

**2019 EASTERN SECTION AAPG PRELIMINARY TECHNICAL PROGRAM**

**8/3/2019**

**ORAL SESSION I - MONDAY MORNING - THE ALDER**

**Utilizing Technology in Modern Exploration and Production**

Presiding: Shuvajit Bhattacharya

- 8:00 Characterizing the Development of North American Source Rock Reservoirs from the Ordovician-Jurassic: A Proxy-Based Multivariate Geochemical Approach**  
Samantha R. Ritzer and Erik A. Sperling
- 8:25 Water Vapor Condensing in Anisotropic Pores of Shales by Neutron Scattering**  
Guijie Sang, Shimin Liu<sup>\*</sup>, Derek Elsworth and Rui Zhang
- 8:50 Anisotropic Pore Structure of Marcellus Shale Under Uniaxial Compression: A Small-Angle Neutron Scattering Study**  
Rui Zhang, and Shimin Liu
- 9:15 3D Seismic Interpretation in Salt Basins: Analytic Review of Case Studies**  
Abdullah Basaloom
- 9:40 3D Seismic Characterization of Devonian Transfer Faults in the Appalachian Plateau**  
Travis Duran and Tom Bardol
- 10:05 BREAK**
- 10:25 Machine-Learning with Multi-Seismic Attributes in Cambro-Ordovician Carbonates of Southwestern Pennsylvania**  
Randall Hunt
- 10:50 Using Artificial Intelligence (AI) to Develop a Predictive Landslide Susceptibility Model to Assist with Well Pad and Pipeline Planning and Design**  
Thomas E. Jordan, Jeffrey C. Dick, Coskun Bayrak and Peter Kimosop
- 11:15 Building Reliable Local Earth Models of Utica Shale Reservoirs in the Presence of Missing Values and Sparse Data: An Integration of Classic Statistics, Spatial Statistics, and Machine Learning**  
Jeffrey M. Yarus, Sara Gutierrez, Afshin Fathi, Julie Bloxson, Roger H. French and Beverly Z. Saylor
- 11:40 NMR Log Calibration for Permeability Prediction with Multimodal Carbonates: A Case Study from a Silurian-Aged Pinnacle Reef in Northern Michigan**  
Z.M.K Cotter, B. Grove and A. Haagsma
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## ORAL SESSION II - MONDAY MORNING - THE CEDAR

### **Reservoir Characterization: Studies and Case Histories**

Presiding: James McDonald

- 8:00**    **Combination of Simplified Local Density Theory and Molecular Dynamic Simulation to Study the Local Density Distribution of Hydrocarbon Gas in Shale Gas Reservoirs**  
Qiu hao Chang, Xingru Wu and Liangliang Huang
- 8:25**    **Modeling of Emission Behavior of Shale Gas Based on Canister Desorption Testing**  
Fengyang Xiong and Joachim Moortgat\*
- 8:50**    **Advanced Petrophysical Logging of Pennsylvanian Cyclic Carbonates, Sleepy Hollow Field, Nebraska**  
Valerie Smith and R.M. Joeckel
- 9:15**    **Silurian Reef Reservoir Heterogeneity in the Illinois Basin with a Focus on Germantown and Wapella East Fields. Reservoir Quality Variability as a Result of Differences in Depositional Environments, Diagenesis and Erosional Truncation at the End of the Silurian**  
Dennis Prezbindowski, Richard Inden, Michael Grammer and Mary Frush
- 9:40**    **Multiscale Assessment of Pore Structures in Unconventional Gas Shale Systems**  
David R. Cole, Alexander Swift, Julia Sheets, Lawrence M. Anovitz and Susan Welch
- 10:05**    **BREAK**
- 10:25**    **Seismogenic Deformation Within the Utica/Pt Pleasant Reservoir in Northern Pennsylvania**  
Gregory C. Bank, Thomas A. Bardol, Andrew G. Smith and Dr. Shikha Sharma
- 10:50**    **Organic Matter Macerals and Associated Mineralogical Matrices—Marcellus Formation, West Virginia**  
Julia M. Sheets, Susan A. Welch, Alexander M. Swift, Aaron L. Evensizor, and David R. Cole
- 11:15**    **Delta Slope Method: An Application of Mudgas Stable Isotopes to Map Fracture Influenced Production in Horizontal Wells**  
Dave Boyer
- 11:40**    **Point Pleasant Formation Produced Water Characterization and Estimation of Future Production**  
Jeffrey C. Dick and Victoria R. Wilson

## **ORAL SESSION III - MONDAY AFTERNOON - THE ALDER**

### **Historical Perspectives on Energy Development in the Eastern USA**

Presiding: Chuck Moyer

- 1:30 Development of the Classic Indiana Trenton Field: Exploration and Development Patterns Depicted in Historic and Recent Maps, and a Review of Recent TBR Exploration**  
Kevin Strunk
- 1:55 The Lima-Indiana Oil and Gas Trend: North America's First Giant Oil Field**  
Larry Wickstrom
- 2:20 Early Drilling and Oil Production in and around Grand Lake, Ohio (1886-1911)**  
Jeff Spencer and Joyce Alig
- 2:45 Early Indicators of the Utica/Point Pleasant Potential, Appalachian and Michigan Basins**  
Charles C. Moyer
- 3:10 Historical Significance of the Macksburg Oil Field, Ohio**  
Jeffrey L. Deisher
- 3:35 BREAK**
- 3:55 From the Good Ole Days of the Heartland to Today, Ohio's 160+ Years of Oil And Gas Activity and How Things have Changed**  
Matthew S. Erenpreiss, Michael P. McCormac and Theresa Egresi
- 4:20 Highlights of Recent Exploration in Illinois**  
Joan E. Crockett and James Coffroth
- 4:35 The Forgotten Oil and Gas Fields in Southwestern Pennsylvania**  
Douglas C. Bowman
- 5:00 History of Structure Contour Mapping in the Appalachian Basin: 1870 – 1917**  
James McDonald

## ORAL SESSION IV - MONDAY AFTERNOON - THE CEDAR

### **IVa Horizontal Wells: Drilling, Completion, Hydraulic Fracturing and Production Techniques** Presiding: Gregory Mason

- 1:30 The Horizontal Drilling of the Henrietta Field, Michigan: A Reactivated Ancient Impact Crater Forming Trenton-Black River Hydrothermal Reservoirs**  
Murray Matson
- 1:55 Site Selection, Planning and Economics of Laterally Drilled Wells in Conventional Reservoirs**  
Greg Mason
- 2:20 Hydraulic Fracturing “Sweet Spots” Identified Using Radiogenic Noble Gases**  
Brent A. Lary, William K. Eymold, Gus Wulsin, Colin J. Whyte and Dr. Thomas H. Darrah
- 2:45 Improving Completion Techniques of Unconventional Shale Reservoirs Through the Analysis of Geomechanical Properties and Fracture Imaging; A Study of Horizontal Velocity and Image Logs Within the MIP-3H Marcellus Shale Well in Monongalia County, West Virginia**  
Kaitlin G. Evans, Tim R. Carr, Payam Kavousi Ghahfarokhi, Tobi Ore, Jarrett Smith and Randy Toth
- 3:10 Lithofacies Analysis of Two Marcellus Wells Using Core and Log Data in Northern West Virginia**  
Randy T. Toth, Thomas Paronish, Dustin Crandall, Jonathan Moore and Timothy R. Carr
- 3:35 BREAK**

### **IVb Conventional Exploration and Production in Eastern USA**

- 3:55 Silurian Lockport in Ohio – Basins, Reefs, and “Newburg” Traps**  
Mark A. Neese
- 4:20 Dolomitized Reef Buildup in the Silurian Louisville Limestone, Muldraugh Gas Storage Field, Meade County, Kentucky**  
David C. Harris and Lewis P. Barnette
- 4:35 Seismic Interpretation of Rich Hill 3D, Salt Creek and Rich Hill Townships, Muskingum County, Ohio**  
Devin R. Fitzgerald, Robert B. Thomas and M. Wes Casto
- 5:00 Evidence of Thrust Sheets and Décollement Within the Sedimentary Sequence of Northern Ohio; Clues for Possible Hidden Oil and Gas Pools**  
Mohammad D. Fakhari

## ORAL SESSION V – TUESDAY MORNING - THE ALDER

### Energy Sustainability and the Environment

Presiding: Autumn Haagsma

- 8:00 What Have We Learned After 20 Years of Carbon Capture and Storage Research in the Illinois Basin?**  
H.E. Leetaru and C.P. Korose
- 8:25 A Retrospective Accounting of the Midwest Regional Carbon Sequestration Partnership's Technical Achievements and Contributions**  
Kristin M. Carter and Neeraj Gupta
- 8:50 A Comparison of Resource Estimate Methodologies to Assess CO<sub>2</sub> Storage Capacity Across the Northern Niagaran Pinnacle Reef Trend, Michigan**  
Autumn Haagsma, Ashwin Pasumarti, Joel Main, Manoj Valluri, Srikanta Mishra and Neeraj Gupta
- 9:15 Geomechanical Characterization for Secure CO<sub>2</sub> Storage in the Pennsylvanian-Permian Storage Complex in the Midcontinent Region, U.S.A.**  
Mackenzie Scharenberg and Andrew Dugui
- 9:40 CCUS Opportunities in Southwestern Pennsylvania Oil Fields: Case Studies from the Midwest Regional Carbon Sequestration Partnership**  
Kristin M. Carter, Brian J. Dunst, Robin V. Anthony and Katherine W. Schmid
- 10:05 BREAK**
- 10:25 The Rock-Solid Scientific Evidence for Anthropogenic Global Warming**  
James F. Kasting
- 10:50 Unusual and Unprecedented Warming? What do Geologic and Human History Tell Us?**  
Gregory R. Wrightstone
- 11:15 Panel Discussion on Climate Change & Carbon Capture and Storage**  
**Panel to include:** James F. Kasting, Gregory R. Wrightstone, and Hannes Leetaru  
Facilitators: John Wicks and Larry Wickstrom

## ORAL SESSION VI – TUESDAY MORNING - THE CEDAR

### Regional Geology of the Eastern USA

Presiding: Marty Shumway

- 8:00** **New Interpretation of the Cambridge Arch and Parkersburg – Lorain Syncline in Ohio**  
Michael P. Solis
- 8:25** **New Interpretation on the Structural Geology of Strata in Chapel Creek and Berlin Heights, North-Central Ohio**  
Mohammad D. Fakhari, Dalton Oxner-Jones and Mark T. Baranoski
- 8:50** **Using Outcrops to Understand and Explain Subsurface Geological Phenomenon: Examples from the Upper Devonian (Famennian) Cleveland Shale Outcrop Belt, Greater Cleveland Metro Area, Ohio**  
David R. Blood, Gordon C. Baird and Joe T. Hannibal
- 9:15** **The Origin and Significance of the Lower Mississippian Sunbury Shale in East-Central United States**  
Frank R. Ettensohn and Jun Li
- 9:40** **Anticlines We Have Admired: A Review of Styles and Implications for Anticlines Observed in Seismic Reflection Data of the Northern Appalachian Basin**  
Robert D. Jacobi, Craig Eckert, Joel Starr and Ryan Mathur
- 10:05** **BREAK**
- 10:25** **Far-field Tectonic Controls on Deposition of the Ordovician Utica/Point Pleasant Play, Ohio Using Core Logging, Well Logging, and Multi-variate Analysis**  
Julie M. Bloxson
- 10:50** **Mesoproterozoic Rocks and Cambrian Magmatism: How Rodinian Rifting Influenced Deposition of the Thickest, Most Porous and Permeable Unit in the Illinois Basin**  
Jared Freiburg, David H. Malone, Mansour Khosravi, Franck Delpomdor and Georg Grathoff
- 11:15** **Extension of Appalachian Black-Shale Source Rocks into Adjacent Intracratonic Basins Through Basin Yoking**  
Frank R. Ettensohn
- 11:40** **Constraining Unusual Patterns of Thermal Maturity Within the New Albany Shale, Illinois Basin Using Source Rock Pyrolysis Geochemical Parameters and Aromatic Markers and Biomarkers in Fluid and Rock Extracts**  
Donna Caraway Willette

**ORAL SESSION VII - TUESDAY AFTERNOON - THE ALDER**

**VIIa Recent Advances and Case Studies in Enhanced Recovery of Oil and Gas**

Presiding: Don Zuch

- 1:30 History of Secondary and Enhanced Oil Recovery in Michigan**  
William B. Harrison, III
- 1:55 Large Potential Reserves Remain for Secondary Oil Recovery in Ohio**  
Thomas E. Tomastik
- 2:20 It's Time For A Fresh Look At Berea and Clinton Secondary Recovery**  
Robert D. Winland
- 2:45 Enhanced Oil Recovery Potential in Four Northern Appalachian Basin Oil Fields**  
Brian J. Dunst, Katherine W. Schmid, Robin V. Anthony and Kristin M. Carter
- 3:10 Integrated Geologic Analysis of East Canton Consolidated Field (Ohio) for CO<sub>2</sub>-EOR**  
Robin V. Anthony
- 3:35 BREAK**

**VIIb Environmental Impacts from Hydraulic Fracturing, Wastewater Disposal, and Minerals Extraction**

- 3:55 Challenges Facing Class II Disposal Well Operations in the Appalachian Basin**  
Thomas E. Tomastik and J. Daniel Arthur
- 4:20 Seismicity Induced by Hydraulic Fracturing and Wastewater Disposal in the Appalachian Basin**  
Michael Brudzinski, Maria Kozłowska, Robert Skoumal, Paul Friberg, Brian Currie and Seth Young
- 4:35 Managing Potential Injection-Induced Seismicity Through Monitoring and Mitigation**  
Thomas E. Tomastik, J. Daniel Arthur, and Steve Tipton
- 5:00 Production and Water Use in Pennsylvania's Organic Shales**  
Katherine Schmid

## ORAL SESSION VIII - TUESDAY AFTERNOON - THE CEDAR

### Hydrocarbon Exploration and Production from Unconventional Reservoirs

Presiding: Ed Rothman

- 1:30 Progress and Findings from “MSEEL 1” and the Transition to “MSEEL 2”: Creating Value from a Cooperative Project**  
B.J. Carney, Tim Carr, Jay Hewitt, Robert Vagnetti, Shikha Sharma and Alexandra Hakala
- 1:55 Utica-Pt Pleasant and Marcellus Activity Update and Production Analysis**  
Marty Shumway, Tim Knobloch and Mitchell Houston
- 2:20 The Conasauga Shale Research Consortium (CSRC) Will Attempt to Unlock the Secrets of Appalachia’s Newest Unconventional Reservoir**  
John B. Hickman and David C. Harris
- 2:45 Petroleum Geochemistry of the Upper Ordovician Maquoketa Group Source Rocks, Illinois Basin, USA**  
Tim E. Ruble, Richard J. Drozd, Wayne R. Knowles, Elizabeth A. Roberts and Donna C. Willette
- 3:10 Temperature Dependent Diffusion of Noble Gases in Unconventional Shale Formations: A Comparison of the Appalachian and Permian Basins**  
W.K. Eymold, B.A. Lary, J.A. Harrington, C.J. Whyte, J. Moortgat and T.H. Darrah
- 3:35 BREAK**
- 3:55 Determining the Type, Amount and Kinetics of Hydrocarbons Generated in a Marcellus Shale Maturity Series**  
Vikas Agrawal, Shikha Sharma and Nicolaj Mahlstedt
- 4:20 Characterization of the Late Famennian Lower Huron Shale Member of the Ohio Shale, Southern Scioto County, Ohio**  
Aaron L. Evelsizer, Julie M. Sheets, David R. Cole, John W. Olesik and Anthony D. Lutton
- 4:35 Log Sampling Scales: How Ultra-High Resolution Logs Highlight the Intricacies of the Marcellus and Upper Devonian Shales**  
Timothy Vance
- 5:00 Devonian Shale Oil Production in the Burning Springs Anticline, West Virginia**  
Ed Rothman and Gregory Wrightstone



**POSTER SESSION 1 MONDAY MORNING**

**Buckeye 1 & 2**

**8:30 – 11:30**

**Utilizing Technology in Modern Exploration and Production**

**An Efficient Repeating Signal Detector That Uses Machine Learning to Improve Detection of Induced Seismicity**

Sutton Chiorini, Robert Skoumal and Michael R. Brudzinski

**Application of Log-Based Transforms to Characterize Mechanical Properties of Silurian-Aged Carbonate and Evaporate Formations within the Northern Niagaran Pinnacle Reef Trend, Michigan**

Z. Cotter, S. Raziperchikolaee and A. Haagsma

**Alaskan Unconventional Shale Core Characterization**

Dustin Crandall and Shuvajit Bhattacharya

**Secondary Porosity Prediction in Complex Carbonate Reefs Using 3D CT Scan Image Analysis and Machine Learning**

Autumn Haagsma, Mackenzie Scharenberg, Laura Keister, Jared Schuetter and Neeraj Gupta

**How Polishing Related Surface Roughness of Rock Minerals Control its Wettability**

Konstantinos Kasamias and Kuldeep Chaudhary

**Silurian Tuscarora Sandstone in Western West Virginia: Will It Work as a Geothermal Reservoir Rock?**

Ronald R. McDowell, J. Eric Lewis, Gary W. Daft, Philip A. Dinterman, Sarah R. Brown and Jessica P. Moore

**Rapid Core Characterization and Database Management**

Thomas Paronish, Dustin Crandall, Paige Mackey, Jonathan Moore and Sarah Brown

**Using Landscape Evolution Modeling to Evaluate Potential for Buried Mega-Landslide Reservoir Units within the Basin and Range, Western USA**

Nicholas T. Ferry, Daniel M. Sturmer and Dylan J. Ward

**POSTER SESSION 2 MONDAY AFTERNOON**

**Buckeye 1 & 2 2:00 – 5:00**

**Reservoir Characterization: Studies and Case Histories**

**Porosity Decrease in the Trenton Limestone of Williams County, Ohio**

Mason Harris, Ann E. Cook, Christopher B.T. Waid and Erika Danielsen

**Varimax-Rotated Visible Derivative Reflectance Spectroscopy of the Utica Shale/ Point Pleasant Formation in Ohio**

Julie M. Bloxson and Beverly Z. Saylor

**Seal Capacity of Upper Ordovician Units in the Midwest Region: A Quantitative Approach Using Mercury Injection Capillary Pressure**

Cristian R. Medina, Maria Mastalerz, Richard W. Lahann and John A Rupp

**A Study on the Origins of Permeability within the Point Pleasant Formation, Eastern Ohio**

Zachary L. Fernandes, Adeline R. Evans, and Dr. Jeffrey D. Grigsby

**Deconvolving Biogeochemical Controls on Source Rock Reservoir Development Using a Quantitative Multivariate Approach: A Case Study from the Late Ordovician Utica-Point Pleasant Formation**

Samantha R. Ritzer, Jochen J. Brocks, and Erik A. Sperling

**Evaluation of Production Data and Reservoir Compartmentalization for the Trenton-Black River Reservoirs in the Albion-Scipio Field, Southern Michigan**

Jennifer L. Trout and William B. Harrison, III

**A New Petrophysical Model for Shale Gas Reservoir Evaluation**

Guochang Wang<sup>1</sup>

**Horizontal Wells: Design, Drilling, Completion, Hydraulic Fracturing and Production Techniques**

**Horizontal Reservoir Value Increased by Enhanced Geological Knowledge**

David Williamson, Keith Kimme, Charles H. Smith and Tiffani Kennedy

**POSTER Session 3 Tuesday Morning**

**Buckeye 1 & 2**

**8:30 – 11:30**

**Energy Sustainability and the Environment**

**Impact of Methane on Carbon Dioxide Sequestration Within Multiscale and Hierarchical Fluvial Architecture**

Reza Ershadnia, Sassan Hajirezaei, Naum I. Gershenzon, Robert W. Ritzi Jr. and Mohamad Reza Soltanian

**Reaction Path Geochemical Modeling as an Essential and Inexpensive Tool in Evaluating Mineral Carbonation-Type Carbon Capture, Utilization, and Storage Projects**

Daniel M. Sturmer

**Regional Geology of the Eastern USA**

**Characterization of Surficial Sediments from a Modern Delta Wetland**

Alexander M. Brown, Deon Knights, Audrey H. Sawyer, Derek E. Sawyer, Douglas A. Edmonds and Rebecca T. Barnes

**CO<sub>2</sub> Storage Resource Assessment and 3-D Property Modeling of the Middle Cambrian Mt. Simon Sandstone in Illinois**

Mansour Khosravi, Jared T. Freiburg, Charles C. Monson and James R. Damico

**Curious Case of Lack of Strata Assignable to the *Pterospirifer celloni* Superzone (Telychian, Llandovery, Silurian) in the Eastern Portion of the Midwestern Basins and Arches Region (New York, Ohio, Kentucky, and Indiana)**

Mark A. Kleffner and Stig M. Bergström

**Precambrian Hydrocarbon Rift Basin Potential, Western North Carolina**

Jeffrey C. Reid and Kenneth B. Taylor

**Silurian Through Middle Devonian Far-Field Tectonics During the Appalachian Orogen in Ohio**

Michael P. Solis and Julie M. Bloxson

**Recent Advances and Case Studies in Enhanced Recovery of Oil and Gas**

**Secondary Recovery Efforts in the Richfield Member (Lucas Formation, Detroit River Group) at Winterfield Field, Clare County, Michigan**

Ayu Nurhidayati, Elizabeth Gaines, Peter Voice\* and William B. Harrison III

**POSTER Session 4 Tuesday Afternoon**

**Buckeye 1 & 2      2:00 – 5:00**

**Case Studies and Current Research on Environmental Impacts from Hydraulic Fracturing, Wastewater Disposal, and Minerals Extraction**

**Identification of the Causes and Extent of Elevated Methane Concentrations in the Groundwater of Eastern Kentucky**

Cristopher Alvarez Villa, Andrea M. Erhardt, Alan Fryar, Thomas M. Parris, Junfeng Zhu and Steven E. Webb

**Comparative Geochemistry of Flowback Fluids from the Utica and Marcellus Formations**

Susan A. Welch, Julia M Sheets, Reb Daly, Andrea Hanson, Anthony Lutton, John Olesik, and David R. Cole

**Factors Influencing the Likelihood of Hydraulic Fracturing Induced Seismicity in Oklahoma**

Rosamiel Ries, Michael R. Brudzinski, Robert J. Skoumal, Brian S. Currie and J. Connor Cunningham

**Hydrocarbon Exploration and Production from Unconventional Reservoirs**

**Abiogenic Methanogenesis Associated with Geocatalysis: Evidence from Biomarker Transformations and Isotopic Variations Across a Maturity Transect of the Devonian New Albany Shale**

Kelsey E. Doiron, Simon C. Brassell, Arndt Schimmelmann, Peter E. Sauer, Agnieszka Drobnik and Maria Mastalerz

**Hydraulic Fracture Induced Seismicity in the Eagle Ford Shale**

Shannon L. Fasola, Michael R. Brudzinski, Robert J. Skoumal and Teresa Langenkamp

**Total Organic Carbon Trends in 3-D Space using Data Analytic Modeling Approaches for Prediction of Organic Matter Variability in the New Albany Shale Group of Central and Southern Illinois**

Mansour Khosravi and Donna C. Willette

**Fractures and Vein-Fill Evolution of the Middle Devonian Marcellus Shale**

Natalie Odegaarden and Tim Carr

**Cross-comparison of Stacked Unconventional Plays of Delaware and Appalachian Basins: Reservoir Characteristics and Production Profiles**

Olga Popova, Emily Geary, April Patel, Gary Long, Jeffrey Little, Steven Grape and Elizabeth Panarelli