

# **23rd EAGE Symposium on Improved Oil Recovery (IOR+ 2025)**

Edinburgh, Scotland, United Kingdom  
2-4 April 2025

ISBN: 979-8-3313-2447-6

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571



**Some format issues inherent in the e-media version may also appear in this print version.**

Copyright© (2025) by the European Association of Geoscientists & Engineers (EAGE)  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2026)

For permission requests, please contact by the European Association of Geoscientists & Engineers (EAGE)  
at the address below.

European Association of Geoscientists & Engineers (EAGE)  
PO Box 59  
3990 DB Houten  
The Netherlands

Phone: +31 88 995 5055

Fax: +31 30 634 3524

[eage@eage.org](mailto:eage@eage.org)

**Additional copies of this publication are available from:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571 USA  
Phone: 845-758-0400  
Fax: 845-758-2633  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

## TABLE OF CONTENTS

Revisiting Water Injection Post-Polymer Flooding: A Global Perspective on Project Performance .....	1
<i>M. Sagyndikov, G. Dupuis, R. Seright, A. Thomas, R. Wilton</i>	
Is There Value in Using ATBS Type Polymers in Lower Temperature and Salinity Reservoirs? .....	26
<i>A. Beteta, K. McIver, C. Silva, K. Sorbie, D. Farthing, G. Johnson</i>	
Challenges in Controlling CO <sub>2</sub> Foam Generation and Propagation .....	42
<i>A. Klimenko, M. Bourrel</i>	
Selecting Injected Viscosity in Polymer Flood Projects: A Controversial and Critical Question .....	57
<i>E. Delamaide</i>	
Model-Based Design of Polymer Injection in Viscous Oil Reservoirs Under Bottom Aquifer .....	91
<i>A. Y. Al Ghafri, H. Al Sulaimani</i>	
Turning Produced Water into an EOR-Fluid for Carbonate Reservoirs .....	102
<i>T. Puntervold, N. Tafur, S. Strand</i>	
Innovative Self-Sufficient Casing Head Gas Compressor Technology to Improve ESP Performance and Reduced CO <sub>2</sub> Emissions. ....	112
<i>M. Abdalla, M. Al-Oqab, S. Al-Meshwet, S. Martinez, P. Shetty</i>	
Lessons Learned from Polymer Flooding Field Application and Challenges After Polymer Flooding in Daqing Oilfield.....	127
<i>G. Chen, X. Han, X. Zhang, M. Ma, K. Lu, X. Su, S. Guo</i>	
Offshore Nanofluid Injectivity and Huff-N-Puff Field Trials in Japan.....	139
<i>J. Kumasaka, A. Goto, D. Ito, H. Kitagawa, M. Kashihara, S. Murakami</i>	
Smart Process to Manage and Rationalize the Water Flood in Highly Heterogeneous Complex Carbonate Reservoir .....	160
<i>S. Alotaibi, M. Y. Khan</i>	
Polymer Flooding to Unlock Extra-Heavy Oil from a Deep Northern Kuwait Clastic Field: Feasibility Investigation .....	175
<i>S. Akther, B. A. Baroon, A. D. M. Al-Ghadhour, A. E. Al-Otaibi, E. Delamaide, A. Soltani, S. Bekri, D. Rousseau</i>	
Simulation Studies of CO <sub>2</sub> -Type EOR Methods Coupled with Carbon Storage.....	200
<i>A. Kazemi, R. Yousefzadeh</i>	
Insights into Water-Based EOR Methods in the Water Invaded Zone of Fractured Reservoirs Using Numerical Simulation.....	234
<i>A. Kazemi, M. Abbasi, M. Madani</i>	
Solvent-Aided Polymer-Flooding: Novel Hybrid Method to Unleash the Potential of a Deep Extra- Heavy Oil Middle-Eastern Reservoir .....	263
<i>A. Al-Otaibi, S. Akther, B. Baroon, A. Soltani, R. Garifullin, E. Delamaide, D. Rousseau</i>	
Analytical Estimation of Caprock Diffusive Losses During Underground Hydrogen Storage – Caprock Screening Criteria .....	273
<i>B. Amiri, M. Ghaedi, P. Østebø Andersen, X. Luo</i>	

Gas/CO <sub>2</sub> Mobility Under 2-Phase and 3-Phase Flow in Carbonate for CO <sub>2</sub> -EOR and CCS Projects.....	290
<i>S. Masalmeh, A. Farzaneh, M. Sohrabi</i>	
On the 2D Dynamic Models for Production Forecasting of Chemical EOR.....	313
<i>H. Kiyumi, L. Bellmann, A. Y. Ghafri, V. Karpan</i>	
The Effect of CO <sub>2</sub> -Rich Brine on Enhanced Oil Recovery in Sandstones.....	323
<i>M. Fani, A. Mamonov, T. Puntervold, S. Strand</i>	
Offshore CO <sub>2</sub> Utilization: Sequestration, IOR, Blue Hydrogen and Ammonia .....	335
<i>L. Surguchev</i>	
Application of Physics-Informed Neural Networks (PINNs) for Real-Time Interpretation of Porous Plate Capillary Pressure Tests.....	346
<i>J. Abbasi, P. Andersen</i>	
Plugging of Fractures in Carbonate Rocks by Nanocomposite Gels .....	360
<i>I. Fjelde, A. Voke Omekeh, A. Ayobami Ogienagbon, E. Gurzaliyev</i>	
Micromodel Chip Application on a Kuwaiti Reservoir for EOR Processes Screening and Fluid Interaction Visualization.....	376
<i>A. Qubian, A. Safar Abbas, T. A. Al-Mutairi, B. Al-Otaibi, B. Baroon</i>	
Towards Long-Term Operational and Geo-Mechanical Stability of Underground Hydrogen Storage in Salt Caverns.....	393
<i>S. Harati, S. Rezaei Gomari</i>	
Characterization of Tayyarat Tight Carbonate Extreme Heavy Oil: Comprehensive Recovery Overview .....	404
<i>W. Al-Bazzaz, A. Al-Mansour, A. Qubian</i>	
Successful Pilot Tests and Numerical Analysis of Acid Stimulation for Dissolving Carbonate Veins in Tight Reservoirs .....	428
<i>T. Ishiwata, K. Tamura, Y. Takai, D. Kuramoto, T. Tamagawa, R. Ueda, M. Kagawa, K. Kawaura, S. Koshi</i>	
Evidence of Viscous Crossflow During Polymer Enhanced Oil Recovery .....	443
<i>A. Beteta, K. Sorbie, A. Skauge, T. Skauge</i>	
Investigation of Methodology to Degrade Miscibility in Compositional Simulation.....	456
<i>M. Bourgeois, M. Hunter, N. Lindeloff, C. Le-Goff</i>	
Discrete-Domain Model for Hysteresis and Its Application on Porous Rocks.....	471
<i>M. Zeynolabedini, E. Jettstuen, O. Aursjø, J. O. Helland</i>	
Impact of Wellbore Lateral Heat Transfer on the Performance of High-Temperature Aquifer Thermal Energy Storage System .....	487
<i>G. Yan, P.ø. Andersen, Y. Qiao, D. G. Hatzignatiou, T. Kohl</i>	
Microfluidic Pore-Scale Analysis of Wax and Scale Formation/Mitigation for Sub-Surface Water Injections .....	497
<i>M. Yousefi, Z. Qi, A. Meimanova, S. Kinneer, A. Abedini, K. Graham</i>	
Experimental Investigation of Seawater Injection for Enhanced Oil Recovery .....	511
<i>H. Divandari, A. Farzaneh, M. Sohrabi, J. Fahimpour</i>	

Carbon Footprint and Energy Intensity Assessment for Improving Water Injection Through Bulk Gels: Casabe Field Case .....	530
<i>C. Barbosa, L. Corredor, H. Quintero, M. Gutierrez, R. Jimenez, J. Quintero, L. Rueda, J. Sarquez</i>	
IOR Mechanisms in Diatomite Reservoirs: Comparative Study of Norwegian and American Diatomite Properties.....	541
<i>V. Abdulina, S. Strand, A. Mamonov, T. Puntervold</i>	
Multidisciplinary Workflow for CO2 Injection in Depleted Gas Reservoirs.....	551
<i>C. Topini, M. Brignoli, A. Corradi, G. L. D. Facchi, S. Lo Forte, C. Sala</i>	
Viscous Fingering Dynamics in Carbon Capture: Impact of CO2 Solubility and Relative Permeability Selection in CCS .....	564
<i>S. Ashtari Larki, A. Skauge, K. S. Sorbie, E. Mackay</i>	
Enhancing Unconventional EOR Techniques: Evaluating Surfactant Formulation Through Laboratory Studies and Field Applications.....	577
<i>G. Herman</i>	
Optimizing Capex/Opex Using DataPhysics Models: A Comprehensive Approach to Conversions, Reactivations, Injection Distribution and In-Fill Drilling .....	592
<i>C. Calad, F. Gutierrez, P. Sarma, M. G. Castaño</i>	
Effect of the Immiscible to Miscible Transition on 3-Phase Displacements in Systems of Arbitrary Wettability .....	602
<i>S. Mahmoudvand, K. S. Sorbie, A. Skauge</i>	
Numerical Analysis of Immiscible WAG Recovery Mechanisms in a Large North Sea Field.....	613
<i>F. Hamon, L. Boitard, N. Daoud, M. Bourgeois</i>	
Breaking the Mold: Reassessing Polymer Flooding and the Outdated 'Primary, Secondary, Tertiary' Model .....	627
<i>A. Thomas</i>	
Boosting Oil Recovery, Efficiency, and Economics in Heterogeneous Reservoirs by Deploying Modular Polymer Injection Units.....	645
<i>G. Villarroel, P. Guillén, J. Propato, J. Juri, A. D'odorico, G. Vocaturo, A. Ruiz, I. Ylitch, M. Mortaloni</i>	
Innovative 3D Modelling and Polymer Injection Techniques in Heavy Oil Reservoirs with “Chinese Dragon” Wells .....	657
<i>G. Villarroel, J. Propato, Y. Julio, M. Mendoza, J. Juri, F. Avalis, L. Alimonti, E. Fernandez</i>	
Evaluation of IOR Projects with Focus on Energy and CO2 Intensity Using eCalc .....	671
<i>Y. Guo, M. Iversen, A. D. Decosemaeker</i>	
Successful Pilot Implementation of 15K Psi HPHT Multi-Stage Stimulation Completion Technology in KOC's Jurassic Wells.....	683
<i>M. Al-Rashidi</i>	
Advancing CCUS for Carbon Neutrality: Execution of Subsurface Characterization at Ecopetrol .....	694
<i>H. Cubillos, J. C. Palacio, I. Plata, J. Castañeda, E. Lopez, R. Osorio, G. Maya</i>	

Optimizing Polymer Flooding in Multilayered Reservoirs: Insights from Connectivity, Composition, and Field Performance .....	709
<i>M. Ould Metidji, S. Gandi, S. González, I. Corrado, H. J. Campos, N. Terra, A. De Vita, P. Diaz, G. Dupuis</i>	
Encapsulated Polymer Technology for Enhanced Oil Recovery in Offshore Subsea Wells .....	729
<i>T. Leblanc, F. Kayser, R. Shields</i>	
Designing an In-Depth Chemical Conformance Gel System for a Mature Fractured Carbonate Field.....	739
<i>L. Hernando, N. Salehi, A. Zaitoun, P. Cheneviere, O. Garnier, D. Tsolakis, B. Pignot</i>	

**Author Index**