



RICE

R E R I
Reservoir Engineering Research Institute

XXXV RERI Workshop on

**Hydrocarbon and Renewable Energy Production from the Subsurface
and Stewardship of the Environment**

May 14 and 15, 2024

Room 130, First Floor, Ralph S. O'Connor Building for Engineering and Science

Rice University, Houston, Texas

May 14

8:45 – 9:00 am	Welcome: Michael Wong Introduction and Overview of Various Projects <i>Abbas Firoozabadi</i>
9:00 – 9:45	Invited Talk 1: Large Scale Simulation of Flow Through Porous Media <i>Ali Dogru, AramcoAmerica</i>
9:45- 10:15	Invited Talk 2: OXY's Overview <i>Francisco Tovar, OXY</i>
10:15- 11:00	Dynamic adaptive gridding in 2 and 3D unstructured geometries in numerical simulations of two-phase subsurface flow: Application to large scale CO ₂ sequestration in aquifers. <i>Jakub Solovský</i>
11:00 – 11:15	Break

11:15 – 11:45	Numerical simulation of water and CO ₂ fracturing in large scale 2D by the phase field and dynamic adaptive gridding <i>Noe Hernandez</i>
11:45 – 12:15	Highly efficient and robust phase-split computations in 2,3, and 4 phase states <i>Martin Jex</i>
12:15 – 12:45	Thermal diffusion in CO ₂ -brine at supercritical geothermal conditions <i>Felipe Mourão</i>
12:45 – 13:30	Lunch Break
13:30 – 14:00	Molecular simulation of adsorption of associating oligomers in CO ₂ onto calcite and quartz surfaces <i>Mohamed Alhosani</i>
14:00 – 14:30	Efficient and robust numerical modeling of heat extraction by water and by CO ₂ in large fractured geothermal formations by dynamic adaptive gridding and comparison with field data <i>Jakub Solovský</i>
14:30 – 15:00	Efficient oil displacement by brine injection through interfacial elasticity increase at high temperature and high salinity conditions <i>Tomás-Eduardo Chávez-Miyauchi</i>
15:00 – 15:15	Coffee Break
15:15 – 15:45	CO ₂ Viscosification in CO ₂ -IOR in secondary and tertiary modes at high temperature and high salinity conditions <i>Taniya Kar</i>
15:45 – 16:15	Phase behavior modeling of CO ₂ -brine systems including superhot geothermal conditions. <i>Felipe Mourão</i>
17:00 – 19:00	Dinner

May 15

8:30 – 9:15 am	Invited talk 3: Gas-Based EOR for Heterogenous Carbonate Reservoirs: Main Challenges and the Need for Mobility Control Solutions <i>Shehadeh Masalmeh, ADNOC</i>
9:15 – 9:45	Branching in molecular structure enhancement of solubility in CO ₂ <i>Kazuya Kobayashi</i>
9:45 – 10:15	Molecular simulation of wettability of CO ₂ /brine/quartz systems <i>Kazuya Kobayashi</i>
10:15 – 10:30	Coffee Break
10:30 – 11:15	Xray CT scanning of fluid flow in neat and viscosified CO ₂ injection in homogeneous and layered porous media saturated by brine <i>Abbas Firoozabadi</i>
11:15 – 11:45	Effect of various hydrocarbons on solubility and viscosification by oligomers in CO ₂ <i>Tomás-Eduardo Chávez-Miyauchi</i>
11:45 – 12:30	Oil recovery enhancement from polymers through sweep efficiency and from ultra low concentration of surfactants from interfacial elasticity increase <i>Taniya Kar</i>
12:30 – 13:00	Effect of temperature, pressure, and oligomer concentration on CO ₂ viscosification <i>Tomás-Eduardo Chávez-Miyauchi</i>
13:00 – 13:30	Lunch
13:30 – 14:00	Kinetics of solubility of oligomers and large normal alkanes in CO ₂ <i>Taniya Kar</i>
14:00 – 14:45	Formulation of fluid flow in deformable fractured media in isothermal and non-isothermal conditions <i>Noe Hernandez</i>
14:45 – 15:00	Discussion on the Topics, and Input and Suggestions on Different Projects <i>Abbas Firoozabadi</i>