5th Asia Pacific Carbon Capture, Utilisation and Storage Conference 2026

Qingao, China
15 - 16 September 2026

ISBN: 979-8-3313-4025-4

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© (2026) 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

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
Web: www.proceedings.com

TABLE OF CONTENTS

SESSION 1: CO_2 CAPTURE AND UTILIZATION IN HARD-TO-ABATE SECTORS: MATERIALS, PROCESSES, AND PERFORMANCE

Surfactant-Assisted CO_2 Storage Enhancement for Thailand's Cement Industry 1
P. Madla, S. Tangparitkul

The Role and Importance of CO2 Specification on Transport and Storage Networks 5
R. Sun

Influence of Citric Acid on the Leaching–Carbonation Performance of Steel Slag in Ammonia Salt 8
J. Hou, Z. Yousif, A. Alabdulwahab, M. Rafie

SESSION 2: FROM BASIN SCREENING TO CONTAINMENT ASSURANCE: INTEGRATED SUBSURFACE WORKFLOWS FOR CO_2 STORAGE

Advancing CCS in Southeast Asia: Subsurface Evaluation and Storage Capacity Assessment in Project B 11
T. Lurprommas, P. Pongthunya, A. Bowonsuriyapong, K. Kreeprasertkul, R. Lertkornteeranan

Impact of Caprock Sealing Capacity During CO2 Injection 14
Z. Yousif, D. Tayyib, L. Ding, A. Abdulwahab, L. Alsiary

CCS Potential in Basin Scale for Central Luconia and Balingian Province, Malaysia 17
W. Imurai, T. Charoenpun, N. Laoniyomthai, K. Jiraratchwaro, K. Pukdeewuth, K. Chuachomsuk, A. Ruangsirikulchai, B. Akkaphin

Evergreening of Multi-Vintage 2D Dataset via Pseudo-3D Model Building for CCS Study, Offshore Vietnam Case Study 20
H. K. Tan, W. Woen, S. Chen, T. Nguyen, D. D. Viet, D. V. Thanh, T. Q. Minh, H. Shi

SESSION 3A: FROM DATA TO DECISIONS: APPLYING AI/ML ACROSS THE CCS VALUE CHAIN

A Comprehensive Deep Learning Framework for Low-Cost CO2 Seismic Monitoring 25
W. Hu, S. Phan, C. Li, H. Di, N. Pham, M. Branston, A. Abubakar, K. Qiu

Automated CO2 Plume Extraction from 4D Migrated Seismic Images 28
H. Di, N. Pham, R. Chhibber, A. Sharma, M. Branston, R. Li, D. Ye

Integrating Diagenetic Characterization Factors into Machine Learning Models for High-Precision Porosity Prediction in Tight Sandstone Reservoirs 32
P. Lu, P. X. Jiang, R. Xu, H. Xue

SESSION 3B: FROM CO_2-EOR TO PERMANENT STORAGE: MECHANISMS, INJECTION STRATEGIES, AND EFFICIENCY OPTIMISATION

WAG Injection Design for CCUS in Fang Oilfield, Thailand: Trade-Offs Between CO_2 Storage and Oil Recovery 35
C. Tapanya, P. Madla, S. Tangparitkul

High-Temperature and High-Pressure CO2 Mineralization: Advantages of Biomimetic Carbonic Anhydrase Over Natural Enzyme 38
Z. Ji, S. Ni, R. Huo, C. He, M. Gao, Y. Shi

Mechanistic Study on the Synergistic Evolution of CO_2-EOR and Geological Storage Under Different Injection Strategies 44
Z. Ji, Y. Guan, M. Gao, Y. Shi, X. Chen

Effect of Surfactant Stability on Foam Assisted Oil Recovery and Long-Term CO2 Storage Efficiency 48
Q. Wu, L. Zhao, W. Zhao, L. Ding

SESSION 4: MULTI-SCALE RESERVOIR CHARACTERIZATION FOR CO_2 STORAGE EFFICIENCY AND CONTAINMENT ASSURANCE

How Excellent Reservoir Properties Can Compromise CO2 Storage Capacity: A Case Study from the Middle East 53
M. Valderrama, N. Din, M. Slinde, J. Zhou, A. Ghamdi, A. Clark

Pore-Scale Quantification of CO_2 Transport and Effective Diffusivity in Layered Porous Media 58
Q. Zhang, W. Wang

Full-Integrated Geological–Geophysical Workflow for Facies Modelling in CCS Site Characterization: Arthit Field Case Study, Thailand 61
A. Vesprasit, R. Uttareun, J. Charoensuk, P. Amonpantang, K. Wongpaet, U. Chanthanaphalin, V. Tivayanonda, P. Thamniyom, K. Inraikhing, T. Lurprommas

Enhancing CO_2 Storage Prediction in Saline Aquifers Through Integration of Forward Stratigraphic Modelling and Dynamic Simulation 64
Y. F. Zainudain, A. Zinatullina, A. Kolupaev, A. A Jalil, R. Affandi, N. M Fadhlan, Z. Affendi, F. Jaafar Azuddin, A. Hakim Mazeli

SESSION 5: HIGH-RESOLUTION SEISMIC MONITORING FOR CCS

Time-Lapse DAS 3D VSP Seismic Inversion for CO_2 Monitoring 67
A. Al-Dawood, B. Gurevich, O. Collet, R. Pevzner

Utilizing the Full Wavefield of Distributed Acoustic Sensing (DAS) for Subsurface Imaging and Velocity Model Building 70
K. Liao, N. Kamath

Rock Physics Modeling of Patch Evolution for Seismic Monitoring of CO2 Sequestration 73
T. Müller, Q. Liu, D. Cao, Y. Liu, X. Wang

Multi-Well DAS-VSP Monitoring of CO2 Storage: Repeatability Challenges and Short-Term Plume Evolution at Otway Stage 4 77
A. Almukhametova, R. Pevzner, K. Tertyshnikov, B. Gurevich, R. Isaenkov, P. Shashkin, M. Al Marzooq

SESSION 6: ENHANCING CO_2 STORAGE PERFORMANCE: FROM WELL INTEGRITY TO ADVANCED INJECTION AND MINERALIZATION

Turning Legacy Liabilities into Managed Risks: A CCS Well Integrity Framework 81
X. S. Tang, A. Sorbier, W. Y. Sun, L. Leng, X. P. Wang, L. Beugelsdijk

Adapting Microbubble CO2 Injection for Pore Space Utilization and Storage Efficiency Improvement 84
Z. Xue, H. Nourollah

Mechanistic Simulation of Nanobubble Assisted CO2 Mineralization in Basalt 87
L. Ding, Z. Alyousef, S. Sangaru

Effect of Impurities on Salt Precipitation, Solubility Trapping and Plume Migration Under CO2 Geological Sequestration Conditions 92
Q. Wu, L. Ding, L. Zhao, W. Zhao, X. Wu

SESSION 7A: DESIGNING EFFECTIVE CCS MONITORING SYSTEMS: SEISMIC INNOVATION, GRAVITY DATA, AND RISK-DRIVEN APPROACHES

Sensitivity Analysis for the Acquisition Geometry Through FWI in CCS Monitoring 98
S. Xu

Risk-Based Monitoring Design for CO_2 Storage in Faulted Formations-Insights from a Controlled Field Experiment 101
H. Nourollah, Z. Xue, M. Watson

Offshore CCS Induced Seismicity Risk Assessment in China 106
X. Wang, M. C. Alfaro, K. Bisdom, S. Bourne, M. D. Elsener, K. Hindriks, L. Beugelsdijk

Surface Gravity Data for Efficient Onshore CO2 Storage Monitoring Plan Design 110
Y. Kozlov, L. De Luca

SESSION 7B: MULTI-SCALE PROCESSES IN CO_2 STORAGE: FROM PORE-SCALE PHYSICS TO FRACTURED RESERVOIRS AND SEAL INTEGRITY

Mechanical and Microstructural Evolution of the Reservoir-Caprock System Under CO2 Exposure.....113
J. He, L. Hou, J. Li, F. Xue

Multi-Scale and Multi-Mechanism CO2-EOR and CCS in Shale Oil Reservoirs with Complex Fracture Network.....116
M. Wang, W. Wang, Y. Su, L. Li

SESSION 8: FLOW BEHAVIOUR AND TRAPPING EFFICIENCY IN GEOLOGICAL CO_2 STORAGE SYSTEMS

Coupled Thermodynamic and Numerical Assessment of CO_2 Dissolution in High-Pressure Saline Water 119
B. Xian, J. Tang, C. He, F. Xiao

Mechanisms of CO2 Storage and Flow Behavior in Shale Oil Reservoirs..... 122
Z. Pan, G. Wu, H. Pang, L. Wang, J. Zhang

Hysteresis and Acoustic Wave Propagation in CO_2 Sequestration 125
X. Zhang, Y. Qi, L. Liu

Pore-Scale Mechanisms of CO_2 Transport and Adsorption in Shale Carbon Sequestration..... 129
J. Li, W. Wang, H. Wang, K. Tang

AM BREAK & POSTER PRESENTATION DAY 1

Numerical Study on Seismic Interferometry for 4D Effects on CCS Monitoring 132
S. Xu

Design and Optimization of 3D High-Precision Seismic Geometry for CCUS-EGR 135
X. Zhang, Z. Wu, Y. Li, X. Wang, X. Zeng, Y. Peng, L. Yang, P. Liu, Y. Huang

Intelligent Optimization of Time-Varying CO2-WAG Parameters in Low-Permeability Reservoirs for Synergistic EOR and CO2 Storage 139
C. Gong, S. Meng

Effects of CO_2 Injection on the Acoustic Propagation Characteristics of Porous Media 143
Y. Qi, X. Zhang

AM BREAK & POSTER PRESENTATION DAY 2

CO2 Injectivity and Trapping Mechanism Study in the Guantao Formation of Offshore Bohai Bay 146
H. Yu

An Adaptive Surrogate-Model-Based Reference Vector Guided Evolutionary Algorithm for CO2-EOR and Storage Optimization 149
W. Liang, K. Zhang, X. Yan, P. Jiang

Artificial Neural Network with Hyperparameter Optimization for CO_2-Brine Density, CO_2-Brine IFT, and CO_2-Alkane IFT 152
Y. Wang, Y. Liu, K. Feng

Quantitative Analysis of Rock-Physics Responses to CO_2 Saturation Variations 155
Y. Dong, Y. Shen

Dynamic Multi-Modal Data Fusion for CO2 Storage Monitoring via Leading Information Guided Attention 158
F. Jia, W. Wang, Y. Deng, D. Feng, Y. Xia, X. Jiahao

Author Index