

## 4<sup>th</sup> Biennial CO<sub>2</sub> for EOR as CCUS Conference 2019

### Collaborative Conference on CO<sub>2</sub> EOR between Universities in Texas and Norway, Oil Industry in Texas & Norway, Governmental Entities & CO<sub>2</sub> EOR Stakeholders

*Provided by: Petroleum Research School of Norway (NFIP), NorTex Petroleum Cluster and co-hosted by Rice University and Royal Norwegian Consulate General in Houston.*

*Venue: Rice University, BRC-Auditorium, 6500 Main St., Houston, TX, USA.*

*Time: Wednesday Sept. 25<sup>th</sup> - Friday Sept. 27<sup>th</sup>, 2019.*

#### Detailed Program: (green text: confirmed)

#### Day 1: Wednesday Sept. 25<sup>th</sup>

#### CO<sub>2</sub> for EOR with CO<sub>2</sub> Storage in Conventional Reservoirs

08:30 Registration and Coffee

09:00 *Opening Address*  
*Norway's Consul General in Houston, Hilde Skorpen*

#### *Symposium Objectives*

*Arne Graue, Prof. of Physics, Univ. of Bergen, Norway;*

*Chair of the Boards: Petroleum Research School of Norway and NorTex Petroleum Cluster*

09:20 *Global Assessment of CCUS in Energy Production*  
*Jostein Dahl Karlsen, Global Manager, International Energy Agency Gas & Oil Technology Network Initiative Collaborative Program(IEA/GOT CP)*

09:40 *CCUS in the US – Historical Perspectives and Future Opportunities*  
*Charles D. McConnell, Director, Carbon Management Center, University of Houston and former Ass. Sec. for Fossil Energy U.S. Department of Energy*

10:00 *Industry Opportunities within CCUS*  
*Mike Godec, Advanced Resources International*

10:30 Coffee

11:00 *Carbon Neutral – Leading the Way to Net Zero Greenhouse Gas Emissions*  
*Christine Ehlig-Economides, Dept. of Petroleum Engineering, U. of Houston*



- 11:20 **CCUS Recruitment to Service Industry**  
**Marina Bulova, Director, University Collaborations, Schlumberger**
- 11:40 **New Insights on Transmissive Fractures from the Horizontal Well Revolution**  
**Steve Melzer, Melzer Consulting**
- 12:00 **Lunch**
- 13:00 **Northern Lights – Whole Value Chain CO<sub>2</sub> Storage on NCS**  
**NN, Norwegian Petroleum Directorate**
- 13:30 **Monitoring CCUS at an Active EOR Site**  
**Robert Balch, Petroleum Recovery Research Center (PRRC), NMT**
- 14:00 **CO<sub>2</sub> Foam EOR for Mobility Control**  
**George Hirasaki, Chemical and Biomolecular Engineering Dept., Rice University**
- 14:30 **CO<sub>2</sub> Storage, Monitoring, Verification and Accounting**  
**Katherine Romanak, Bureau of Economic Geology, University of Texas at Austin**
- 15:00 **CO<sub>2</sub> EOR in Micromodels**  
**Jarand Gauteplass, Dept. of Physics and Technology, University of Bergen**
- 15:30 **Coffee**

### **PhD presentations**

- 16:00 **Liquid Injectivity in Surfactant-Alternating-Gas Foam Enhanced Oil Recovery**  
**Jiakun Gong and William Rossen, Delft University of Technology**
- 16:20 **Foam for Gas-Mobility Control in Enhanced Oil Recovery Processes: Experimental Investigation and Modeling of the Effect of Oil**  
**Jinyu Tang and William R. Rossen, Delft University of Technology**
- 16:40 **Machine Learning Based Optimization and Design of Carbon Dioxide Storage and Hydrocarbon Production in CO<sub>2</sub>-EOR Project**  
**Junyu You, W. Ampomah, Qian Sun, Brian Borchers, Petroleum Recovery Research Center, NMT**
- 19:00 **Reception and Buffet Dinner at the Residence of Norway's Consul General in Houston**

## Day 2: Thursday Sept. 26<sup>th</sup>

### Part 1: CO<sub>2</sub> applied to Unconventional Hydrocarbon Reserves

### Part 2: Field Experience, Case Studies and the Way Forward

08:30 Registration and Coffee

### Part 1: CO<sub>2</sub> applied to Unconventional Hydrocarbon Reserves

09:00 *Unconventional Energy Production and CCUS*

Jostein Dahl Karlsen, International Energy Agency Gas & Oil Technology Network Initiative (IEA/GOT)

09:20 *CO<sub>2</sub> Foam EOR and CO<sub>2</sub> Injection in Hydrates – CCUS Enablers for Efficient, Cost Saving and More Sustainable Oil & Gas Production: Offshore International Whole Value Chain CCUS Collaboration*  
Arne Graue, Dept. of Physics and Technology, University of Bergen

09:40 *CO<sub>2</sub> as a Commodity in CCUS for Methane Production from Hydrate Reservoirs*  
Geir Ersland, Dept. of Physics and Technology, University of Bergen

10:10 *CO<sub>2</sub> as a commodity for realizing the potential in Unconventional Production Strategies of Conventional Reservoirs*  
Jim Skurner, Windy Cove Energy II

10:30 Coffee

11:00 *Comparison of CO<sub>2</sub> to Associated Gas Injection in Unconventional Shale Reservoirs*  
Konstantinos Kostarelos, Petroleum Engineering, Subsurface Research Center, U. of Houston

11:30 Lunch

### Part 2: Field Experience, Case Studies and the Way Forward

12:30 *CO<sub>2</sub> for EOR –State of the Art Technology Status and Technological Challenges*  
Ganesh C. Thakur, Director of Energy Industrial Partnerships & Distinguished Professor of Petroleum Engineering U. of Houston, 2012 SPE President & Former VP Chevron

13:00 *The Farnsworth CO<sub>2</sub> Field Pilot*  
William Ampomah & Robert Balch, Petroleum Recovery Research Center (PRRC), NMT

13:30 *Ongoing CO<sub>2</sub> Foam EOR Field Pilot in Texas*  
Zachary Alcorn, Univ. of Bergen

14:00 **CO<sub>2</sub> EOR Assessment**  
Wayne Rowe, Schlumberger Carbon Services

14:30 **Coffee**

### **PhD presentations**

15:00 **Coupled Hydro-Mechanical Modeling at Farnsworth West Unit, Ochiltree County, Texas**  
M. McMillan, New Mexico Institute of Mining and Technology; W. Ampomah, R.A. Will, R.S. Balch, P. Czoski, Petroleum Recovery Research Center, NMT

15:20 **Optimization of the CO<sub>2</sub> Huff-n-Puff Process in an Unconventional Reservoir Using a Machine Learning Based Proxy**  
Azad Almasov, Mustafa Onur, and Albert Reynolds, University of Tulsa

15:40 **Utilization of Zeolite as a Potential Multi-Functional Proppant for CO<sub>2</sub> Enhanced Shale Gas Recovery and CO<sub>2</sub> Sequestration: A Molecular Simulation Study on Gas Adsorption in Zeolite and Organic Matter**  
Kaiyi Zhang and Guan Qin, Department of Petroleum Engineering, University of Houston

16:00 **Uptake capacity and pore accessibility of illite-smectite clay minerals for supercritical CO<sub>2</sub> and CH<sub>4</sub> under subsurface conditions**  
Junyoung Hwang and Ronny Pini, Dept. of Chemical Engineering, Imperial College London, UK.

16:30 **Panel Debate: USA and the World on CCUS – Economy or Climate as Drivers?**  
**Moderator:** Arne Graue, Prof. of Physics, Univ. of Bergen, Norway;  
**Chair of the Board:** Petroleum Research School of Norway and NorTex Petroleum Cluster

18:00 **Conference Dinner at Hilton Houston Plaza/Medical Center**

### **Day 3: Friday Sept. 27th**

10:00 – 12:00 **Tour of Houston Petroleum Museum**  
12:00 – 13:00 **Lunch at Hollywood Café, 2<sup>nd</sup> floor, BRC**  
13:00 – 15:00 **Tour of University of Houston EOR Laboratories**