

Rice U., HOUSTON, TX, OCT. 4th-6th, 2017

3rd Biennial CO₂ for EOR as CCUS *- More Sustainable Oil and Gas Production*

A Collaborative Symposium for Universities, Oil Industry and other CO₂ EOR Stake Holders in USA and Norway



Norwegian Consulate General

Houston



Norwegian Ministry
of Petroleum and Energy



U.S. DEPARTMENT OF
ENERGY



The Research Council
of Norway



International
Energy Agency



Statoil

2017 CO₂ for EOR as CCUS Conference

3rd Biennial Collaborative Conference on CO₂ EOR between Universities in Texas and Norway, Oil Industry in Texas & Norway, Governmental Entities & CO₂ 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 Oct. 4th - Friday Oct. 6th, 2017

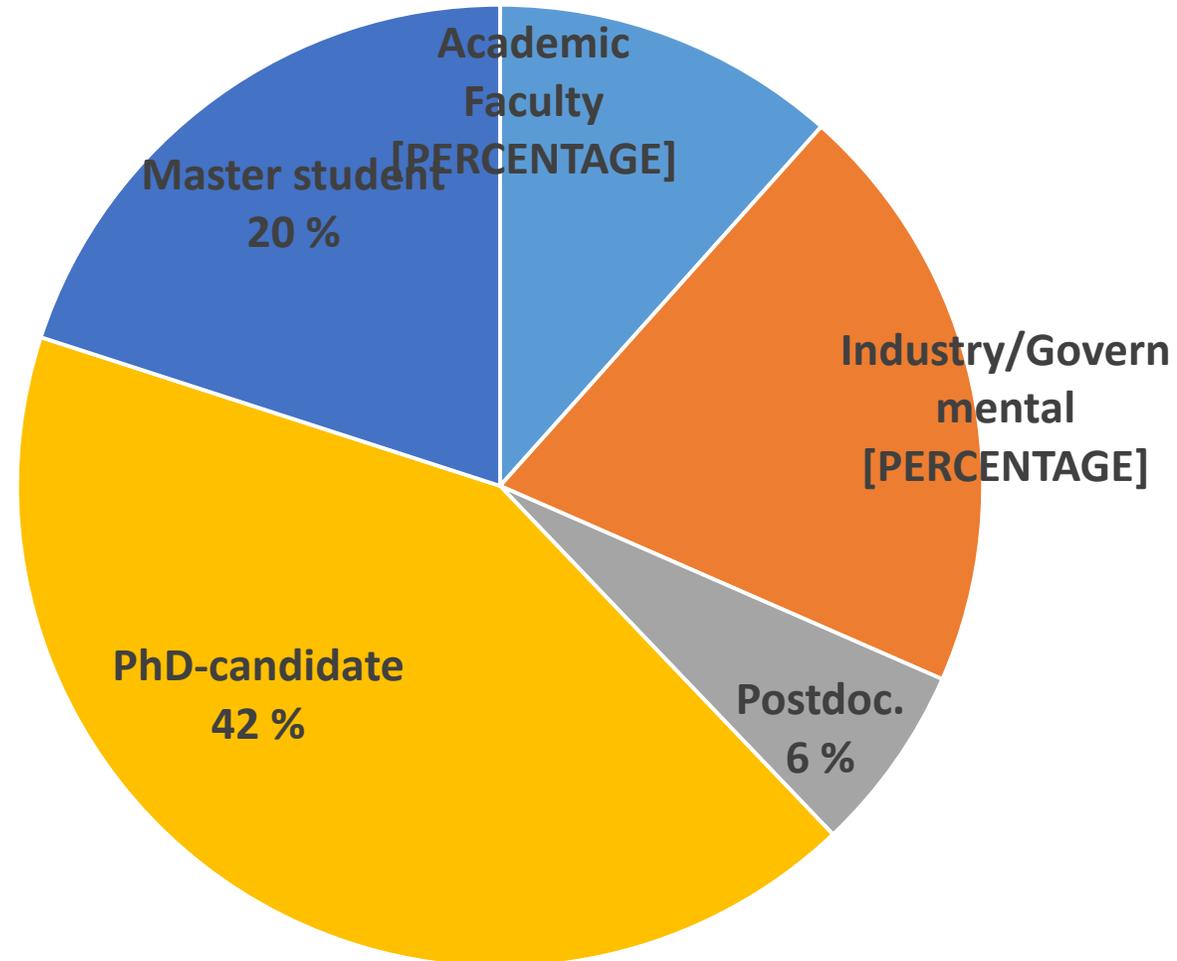
Conference Objectives:

- 1. Accelerate CO₂ Research Collaboration between Norway and Texas**
- 2. Provide opportunity for experts in industry and academia to collectively discuss CO₂ research**
- 3. Provide Post docs and PhD students with current research status and the way forward**
- 4. Provide oil industry an opportunity to communicate needs to the next generation engineers**
- 5. Emphasize CO₂ as mean to mitigate negative climate effects in oil production**

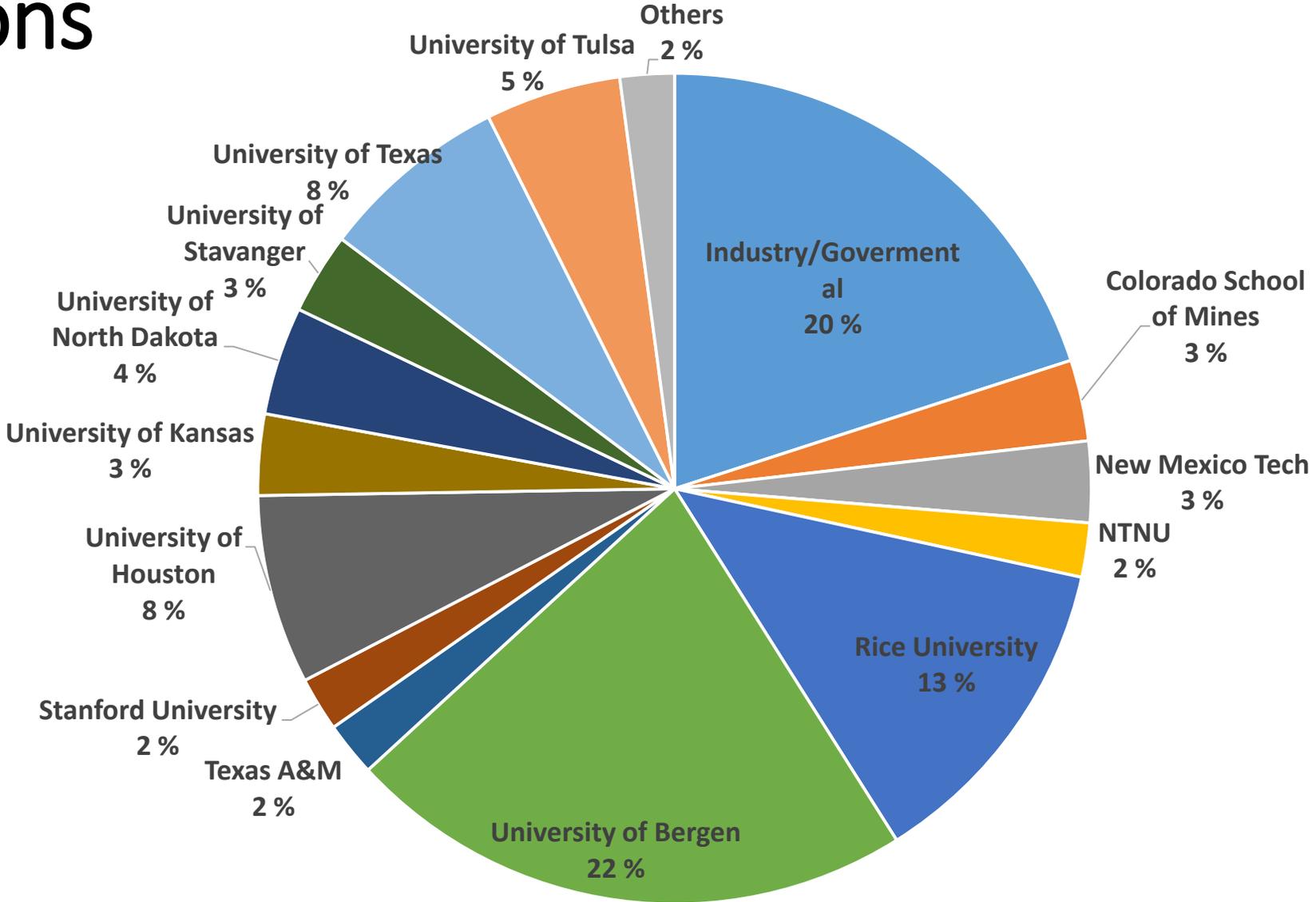
Program

- Day 1: CO₂ for EOR with CO₂ Storage in Conventional Reservoirs**
- PhD presentations
 - Reception at the Residence of Norway's Consul General in Houston
- Day 2: Part 1: CO₂ applied to Unconventional Hydrocarbon Reserves**
Part 2: Field Experience, Case Studies and the Way Forward
- PhD presentations
 - Conference Dinner at Hilton Plaza Medical Center
- Day 3: Tour of Rice University Flow Assurance and EOR Laboratories**

2017 CO2 for EOR as CCUS: - 102 Attendees



Affiliations



Day 1: Wednesday Oct. 4th

CO₂ for EOR with CO₂ Storage in Conventional Reservoirs

08:30 *Registration and Coffee*

09:00 *Opening Address*

Norway's Consul General in Houston, Morten Paulsen

Symposium Objectives

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

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

09:30 *CCUS in the US - Global Importance of CCUS*

Charles D. McConnell, Executive Director, Energy and Environment Initiative (EEI), Rice University and former Ass. Sec. for Fossil Energy U.S. Department of Energy

Day 1: Wednesday Oct. 4th continue

CO₂ for EOR with CO₂ Storage in Conventional Reservoirs

- 10:00** *CO₂ for EOR – Historical Perspectives, Current State of the Art Technology Status and Technological Challenges*
Sriram Balasubramanian¹ & Ganesh C. Thakur², ¹Univ. of Houston, ²Director of Energy Industrial Partnerships & Distinguished Professor of Petroleum Engineering U. of Houston, 2012 SPE President & Former VP Chevron
- 10:30** *Global Opportunities for Oil and Gas within CCUS*
Mike Godec, Advanced Resources International
- 11:00** *Coffee*
- 11:30** *Balancing the Rising Distress in the CO₂ EOR Industry with CCUS and EOR in Horizontally Depressured Reservoirs*
Steve Melzer, Melzer Consulting
- 12:00** *Lunch*

Day 1: Wednesday Oct. 4th continue

CO₂ for EOR with CO₂ Storage in Conventional Reservoirs

- 13:00** *CO₂ Foam EOR for Mobility Control*
George Hirasaki, Prof., Chemical and Biomolecular Engineering Dept., Rice University
- 13:30** *CCUS and CO₂ Storage on NCS*
Oskar Johansen, Norwegian Petroleum Directorate
- 14:00** *CO₂ Storage, Monitoring, Verification and Accounting*
Susan Hovorka, Bureau of Economic Geology, University of Texas at Austin
- 14:30** *Post-Combustion CO₂ EOR Development in a Mature Oil Field: Model Calibration Using a Hierarchical Approach*
Feyi Olalotiti-Lawal, Tsubasa Onishi and Akhil Datta-Gupta, Texas A&M University, Yusuke Fujita and Kenji Hagiwara, JX Nippon Oil & Gas Exploration Corporation
- 15:00** *Coffee*

Day 1: Wednesday Oct. 4th continue

CO₂ for EOR with CO₂ Storage in Conventional Reservoirs

PhD presentations

- 15:20** ***Preparing CO₂ Foam EOR Field Pilots in Texas***
Zachary Alcorn, Univ. of Bergen
- 15:40** ***CO₂ Mobility Control in Sandstone Cores***
Michael Guoqing Jian, Rice University
- 16:00** ***Integrated Reservoir Study for Designing CO₂-Foam Field Pilot***
Mohan Sharma, University of Stavanger
- 16:20** ***Applications of Petroleum Systems Modeling in CCUS***
Evan Gragg, PRRC, NMT
- 19:00** **Reception and Buffet Dinner at the Residence of Norway's Consul General in Houston**
Address: 1024 Rocky River Road, 77056, Houston
Attire: Business casual

Day 2: Thursday Oct. 5th

08:30 Registration and Coffee

Part 1: CO₂ applied to Unconventional Hydrocarbon Reserves

09:00 *International Energy Agency Gas & Oil Technology Network Initiative (IEA/GOT)*
Jostein Dahl Karlsen, IEA

09:20 *CO₂ for Methane Production from Hydrate Reservoirs*
Geir Erslund, Assoc. Prof. Dept. of Physics and Technology, University of Bergen

09:40 *CO₂ Foam EOR and CO₂ Injection in Hydrates – CCUS Enablers for Efficient, Cost Saving and More Sustainable Oil & Gas Production: Offshore International Whole Value Chain CCUS Collaboration*
Arne Graue, Prof. of Reservoir Physics, U. of Bergen

10:10 *EOR Potential for the Bakken Shale*
Larry Pekat, Energy & Environmental Research Center, Grand Forks, North Dakota

10:30 Coffee

Day 2: Thursday Oct. 5th *continue*

11:00 *HC Gas or CO₂ Gas Injection in Conventional and Unconventional Reservoirs – Advantages and Disadvantages*

Reza Fassihi and Matt Honarpour, BHPBilliton

11:30 *Lunch*

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

12:30 *Performance Assessment of CO₂-Enhanced Oil Recovery and Storage in the Morrow Reservoir*

William Ampomah & Robert Balch, Petroleum Recovery Research Center (PRRC), NMT

13:00 *Seismic Monitoring of CO₂ EOR at the Farnsworth Field*

George El-kaseeh, Schlumberger

13:30 *Single Well - GAGD: Tipping the balance towards profitable CO₂ sequestration*

Bikash D. Saikia and Dandina N. Rao, Petroleum Engineering Department, LSU

14:00 *Coffee*

Day 2: Thursday Oct. 5th *continue*

PhD presentations

- 14:30** ***Nanotechnology for increased CO₂ utilization: Laboratory study of Enhanced CO₂ Storage and Oil Recovery by CO₂-foam injection***
Arthur Rognmo, U. of Bergen
- 14:50** ***Foam Displacement of Heavy Oil in Micromodels***
Eric Vavra, Rice University
- 15:10** ***A Novel Mitigation Method for CO₂ Leakage in Wellbore Cement***
Shayan Tavassoli, UT Austin
- 15:30** ***Effect of Capillary Pressure and Salinity on CO₂ Solubility in Slain Aquifers***
Hamid R.Lashgari, Petroleum and Geosystems Engineering Department, UT Austin
- 15:50** ***Pre-CO₂ Injection Reservoir Characterization, Petrophysical Analysis, and Multicomponent Seismic Modeling, Cabin Creek Field, Montana***
Paul El Khoury¹, Dr. Tom Davis¹, and Paul Anderson², ¹CSM & ²Denbury Onshore LLC.
- 16:10** ***Assessing ultramicropores of shales by CO₂ adsorption at 273K***
Nerine Joewondo, Colorado School of Mines
- 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

Day 2: Thursday Oct. 5th *continue*

19:00 Conference Dinner at Hilton Houston Plaza/Medical Center

Day 3: Friday Oct. 6th

10:00 – 12:00

Tour of Rice University Flow Assurance and EOR Laboratories

12:00 – 13:00

Lunch at Hollywood Café, 2nd floor, BRC

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