

## PREFACE

The 2021 International Symposium of the Society of Core Analysts (SCA), founded in 1986, is a chapter - at -large of the Society of Petrophysicists and Well Log Analysts (SPWLA) . Generally, SCA symposium is a four - day conference and exhibition, which takes place annually in different locations around the world with 2021 being its 35th year. In 2021, the symposium was held online, between September 13 and 16, featuring one online workshop during the first day and a plenary virtual live technical session showcasing 30 oral presentations and approximately 20 posters presentations.

The collection of articles published in the SHS Web of conferences consists of 24 articles prepared for oral presentations. Twenty-three (23) proceedings presented in this symposium, published in Petrophysics or other journals, and twenty (20) posters are not included in this collection. Here is the list of papers no included in this collection.

### **Papers presented at the 2021 SCA Symposium published in other journals**

#### **Combining high-resolution core data with unsupervised machine learning schemes for the identification of rock types and the prediction of reservoir quality**

*C. Germay, T. Lhomme, and P. Bisset.*

#### **NMR Core Analysis On Whole Core Samples**

*M. J. Dick, D. Veselinovic, R. Krumm, R. Antle, and D. Green.*

#### **Advanced Core Characterisation to Improve Multiphase Flow Prediction in Heterogeneous Sandstone and Carbonate Rocks**

*N. Wenck, S. Jackson, A. Muggeridge and S. Trevor.*

#### **Large two phase DRP simulations for relative permeability uncertainty assessment**

*M. Regaieg, I. Bondino, C. Varloteaux, T. F. Faisal, J. Yang and R. Rivenq.*

#### **Study of Relative Permeability Curves for a CO<sub>2</sub>-Brine System at Reservoir Conditions in Carbonates**

*J. Tovar, T. Berna, T. Borges, J. Vidal, R. Valladares de Almeida, G. Soares Bassani, and E. Koroishi*

#### **Comparing Predicted 3D Anisotropic Properties from Micro-CT Derived Digital Rock Physics with Experimentally Measured Anisotropy**

*D. K. Potter, L. L. Belisle, A.L Shewchuk, B. C. Snow, A. Zhu and S. Zhang*

**Improved fracture segmentation from unwrapped images of drill core using an innovative two-stage segmentation Mask R-CNN**

F. Alzubaidi, H. Nalinakumar, S. R. Clark, J. E. Lie, P. MOstaghimi, and R. T. Armstrong

**Initial Wettability in Carbonates by Advanced Core Analyses: A Step Closer to Representative Reservoir Wettability**

*I. D. Pinerez Torrijos, T. Puntervold, S. Strand, P. Hopkins, and P. Aslanidis*

**Wireless acquisition for resistivity index in centrifuge: - WiRI: A new method to estimate Archie's law parameters**

*Q. Danielczick, P. Faurissoux, and B. Nicot*

**Physical origin of pressure- and saturation fluctuations in steady-state core floods**

*S. Berg, H. Van der Linde, N. Brussee, M. Rucker, H. Dijk, E. Unsal, T. G. Sorup and M. Appel.*

**In-situ investigation of salt precipitation dynamic induced by gas flow-through drying using simultaneous Neutron and X-ray dual-beam Radiography**

*M. Mascle, O. Lopez, H. Deschamps, L. Rennan, N. Lenoir, A. Tengattini, S. Youssef.*

**Material balance and mixing behavior during emulsification of crude oil by using micro-X-ray tomography**

*M. Borji, A. Kharrat and H. Ott*

**SmartWater Synergy with Surfactant and Polymer: A Microscale Investigation at Crude Oil-Water Interface**

*S. Ayirala, A. AlSofti, Z. Li, R. Mariah, Z. Xu, and A. Yousef.*

**DarcyShale: An improved GRI method for more reliable measurements on low permeability samples**

*R. Lenormand and S. Profice*

**The KPC-Log: A new method for measuring the permeability of a non-cylindrical tight sample**

*S. Profice, R. De Loubens, D. Potenzoni, P. Chehade, B. Nicot and R. Lenormand*

**Rock Image Enhancement Using Super-Resolution Neural Networks**

*B. Gong and P. Duke*

**Study of Bakken and Three Forks Formations using NMR Core Analysis**

*M. M. Awad, P. Singer, Z. H. Xie, M. Puerto, H. Pu and G. Hirasaki*

**Core Restoration and its effect on Initial Wetting of NCS Sandstone Reservoir Cores**

*P. Aslanidis, I. D. Pinerez Torrijoz, S. Strand, and T. Puntervold*

**Novel 3D Characterisation of Rock Properties at Core Scale**

*H. Velcin, J. Dautriat, L. Esteban, M. D. Lindsay, A. D. George, T. Richards, and A. Ramage*

**Comparison of High Resolution X-Ray Fluorescence and Probe Magnetism on Core with Borehole Spectral Gamma Ray in 3 Oil Sands Wells**

*T. H. To and D. Potter*

**Developed emulsification in porous media flow**

*A. Kharrat, B. Brandstatter, M. Borji, G. Friz-Popovski, O. Paris and H. Ott*

**Data-Driven Methods to Predict Recovery Factor in Water-Alternating-Gas (WAG) Laboratory Coreflood Experiments**

*A. K. Idogun and L. A. James*

**Tortuosity and Cementation Exponent as Variables related to Heterogeneity and the Impact on Sw Calculations in Tambaredjo Field of Suriname**

*A. Mijland, E. R. Acosta, and M. Pinas*

**Posters presented at the 2021 SCA Symposium**

**Evaluation of in-Situ Gelation Behavior by a Slim Tube Technique.**

**Integration of core scale logging, dual-energy computed tomographic imaging and geochemical and mineralogical analysis of a composite core**

**Reactivation and branching by CO<sub>2</sub> injection in pre-faulted Berea and Boise sandstones. Laboratory micro-seismic imaging**

**Novel analysis of molecular structures at oil-brine interface for Smartwater flooding.**

**Digital extraction of core properties from whole core photos**

**Developed emulsification in porous media flow**

**The Effect of Microporosity and Oil Property on the Initial and Residual Oil Saturations of a Bimodal Carbonate**

**Data rescue – Maximising the value of archived core using non-destructive Multi-Sensor Core Logger (MSCL) and machine learning techniques**

**Rate dependency of capillary trapping in gas-brine flow**

**Multi Field Evaluation of T2 Pore Size Distributions and T1-T2 2D Maps**

**Influence of Wettability on Molecular Adsorption and Kinetics Studied by In-Situ NMR**

**Tortuosity and Cementation exponent as variables related to heterogeneity and the impact on Sw calculations in Tambaredjo field of Suriname.**

**Elucidating Hydrocarbon and Brine Flow Paths in Source Rock Shales Using NMR Imaging**

**Powder River Basin Integrated Hydrocarbon System Case Study**

**Rate-Controlled Mercury Injection Experiments to Characterize Pore Space Geometry of Berea Sandstone**

**Evaluation of the InterFoam Solver in the Prediction of Immiscible Two-Phase Flow in Imbibition and Drainage on the Pore-Doublet System.**

**Dynamic pore-scale modeling of residual fluid configurations in disordered porous media.**

**Evaluation the effectiveness of the different methods enhanced oil recovery (thermal and chemical) on plugs of the Cenomanian tier**

**Oscillating Back Pressure Regulator (OBPR) for High-Pressure Oscillating Back Pressure Regulator (OBPR) for High-Pressure**

**A Mechanistic Study of Wettability Alterations in Sandstone by Low Salinity Water Injection (LSWI) and CO2 Low Salinity Water-Alternating-Gas (WAG) Injection**