

Sunday, Aug 25	
11:00 – 5:00	Optional Golf Event – Pau Golf Club

Monday, Aug 26	
8:00 – 5:00	Registration Desk Open

## Short Course Program

### Numerical History Matching of SCAL Data; Best Practice MONDAY, AUGUST 26, 2019

Numerical interpretation of data	
9:00 – 9:10	Welcome
9:10 – 10:40	Numerical Interpretation of Data  Presenters: Jos Maas & Jules Reed
10:40 – 11:00	Coffee Break <b>Kindly Sponsored by: AMETEK Chandler Engineering</b>
11:00 – 12:30	Interpretation of Pore Scale Experiments; Alternative Descriptions of Porous Media Flow by Topological Means  Presenters: Ryan Armstrong & Steffen Berg
12:30 – 12:35	Closing Remarks
12:35 – 1:30	Lunch <b>Kindly Sponsored by: TOTAL</b>

Short Course Kindly Sponsored by: Thermo Fisher Scientific

# Core analysis in a digital world

## Technical Program

Monday, August 26, 2018

1:30 - 1:45            **Opening Remarks**

1:45 – 3:15            **Session 1: Core Analysis in a Digital World (1) - Pore Scale**  
**Chairs: Oliver Lopez and Josephina Schembre-McCabe**

SCA001            Pore-scale imaging and determination of relative permeability and capillary pressure in a mixed-wet carbonate reservoir rock at subsurface conditions  
Amer M. Alhammedi, Ying Gao, Takashi Akai, Martin J. Blunt, and Branko Bijeljic

SCA002            Density Functional Hydrodynamics in Multiscale Pore Systems: Chemical Potential Drive  
Oleg Dinariev, Nikolay Evseev, and Denis Klemin

SCA003            Uncertainty span for relative permeability and capillary pressure by varying wettability and spatiality flow directions utilizing pore scale modelling  
Thomas Ramstad, Anders Kristoffersen, and Einar Ebeltoft

3:15 – 3:30            **Exhibitor Presentations (x5)**

3:30 - 3:45            **Coffee Break**  
**Kindly Sponsored by: AMETEK Chandler Engineering**

3:45 – 4:00            **Exhibitor Presentations (x5)**

4:00- 5:30            **Session 2: Improved SCAL Techniques and Interpretation (1)**  
**Chairs: Derrick Green and Doug Ruth**

SCA004            Permeability alteration by salt precipitation: numerical and experimental investigation using X-Ray Radiography  
Olivier Lopez, Souhail Youssef, Audrey Estublier, Jostein Alvestad, Christin Weierholt Strandli

SCA005            Steady-State Two-Phase Flow in Porous Media: Laboratory Validation of Flow-Dependent Relative Permeability Scaling  
Marios S. Valavanides, Matthieu Mascle, Souhail Youssef and Olga Vizika

SCA006            Improved method for complete gas-brine imbibition relative permeability curves

M. Ben Clennell, Cameron White, Ausama Giwelli, Matt Myers, Lionel Esteban, Michael Cullingford, William Richardson, Gavin Ward, Matt Waugh, Scott Cole, Ashley Hunt and Peter Bright

**5:30 - 9:00**

**Opening Reception “Icebreaker Reception” – Restaurant “La belle Epoque”, Palais Beaumont**

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Tuesday, August 27, 2018

8:00 – 5:00                    **Registration Desk Open**

8:30 - 10:00                 **Session 3: Wettability**  
**Chairs: Steffen Berg and Josephina Schembre-McCabe**

SCA007                    Workflow for upscaling wettability from the nano- to core-scales  
Maja Rücker, Willem-Bart Bartels, Tom Bultreys, Marijn Boone, Kamaljit Singh, Gaetano Garfi, Alessio Scanziani, Catherine Spurin, Sherifat Yesufu, Samuel. Krevor, Martin. J. Blunt, Ove Wilson, Hassan Mahani, Veerle Cnudde, Paul F. Luckham, Apostolos Georgiadis and Steffen Berg

SCA008                    Is contact angle a cause or an effect? – A cautionary tale  
Douglas Ruth

SCA009                    The link between microscale contact angle measurements and corescale wettability  
Chenhao Sun, James McClure, Mehdi, Shabaninejad, Peyman Mostaghimi, Steffen Berg and Ryan T. Armstrong

10:00 – 10:15               **Exhibitor Presentations (x5)**

10:15 - 10:30               **Coffee Break - Kindly Sponsored by: Thermo Fisher Scientific**

10:30 – 10:45               **Exhibitor Presentations (x5)**

10:45 – 12:15               **Session 4: Displacement Mechanisms/EOR/IOR (I)**  
**Chairs: Jos Maas and Doug Ruth**

SCA010                    Effect of fractures on hot solvent injection in viscous oil: a study using HP-HT micromodel  
Igor Bondino, Gerardo Emanuel Romero, Jean-Philippe Chaulet, Anne Brisset and Marelys Mujica

SCA011                    Screening of EOR potential on the pore scale by statistical and topological means  
Holger Ott, Ahmad Kharrat, Mostafa Borji, Thorsten Clemens, Pit Arnold

SCA012                    An experimental investigation of surface-modified silica nanoparticles in the injection water for enhanced oil recovery  
Alberto Bila, Jan Åge Stensen, and Ole Torsæter

12:15 - 1:15                 **Lunch**

1:15 – 2:45                 **Poster Session (Even Numbers)**  
**Chair: Christoph Arns and Ryan Armstrong**

2:45 - 3:45                 **Coffee and Poster Session Break**  
**Coffee Break Kindly Sponsored by: Thermo Fisher Scientific**

Poster Session Kindly Sponsored by: Green Imaging Technologies, Inc. and Oxford Instruments

3:45 – 4:00 Exhibitor Presentations (x5)

4:00 – 5:30 Session 5: Pore Scale Imaging and Modelling (1)

Chairs: Hendrik Roler and Steffen Berg

SCA013 Permeability Prediction using multivariant structural regression  
Matthew Andrew

SCA014 A fast FFT method for 3D pore-scale rock-typing of heterogeneous rock samples via Minkowski functionals and hydraulic attributes  
Han Jiang and Christoph H. Arns

SCA015 Estimation of Gas Condensate Relative Permeability using a Lattice Boltzmann Modelling approach  
Josephina Schembre-McCabe, Jairam Kamath, Andrew Fager and Bernd Crouse

6:00 – 11:00 p.m. Young Professional Event – Pau-Pyrenes, Whitewater Stadium

6:00 – 9:00 p.m. Visit to the Log Calibration Center

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Wednesday, August 28, 2018

8:30 – 5:00            **Registration Desk Open**

8:30 – 10:00          **Session 6: Unconventionals and Shales (1)**  
**Chairs: Ryan Armstrong and Jos Maas**

SCA016            Low permeability measurement on crushed rock: insights  
Sandra Profice, and Roland Lenormand

SCA017            Towards Relative Permeability Measurements in Tight Gas  
Formations  
Denis Dzhafarov, and Benjamin Nicot

SCA018            Storing CO<sub>2</sub> as solid hydrate in shallow aquifers: Electrical  
resistivity measurements in hydrate-bearing sandstone  
Jarand Gauteplass, Stian Almenningen, and Geir Ermland

**10:00 - 10:30            Coffee Break**

10:30 – 12:00          **Session 7: Pore Scale Imaging and Modelling (2)**  
**Chairs: Oliver Lopez and Souhail Youssef**

SCA019            Multiphase flow imaging through X-ray microtomography:  
Reconsideration of capillary end-effects and boundary  
conditions  
Franck Nono, Peter Moonen, H el ene Berthet and Richard  
Rivenq

SCA020            Local Capillary Pressure Estimation Based on Curvature of the  
Fluid Interface – Validation with Two-Phase Direct Numerical  
Simulations  
Takashi Akai, Branko Bijeljic, and Martin Blunt

SCA021            Determination of Critical Gas Saturation by Micro-CT  
Steffen Berg, Ying Gao, Apostolos Georgiadis, Niels Brussee, Ab  
Coorn, Hilbert van der Linde, Jesse Dietderich, Faruk Omer  
Alpak, Daniel Eriksen, Miranda Mooijer-van den Heuvel, Jeff  
Southwick, Matthias Appel, Ove Bj orn Wilson

**12:00 - 1:00            Lunch**

**1:00 – 2:00**                    **Session 8: Improved SCAL Techniques and Interpretation (2)**  
**- NMR**  
**Chairs: Stefano Pruno and Matthias Appel**

SCA022                    Inverted bucket centrifugation with fluorinated oils and its applications to T2 cut-offs  
Ben Anger, Stefan Hertel, Keith Love, Michael Ehiwario, Matthias Appel

SCA023                    A New Apparatus for Coupled Low-field NMR And Ultrasonic Measurements in Rocks at Reservoir Conditions  
Paul R. J. Connolly, Joël Sarout, Jérémie Dautriat, Eric F. May, Michael L. Johns

**2:00 – 3:30**                    **Poster Session (Odd Numbers)**  
**Chair: Lesley James and Jules Reed**

**3:30 – 4:30**                    **Coffee and Poster Session Break**  
**Coffee Break Kindly Sponsored by: Thermo Fisher Scientific**  
**Poster Session Kindly Sponsored by: Green Imaging Technologies, Inc and Oxford Instruments**

**4:30 - 5:30**                    **Session 9: Core Analysis in a Digital World (2)**  
**Chairs: Olga Vizika-Kavvadias and Christopher Arns**

SCA024                    Defining a sample heterogeneity cut-off value to obtain representative Special Core Analysis (SCAL) measurements  
Jos G. Maas, Niels Springer, and Albert Hebing

SCA025                    Digital core repository coupled with machine learning as a tool to classify and assess petrophysical rock properties  
Vanessa Hébert, Thierry Porcher, Valentin Planes, Marie Léger, Anna Alperovich, Bastian Goldluecke, Olivier Rodriguez and Souhail Youssef

**6:30 – 11:00**                    **Gala Dinner – At Villa Navarre**  
**Kindly Sponsored by: iRock Technologies**

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**Thursday, August 29, 2018**

**8:30 – 4:30**                    **Registration Desk Open**

**8:30 - 10:00**                    **Session 10: Unconventionals and Shales (2)**  
**Chairs: Matthias Appel and Olga Vizika-Kavvadias**

SCA026                    Using Capillary Condensation and Evaporation Isotherms to Investigate Confined Fluid Phase Behavior in Shales  
Elizabeth Barsotti, Evan Lowry, Mohammad Piri, and Jin-Hong Chen

SCA027	Methane Isotherms and Magnetic Resonance Imaging in Shales M. J. Dick, D. Heagle, D. Veselinovic and D. Green
SCA028	Dielectric Polarisation in Partially Saturated Shales Paul R.J. Connolly, Matthew Josh, Keelan O'Neill, Eric F. May, Michael L. Johns
<b>10:00 - 10:30</b>	<b>Coffee Break</b>
<b>10:30 – 12:00</b>	<b>Session 11: Displacement Mechanisms/EOR/IOR (2)</b> <b>Chairs: Souhail Youssef and Hendrik Roler</b>
SCA029	CT-scan in-situ investigation of waterflood front instabilities during immiscible displacements: effect of viscosity contrast and flow rate Matthieu Mascle, Elisabeth Rosenberg, Berit Roboele, Espen Kowalewski, and Souhail Youssef
SCA030	Core-scale sensitivity study of CO <sub>2</sub> foam injection strategies for mobility control, enhanced oil recovery, and CO <sub>2</sub> storage Zachary Paul Alcorn, Sunniva B. Fredriksen, Mohan Sharma, Tore Føyen, Connie Wergeland, Martin A. Fernø, Arne Graue, and Geir Ermland
SCA031	New laboratory core flooding experimental system for EOR surfactant screening, especially for foam Xuesong Li, and Matthias Appel
<b>12:00 – 12:30</b>	<b>Business Meeting</b>
<b>12:30 - 1:30</b>	<b>Lunch</b>



1:30 – 3:00

**Session 12: Laboratory Core Analysis**

**Chairs: Stefano Pruno and Matthias Halisch**

- SCA032 A new CEC measurement proxy using high-frequency dielectric analysis of crushed rock  
M. Rebecca Stokes, Z. Elton Yang, Prince Ezebuoro, and Timothy Fischer
- SCA033 Gas Slippage in Partially Saturated Tight Rocks and During Drainage  
Alexandra Amann-Hildenbrand, Mohammadebrahim Shabani, Thomas Hiller, Norbert Klitzsch, Norbert Schleifer, and Bernhard M. Krooss
- SCA034 Modeling Permeability in Carbonate Rocks  
Moustafa Dernaika, Shehadeh Masalmeh, Bashar Mansour, Osama Al-Jallad, and Safouh Koronfol

3:00 – 3:30

**Coffee Break**

3:30 - 4:30

**Session 13: Improved SCAL Techniques and Interpretation (3) - NMR**

**Chairs: Matthias Appel and Derrick Green**

- SCA035 Direct Magnetic Resonance Measurement of Average Pore Size  
Florin Marica, Armin Afrough, Derrick Green, Laura Romero-Zeron, and Bruce Balcom
- SCA036 Two-Phase Fluid Flow Experiments Monitored by NMR  
Thomas Hiller, Gabriel Hoder, Alexandra Amann-Hildenbrand, Norbert Klitzsch, and Norbert Schleifer

4:30

**Closing Remarks**

## Alternate Orals

SCA037	Transport properties of the Cobourg Limestone: A benchmark investigation C. A. Davy, Zhazha Hu, A.P.S. Selvadurai, Jop Klaver, M.-C. Willemetz, F. Agostini, F. Skoczylas, Jan Dewanckele, Alexandra Amann-Hildenbrand and Roland Lenormand
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SCA038	Pore-scale experimental investigation of in-situ wettability and displacement mechanisms governing WAG in oil-wet carbonates Ziqiang Qin, Maziar Arshadi, and Mohammad Piri
SCA039	High-resolution inline density measurements: insight on multiphase flow and transport phenomena in porous media Jelayne Falat, Adam Fehr, Ali Telmadarreie, and Steven Bryant
SCA040	Pore-scale experimental study of carbonated water injection in an oil-wet carbonate: an improved insight into wettability alteration and displacement mechanisms Ziqiang Qin, Maziar Arshadi, and Mohammad Piri
SCA041	The digital rock analysis of biogenically induced reservoir heterogeneities in Cretaceous reservoirs of Saudi Arabia Ivan Deshnenkov, and Camilo Polo
SCA042	Novel technique to measure mutual bulk fluid diffusion using NMR 1-D gradient Son Dang, Carl Sondergeld, and Chandra Rai
SCA043	A Surface Complexation Model of Alkaline-Smart Water Electrokinetic Interactions in Carbonates Moataz Abu-Al-Saud, Amani Al-Ghamdi, Subhash Ayirala, and Mohammed Al-Otaibi
SCA044	Effects of gas pressurization on the interpretation of NMR hydrocarbon measurements in organic rich shales Son Dang, Carl Sondergeld, and Chandra Rai

## Posters Presentations / Abstracts

SCA045	CAUSAL PROTOCOLS TO ASSESS THE VIABILITY OF NATIVE STATE OR RESTORED STATE PREPARATION Jules Reed, Stefano Pruno, Izaskun Zubizarreta, Rolf Solheimdal Johansen
SCA046	Validation of Simulated Relative Permeability Estimates in Very Low Permeability Rocks Nick Drenzek, Ryan Antler, Shawn Zhang, James Howard
SCA047	Composite Core – An Experimental Approach in Evaluating Ordering Criteria for Individual Cores in Composite Edison Sripal, Lesley James

SCA048	Impact of Brine Spontaneous and Forced imbibition on effective permeability in gas shales Denis Dzhafarov, Benjamin Nicot
SCA049	A new approach to measure the wettability of porous media under different saturation conditions by Temperature Sensitivity of Nuclear Magnetic Resonance Relaxation Time Hyung T. Kwak and Jun Gao
SCA050	Wettability - Combine the macroscopic approach to pore-scale analysis Prisca Andriamananjaona, Peter Moonen, Manuel Chamerois, Richard Rivenq
SCA051	Lithologically Controlled Core-Log-Geocell Integration Using Probabilistic Multivariate Clustering Analysis and an Expert System A. A. Curtis, E. Eslinger, S. Nookala, and F. Boyle
SCA052	An experimental and digital investigation into the impact of diagenesis above and below the oil-water contact Francis Mujica, Lesley A. James, Carl F. Berg and Derek H. C Wilton
SCA053	Optimizing Magnetic Measurements on Drill Cuttings for Reservoir Characterization Michael Bik and David K. Potter
SCA054	Automated Determination of Formation Porosity from Drill Cuttings using Nuclear Magnetic Resonance Joel BILLIOTTE, Mahdi Ammar, Karim Bondabou and Jerome Breviere
SCA055	Hele-Shaw setup for investigation of two-phase flow in fractures Martin Raphaug, Per Bergmo, Alexandre Lavrov, Bård Bjørkvik, Cathrine Ringstad
SCA056	A Review of Effects of Bedding Plane and Anisotropy on Indirect Tensile Strength Test of Rocks Dee Moronkeji, Richard Shouse and Rolando Lew
SCA057	Pore scale visualization of Improved Sweep Efficiency During Fines Assisted Low-salinity Waterflooding Using Micro-CT Imaging Yamin Wang, Muhan Yu, Furqan Hussain
SCA058	New method for characterising the nano- to macro-scale voidage within black shale and for modelling shale gas recovery efficiency G. Peter Matthews, Katie L. Jones and G. Maurizio Laudone
SCA059	Pore Structure Impact on Polymer Retention in Carbonate Cores Abdulkareem M. AlSofi, Jinxun Wang, Abdullah M. Boqmi
SCA060	Automated Quantitative Micromodel Image Analysis Applied to High-Pressure CO <sub>2</sub> Foam Injections T. L. Føyen, J. Gauteplass, Ø. Eide, M. A. Fernø

SCA061	Reducing Sample Heating During NMR Measurements M. J. Dick, D. Veselinovic, and D. Green
SCA062	Modeling carbonate microfractures with the lattice Boltzmann method Andrew Fager, Bernd Crouse, David Freed, Josephina Schembre-McCabe, Neil Hurley
SCA063	Microscale interactions of EOR chemicals at the crude oil-water interface and their implications for oil recovery Zuoli Li, Zhenghe Xu, Subhash Ayirala and Abdulkareem AlSofi
SCA064	Robust and Efficient Evaluation of Oil/Water Contact Angles and Wettability Alteration Using a Modified Washburn Method Alhasan B. Fuseni, Ziyad Kaidar, Abdulkareem M. AlSofi
SCA065	In-situ Characterization of Mixed Wettability in Carbonate Rock: A Cryo-BIB-SEM Approach A. Gmira, S.M. Enezi and A. A. Yousef
SCA066	Core-Based Diagnostics of Sanding Prone Pay Zones in the Ordovician Sarah Sandstone Reservoir, Northern Saudi Arabia M. S. Ameen, A. Y. Coulibaly, A. Rees, and L. Jihong
SCA067	A Pore-Level Analysis on Residual Oil Structure post Secondary and Tertiary Displacements Lyla, AlMaskeen; Felix Servin, Jesus; AlAseeri, Abdurahman; AlSofi, Abdulkareem
SCA068	Application of digital petrophysics to Brazilian pre-salt carbonate rock: comparative study on two different facies Titly Farhana Faisal (TOTAL and INRIA), Rodolfo Victor (PETROBRAS), Rodrigo Surmas (PETROBRAS), Igor Bondino (TOTAL)
SCA069	Digital Core-Enabled High-Resolution Formation Evaluation via Coupled Physics and Data Analytics Nicholas Drenzek, Ryan Antle, Haifeng Jiang, Siddharth Misra
SCA070	Metre scale gas-brine coreflood investigation of plume mobility and trapping Michael B. Clennell, Cameron White, Ausama Giwelli & Matt Myers
SCA071	The role of heterogeneous wettability for hydrocarbon production from imbibition in a mixed multiporous carbonate reservoir rock investigated by magnetic resonance techniques Jun Gao, Hyung T. Kwak
SCA072	Adsorption isotherm for wettability evaluation Dmitry Korobkov, Vera Pletneva
SCA073	Petrophysical Parameter Prediction Utilizing Limited Core Training Data Ana Maria Naranjo Pacheco and David K. Potter

SCA074	Effects of Temperature on Fines Migration during Low Salinity Water Injection Yamin Wang, Muhan Yu, Furqan Hussain
SCA075	Methane Production through Combined Depressurization + Hydrate Swapping method in the Sandy Porous Medium under Permafrost Temperature Conditions Jyoti S Pandey, Nicolas von Solms
SCA076	Impact of Micro-Emulsion Phase Behavior on Near Wellbore Associated Emulsification Properties during Chemical Enhanced Oil Recovery Marwah M. Alsinan, Debora Salomon Marques, Hyung T. Kwak, Alhasan B. Fuseni
SCA077	Combination of computed X-ray tomography and triaxial geomechanical tests as a tool for fracture propagation prediction Edyta Puskarczyk, Paulina I. Krakowska, Marek Dohnalik
SCA078	Slip-flow in tight carbonate for permeability estimation using 3D digital pore space Krakowska P., Madejski P., Puskarczyk E., Habrat M.
SCA079	A FAST AND DIRECT RCAL METHODS ON AS-RECEIVED BRAZILIAN PRE-SALT CARBONATES CORES Leonardo Goncalves; Plinio Cancio Rocha Da Silva Junior; Glenio Rosinski Ribeiro; Bernardo Coutinho Camilo Dos Santos; Willian Andrighetto Trevizan
SCA080	Comparing the porous plate technique and the evaporation technique for establishing initial water saturation Lykourgos Sigalas, Hanne Dahl Holmslykke, Dan Olsen
SCA081	Digital Rock Model based on nCT images as an input to Deep Learning for permeability simulation Edyta Puskarczyk, Paulina I. Krakowska, Magdalena Habrat, Paweł Madejski, Mariusz Jędrychowski
SCA082	Simulation and Experimental Measurements of Internal Magnetic Field Gradients and NMR Transverse Relaxation Times (T2) in Sandstone Rocks Paul R. J. Connolly, Weichao Yan, Daniel Zhang, Mohammed Mahmoud, Michael Verrall, Maxim Lebedev, Stefan Iglauer, Peter J. Metaxas, Eric F. May, Michael L. Johns
SCA083	Computed X-ray tomography data in multiple linear regression analysis on tight rocks for permeability estimation Krakowska P., Puskarczyk E., Madejski P., Habrat M., Dohnalik M.

SCA084	Laboratory core analysis of potentially in-situ recovery amenable sandstone-hosted uranium deposits in the Morrison Formation/New Mexico/USA Micha Janosch Zauner, Matthias Halisch, Andreas Weller
SCA085	Core Fracture Segmentation in CT Images by Transfer Learning Ryan Antle, Mackenzie Dreese
SCA086	STUDY OF THE EFFECTS OF NaCl REDUCTION IN OIL RECOVERY DURING THE CALIBRATED WATER INJECTION INTO DOLOMITE ROCKS Carlos A. Rivas, Alessandra Winter, Osvaldo V. Trevisan (In memoriam)
SCA087	PORTABLE XRF SPECTROMETER AS A FORMATION EVALUATION AND GEOSTEERING TOOL APPLIED IN THE POLISH PERMIAN BASIN Rafał SKUPIO Urszula ZAGÓRSKA, Benedykt KUBIK, Sylwia KOWALSKA, Krzysztof WOLAŃSKI
SCA088	Emulsification under different mixing conditions Pit Arnold, Ahmad Kharrat, Barbara Schnöpf and Holger Ott
SCA089	Pore-scale characterization of Norwegian Continental Shelf Reservoir based on Digital Rock Simulation Fatime Zekiri, Pit Arnold, Jan Steckhan, Holger Ott
SCA090	The Impact of Microbial Growth on Hydraulic Properties in Saturated Porous Media Holger Ott, Neda Hassannayebi, Frieder Enzmann, Johanna Schritter, Martin Fernø, Andreas Loibner
SCA091	Improving oil recovery by injecting alcohol-treated CO <sub>2</sub> Saira Saira, Emmanuel Ajoma, Furqan Hussain

Poster Program is kindly sponsored by: Green Imaging Technologies, Inc. and Oxford Instruments

Friday, August 30th	
8:15 a.m. – 6:00 p.m.	Optional Field Trip. Bus for the field trip leaves from the conference center Palais Beaumont, meeting at 08.15. We will be back at the Palais Beaumont 17.30-18.00