Learning (ML) in Flow Assurance Applications
11:20-11:40 AM	Saugata Gon et al.	40. Unravelling Asphaltene Challenges with HPHT Quartz Crystal Microbalance Studies
11:40-12:00 PM	Chris Russel et al.	41. Developments in Para-Window technology broaden the view over paraffin deposition processes
12:00-12:20 PM	Tyler Stenstrom et al.	42. An Investigation of the Effects of Temperature and Surface Orientation on Asphaltene Inhibition
12:20-12:40 PM	As A. Rios et al.	43. SiO ₂ -Based Nanofluids for the Inhibition of Wax Precipitation in Production Pipelines

WEDNESDAY AUGUST 14TH

YUCATAN - II ROOM



FLOW & PRODUCTION ASSURANCE SESSION-II

ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
12:40-13:00 PM	Thomas Hu et al.	44. Effects of Flow and De-stabilization Methods on Deposition Kinetics of Asphaltene Studied by Quartz Crystal Microbalance (QCM)

13:00-15:00 LUNCH / NETWORKING

15:00-15:20 PM	Pete Conrad et al.	45. A case study on the importance of accurate water samples in assessing scale risk and designing MRU solids handling
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EMULSIONS & PRODUCED WATER MANAGEMENT SESSION

ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
15:20-15:50 PM	David Harbottle U. of Leeds Keynote Lecture	Petroleum emulsions: Insights into the physicochemical properties of the stabilizing species
15:50-16:10 PM	Libia-Sofia Sandoval Rodriguez et al.	46. Understanding the demulsification processes of water-in-crude oil emulsions produced under real operating conditions ¹⁵

WEDNESDAY AUGUST 14TH

YUCATAN - II ROOM



EMULSION & PRODUCED WATER MANAGEMENT SESSION

ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
16:10-16:30 PM	Evgeniya Hristova et al.	47. Progression from Surface to Bulk Asphaltene Precipitation in Athabasca Bitumen Emulsions Diluted with Paraffinic Solvent
16:30-16:50 PM	Hadi Nasrabadil et al.	48. A Novel Approach to Produced Water Management Using Surfactants for Water-Wise Energy Production
16:50-17:10 PM	K. L. Feilberg et al.	49. Analysis and Toxicity Evaluation Organic Volatiles and Metals in Offshore Produced Water
17:10-17:30 PM	Izabela Owsik et al.	50. Alternative Treatment to Remediate Water Soluble Organics (WSO) Prior to Overboard Discharge
17:30-17:50 PM	Marcia Cristina Khalil de Oliveira et al.	51. How W/O Emulsions Can Affect Inorganic Solids Formation and Deposition in Offshore Production Scenarios?

19:00 – 22:00 PM
Gala Dinner at El Pinal House



THURSDAY AUGUST 15TH

YUCATAN - II ROOM



EMULSION & PRODUCED WATER MANAGEMENT SESSION

ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
08:00-8:20 AM	Libia-Sofia Sandoval Rodriguez et al.	52. Exploring the Emulsifying Process of Interfacially Active Asphaltene Subfractions: Integrating Ultra High-Resolution Mass Spectrometry and Molecular Dynamics Simulations for In Depth Characterization
08:20-08:40 AM	Isabelle Moraes Amorim Viegas et al.	53. Online monitoring of crude oil in water by advanced fluorescence spectroscopy: laboratory and flow loop tests with an advanced prototype
08:40-09:00 AM	Simon Ivar Andersen et al.	54. Effect of Crude Oil Acidity Alteration by Methylation on the Stability of Oil-Water Interfaces
09:00-09:20 AM	Maria Rodriguez-Reyes et al.	55. Effect of Asphaltene Dispersant on Electric Field Crude Oil Dewatering
09:20-09:40 AM	Isabelle Moraes Amorim Viegas et al.	56. An analytical method to quantify BTEX in water by advanced fluorescence spectroscopy and chemometrics

09:40-09:50 COFFEE BREAK

THURSDAY AUGUST 15TH

YUCATAN - II ROOM



EMULSION & PRODUCED WATER MANAGEMENT SESSION

ORAL PRESENTATIONS



TIME	SPEAKER	TITLE
09:50-10:10 AM	Hamidreza Samouei et al.	57. Brine Refining: Simultaneous Efforts against Water Scarcity, Global Warming, and Critical Mineral Shortages
10:10-10:30 AM	Maria Rodríguez-Reyes et al.	58. Effect of Surfactant Type on Electrostatic Destabilization of W/O Emulsions
10:30-10:50 AM	Johann Fernando Montañez-Sarmiento et al.	59. Use of produced water for enhanced recovery through wettability alteration
10:50-11:10 AM	Liridon Aliti et al.	60. Quantification and identification of production chemicals in produced water using capillary electrophoresis

11:30 – 11:50 AM

Closing and Petrophase 2025 Announcement



MONDAY AUGUST 12TH

YUCATAN – I ROOM



II. POSTER PRESENTATIONS:



18:50 – 21:00 PM
POSTER SESSION (YUCATAN-I ROOM)

POSTER SESSION

YUCATAN - I ROOM



CCUS POSTERS

TITLE

AUTHOR(S)

61. Technical, economic and environmental evaluation of technologies for the capture, sequestration, storage and use of CO₂ emissions from the production processes of the José Antonio Anzoátegui Petroleum and Petrochemical Industrial Complex and the Puerto La Cruz Refinery

Clarimar Camacho, Sol Vásquez, John González, Jean Massad , René Millano, Alberto Valbuena, Juan Szabo, Gustavo Carrero, Juan Pablo Rosso.

POSTER SESSION

YUCATAN - I ROOM



EMULSION & PRODUCED WATER MANAGEMENT POSTERS

TITLE

AUTHOR(S)

62. Evaluation of addition of Carbon Quantum Dots (CQDs) on Polymeric solution for EOR processes: Effect of CQD type and Ion content on brine

As A. Ríos, Lady J. Giraldo, Camilo A. Franco, and Farid B. Cortés

POSTER SESSION

YUCATAN - I ROOM



FLOW & PRODUCTION ASSURANCE
POSTERS

TITLE

AUTHOR(S)

**63. Microwave radiation assisted GO-NpFe₃O₄:
Temperature rise for transport in Colombian heavy crudes.**

E. Pérez , N. Gutiérrez, N. Santos , R. Cabanzo , E. Mejía-Ospino

**64. Sulphonic Modified Graphene Oxide: An Alternative for
Improved Oil Recovery**

Nathalie Correa-Niño, Nelson Gutierrez Niño, Rafael Cabanzo, Enrique Mejía-Ospino

**65. Insights into Wax Deposition Morphology via
Experimental Microscopy in Flow Loop Systems**

Letícia Bizarre, Tayanne Ligeiro, Ivanei F. Pinheiro, Charlie van der Geest, Vanessa C. B. Guersoni

**66. Comparative study between a new CaCO₃ scale
inhibitor and well-known commercial products**

Brenno Danho Veras Evangelista, Michelle Jakeline Cunha Rezende

POSTER SESSION

YUCATAN - I ROOM



FLOW & PRODUCTION ASSURANCE POSTERS

TITLE

AUTHOR(S)

67. Application of Flow Improver to Increase Production

Tri Phan, Irwan Yunus, Chad Gilme, Ahmed Said, Wael Mohamed, Mohamed Markled, and Rocio Banda

68. Prediction of the Occurrence Location and Amount for Asphaltene Precipitation during Nature Gas Injection in Carbonate Oil Reservoirs Using the Modified Hirschberg Solubility Model

Hao Chena, Linxi Yanga, Feng Luo, Wen Liua, Pengbo Li

69. Enhancing Fines Particles Retention in Functionalized Porous Media: A Synergistic Approach with Zinc Oxide Nanoparticles and CTAB

Daniel F. Gómez, Frank Viveros, Jhon H. Carreño, Camilo A. Franco, Farid B. Cortés

70. Carbon Quantum Dots (CQD) as CO₂ Corrosion Inhibitors of divalent cations in Carbonated Water

Viviana Ortiz-Perez, Camilo A. Franco y Farid B. Cortes



POSTER SESSION

YUCATAN - I ROOM



PETROLEUM PROPERTIES
POSTERS

TITLE

AUTHOR(S)

<p>71. Based Diffusivity Prediction: Introducing a New Correlation Model</p>	<p>Ivanei F. Pinheiro, Letícia Bizarre , Charlie van der Geest and Vanessa C. B. Guersoni</p>
<p>72. Detailed molecular analysis of asphaltenes from a GoM asset</p>	<p>Andrew Yen, Onome Ugono, Abhishek Golchha and David Jennings; Zhongxin Huo; Martha Liliana Chacón-Patiño and Ryan Rodgers</p>
<p>73. Prediction of the Distillate and SARA Content of Visbroken Heavy Oils</p>	<p>Jose Beleno, Camilo Lopez, Florian Schoeggl and H.W Yarranton</p>
<p>74. Determination of Asphaltene Content in Crude Oils and Processed Materials</p>	<p>Estrella Rogel, Greg Hulen, George Gonzalez, Cesar Ovalles</p>

POSTER SESSION

YUCATAN - I ROOM



PETROLEUM PROPERTIES
POSTERS

TITLE

AUTHOR(S)

75. Composition and Stability of Methane Hydrates Obtained in Solutions of Monohydric Alcohols

Daria Sergeeva, Murtazali Yarakhmedov, Anton Semenov, Vladimir Istomin and Andrey Stoporev

76. Evaluations of Weathering of Polar and Non-Polar Petroleum Components in a Simulated Freshwater Oil Spill by Orbitrap and Fourier Transform Ion Cyclotron Resonance Mass Spectrometry

Chukwuemeka Ajaeroa, b, Ian Vander Meulen a, c, Nicole E. Heshkad, Qin Xind, Dena W. McMartinb, c, Kerry M. Perua, Huan Chene, Amy M. McKennae, f, Kiaura Reedg John V. Headleya

77. Modeling the brine/rock and brine/crude oil interphases interaction, based on zeta potential measurements and hydrogeochemical simulation, as a tool to understand the EOR mechanism.

Wilmar Antonio Contreras Toloza, Rafael Cabanzo Hernández, Nicolas Santo-Santos, Enrique Mejia Ospino

78. Direct Analysis of Petroleum and Biofuels with FT-ICR MS and Direct Ionization Probe APPI

K. Modi

POSTER SESSION

YUCATAN - I ROOM



PETROLEUM PROPERTIES
POSTERS

TITLE

AUTHOR(S)

79. Prediction Of Properties for Visbroken Oils from Different Geographical Sources

Camilo Lopez, J. A. Beleno, F.F. Schoeggl, H.W. Yarranton

80. Particle Size Comparison of Asphaltenes in a Chemically Treated vs Untreated Crude Oil

Abhishek Golchha, Michael Houghton, Andrew Yen y David Jennings

81. Polydispersity, Fractionation, and Characterization of Asphaltenes

Cláudio V.B. Fávero, H. Scott Fogler

82. Maltene Fractions on Asphaltene Aggregation: Insights into Critical Aggregation Concentration and Dilatational Rheology

Gabriel Medeiros do Nascimento Costa, Ronaldo Gonçalves dos Santos

POSTER SESSION

YUCATAN - I ROOM



PETROLEUM PROPERTIES POSTERS

TITLE

AUTHOR(S)

**83. Thermodynamic Properties of Asphaltene
Monomolecular Films**

Mayara Alves Rosa Neves , Ronaldo Gonçalves dos
Santos



POSTER SESSION

YUCATAN - I ROOM



UPGRADING & FOULING POSTERS

TITLE

AUTHOR(S)

83. Simulation of Bitumen partial upgrading process

Suk Hyun Lim, Hung Hai Pham, Eun-Hee Kwon, Kwang-ho Kim, Young-Hwan Chu, Youngdoo Kim, and Nam Sun Nho

84. Study of partial upgrading process for bitumen

Suk Hyun Lim, Hung Hai Pham, Eun-Hee Kwon, Kwang-ho Kim, Young-Hwan Chu, Youngdoo Kim, and Nam Sun Nho

85. Experimental Study of Capillary Forces and Fluid Compatibility in EOR with Smart Water and Surfactant for Heavy Oil

Jorge Andrés García Nossa, Jimena Lizeth Gómez Delgado, Julio Cesar Pérez Angulo, Nicolas Santos Santos, Raúl Andrés Martínez López y John Jairo Rodríguez Molina

