

## PREFACE

**The 2019 International Symposium of the Society of Core Analysts (SCA)** was held in Pau, France between August. 26<sup>th</sup> and 30<sup>th</sup>. The theme for the Symposium in 2018 was “*Core Analysis in a Digital World*”. The symposium was attended by representatives from industry, academia and organizations and vendors. With a large variety of vendors, technical veterans, industry leaders, and rising young professionals, the Annual meeting of the Society of Core Analysts is a great opportunity for professional interaction, to share ideas, innovations, knowledge, best practices, products and services.

The collection of articles published in the SHS Web of conferences consists of 23 articles prepared for oral presentations. Twenty-one (21) proceedings presented in this symposium, published in *Petrophysics* or other journals, and (47) posters are not included in this collection. Here is the list of articles with full text available in [www.scaweb.org](http://www.scaweb.org) and/or other journals.

### ***Papers presented at the 2018 SCA Symposium not submitted / published in other journals***

**Pore-scale imaging and determination of relative permeability and capillary pressure in a mixed-wet carbonate reservoir rock at subsurface conditions**

*A. M. Alhammadi, Y. Gao, T. Akai, M. J. Blunt, and B. Bijeljic*

**Workflow for upscaling wettability from the nano- to core-scales**

*M. Rücker, W.-B. Bartels, T. Bultreys, M. Boone, K. Singh, G. Garfi, A. Scanziani, C. Spurin, S. Yesufu, S. Krevor, M.. J. Blunt, O. Wilson, H. Mahani, V. Cnudde, P. F. Luckham, A. Georgiadis and S. Berg*

**The link between microscale contact angle measurements and corescale wettability**

*C. Sun, J. McClure, M. Shabaninejad, P. Mostaghimi, S. Berg and R. T. Armstrong*

**Effect of fractures on hot solvent injection in viscous oil: a study using HP-HT micromodel**

*I. Bondino, G. E. Romero, J.-P. Chaulet, A. Brisset and M. Mujica*

**Screening of EOR potential on the pore scale by statistical and topological means**

*H. Ott, A. Kharrat, M. Borji, T. Clemens, and P. Arnold*

**Estimation of Gas Condensate Relative Permeability using a Lattice Boltzmann Modelling approach**

*J. Schembre-McCabe, J. Kamath, A. Fager, and B. Crouse*

**Low permeability measurement on crushed rock: insights**

*S. Profice and R. Lenormand*

**Multiphase flow imaging through X-ray microtomography : Reconsideration of capillary end-effects and boundary conditions**

*F. Nono, P. Moonen, H. Berthet and R. Rivenq*

**Determination of Critical Gas Saturation by Micro-CT**

*S. Berg, Y. Gao, A. Georgiadis, N. Brussee, A. Coorn, H. van der Linde, J. Dietderich, F. O. Alpak, D. Eriksen, M. Mooijer-van den Heuvel, J. Southwick, M. Appel and O. B. Wilson*

**A New Apparatus for Coupled Low-field NMR And Ultrasonic Measurements in Rocks at Reservoir Conditions**

*P. R. J. Connolly, J. Sarout, J. Dautriat, E. F. May, M. L. Johns*

**Defining a sample heterogeneity cut-off value to obtain representative Special Core Analysis (SCAL) measurements**

*J. G. Maas, N. Springer, and A. Hebing*

**Dielectric Polarisation in Partially Saturated Shales**

*P. R. J. Connolly, M. Josh, K. O'Neill, E. F. May, M. L. Johns*

**CT-scan in-situ investigation of waterflood front instabilities during immiscible displacements: effect of viscosity contrast and flow rate**

*M. Mascle, E. Rosenberg, B. Roboele, E. Kowalewski and S. Youssef*

**New laboratory core flooding experimental system for EOR surfactant screening, especially for foam**

*X. Li, and M. Appel*

**A new CEC measurement proxy using high-frequency dielectric analysis of crushed rock**

*M. R. Stokes, Z. E. Yang, P. Ezebuio, and T. Fischer*

**Gas Slippage in Partially Saturated Tight Rocks and During Drainage**

*A. Amann-Hildenbrand, M. Shabani, T. Hiller, N. Klitzsch, N. Schleifer, and B. M. Krooss*

**Modeling Permeability in Carbonate Rocks**

*M. Dernaika, S. Masalmeh, B. Mansour, O. Al-Jallad, and S. Koronfol*

**Direct Magnetic Resonance Measurement of Average Pore Size**

*F. Marica, A. Afrough, D. Green, L. Romero- Zeron and B. Balcom*

**Transport properties of the Cobourg Limestone: A benchmark investigation**

*C. A. Davy, Z. Hu, A.P.S. Selvadurai, J. Klaver, M-C. Willemetz, F. Agostini, F. Skoczylas, J. Dewanckele, A. Amann-Hildenbrand and R. Lenormand*

**Pore-scale experimental investigation of in-situ wettability and displacement mechanisms governing WAG in oil-wet carbonates**

*Z. Qin, M. Arshadi, and M. Piri*

**Pore-scale experimental study of carbonated water injection in an oil-wet carbonate: an improved insight into wettability alteration and displacement mechanisms**

*Z. Qin, M. Arshadi, and M. Piri*

**Papers presented in Poster Sessions**

**Causal Protocols to assess the Viability of Native State or Restored State Preparation**

*J. Reed, S. Pruno, I. Zubizarreta, R. S. Johansen*

**Validation of Simulated Relative Permeability Estimates in Very Low Permeability Rocks**

*N. Drenzek, R. Antler, S. Zhang, J. Howard*

**Composite Core – An Experimental Approach in Evaluating Ordering Criteria for Individual Cores in Composite**

*E. Sripal and L. James*

**Impact of Brine Spontaneous and Forced imbibition on effective permeability in gas shales**

*D. Dzhabarov and B. Nicot*

**A new approach to measure the wettability of porous media under different saturation conditions by Temperature Sensitivity of Nuclear Magnetic Resonance Relaxation Time**

*H. T. Kwak and J. Gao*

**Wettability - Combine the macroscopic approach to pore-scale analysis**

*P. Andriamananjaona, P. Moonen, M. Chameris, and R. Rivencq*

**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*

**An experimental and digital investigation into the impact of diagenesis above and below the oil-water contact**

*F. Mujica, L. A. James, C. F. Berg and D. H. C. Wilton*

**Optimizing Magnetic Measurements on Drill Cuttings for Reservoir Characterization**

*M. Bik and D. K. Potter*

**Automated Determination of Formation Porosity from Drill Cuttings using Nuclear Magnetic Resonance**

*J. Billiotte, M. Ammar, K. Bondabou and J. Breviere*

**Hele-Shaw Setup for Investigation of two-phase flow in fractures**

*M. Raphaug, P. Bergmo, A. Lavrov, B. Bjørkvik, C. Ringstad*

**A Review of Effects of Bedding Plane and Anisotropy on Indirect Tensile Strength Test of Rocks**

*D. Moronkeji, R. Shouse and R. Lew*

**Pore scale visualization of Improved Sweep Efficiency During Fines Assisted Low-salinity Waterflooding Using Micro-CT Imaging**

*Y. Wang, M. Yu and F. Hussain*

**New method for characterising the nano- to macro-scale voidage within black shale and for modelling shale gas recovery efficiency**

*G. P. Matthews, K. L. Jones and G. M. Laudone*

**Pore Structure Impact on Polymer Retention in Carbonate Cores**

*A. M. AlSofi, J. Wang, A. M. Boqmi*

**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*

**Reducing Sample Heating During NMR Measurements**

*M. J. Dick, D. Veselinovic, and D. Green*

**Modeling Carbonate Microfractures with the Lattice Boltzmann method**

*A. Fager, B. Crouse, D. Freed, J. Schembre-McCabe and N. Hurley*

**Microscale interactions of EOR chemicals at the crude oil-water interface and their implications for oil recovery**

*Z. Li, Z. Xu, S. Ayirala and A. AlSofi*

**Robust and Efficient Evaluation of Oil/Water Contact Angles and Wettability Alteration Using a Modified Washburn Method**

*A. B. Fuseni, Z. Kaidar and A. M. AlSofi*

**In-situ Characterization of Mixed Wettability in Carbonate Rock: A Cryo- BIB-SEM Approach**

*A. Gmira, S. M. Enezi and A. A. Yousef*

**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*

**A Pore-Level Analysis on Residual Oil Structure post Secondary and Tertiary Displacements**

*L. AlMaskeen, J. Felix, A. AlAseeri and A. AlSofi*

**Application of digital petrophysics to Brazilian pre-salt carbonate rock: comparative study on two different facies**

*T. F. Faisal, R. Victor, R. Surmas and I. Bondino*

**Digital Core-Enabled High-Resolution Formation Evaluation via Coupled Physics and Data Analytics**

*N. Drenzek, R. Antle, H. Jiang and S. Misra*

**Metre scale gas-brine coreflood investigation of plume mobility and trapping**

*M. B. Clennell, C. White, A. Giwelli and M. Myers*

**The role of heterogeneous wettability for hydrocarbon production from imbibition in a mixed multiporous carbonate reservoir rock investigated by magnetic resonance techniques**

*J. Gao and H. T. Kwak*

**Adsorption isotherm for wettability evaluation**

*D. Korobkov and V. Pletneva*

**Petrophysical Parameter Prediction Utilizing Limited Core Training Data**

*A. M. Naranjo Pacheco and D. K. Potter*

**Effects of Temperature on Fines Migration during Low Salinity Water Injection**

*Y. Wang, M. Yu, F. Hussain*

**Methane Production through Combined Depressurization + Hydrate Swapping method in the Sandy Porous Medium under Permafrost Temperature Conditions**

*J. S. Pandey and N. von Solms*

**Impact of Micro-Emulsion Phase Behavior on Near Wellbore Associated Emulsification Properties during Chemical Enhanced Oil Recovery**

*M. M. Alsinan, D. Salomon Marques, H. T. Kwak and A. B. Fuseni*

**Combination of computed X-ray tomography and triaxial geomechanical tests as a tool for fracture propagation prediction**

*E. Puskarczyk, P. I. Krakowska and M. Dohnalik*

**Slip-flow in tight carbonate for permeability estimation using 3D digital pore space**

*P. Krakowska, P. Madejski, E. Puskarczyk and M. Habrat*

**A Fast and Direct RCAL Methods on As-Received Brazilian Pre-salt Carbonate Cores**

*L. Goncalves; P. C. Rocha Da Silva Junior, G. Rosinski Ribeiro; B. C. Camilo Dos Santos; W. A. Trevisan*

**Comparing the porous plate technique and the evaporation technique for establishing initial water saturation**

*L. Sigalas, H. D. Holmslykke, D. Olsen*

**Digital Rock Model based on nCT images as an input to Deep Learning for permeability simulation**

*E. Puskarczyk, P. I. Krakowska, M. Habrat, P. Madejski, and M. Jędrychowski*

**Simulation and Experimental Measurements of Internal Magnetic Field Gradients and NMR Transverse Relaxation Times (T<sub>2</sub>) in Sandstone Rocks**

P. R. J. Connolly, W. Yan, D. Zhang, M. Mahmoud, M. Verrall, M. Lebedev, S. Iglauer, P. J. Metaxas, E. F. May and M. L. Johns

**Computed X-ray tomography data in multiple linear regression analysis on tight rocks for permeability estimation**

P. Krakowska, E. Puskarczyk, P. Madejski, M. Habrat and M. Dohnalik

**Laboratory core analysis of potentially in-situ recovery amenable sandstone-hosted uranium deposits in the Morrison Formation/New Mexico/USA**

M. J. Zauner, M. Halisch and A. Weller

**Core Fracture Segmentation in CT Images by Transfer Learning**

R. Antle and M. Dreese

**Study of the Effects of NaCl Reduction in oil Recovery during the Calibrated Water Injection into Dolomite Rocks**

C. A. Rivas, A. Winter and O. V. Trevisan (*In memoriam*)

**Portable XRF Spectrometer as a Formation Evaluation and Geosteering Tool applied in the Polish Permian Basin**

R. Skupio, U. Zagorska, B. Kubik, S. Kowalska, K. Wolanski

**Emulsification under different mixing conditions**

P. Arnold, A. Kharrat, B. Schnöpf and H. Ott

**Pore-scale characterization of Norwegian Continental Shelf Reservoir based on Digital Rock Simulation**

F. Zekiri, P. Arnold, J. Steckhan and H. Ott

**The Impact of Microbial Growth on Hydraulic Properties in Saturated Porous Media**

H. Ott, N. Hassannayebi, F. Enzmann, J. Schritter, M. Fernø and A. Loibner

**Improving oil recovery by injecting alcohol-treated CO<sub>2</sub>**

S. Saira, E. Ajoma and F. Hussain