Agenda for Annual Meeting of MSRL  
March 19-22, 2018  
Austin, Texas

Core Workshop: Held at Bureau of Economic Geology, Core Research Center

Monday, March 19, 8:30 AM – 3:30 PM

Wolfcamp (upper), Delaware Basin: Ruppel and Zhang  
Two Fingers (upper Mississippian), Permian Basin: Mauck  
Marcellus Fm (middle Devonian), Pennsylvanian: Ko  
Austin Gp. (upper Cretaceous), Texas: Loucks et al.  
Avalon Fm. (Leonard), Permian Basin: Reed  
Smackover Fm (Jurassic), Texas: Schemper

Main Meeting: Held in ROC (adjacent to Bureau of Economic Geology main building)

Tuesday, March 20, 8:00 AM – 7:00 PM

Oral Presentations
08:00–08:20AM Welcome by the Bureau of Economic Geology’s Associate Director for Energy: Shuster  
08:20–08:40AM Introduction, overview, highlights: Ruppel et al.

Reservoir Architecture and Attributes
08:40–09:10AM Facies and reservoir quality of the Marcellus Formation, Appalachian Basin, Lycoming County, Pennsylvania: Ko  
09:10–09:40AM Stratigraphy, depositional systems, and facies; Barnett Two-Finger Sand: Mauck  
09:40–10:10AM Wolfcamp facies and facies architecture in the Delaware Basin: Ruppel  
10:10–10:25AM BREAK  
10:55–11:25AM New insights on the geology of the Eagle Ford from hyperspectral imaging: Alnahwi

Pores and Porosity
11:25–11:55AM New observations on the classification of organic-matter pores: Reed  
11:55–01:00PM LUNCH  
01:00–01:30PM Hyperspectral Imaging Technology: History, Recent Developments, and Implications for Unconventional Reservoir Characterization: Kosanke  
1:30–2:00PM Insights into early reservoir development of the Eagle Ford Group from observation of the USGS Gulf Coast #1 West Woodway Low-R_o research core: Loucks  
2:00–2:30PM Cyclic variations in pore size distributions; Wolfcamp A, Delaware and Midland basin: Zhang

2:30–3:00PM Preliminary Wolfcamp pore systems and lithology; Delaware Basin: Reed  
3:00–3:45PM Group Discussion: All  
3:45–4:00PM Introduction to poster session  
4:00–7:00PM Evening Poster Session. Hors d’oeuvres and drinks provided

Poster Presentations (Display in Bureau Library)
- Lateral variability of lithology and pore systems in an Eagle Ford horizontal core: Reed  
- Organic matter-rich facies and pore networks in the lower Austin Chalk: Loucks  
- High-resolution hyperspectral core imaging: Applications to unconventional reservoirs: Kosanke  
- Vertical oil migration and charging in the Wolfcamp; Delaware and Midland basins: Zhang  
- Oil generation and retention in the Wolfcamp A unit, Midland basin: Sun
- Pore systems in the high-maturity (dry-gas window) Marcellus Formation depositional context, Appalachian Basin, Pennsylvania: Ko
- Fracture network from microseismic data and a semi-analytic model of gas production: Sheng
- Effects of microscale compressibility on mudrock porosity and permeability: Sheng
- Mudrock calibration of core XRF data: Sivil
- Fracture network from microseismic data and a semi-analytic model of gas production: Knapp
- (Core workshop) Integrated Approach to Characterizing the Upper Jurassic Smackover Carbonate Ramp Succession in East Texas: Schepner
- (Core workshop) Lithofacies and reservoir quality of the (Mississippian) Upper Barnett Two Finger Sand, Midland Co. Texas: Mauck
- (Core workshop) Examples of Carbonate Gravity-flow deposits and associated strata in the early Permian Avalon Section in the Eastern Delaware Basin: Whiting No. 1201 Collier, Reeves County, TX: Case for Hybrid Reservoirs?: Loucks
- (Core workshop) Contrasting Austin Chalk depositional styles from South Texas: Loucks
- (Core workshop) Facies and reservoir quality of the Middle Devonian Marcellus formation, Appalachian Basin, Pennsylvania: Ko
- (Core workshop) Facies Characterization of the Wolfcamp Fm in the Delaware Basin: Comparison of Chemostratigraphic and Conventional Approaches: Ruppel

Main Meeting: Held in ROC (adjacent to Bureau of Economic Geology main building)

**Oral Presentations (continued)**

**Pores and Porosity (continued)**
8:00 – 8:30AM Avalon Shale petrography and pore networks; Delaware Basin: Loucks

**Hydrocarbon chemistry, migration, saturation and organic matter**
08:30–09:00AM Re-evaluation of Rock-Eval data and TOC using programmed pyrolysis from the HAWK instrument: Ko
09:00–09:30AM Organic petrography and diagenesis of Wolfcamp facies, Midland Basin: Hackley
09:30–10:00AM Geochemical characterization of organic matter: Wolfcamp A, Midland Basin: Sun
10:00–10:15AM BREAK
10:15–10:45AM Controls on variations in oil saturation; Wolfcamp A Delaware/Midland Basins: Zhang
10:45–11:15AM Using box models to interpret OAE elemental and isotope patterns: Larson
11:15–11:45AM Geochemical and biomarker characterization of the Lower Cretaceous OAE1b: Sun
11:45–12:15PM Saturation isn’t what it used to be: towards more realistic petroleum fluid saturations and produced fluid compositions in organic-rich unconventional reservoirs Pepper

12:15 –1:15PM LUNCH

**Permeability and Two Phase Fluid Flow**
1:15–1:45PM Multiscale mudrock permeability based on molecular dynamics and pore networks: Javadpour
1:45–2:15PM Object-based geomechanical modeling of mudrock permeability: Javadpour
2:15–2:45PM Preliminary three-dimensional model of mudrock permeability: Non-Darcy gas flow, surface diffusion and sorption effects: Javadpour
2:45–3:15PM An improved pressure decay method to measure mudrock matrix permeability: Peng
3:15–3:30PM BREAK

**New Methodologies and Advances**
3:30–4:00PM High resolution hyperspectral and dual energy CT: Relationships to log data: Duncan
4:00–4:30PM Principal component analysis of XRF core data: Interpreting mineral variations: Larson
Mudrocks Short Course: Held at Bureau of Economic Geology, Main Building

Thursday, March 22, 8:00 AM – 5:00 PM

Title: Introduction to Mudrock Systems: Origin, Distribution, Fluid flow, and Reservoir Characterization

Classroom
VR room at the Bureau of Economic Geology (Bldg 130) on the Pickle Research Campus.

Instructors
Dr. Steve Ruppel – Stephen.Ruppel@beg.utexas.edu – (512) 471-2965
Dr. Bob Loucks – Bob.Loucks@beg.utexas.edu – (512) 471-0366
Dr. Farzam Javadpour – Farzam.javadpour@beg.utexas.edu – (512) 232-8068

Agenda

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Instructor(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>07:45–08:00AM</td>
<td>Meet and greet, coffee and breakfast items provided</td>
<td>All</td>
</tr>
<tr>
<td>08:00–09:20AM</td>
<td>Introduction to mudrock systems</td>
<td>Ruppel</td>
</tr>
<tr>
<td>09:20–09:30AM</td>
<td>BREAK</td>
<td></td>
</tr>
<tr>
<td>09:30–10:50AM</td>
<td>Introduction to diagenesis of mudrocks</td>
<td>Loucks</td>
</tr>
<tr>
<td>10:50–11:00AM</td>
<td>BREAK</td>
<td></td>
</tr>
<tr>
<td>11:00–12:00PM</td>
<td>Pore types and pore networks in mudrock</td>
<td>Loucks</td>
</tr>
<tr>
<td>12:00–01:00PM</td>
<td>LUNCH (catered)</td>
<td></td>
</tr>
<tr>
<td>01:00–02:20PM</td>
<td>Defining and characterizing mudrock reservoirs</td>
<td>Ruppel</td>
</tr>
<tr>
<td>02:20–02:30PM</td>
<td>BREAK</td>
<td></td>
</tr>
<tr>
<td>02:30–03:50PM</td>
<td>Advances in gas-in-place analysis and methods</td>
<td>Javadpour</td>
</tr>
<tr>
<td>03:50–04:00PM</td>
<td>BREAK</td>
<td></td>
</tr>
<tr>
<td>04:00–05:00PM</td>
<td>Advances in fluid flow in shale</td>
<td>Javadpour</td>
</tr>
</tbody>
</table>