

# **Second EAGE Workshop on Geochemistry in Petroleum Operations and Production (Muscat 2018)**

Muscat, Oman  
1 – 4 October 2018

ISBN: 978-1-5108-7640-8

**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© (2018) by the European Association of Geoscientists & Engineers (EAGE)  
All rights reserved.

Printed by Curran Associates, Inc. (2019)

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](mailto: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](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

<b>HALOGEN STABLE ISOTOPE STUDIES IN FORMATION WATERS, A COMPARISON BETWEEN THEIR CHLORINE AND BROMINE ISOTOPE SYSTEMATICS</b> .....	1
<i>H. G. M. Eggenkamp, P. Agrinier, M. L. Coleman, M. Bonifacie, M. Ader, J. Griffioen, J. Strydom, J. Sterpenich, E. Gaucher, P. Louvat</i>	
<b>IDENTIFYING GRAVITATIONAL SETTLING BY COMBINING CHORINE AND BROMINE ISOTOPES: A NEW METHOD TO DETECT ISOLATED AQUIFERS</b> .....	5
<i>T. Giunta, O. Devauchelle, P. Louvat, F. Métivier, H. Eggenkamp, M. Bonifacie, P. Agrinier, R. Locke, M. Ader</i>	
<b>CHLORINE STABLE ISOTOPE RATIOS (35CL/37CL) OF CHLORIDES OF FLUIDS PRODUCED IN LOW PERMEABILITY CLAY-RICH SEDIMENTS : THE POTENTIAL ROLE ION FILTRATION</b> .....	7
<i>P. Agrinier, G. Bardoux, T. Giunta, M. Bonifacie, C. Destrigneville, F. Lucazeau, M. Ader, H. Eggenkamp</i>	
<b>MULTI-ISOTOPIC TECHNIQUES TO TRACE WATER-ROCK INTERACTION IN PETROLEUM SYSTEMS – A CASE STUDY FROM THE NORTHERN RED SEA BASIN, SAUDI ARABIA</b> .....	9
<i>P. Birkle, Philip J. Ball, John P. Brown</i>	
<b>MONITORING THE EFFECTS OF THERMAL MATURITY ON NSO COMPOUNDS IN ARABIAN CRUDE OILS BY HIGH RESOLUTION MASS SPECTROMETRY</b> .....	13
<i>C. E West, H. Muller, K. Arouri, S. Inan, A. Fuhrmann</i>	
<b>CARBONATE MICROFACIES AS A SOURCE ROCK : HEAT FLOW AND CARBONATE SOURCE ROCK MODELLING OF KAIS FORMATION INDONESIA</b> .....	16
<i>T. E. Putra, P. R Putra, A. Samodra, M. Natsir</i>	
<b>PREDICTING FLUID PROPERTIES AND CONCEPTUAL CHARGE MODEL USING C ISOTOPE AND ADVANCED MUD GAS LOGGING</b> .....	19
<i>M. Elie, M. Ghammari</i>	
<b>PETROLEUM IN THE GULLFAKS AREA, NORTHERN NORTH SEA: A NEW APPRAISAL OF SOURCE INDICATORS FROM MOLECULAR AND ISOTOPE DATA</b> .....	21
<i>W. Murillo, A Vieth-Hillebrand, B. Horsfield</i>	
<b>A NEW DOWNHOLE SAMPLER FOR PETROLEUM APPLICATIONS</b> .....	25
<i>B. Garcia, Besson Laurent</i>	
<b>SYSTEMATICS AND CONTROLS OF IN-RESERVOIR OIL BIODEGRADATION</b> .....	27
<i>N. I. Marcano Balliache</i>	
<b>HYDROGEOCHEMICAL MODELING OF ILLITE-FORMING MECHANISMS IN THE UNAYZAH FORMATION, SAUDI ARABIA</b> .....	32
<i>Y Fu, P. Birkle, S. Z Khan</i>	
<b>STREAMING POTENTIAL COUPLING COEFFICIENT AND TRANSPORT PROPERTIES OF UNSATURATED CARBONATE ROCKS</b> .....	36
<i>B. Garcia, Ac Cherubini, Ac Cerepi</i>	
<b>THE ORIGIN OF LOW SALINITY FORMATION WATER IN TURBIDITE SANDSTONE RESERVOIRS: INSIGHTS FROM NATURAL ISOTOPIC AND CHEMICAL TRACERS</b> .....	38
<i>J. Matthews, E. Gaucher</i>	
<b>TOTAL ORGANIC CARBON: FROM ANALYTICAL DATA ACQUISITION TO NUMERICAL 3D VISION</b> .....	41
<i>F. Haeseler, B. Colnet, D. Couteyen-Carpaye, T. Chugunova, E. Tawile</i>	
<b>THE SYNERGISTIC EFFECT OF SURFACTANT AND POLYMER IN STABILIZING CO2-FOAMS</b> .....	47
<i>Alkhowaildi, Zy Yousef, Sk Kokal</i>	
<b>MODELLING THE IMPACTS OF POLYMER FLOODING AND INJECTION BRINE COMPOSITION ON BARIUM SULPHATE SCALE PRECIPITATION AND ITS INHIBITION</b> .....	51
<i>M. Jorday, M. Al Kalbani, E. Mackay</i>	
<b>AN INNOVATIVE WORKFLOW TO DETERMINE THE ROOT CAUSE OF FES SCALE IN SOUR OIL AND GAS WELLS</b> .....	55
<i>T. Goldberg</i>	
<b>GEOCHEMICAL STUDY OF ACIDIZING IN CARBONATE FORMATION</b> .....	59
<i>Bazargan, Ghotbi, M. Najmedini</i>	
<b>THERMOCHEMICAL SULPHATE REDUCTION: A REVIEW OF GAS SOURING FOR PREDICTION FROM EXPLORATION THROUGH TO PRODUCTION</b> .....	61
<i>R. Worden</i>	

<b>MYTHS/REALITIES OF INPUT AND CALIBRATION IN BASIN AND PETROLEUM SYSTEM MODELS</b> .....	63
<i>K. Peters</i>	
<b>ORGANIC-INORGANIC INTERACTIONS DURING REACTIVE FLUID FLOW IN CARBONATES</b> .....	67
<i>N. Schovsbo, R. Wirth, A. Schreiber, W. Van Berk, H. M. Schulz</i>	
<b>Author Index</b>	