

The 35th International Symposium of the Society of Core Analysts

Sunday, Sept. 18, 2022

Optional Golf Event

Monday, Sept. 19, 2022

8:00 – 5:00 Registration Desk Open

- 8:40 am – 9:00 am Welcome and safety moment
- 9:00 am – 12:30 pm Short Workshop: Core Analysis in Carbon Geosequestration, Geothermal, and Nuclear-Waste Disposal**
- 9:00 am – 9:50 am Flow in Porous Media in the Energy Transition
Martin J. Blunt
- 9:50 am – 10:40 am What Do We Need to Know for Designing a Reliable Carbon Storage Project?
Dengen Zhou
- 10:40 am – 11:00 am **Coffee break**
Kindly Sponsored by AMETEK Chandler Engineering
- 11:00 am – 11:45 am Core Analysis in Geothermal: Supporting the Energy Transition
Kevin McCarthy
- 11:45 am – 12:30 pm Core and Petrophysics Analysis as Complementary Datasets for Geological Disposal of Nuclear Waste at NAGRA
Garrard Rodney
- 12:30 pm – 1:30 pm **Lunch**
Kindly Sponsored by TOTAL Energies
- 1:30 pm – 3:00 pm Technical Session 1 – Core Analysis Embracing Energy Transition**
Chairs: C. Berg and H. Xie
- SCA01 Displacement Stability Revisited – A New Criterion for the Onset of Viscous Fingering
Jos G. Maas, Niels Springer, Albert Hebing, and Steffen Berg
- SCA02 Advanced Digital-SCAL Measurements of Gas Trapping in Sandstone

Ying Gao, Tibi Sorop, Niels Brussee, Hilbert van der Linde, Ab Coorn, Matthias Appel, and Steffen Berg

SCA03 Integrated Thermo-Poro-Mechanical Characterization for CO₂ Sequestration at Deep Aquifer Conditions
Sudarshan Govindarajan, Munir Aldin, Akshay Thombare, Omar Abdulkaki, Deepak Gokaraju, Abhijit Mitra, and Robert Patterson

3:00 pm – 3:30 pm

Coffee Break

Kindly Sponsored by AMETEK Chandler Engineering

3:30 pm – 5:00 pm

Technical Session 2 – Improved SCAL Techniques and Interpretation 1

Chairs: E. Ebeltoft and M. Dick

SCA04 Wireless Acquisition for Resistivity Index in Centrifuge – Wiri: A Comparative Study of Three Pc-RI Methods
Quentin Danielczick, Ata Nepesov, Laurent Rochereau, Sandrine Lescoulie, Victor De Oliveira Fernandes, and Benjamin Nicot

SCA05 Unraveling Electrokinetics – A Brand New and Innovative Workflow for the Quantification of Electrokinetic Properties of Siliciclastic Rocks
Matthias Halisch, Stephan Kaufhold, and Christian Weber

Sca06 Analytical Models for Predicting the Formation Resistivity Factor and Resistivity Index at Overburden Conditions
Meysam Nourani, Stefano Pruno, Mohammad Ghasemi, Muhamet Meti Fazlija, Byron Gonzalez, and Hans-Erik Rodvelt

5:30 pm – 8:30 pm

Opening Reception

Tuesday, Sept. 20, 2022

7:30 am – 5:00 pm Registration Desk Open

8:15 am – 9:45 am

Technical Session 3 – Laboratory Core Analysis 1

Chairs: B. Gao and S. Althaus

SCA07 THz Imaging to Map the Microporosity Distribution in Carbonate Rocks
Shannon L. Eichmann, Jacob Bouchard, Hooisweng Ow, Doug Petkie, and Martin Poitzsch

SCA08 Innovations in Low UCS Core Acquisition and Quality Assessment Using Digital Rock Physics
Dmitry Lakshatanov, Jennie Cook, Yuliana Zapata, Dave Saucier, Robin Eve, Mark Lancaster, Nathan Lane, Glen Gettemy, Kevan Sincock, Elizabeth Liu, Rosemarie Geetan

SCA09	Angle-Dependent Ultrasonic Wave Propagation in Rocks for Estimating High-Resolution Elastic Properties of Complex Core Samples Daria Olszowska, Gabriel Gallardo-Giozza, Domenico Crisafulli, and Carlos Torres-Verdín
9:45 am – 10:15 am	Coffee Break Kindly Sponsored by Math2Market
10:15 am – 11:45 pm	Technical Session 4 – Pore Scale Imaging and Modeling 1 Chairs: M. Halisch and S. Pruno
SCA10	Pore Network Simulations Coupled with Innovative Wettability Anchoring Experiment to Predict Relative Permeability of a Mixed-Wet Rock Mohamed Regaieg, Franck Nono, Titly Farhana Faisal, Clément Varloteaux, and Richard Rivenq
SCA11	ElRock-Net: Assessing the Utility of Machine Learning to Initialize 3D Electric Potential Simulations Bernard C. Chang, Javier E.Santos, Rodolfo Victor, and Maša Prodanović
SCA12	A Bayesian Optimization Approach to the Extraction of Intrinsic Physical Parameters from T2 Relaxation Responses Rupeng Li, Igor Shikhov, and Christoph H. Arns
11:45 pm – 1:00 pm	Lunch Kindly Sponsored by Chevron
1:00 pm – 3:00 pm	Poster Session 1 (Odd Numbers)
3:00 pm – 3:30 pm	Coffee Break Kindly Sponsored by Math2Market
3:30 pm – 4:30 pm	Technical Session 5 - Unconventionals and Source Rocks Chairs: J. Howard and S. Eichmann
SCA13	Shale Characterization Using Magnetic Resonance Mohammad Sadegh Zamiri, Jiangfeng Guo, Florea Marica, Laura Romero-Zerón, and Bruce J. Balcom
SCA14	The Effect of Nanoconfinement on the Phase Behavior of Ethane/N-Propane Binary Mixture: An Experimental Study at Varying Pore Sizes and Compositions Keerti Vardhan Sharma, Rami M. Alloush, Karem Al-Garadi, and Mohammad Piri
6:00 pm – 9:00 pm	Young Professionals Event

Wednesday, Sept. 21, 2022

- 7:30 am – 5:00 pm** **Registration Desk Open**
- 8:15 am – 9:45 am** **Technical Session 6 – Pore Scale Imaging and Modeling 2**
Chairs: J. Maas and S. Eichmann
- SCA15 Forced Imbibition and Uncertainty Modelling Using the Morphological Method
Pit Arnold, Mario Dragovits, Sven Linden, Fatime Zekiri, and Holger Ott
- SCA16 Initial States of Core Flooding Techniques Evaluation: A Global Pore-Scale Investigation
Franck Nono, Cyril Caubit, and Richard Rivenq
- SCA17 Numerical Study of NMR Relaxation Responses in Synthetic Clayey Sandstone by Dual-Scale Modeling
Yingzhi Cui, Igor Shikhov, and Christoph Arns
- 9:45 am – 10:15 am** **Coffee Break**
- 10:15 am – 11:45 pm** **Technical Session 7 – Application of Artificial Intelligence/Machine Learning**
Chairs: H. Ott and W. Richardson
- SCA18 Artificial Intelligence Assisted Quantitative Petrophysical Properties Analysis using Core Images and Well Logs
Tao Lin, Mokhles Mezghani, Chicheng Xu, and Weichang Li
- SCA19 Combining High-Resolution Core Data and Machine Learning Schemes to Develop Sustainable Core Analysis Practices
Christophe Germy, Tanguy Lhomme, Luc Perneder, and John Cummings
- SCA20 Prediction of Centrifuge Capillary Pressure Using Machine Learning Techniques
Brandon Jeremy Burse, Erfan Mohagheghian, Edison Sripal, and Lesley Anne James
- 11:45 pm – 1:00 pm** **Lunch**
- 1:00 pm – 3:00 pm** **Poster Session 1 (Even Numbers)**
- 3:00 pm – 3:30 pm** **Coffee Break**
- 3:30 pm – 4:30 pm** **Technical Session 8 – Wettability & others**
Chairs: J. Maas and S. Althaus

- SCA21 Digital Rock Workflow to Calculate Wettability Distribution in A Reservoir Rock
Ashraful Islam, Rafael Tio Salazar, and Bernd Crouse
- SCA22 Fast Wettability Assessment on Small Rock Samples Using A 3D, High-Resolution, Image-Based Amott-Like Test
Maria Repina, Regis Brugidou, Alexandre Dufour, and Richard Rivenq

6:30 pm – 9:30 pm **Gala Dinner**

Thursday, Sept. 22, 2022

7:30 am – 5:00 pm Registration Desk Open

8:15 am – 9:45 am **Technical Session 9 –Improved SCAL Techniques and Interpretation 2**
Chairs: S. Pruno and W. Richardson

- SCA23 Hybrid Technique for Setting Initial Water Saturation on Core Samples
Victor Fernandes, Cyril Caubit, Benjamin Nicot, Fabrice Pairoys, Henri Bertin, and Jean Lachaud
- SCA24 Water-Gas Imbibition Relative Permeability: Literature Review, Direct versus Indirect Methods and Experimental Recommendations
Fabrice Pairoys, Cyril Caubit
- SCA25 Geomechanical Deformation of Saturated Porous Media under Various Wettability Conditions: A Pore-scale Investigation
Ahmed Zankoor, Rui Wang, Maziar Arshadi¹ and Mohammad Piri

9:45 am – 10:15 am **Coffee Break**

10:15 am – 11:45 pm **Technical Session 10 - Laboratory Core Analysis 2**
Chairs: E. Ebeltoft and H. Xie

- SCA26 A Combinational NMR and Dielectric Technique Using Spectral NMR Mapped Distributions of Dielectric Relaxation
James J. Funk, Michael Myers, and Lori Hathon
- SCA27 Experimental Time-Lapse Visualization of Mud-Filtrate Invasion and Mudcake Deposition in Complex Rocks Using X-Ray Radiography
Pierre Aéreus, Carlos Torres-Verdín, and Nicolas Espinoza
- SCA28 Causal Protocols to Assess the Viability of Native State or Restored State Preparation
Jules Reed, Stefano Pruno, Izaskun Zubizarreta, and Rolf Johansen

11:45 pm – 1:00 pm **Lunch**

- 1:00 pm – 2:30 pm Technical Session 11 - Displacement Mechanisms/EOR/IOR**
- Chairs: J. Funk and M. Halisch**
- SCA29 Carbonated Water Injection for Heavy Oil Recovery
Jinxun Wang, Abdulkarim M. AlSofi, Hassan Behairy, Abdullah M. Boqmi, and Sinan Caliskan
- SCA30 Carbonated Smart Water Injection for Optimized Oil Recovery in Chalk at High Temperature
Md Ashrafal Islam Khan, Sander Haaland Kleiberg, Ivan Dario Pinerez Torrijos, Tina Puntervold, and Skule Strand
- SCA31 Nano-Colloid Based Suspensions and Emulsions Used as Means for Enhanced Oil Recovery
Anastasia Strekla, Christina Ntente, Maria Theodoropoulou, and Christos Tsakiroglou
- 2:30 pm – 3:00 pm Coffee Break**
- 3:00 pm – 4:00 pm Technical Session 12 - Improved SCAL Techniques and Interpretation 3**
- Chairs: B. Gao and M. Dick**
- SCA32 Simultaneous Interpretation and Uncertainty Analysis of SCAL Data from Complex Rocks
Omideza Amrollahinasab, Siroos Azizmohammadi, and Holger Ott
- SCA33 Uncertainty in Measuring Capillary Pressure in Heterogeneous Cores
Guming Zhou, Jie Cao, and Lesley James

Friday, Sept. 23, 2022

Optional Field Trip

Trip Leaders: Charlie Kerans, Brian Hunt, Charlotte Sullivan, and Toti Larsen

Poster Presentations

Poster with manuscript

- SCA 34 Capturing the Wetting State of An Aged-Carbonate Core Through Pore-Scale Multiphase Flow Simulations
Tingting Wang, Ying Da Wang, Chenhao Sun, James E. McClure, Peyman Mostaghimi, and Ryan T. Armstrong
- SCA35 Comparison of Three-Dimensional Permeability Inversion from Positron Emission Tomography Experimental Data Using Convolutional Neural Networks and Ensemble Kalman Filter

- Zitong Huang and Christopher Zahasky
- SCA36 Digital Rocks Portal (Digital Porous Media): Connecting Data, Simulation and Community
Maša Prodanović, Maria Esteva, James McClure, Bernard C. Chang, Javier E. Santos, Anuradha Radhakrishnan, Ankita Singh, and Hasan Khan
- SCA37 Pore-scale Analysis of CO₂-brine Displacement in Berea Sandstone and Its Implications to CO₂ Injectivity
Guangyuan Sun, Zhuang Sun, Andrew Fager, and Bernd Crouse
- SCA38 Core Characterization of Patterson #5-25 Well for Carbon Capture and Storage in Western Kansas
Thomas Paronish, Rhiannon Schmitt, Dustin Crandall, Franek Hasiuk, Eugene Holubnyak, and Jingyao (Jenny) Meng
- SCA39 An Approach for Image-Based Quantification of Fines Migration in Geologic Columns and Core Samples
Collin R. Sutton and Christopher Zahasky
- SCA40 An Integrated Petrophysical Analysis Based on NMR, Organic Geochemistry and Mineralogy. The Vaca Muerta Source Rock-Unconventional Play at Different Thermal Maturities
Diana Masiero, Marcos Comerio, Esteban Domené, Gabriela Vila, Bernarda Epele, Mariano Cipollone, Mariela Silka, Carlos Camacho, Lourdes Vera López, and Silvina Chiappero
- SCA41 Some Useful Guidelines for Whole Core CT-Scanning for Petrophysical Applications
Shameem Siddiqui
- SCA42 Investigation Pore Geometry Wettability Preference in Oolitic Oil Reservoir: Pore Scale Imaging and Modelling Study
Hussien Al-Ajaj, Ralph Flori, Saleh Alsayegh, Haidar AlMubarak, and Waleed Al-Bazzaz
- SCA43 Rapid, High Resolution Probe Screening Techniques for Core Analysis and their Potential Usefulness for Hydrocarbon or Energy Transition Applications
Emmanuel Okwoli and David K. Potter
- SCA44 Applications of Temperature Dependent Paramagnetic Properties for Quantifying Mineral Content and Extending the Use of Paramagnetic Dopants for Laboratory or Borehole Analysis of NMR Data
Cody W. Good and David K. Potter
- SCA45 Modification of the SDR Equation for Permeability Prediction
Andreas Weller and Zeyu Zhang
- SCA46 Towards Multiscale Digital Rocks: Application of a Sub-Resolution Production Model to a multiscale Sandstone
Rafael Salazar-Tio, Andrew Fager, Guangyuan Sun, Bernd Crouse, Rui Xu, Brett Wendt, and Adam Lewis

SCA47 Chemostratigraphic Analysis as A Powerful Tool for the Lateral Continuity of Structurally Complex Reservoirs: A Case Study
Liborius-Parada Andreina, Medina-Macedo Marlen, Tonner Dave, Hughes Simon, and McCulley Meri

Poster without manuscript

- SCA48 Carbon Capture and Storage (CCS), Evaluation of Carbon Dioxide Storage Efficiency at the Western Siberia Field
Pavel Golub, Andrei Cheban, and Evgenii Romanov
- SCA49 A Joint Workflow Towards a Reliable Quantification and Understanding of NMR Surface Relaxivity
Matthias Halisch, Raphael Dlugosch, Zeyu Zhang, and Andreas Weller
- SCA50 Comparison of Geophysics- and Core-Based Wettability Assessment Methods: An Experimental Study Using Artificial Grain Packs
Zulkuf Azizoglu and Zoya Heidari
- SCA51 Surface Tension and Contact Angle Measurements for Hydrogen-Methane Mixture/Brine/Rock Systems at Reservoir Conditions Relevant to Underground Hydrogen Storage
Vahideh Mirchi, Morteza Dejam, and Vladimir Alvarado
- SCA52 Multi-Scale 3D Carbonate Digital Rock Reconstruction: Traditional or Machine Learning Approaches?
Yiteng Li, Xupeng He, Marwa AlSinan, Hyung Kwak and Hussein Hoteit
- SCA53 NMR T₂ Response versus Roughness: A Numerical and Analytical Study
Yiteng Li, Xupeng He, Marwa AlSinan, Hyung Kwak, and Hussein Hoteit
- SCA54 Nuclear Magnetic Resonance Laboratory Study of A Tight Sandstone for Robust Permeability Prediction
Jun Gao, Hyung Kwak, Abdullah Alkhaldi, and Gabor Hursan
- SCA55 NMR Spin-spin Relaxation in Unconventional Source Rocks
Z. Harry Xie
- SCA56 SEM Image-Constrained Process-Based Modeling for Relative Permeability Estimation of Carbonate-Rich Mudrock
Christopher J. Landry and Masa Prodanovic
- SCA57 Multi-Phase Flow in Fractured Rocks: From Pore-Scale Processes to Field-Scale Responses
Xupeng He, Marwa AlSinan, Hyung Kwak, and Hussein Hoteit
- SCA58 Direct Measurement of In-Situ Hydrogen-Water-Quartz System Relative Permeability for Underground Hydrogen Storage in A Depleted Gas Reservoir
Scott Higgs, Ying Da Wang, Jonathan Ennis-King, Samuel J. Jackson, Ryan T. Armstrong, and Peyman Mostaghimi
- SCA59 Characterization of Surface Conductivity of Clays
Viacheslav Emelianov, Zeyu Zhang, Konstantin Titov, Matthias Halisch³, and Andreas Weller

- SCA60 Manganese-Ion Based Tailored Waterflooding Processes for Carbonates
Amani Alghamdi, Saleh Salah, Mohammed Otaibi, Subhash Ayirala, and Ali Yousef
- SCA61 Development and Testing of A New 10000 PSI NMR Overburden Probe
Michael Dick, Dragan Veselinovic, Taylor Kenney, and Derrick Green
- SCA62 A Semi-Analytical Model for Capillary Entry Pressure of Pores in Carbonates with Varying Wettability States
Yanbin Gong, Bradley William McCaskill, Mohammad Sedghi, and Mohammad Piri
- SCA63 In-situ Characterization of Carbonate/Oil/SmartWater Interfacial Layers Using Advanced EM Techniques
Dongkyu Cha, Mohammed B. AlOtaibi, Subhash Ayirala, Ahmed Gmira, and Ali A. Yousef
- SCA64 Study on Adsorption Behavior of a New Type Gemini Surfactant onto Quartz Surface by Molecular Dynamics Method
Weifeng Lyu
- SCA65 Novel Evaluation of Oil Recovery in Rock-Like Mixed-Wet Microfluidic Systems
Abdullah AlOmier, Antonia Sugar, Dongkyu Cha, Subhash Ayirala, Mohammed AlOtaibi, Ali Yousef, and Hussein Hoteit