8th International Conference on Upstream Engineering and Flow Assurance 2020

Topical Conference at the 2020 AIChE Spring Meeting and 16th Global Congress on Process Safety

Online 17 – 21 August 2020

ISBN: 978-1-7138-2323-0

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© (2020) by AIChE All rights reserved.

Printed with permission by Curran Associates, Inc. (2021)

For permission requests, please contact AIChE at the address below.

AIChE 120 Wall Street, FL 23 New York, NY 10005-4020

Phone: (800) 242-4363 Fax: (203) 775-5177

www.aiche.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 Web: www.proceedings.com

TABLE OF CONTENTS

(1A) 2020 AICHE SPRING MEETING & 16TH GCPS AGILE AWARD KEYNOTE ADDRESS - BEYOND THE HORIZON: THE FACTORS AND FORCES AFFECTING THE GLOBAL PETROCHEMICAL INDUSTRY	1
Bhavesh V. (Bob) Patel	1
(16A) SECURING ENTERPRISES VIA CYBERSECURITY UNDERSTANDING, RESILIENCY, AND EDUCATION	2
(66C) ACCURATE MODELING OF ASPHALTENE ONSET PRESSURE IN CRUDE OILS UNDER GAS INJECTION USING PENG-ROBINSON EQUATION OF STATE	3
(66D) MEASUREMENT AND MODELING OF ASPHALTENE PRECIPITATION FROM HEAVY OIL AND MULTICOMPONENT SOLVENTS	4
(88A) A HEAT AND MASS TRANSFER MODEL FOR PARAFFIN WAX DEPOSITION FROM FLOWING OIL ONTO A COLD SURFACE	6
Luqman Ahmad Mahir, Jieun Lee, H. Scott Fogler, Ronald G. Larson	
(88C) CONDITIONS WHERE ASPHALTENE DESTABILIZATION ARE NOT DETECTED IN THE LABORATORY BUT COULD STILL LEAD TO SURFACE FOULING	7
(110A) WETTABILITY ALTERATION OF CARBONATE ROCKS AT RESERVOIR CONDITIONS BY NOVEL POLY(ETHYLENE OXIDE) GEMINI SURFACTANTS	8
(110B) CR(III)-ENTRAPPED IN NANOCAPSULES PREPARED BY DOUBLE EMULSION METHOD FOR DELAYED GELATION OF HYDROLYZED POLYACRYAMIDE IN SECONDARY FOODING	9
Jingyang Pu, Tanmaya Shrivastava, Muaaz Ahmad, Jerry Che, Keith Johnston, Pingkeng Wu	
(179A) WHEN DISASTERS HAPPEN: A COLLABORATIVE APPROACH TOWARDS THE COMMUNITY'S RECOVERY PROCESS	10
(213A) HIGHLY STABLE NITROGEN-IN-BRINE FOAMS WITH SURFACE-MODIFIED SILICA NANOPARTICLES FOR ENHANCED OIL RECOVERY	
(213B) COMPATIBILITY, AQUEOUS STABILITY, AND PHASE BEHAVIOR OF SYNTHESIZED GEMINI SURFACTANTS WITH COMMERCIAL SURFACTANTS	17
(213C) WETTABILITY ALTERATION OF CARBONATE ROCKS USING SURFACTANTS - A COMPREHENSIVE ANALYSIS USING CENTRIFUGE, NMR AND MICRO CT	
TECHNIQUES	18

(60A) PROCESS AND ADSORBENT FOR SEPARATING ETHANOL AND ASSOCIATED OXYGENATES FROM A BIOFERMENTATION SYSTEM	19
(60B) PUMP SAFETY, THE UNDISCUSSED TOPIC IN CHEMICAL INDUSTRY LEADING TO SEVERAL FATAL INCIDENTS	20
(60F) NEW KIND OF LINEAR NANOCOMPOSITE APPLIED IN IMPROVING RHEOLOGICAL BEHAVIOR OF CRUDE OIL AND ITS MECHANISM STUDIED THROUGH MOLECULAR SIMULATION METHOD	21
(60G) SOLAR ENERGY CONVERSION AND NOISE CHARACTERIZATION SENSING IN BUILDING INTEGRATED SOLAR PHOTOVOLTAIC DEVICES WITH VENTILATION	22
(60H) STRUCTURAL CHARACTERIZATION AND MODEL REPRESENTATION OF VITRINITE-RICH INDIA COAL BY USING ADVANCED ANALYTICAL TECHNIQUES	23
(60K) LIFE MANAGEMENT OF HIGH ENERGY PIPING WITH HIGHLIGHTS FROM ASME B31.1	24
(600) OPTIMIZATION OF C3MR LNG LIQUEFACTION PROCESS USING A PARALLELIZED SIMULATOR Trevor Rice, Yoshitsugi Kikkawa, Mingder Lu	25
(60P) MODIFYING FISCHER-TROPSCH REACTION SEQUENCE WITH ADDITION OF ZEOLITE TO IRON-BASED ACTIVATED-CARBON SUPPORTED CATALYST	26
(60T) LATERAL RETENTION FORCE REQUIRED FOR SLIDING SALINE DROPLETS OVER SILIANIZED SILICON SURFACE	27
(60U) STUDY OF DROPLET MOTION ACROSS POLYMERIC SUBSTRATES BY CENTRIFUGAL ADHESION BALANCE (CAB)	28
(60W) POPULATION BALANCE MODELING AND SPATIALLY-ORIENTED CONTROL FOR CRYSTAL SIZE AND SHAPE IN CRYSTALLIZATION PROCESSES	29
(60AE) AUDITING THE PROCESS HAZARD ANALYSIS - KEY CHARACTERISTICS TO SCRUTINIZE IN A GOOD-QUALITY HAZOP STUDY AND SUPPORTING EFFECTIVE HAZOP STUDY UPDATES	31
(60AF) DEVELOPMENT OF HIGH PERFORMANCE ORGANIC-BASED CATHODES	32
(60AK) ELECTROCHEMICAL KINETICS OF DEGRADATION OF GRAPHITE ANODES IN LITHIUM ION BATTERIES	33

(60AU) MODEL DEVELOPMENT OF SOLID OXIDE FUEL CELL THERMAL PERFORMANCE USING ARTIFICIAL NEURAL NETWORK	35
(60AW) IMPACT OF SPACER NATURE ON RHEOLOGICAL PROPERTIES OF CATIONIC GEMINI SURFACTANT	36
(60AX) REAL TIME ENERGY MANAGEMENT SYSTEMS IMPLEMENTATION FOR CONTINUALLY OPTIMIZED PERFORMANCE	37
(60AN) ANALYSIS OF FUEL CELL SYSTEM THROUGH PROJECT BASED LEARNING FOR APPLICATION OF CLASSICAL THERMAL FLUID CONCEPTS IN MECHANICAL ENGINEERING LABORATORY COURSE	38
(60BD) MEASURED VERSUS CALCULATED SOUR GAS PROPERTIES	39
(60BL) THE STUDY OF A S-CO2 OXY-FUEL COMBUSTION POWER PLANT FOR LOW GRADE COALS	40
Hyung Woo Kim, Su Been Seo, Seo Young Kang, Eun Sol Go, See Hoon Lee	
(60BM) CHARACTERIZATION AND PERFORMANCE ASSESSMENT OF OIL ENTRAPMENT BY COMMERCIALLY AVAILABLE SURFACTANTS	41
(60BN) DESIGNING A NATIVE MODEL FOR ASSESSMENT OF THE EFFECTIVENESS OF ADVERTISING	42
(60BO) STUDY OF NATURAL ANTIOXIDENT INHIBITORS FOR CORROSION PROTECTION OF MILD STEEL IN ACIDIC MEDIUM	78
(60BP) VERIFICATION OF FIREFIGHTERS' HEURISTICS AND PREDICTIVE MODEL DEVELOPMENT THROUGH BIG DATA ANALYSIS	87
(60BT) CONVERTING SHELTER-IN-PLACE LOCATIONS TO ZERO VULNERABILITY SAFE HAVENS	88
James Rau, Ashlee Young, Meghan McDermott	
(60BW) HOW THE FIELD OF HUMAN FACTORS HELPS SOLVE THE RIDDLE OF SERIOUS INJURIES AND FATALITIES	102
(60BX) INITIAL CONDITIONS USED IN ATMOSPHERIC DISPERSION MODELS:ISSUES WITH COMMONLY USED ASSUMPTIONS FOR GAS JETS AND PLUMES	103
(60BZ) FAULT TREE UNCERTAINTY ANALYSIS	104
(60CD) MAKING THE MOST OF YOUR PHA	134

CYCLOHEXANE SOLVENT SYSTEMS FOR BIOMATTER LIPID EXTRACTION	135
(60CO) TECHNO-ECONOMIC ANALYSIS OF THE CONVERSION OF CH4 AND CO2 INTOACETIC ACID USING MICROWAVE PLASMA	136
(60CQ) MODEL PREDICTIVE CONTROL DESIGN FOR THE ALLAM POWER PLANT INTEGRATED WITH AN AIR SEPARATION UNIT	137
(60CR) EXPLORE THE FUNCTION OF ION-EXCHANGE MEMBRANE (IEM) IN MEMBRANE CAPACITIVE DEIONIZATION (MCDI) CELL, AN ALTERNATIVE TECHNIQUE IN BRACKISH WATER DESALINATION FIELD	138
(60CT) AN INTEGRATED PROCESS FOR THE PRODUCTION OF PROPYLENE GLYCOL FROM SHALE GAS	139
(60DC) MONITORING METHODS FOR FAULT DETECTION AND DIAGNOSIS: ALGORITHMS AND APPLICATIONS	140
(60DE) SELECTIVE SEPARATION OF INDUSTRIAL RELEVANT METAL IONS FROM HIGH TDS WATER USING WAFER-ENHANCED ELECTRODEIONIZATION (WE-EDI)	141
(60DF) INFLUENCE OF PARTICLES ON AMINE LOSSES DURING CO2 CAPTURE: A PROCESS SIMULATION COUPLED AEROSOL DYNAMICS MODEL	142

Author Index