

# **Waste Plastics 2019**

Topical Conference at the 2019 AIChE Annual Meeting

Orlando, Florida, USA  
10 - 15 November 2019

ISBN: 978-1-7138-0566-3

**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© (2019) by AIChE  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2020)

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

# TABLE OF CONTENTS

<b>(7A) RAPID MANUFACTURING INSTITUTE AND AICHE</b> .....	1
<i>Phillip R. Westmoreland</i>	
<b>(7B) THE IMPORTANCE OF CREDENTIALING AND LICENSURE</b> .....	2
<i>Deborah Grubbe</i>	
<b>(7C) LEGAL DEVELOPMENTS ON PLASTICS: BASEL CONVENTION AND THE CIRCULAR PLASTICS ECONOMY</b> .....	3
<i>Mary Ellen Ternes</i>	
<b>(7D) RESPONDING TO PARADIGM SHIFTS</b> .....	4
<i>Dale Keairns</i>	
<b>(34A) AQUEOUS RHEOLOGY OF HYDROPHOBE-SUBSTITUTED CELLULOSE ETHERS</b> .....	5
<i>Nikhil Fernandes, Lyndsay Leal, Alan Nakatani, Emmett Partain, Jennifer Koenig, Janine Stratton</i>	
<b>(34B) MY WONDERFUL AND RANDOM WALK THROUGH POLYMER SCIENCE IN INDUSTRY</b> .....	6
<i>Ann Fornof</i>	
<b>(34C) DESIGN AND SYNTHESIS OF EMULSION POLYMER DISPERSIONS AND RESINS FOR INDUSTRIAL PRODUCTS WITH IMPROVED ECO-FOOTPRINT</b> .....	7
<i>Pu Luo, James Bohling</i>	
<b>(34D) RECENT ADVANCES IN LOW TEMPERATURE CURE ELECTRODEPOSITION COATINGS</b> .....	8
<i>Egle Puodziukynaitė, Hyun Wook Ro, Craig Wilson, Brian Okerberg, Reza Rock, Jonathan Weis</i>	
<b>(34E) SUSTAINABLE PLASTICS FOR FOOD PACKAGING</b> .....	9
<i>Christopher Thurber</i>	
<b>(166A) UNDERSTANDING FORMATION OF NITROGEN HETEROCYCLES DURING CATALYTIC HYDROTHERMAL LIQUEFACTION</b> .....	10
<i>Michael T. Timko, Richard H. West, Rasha Atwi</i>	
<b>(166B) BIOCHAR AND ACTIVATED CARBONS DERIVED FROM FOOD WASTE: PROPERTIES AND APPLICATIONS</b> .....	11
<i>Lei Yu, David P. Gamliel, Katherine M. Saltzgeber, Brianna Markunas, Julia A. Valla</i>	
<b>(166C) A FRAMEWORK FOR ASSESSING SOLID WASTE ENERGY RECOVERY SYSTEMS FOR SMALL-SCALE ON-SITE APPLICATIONS</b> .....	13
<i>Andrew Pflugger, Pamela L. Sheehan, Enoch Nagelli, Corey James, Harry L. Moore, Preston Haney</i>	
<b>(166D) MICROPLASTIC ENVIRONMENTAL EFFECT ON THE AQUATIC ECOSYSTEM OF THE THERMAIC GULF</b> .....	14
<i>Marianthi Kermenidou, Irini Moschoula, Dimitris Kousis, Spyros Karakitsios, Dimosthenis Sarigiannis</i>	
<b>(166E) STUDY AND OPTIMIZATION OF THE SUPPLY CHAIN OF THE RECOLLECTION AND HARNESSING OF USED COOKING OIL IN THE CITY OF BOGOTÁ</b> .....	16
<i>Juan Sebastián Rodríguez Flórez, Alvaro Orjuela</i>	
<b>(166F) ECONOMIC FEASIBILITY OF EVAPORATION-BASED LIQUID DIGESTATE TREATMENT FOR BIOGAS PLANTS</b> .....	17
<i>Michal Touš, Marek Vondra</i>	
<b>(166G) STRATEGIES FOR IMPROVEMENT OF ANAEROBIC DIGESTION FROM AGRICULTURAL WASTE: A CRITICAL REVIEW</b> .....	18
<i>Safenaz Shaaban, Doaa Bassuney, Mahmoud Nasr</i>	
<b>(188A) FILAMENT FABRICATION AND 3D PRINTABILITY OF POLY(3-HYDROXYBUTYRATE-CO-3-HYDROXYVALERATE) (PHBV)/POLY(LACTIC ACID) (PLA) BLENDS USING A COMMERCIAL CHAIN EXTENDER</b> .....	24
<i>Miguel A. Vigil Fuentes, Suman Thakur, Manju Misra, Stefano Gregori, Amar K. Mohanty</i>	
<b>(188B) EVALUATION OF BINDERLESS BOARD MADE FROM COMPOSTED RICE STRAW AS SUBSTRATE FOR RICE SEEDLING PRODUCTION</b> .....	25
<i>Ping Qu</i>	
<b>(188C) A CLOSED-LOOP BIOREFINERY FOR WOODY BIOMASS CONVERSION USING LIGNIN-DERIVED DEEP EUTECTIC SOLVENTS</b> .....	26
<i>Yunxuan Wang, Xianzhi Meng, Yunqiao Pu, Kwang Ho Kim, Arthur J. Ragauskas, Chang Geun Yoo</i>	
<b>(188D) REUSE OF SUSTAINABLE WASTES FOR FIBREBOARD PRODUCTION: THE CASE OF WASTE PAPER AND WATER HYACINTH</b> .....	27
<i>Ebenezer Ojo, Festus Oyawale</i>	

<b>(188E) POLYHYDROXYALKANOATE AND CELLULOSE ESTER BASED BIODEGRADABLE PLASTIC BLENDS FOR SUSTAINABLE PACKAGING .....</b>	<b>28</b>
<i>Kjeld Meereboer, Akhilesh K. Pal, Amar K. Mohanty, Manju Misra</i>	
<b>(188F) EXTRACTION OF EUCALYPTUS GLOBULUS LEAVES WITH DISTINCT METHODS AND SOLVENTS. COMPARISON AND ANALYSIS OF THE EXTRACTS .....</b>	<b>29</b>
<i>Vitor H. Rodrigues, Marcelo M. R. De Melo, Vico Tenberg, Jose P. S. Aniceto, Rui Carreira, Inês Portugal, Carlos M. Silva</i>	
<b>(209A) TOWARDS A COMPREHENSIVE DECISION-SUPPORT FRAMEWORK FOR SUSTAINABLE MANUFACTURING .....</b>	<b>30</b>
<i>Majid Moradi Aliabadi, Yinlun Huang</i>	
<b>(209B) EVALUATING DYNAMIC RESILIENCE OF INTERMITTENT AND UNCONTROLLABLE TECHNO-ECOLOGICAL SYSTEMS.....</b>	<b>31</b>
<i>Utkarsh Shah, Bhavik R. Bakshi</i>	
<b>(209C) A MULTI-LAYER PROCESS CONTROL FRAMEWORK FOR SUSTAINABILITY: APPLICATION TO BIOMASS/COAL CO-GASIFICATION SYSTEM .....</b>	<b>32</b>
<i>Shuyun Li, Gerardo J. Ruiz-Mercado, Fernando V. Lima</i>	
<b>(209D) PROCESS ENGINEERING INSPIRED COMPARISON OF SUSTAINABILITY AND RESILIENCE SPECIFIC FEATURES OF NATURAL AND HUMAN-BUILT PROCESS SYSTEMS .....</b>	<b>33</b>
<i>Bela Csukas, Monika Varga</i>	
<b>(209E) AN INPUT-OUTPUT FRAMEWORK TO ASSESS THE IMPORTANCE OF INSECT POLLINATORS TO US INDUSTRY SECTORS: A CASE STUDY OF APPLE PRODUCTION .....</b>	<b>35</b>
<i>Alex Jordan, Harland Patch, Christina Grozinger, Vikas Khanna</i>	
<b>(209F) RAPID ESTIMATION OF RELEASE INVENTORIES AND EVALUATION: A U.S. METAL COATING INDUSTRY CASE STUDY .....</b>	<b>36</b>
<i>Jose D. Hernandez-Betancur, Gerardo J. Ruiz-Mercado, Hugo Hernandez, Luz M. Ocampo-Carmona</i>	
<b>(214A) MECHANISTIC MODELING OF THE (BIO)CONVERSION OF (BIO)MACROMOLECULES .....</b>	<b>37</b>
<i>Linda J. Broadbelt</i>	
<b>(214B) CYCLOOCTENE-FACILITATED LOW TEMPERATURE AEROBIC OXIDATION OF ETHYLBENZENE WITH SOLUBILIZED AU CLUSTERS CATALYSTS.....</b>	<b>38</b>
<i>Harold H. Kung</i>	
<b>(214C) STABILITY OF SUPPORTED METAL CATALYST IN AQUEOUS PHASE REACTIONS .....</b>	<b>39</b>
<i>Brent H. Shanks, Jiajie Huo</i>	
<b>(214D) CHEMICAL RECYCLING - THE ANSWER TO PLASTIC WASTE? .....</b>	<b>40</b>
<i>Kevin M. Van Geem, Guy B. Marin</i>	
<b>(214E) A VIEW OF CANCER IMMUNOLOGY THROUGH A REACTION ENGINEERING LENS.....</b>	<b>41</b>
<i>David J. Klink</i>	
<b>(332B) ABIOTIC DEGRADATION WITH REACTIVE IRON MINERAL COATINGS IN ANAEROBIC SEDIMENT.....</b>	<b>42</b>
<i>Lisa Axe, Han Hua, Xin Yin, Wei Ding, Michael Russell</i>	
<b>(332C) NANOPARTICLES FOR ENERGY AND ENVIRONMENT APPLICATIONS – WASTEWATER TREATMENT .....</b>	<b>43</b>
<i>Ghada Nafie, Gerardo Vitale, Nashaat N. Nassar</i>	
<b>(332D) LABORATORY INVESTIGATION OF COMBINED CHEMICAL/BIOLOGICAL TREATMENT OF HEXAVALENT CHROMIUM, CARBON TETRACHLORIDE AND TRICHLOROETHYLENE IN AQUEOUS SYSTEM .....</b>	<b>44</b>
<i>Ramesh Chawla, Aadarsh Shah, Md Alamgir Hossain, Michelle Cole, Brady Lee</i>	
<b>(332E) RAPID DECHLORINATION OF POLYCHLORINATED BIPHENYLS (PCBS) IN AN ENGINEERED SYSTEM .....</b>	<b>45</b>
<i>Chen Chen, Yang Kun-Lin, Jianzhong He</i>	
<b>(332F) ADSORPTION ON NDMA ON BIOMASS-DERIVED ACTIVATED CARBONS IN LAB-SCALE COLUMNS.....</b>	<b>46</b>
<i>Kailey Garland, David Amidei, Catherine E. Brewer, Paul K. Andersen</i>	
<b>(332G) TRANSFORMING PLASTIC WASTE INTO MICROPOROUS ADSORBENTS FOR ENVIRONMENTAL REMEDIATION.....</b>	<b>47</b>
<i>Xinxin Dong, Baosheng Jin, Cher Hon Lau</i>	
<b>(332H) STUDY OF FOAM INJECTION TECHNOLOGY FOR SOIL REMEDIATION CONTAMINATED WITH HYDROCARBONS .....</b>	<b>48</b>
<i>Tomás-Eduardo Chávez-Miyauchi, Mariana Ramirez-Morales</i>	

<b>(332I) FACILE BALL MILLING METHOD FOR DEVELOPING SURFACE FUNCTIONAL GROUPS ON CARBON-BASED ADSORBENTS AND THEIR ROLES IN THE REMOVAL OF HEAVY METALS IN AQUEOUS SOLUTION .....</b>	<b>49</b>
<i>Yulin Zheng, Bin Gao</i>	
<b>(332J) ENVIRONMENTALLY-RESPONSIBLE CONVERSIONS FROM GASIFICATION WASTE TO ENERGY STORAGE DEVICES: SYNTHESIS OF WASTE-DERIVED NANOMATERIALS AND ENVIRONMENTAL EVALUATION.....</b>	<b>50</b>
<i>He Li, Hailin Tian, Xiaonan Wang, Chi-Hwa Wang, Po-Yen Chen</i>	
<b>(332K) AMELIORATED PHENOL UPTAKE FROM PAPER MILL EFFLUENT ONTO SPENT BREWER'S SACCHAROMYCES CEREVISIAE IN THE PRESENCE OF CETYL TRIMETHYL AMMONIUM BROMIDE .....</b>	<b>51</b>
<i>Arulmozhi M, Saravani Natarajan</i>	
<b>(332L) BIOSURFACTANT FERMENTED FROM WASTE COOKING OIL AND ITS APPLICATION ON OIL SLUDGE CELANING.....</b>	<b>64</b>
<i>Chunyan Chen</i>	
<b>(332M) LIQUID-LIQUID EXTRACTION OF CHLOROPHENOLS FROM WASTEWATER USING HYDROPHOBIC IONIC LIQUIDS.....</b>	<b>65</b>
<i>Inas M. Alnashef, Reyihangu Sulaiman, Idowu Adeyemi, Shadi Hasan, Shema Abraham</i>	
<b>(405A) OVERVIEW OF WASTE VALORIZATION CONCEPTS AND PRINCIPLES .....</b>	<b>66</b>
<i>Robert W. Peters, Jeffrey R. Seay</i>	
<b>(405B) CONVERSION OF POLYVINYLCHLORIDE CONTAINING SOLID WASTES INTO VALUE-ADDED PRODUCTS .....</b>	<b>67</b>
<i>Joel Braden, Xianglan Bai</i>	
<b>(405C) DEVELOPMENT OF HIGH PERFORMANCE COMPOSITES USING RECYCLED MATERIALS .....</b>	<b>68</b>
<i>Haibin Ning, Robert W. Peters, Siddhartha Brahma, Selvam Pillay</i>	
<b>(405D) SUSTAINABLE MASS-BURN REFUSE-DERIVED-FUEL-TO-ENERGY SYSTEM: A MUNICIPAL SOLID WASTE MANAGEMENT CASE STUDY .....</b>	<b>69</b>
<i>Tapas Das, Robert W. Peters</i>	
<b>(405E) INVESTIGATION OF REACTIONS AT THE GAS/SOLID INTERFACE OF MUNICIPAL SOLID WASTE RESIDUES.....</b>	<b>70</b>
<i>Tasnuva Moutushi, Marco J. Castaldi</i>	
<b>(405F) MICROWAVE ENHANCED ADVANCED OXIDATION TREATMENT OF ANAEROBIC DIGESTED EFFLUENT .....</b>	<b>71</b>
<i>Moutoshi Saha, Asha Srinivasan, Ping Huang Liao, Kwang Victor Lo</i>	
<b>(555A) CO2 CONVERSION TO 3D GRAPHENE FOR CLEAN-ENERGY APPLICATION .....</b>	<b>72</b>
<i>Yun Hang Hu</i>	
<b>(555B) WASTE PLASTICS TO ENERGY STORING CARBON ANODES THROUGH GREEN PROCESSING .....</b>	<b>73</b>
<i>Vilas G. Pol</i>	
<b>(555D) MOLECULAR SIMULATION AND EXPERIMENTAL STUDY OF CH4 ADSORPTION IN SURFACTANT SOLUTION .....</b>	<b>75</b>
<i>Yihan Xue</i>	
<b>(560A) REACTIVITY OF NI-CO/<math>\gamma</math>-AL2O3 CATALYSTS FOR HYDRODEOXYGENATION OF GUAIACOL .....</b>	<b>76</b>
<i>Deepak Raikwar, Saptarshi Majumdar, Debaprasad Shee</i>	
<b>(560B) "H2 -FREE" HYDRODEOXYGENATION OF GUAIACOL OVER NI-MO/CEO2-C NANOCATALYSTS.....</b>	<b>82</b>
<i>Wei Jin, Laura Pastor-Perez, Juan Jose Villora Pico, Sai Gu, Antonio Sepúlveda-Escribano, Tomás Ramirez-Reina</i>	
<b>(560C) MICROWAVE CARBOCATALYSIS FOR BIOENERGY AND BIOCHEMICAL CONVERSION .....</b>	<b>85</b>
<i>Armando T. Quitain, Elaine G. Mission, Tomomi Hasunuma, Jonas Karl N. Agutaya, Mitsuru Sasaki, Tetsuya Kida</i>	
<b>(560D) THE GREEN PRODUCTION PROCESS OF E-CAPROLACTAM WITH VAPOR-PHASE BECKMANN REARRANGEMENT .....</b>	<b>86</b>
<i>Hao Wang, Shibiao Cheng, Yingqi Fan, Li Xie, Yusheng Jiang, Keyong Yang, Baoning Zong</i>	
<b>(560E) VAPOR-PHASE HYDROTREATING OF FURFURAL OVER NI-M/SIO2 CATALYSTS (M= FE, CU, PT, PD) FOR PROPYLENE PRODUCTION.....</b>	<b>88</b>
<i>Sheng-Chiang Yang, Shawn D. Lin</i>	
<b>(560G) HYDROGENATION OF 2-METHYLNAPHTHALENE OVER BI-FUNCTIONAL SUPPORTED NICKEL CATALYSTS.....</b>	<b>89</b>
<i>Matthew J. Kline, Sampath A. Karunaratne, Thomas J. Schwartz, M. Clayton Wheeler</i>	

<b>(560H) KINETICS STUDY OF THE SIMULTANEOUS HYDRODEOXYGENATION OF XYLITOL OVER A REOX-PD/CEO<sub>2</sub> CATALYST</b> .....	90
<i>Blake Macqueen, Jochen Lauterbach</i>	
<b>(560I) NOVEL BIO-DERIVED SOLVENTS FOR EXTRACTION OF NATURAL PRODUCTS</b> .....	91
<i>Md. Anwar Hossain, Noppadon Sathitsuksanoh</i>	
<b>(560J) UNDERSTANDING AND IMPROVING THE RECYCLABILITY OF SUPPORTED NICKEL AND COBALT CATALYSTS FOR THE DEOXYGENATION OF BIO-DERIVED FATTY ACIDS</b> .....	92
<i>James M. Crawford, Courtney S. Smoljan, Jolie Lucero, Sarah F. Zaccarine, Nolan C. Kovach, Brian G. Trewyn, Svitlana Pylypenko, Moises A. Carreon</i>	
<b>(560K) STUDY ON CATALYTIC OLIGOMERIZATION OF GLYCEROL OVER ALUMINA SUPPORTED CA/LA MIXED OXIDES</b> .....	93
<i>Cheng-Yen Lin, Wei-Xiang Fang, Bing-Hung Chen</i>	
<b>(560L) TEMPERATURE DEPENDENCE OF PH DYNAMIC BEHAVIOR IN THE GLUCOSE OXIDASE-FERRICYANIDE-GLUCOSE-NAOH REACTION SYSTEM IN A CSTR</b> .....	95
<i>Lenka Schreiberova, Baris Bager Solgun, František Muzika, Igor Schreiber</i>	
<b>(560M) DESCRIBING THE CATALYTIC ROLE OF ALKALINE EARTH METALS ON INITIATION DURING CELLULOSE PYROLYSIS</b> .....	97
<i>Gregory G. Facas, Vineet Maliekkal, Matthew Neurock, Paul Dauenhauer</i>	
<b>(560N) TOWARDS PHARMACEUTICAL PROTEIN STABILIZATION: INSIGHTS FROM THEORETICAL STUDIES ON PEPTIDE HYDROLYSIS REACTIONS</b> .....	98
<i>Katherine Lawson, Andrew J Adamczyk</i>	
<b>(560O) COMPUTATIONAL STUDY ON BIOMASS FAST PYROLYSIS: DESIGN CONSIDERATIONS FOR A LABORATORY-SCALE FLUIDIZED BED</b> .....	99
<i>Emilio Ramirez, Tingwen Li, Charles E. A. Finney, Mehrdad Shahnam, C. Stuart Daw</i>	
<b>(560P) ULTRASOUND-ASSISTED PRODUCTION OF ETHYL BUTYRATE VIA A LIPASE COCKTAIL</b> .....	100
<i>Fernando C. De Sousa Filho, Roberto M. F. De Freitas, Bárbara K. N. Gadelha, Ellefson E. S. De Oliveira, Rodolpho R. C. Monteiro, Paula J. M. Lima, Maria C. M De Souza, José C. S Dos Santos</i>	
<b>(560Q) FOOD WASTE REPURPOSING TO AN INTEGRATED BIOREFINERY</b> .....	105
<i>Elvis Ebikade, Dionisios G. Vlachos</i>	
<b>(560R) MIXED AL/B CATALYSTS: A BIFUNCTIONAL GROUPS MODIFIED SOLID ACID CATALYST WITH NANO-SIZE MESOPOROUS FOR EFFICIENT CONVERSION OF GLUCOSE TO 5-HYDROXYMETHYLFURFURAL IN DMSO</b> .....	106
<i>Jiangxiong Xiao, Jiayi Zheng, Shuxian Yuan, Zhitong Peng, Yao Liu, Xiaojie Zheng, Xiaoqing Lin</i>	
<b>(560T) HYDROTHERMAL CARBONIZATION OF MICROALGAE FOR HYDROCHAR PRODUCTION</b> .....	107
<i>Magdalini Tsarpali, George Philippidis, John Kuhn</i>	
<b>(560U) HYDROGEN DONATION FROM BIO-ACIDS OVER CARBON NANO TUBE (CNT) BASED BI-FUNCTIONAL CATALYSTS: DENSITY FUNCTIONAL THEORY STUDY</b> .....	108
<i>Jiajun Zhang, Xiaolei Zhang</i>	
<b>(560V) ENGINEERING LIGNIN TRANSFORMATION MECHANISMS TO CREATE VALUE-ADDED PRODUCTS USING ATOMISTIC MODELING</b> .....	109
<i>Tanzina Azad, Jonathan Schuler, Maria Auad, Thomas Elder, Andrew J Adamczyk</i>	
<b>(560W) EVALUATION OF AL, TI, AND NB OXIDES AS SUPPORT FOR H<sub>3</sub>PMO<sub>12</sub>O<sub>40</sub> TO BE USED AS CATALYST IN BIODIESEL PRODUCTION FROM LOW-GRADE OILS</b> .....	111
<i>L. Rafael V. Da Conceição, Ana Karine Carvalho, Cristiano Reis, Heitor Bento, Daniela Cortez, Heizir De Castro</i>	
<b>(560X) EFFECT OF PROCESS PARAMETERS AND HETEROGENEOUS CATALYSTS ON THE UPGRADING OF MICRO-ALGAL BIO-CRUDE OIL</b> .....	112
<i>Kodanda Phani Raj Dandamudi, Tessa Murdock, Peter Lammers, Shuguang Deng</i>	
<b>(560Y) CATALYTIC TRANSFER HYDROGENOLYSIS OF XYLITOL OVER BIFUNCTIONAL PD-BASED CATALYSTS</b> .....	113
<i>Qi Xia, Bin Yin, Xin Jin</i>	
<b>(560Z) CATALYTIC CONVERSION OF GLUCOSE TO TARTARIC ACID OVER AU-PT/TIO<sub>2</sub> CATALYSTS</b> .....	114
<i>Mengyuan Liu, Tianqi Fang, Jie Ding, Xiaowen Ge, Hao Yan, Xin Jin, Chaohe Yang</i>	
<b>(560AA) BIOFUEL PRODUCTION FROM HYDROTREATMENT OF FATTY ACIDS USING SUPPORTED NI/MO BIMETALLIC CATALYSTS</b> .....	115
<i>Chao-Wei Lee, Po-Yi Lin, Bing-Hung Chen</i>	
<b>(560AB) LARGE-SCALE EXPLOITATION OF GLUCOSE REDUCTIVE AMINOLYSIS: COMPARISON OF JET-LOOP AND TRICKLE-BED REACTOR PERFORMANCE</b> .....	116
<i>Jeroen Poissonnier, Frederik Van Waes, Kristof Moonen, Guy B. Marin, Joris W. Thybaut</i>	

<b>(560AC) CHARACTERIZATION OF PHYSICAL AND CHEMICAL PROPERTIES OF BIO-CRUDE OIL FROM HYDROTHERMAL LIQUEFACTION OF FOOD WASTE .....</b>	<b>120</b>
<i>Hengameh Bayat, Mostafa Dehghanizadeh, Feng Cheng, Catherine E. Brewer, Umakanta Jena</i>	
<b>(560AD) BIFUNCTIONAL CO-MN OXIDE CATALYSTS FOR CATALYTIC TRANSFER HYDROGENATION OF LEVLINIC ACID TO <math>\gamma</math>-VALEROLACTONE .....</b>	<b>121</b>
<i>Jinyao Wang, Guangyu Zhang, Bin Yin, Hao Yan, Xin Jin</i>	
<b>(560AF) IONIC LIQUID-MEDIATED RAPID CATALYTIC CONVERSION OF LIGNOCELLULOSIC GRASS TO BIOFUEL PRECURSORS IN MICROWAVE REACTORS .....</b>	<b>122</b>
<i>Subhrajit Roy, Saikat Chakraborty</i>	
<b>(560AG) MAIN EFFECTS OBSERVED IN THE CONVERSION OF FRUCTOSE IN HMF .....</b>	<b>123</b>
<i>Juliana Tacacima, Silas Derenzo, Joao G. R. Poco</i>	
<b>(560AH) COMPUTER-AIDED ANALYSIS OF PROTEASE CATALYTIC ACTIVITY TO ENHANCE PROCESS AND PRODUCT DEVELOPMENT .....</b>	<b>124</b>
<i>Ashraf Ali, Ashley Caroline Massey, Shounak Datta, Andrew J Adamczyk</i>	
<b>(560AI) OPTIMIZATION OF THE UPGRADING OF ETHANOL TO N-BUTANOL USING IN-SITU IR SPECTROSCOPY IN THE GUERBET REACTION NETWORK .....</b>	<b>125</b>
<i>Andreas Ohligschläger, Nils Van Staalduinen, Marcel A. Liauw</i>	
<b>(560AJ) HMF SYNTHESIS FROM GLUCOSE BY REACTION-EXTRACTION SYSTEM USING A MICROREACTOR .....</b>	<b>127</b>
<i>Yosuke Muranaka, Kenta Matsubara, Taisuke Maki, Shusaku Asano, Hiroyuki Nakagawa, Kazuhiro Mae</i>	
<b>(560AK) PREPARATION OF A NEW ENZYMATIC BIOCATALYST VIA THE TAGUCHI METHOD: APPLICATION TO LIPASE A FROM CANDIDA ARTARCTICA IMMOBILIZED ONTO CASHEW APPLE BAGASSE .....</b>	<b>129</b>
<i>Paula J. M. Lima, Juliana De F. Serpa, Bruna B. Pinheiro, Rodolpho R. C. Monteiro, Maria V. P. Rocha, Luciana R. B. Goncalves, José C. S Dos Santos</i>	
<b>(560AL) REACTION OF ACETIC ACID AND CHICKEN EGGSHELLS TO FORM CALCIUM ACETATE .....</b>	<b>130</b>
<i>José A. Pérez, Adriana M. Gómez, Cristian D. Hernández, Luis Obregón</i>	
<b>(560AM) ENHANCED GLUCOSE DEHYDRATION TO 5-HYDROXYMETHYL FURFURAL THROUGH ENCAPSULATED PHOSPHOTUNGSTIC ACID IN METAL ORGANIC FRAMEWORKS .....</b>	<b>131</b>
<i>Mohammad Shahinur Rahaman, Md. Anwar Hossain, Thanh Khoa Phung, Sarttrawut Tulaphol, Teerawit Prasomsri, Mark Crocker, Noppadon Sathitsuksanoh</i>	
<b>(560AN) COVERAGE-DEPENDENT FIRST PRINCIPLES MICROKINETIC MODELS FOR COPPER-CATALYZED HYDROGENATION OF CARBONYL GROUPS: ROLE OF WATER AND SACRIFICIAL ALCOHOLS .....</b>	<b>132</b>
<i>Jenoff De Vrieze, Mark Saeys</i>	
<b>(560AO) CATALYTIC DEOXYDEHYDRATION OF GLYCEROL TO ALLYL ALCOHOL WITH 2-HEXANOL AS H-DONOR – A DETAILED STUDY OF THE REACTION MECHANISM .....</b>	<b>136</b>
<i>Karen Silva Vargas, Benjamin Katryniok, Marcia Araque Marin, Sebastien Paul, Franck Dumeignil</i>	
<b>(560AP) ESTERIFICATION OF ISOBUTYL ALCOHOL AND ACETIC ACID - KINETIC STUDY .....</b>	<b>138</b>
<i>Felipe Martinez, Alvaro Orjuela, Gerardo Rodriguez</i>	
<b>(560AQ) SUSTAINABLE SOLUTIONS FOR SELECTIVE GLYCEROL OXIDATION INTO DIHYDROXYACETONE USING COMMERCIAL CATALYSTS .....</b>	<b>139</b>
<i>Pedro Walgode, Rui Faria, Alirio E. Rodrigues</i>	
<b>(560AR) CATALYTIC CONVERSION OF CELLULOSE INTO LEVOGLUCOSENONE USING HOMOGENOUS BRØNSTED ACID CATALYSTS IN POLAR APROTIC SOLVENTS IN A FLOW REACTOR .....</b>	<b>141</b>
<i>Alexa M. González-Rosario, Oscar Oyola-Rivera, Nelson Cardona-Martínez</i>	
<b>(560AS) THE USE OF AQUEOUS ETHANOL AS A SOLVENT FOR THE CATALYTIC HYDROGENATION OF LACTOSE TO LACTITOL .....</b>	<b>142</b>
<i>Andrew Kasick, Sunggyu Lee</i>	
<b>(560AU) AQUEOUS PHASE REFORMING OF ETHANOL OVER NICKEL SUPPORTED ON OXYGEN ION CONDUCTING SUPPORTS .....</b>	<b>143</b>
<i>Vincent Herrera, Richard Nelson, Corey A. Leclerc</i>	
<b>(560AV) POLYELECTROLYTES ENABLED CO-LOCALIZATION OF ENZYME CASCADES FOR ONE-POT SYNTHESIS .....</b>	<b>144</b>
<i>Zheyu Wang, Junqian Wang, Gong Chen, Weina Xu, Zhongwang Fu, Guoqiang Jiang, Jianzhong Wu, Zheng Liu</i>	
<b>(560AW) CONVERTING BIOGAS TO LIQUID FUELS BY LOW ENERGY ELECTRICAL CORONA DISCHARGE PROCESSES .....</b>	<b>145</b>
<i>Yu Miao, Alexandre Yokochi, Goran Jovanovic, Nick Auyeung, Annette Von Jouanne, Ryan Collin, Ian Reddick, Andrew Traverso</i>	

<b>(560AX) MECHANISMS OF C-O AND C-C BOND ACTIVATION OF ACETIC ACID HYDRODEOXYGENATION OVER PT-MO CATALYSTS .....</b>	<b>146</b>
<i>Yiteng Zheng, Ziyu Tang, Simon G. Podkolzin</i>	
<b>(560AY) LAXBA1-XFEO3 PEROVSKITE OXIDE FOR LOW TEMPERATURE THERMOCHEMICAL CONVERSION OF CARBON DIOXIDE .....</b>	<b>147</b>
<i>Hanzhong Shi, Venkat R. Bhethanabotla, John N. Kuhn</i>	
<b>(560AZ) HYDROXYL-MEDIATED ETHANOL SELECTIVITY OF CO<sub>2</sub> HYDROGENATION.....</b>	<b>148</b>
<i>Chengsheng Yang, Rentao Mu, Jinlong Gong</i>	
<b>(560BA) H<sup>+</sup> CONDUCTIVITY AND O<sub>2</sub> IMPERMEABILITY OF ULTRATHIN OXIDE LAYERS WITH BUILT-IN SiO<sub>2</sub> SEPARATION MEMBRANE FOR SCALABLE ARTIFICIAL PHOTOSYNTHESIS .....</b>	<b>149</b>
<i>Won Jun Jo</i>	
<b>(560BB) 3D NITROGEN-DOPED GRAPHENE AEROGEL-SUPPORTED MnO NANOPARTICLES AS EFFICIENT ELECTROCATALYST FOR CO<sub>2</sub> CONVERSION TO CO.....</b>	<b>150</b>
<i>Mengchu Wang, Bike Zhang, Yao Shi, Yi He</i>	
<b>(560BC) NON-NOBLE METALS DOPED BI-NANOPARTICLES FOR ELECTROCHEMICAL CO<sub>2</sub> REDUCTION.....</b>	<b>152</b>
<i>Xue Han</i>	
<b>(560BD) ENHANCING THE ELECTROCHEMICAL PRODUCTION OF SYNGAS FROM CAPTURED CO<sub>2</sub> BY USING SILVER NANO-STRUCTURED ELECTROCATALYSTS .....</b>	<b>153</b>
<i>Omar Movil-Cabrera, Ningshengjie Gao, Tedd Lister, Luis Diaz-Aldana</i>	
<b>(560BE) ELECTROCHEMICAL REDUCTION OF CO<sub>2</sub> ON TRANSITION METAL-P BLOCK CATALYST COMPOSITIONS .....</b>	<b>154</b>
<i>Sahithi Ananthaneni, Rees B. Rankin</i>	
<b>(560BF) SYNTHESIS AND CHARACTERIZATION OF BIMETALLIC CORE@SHELL STRUCTURED NANOPARTICLES FOR ELECTROCHEMICAL REDUCTION OF CO<sub>2</sub> INTO FORMIC ACID .....</b>	<b>155</b>
<i>Wei Jyun Wang, Su Ha, Louis Scudiero</i>	
<b>(560BG) COPPER-NITROGEN-DOPED CARBON NANOSTRUCTURES FOR AN EFFICIENT CO<sub>2</sub> REDUCTION REACTION.....</b>	<b>156</b>
<i>Huiyuan Cheng, Xuemei Wu, Gaohong He</i>	
<b>(560BH) DOPED TRANSITION METAL NITRIDES AS EFFICIENT ELECTROCATALYSTS FOR ELECTROCHEMICAL REDUCTION OF CO<sub>2</sub>.....</b>	<b>158</b>
<i>Mohammadreza Karamad, Samira Siahrostami, Ian D. Gates</i>	
<b>(560BI) ARTIFICIAL THYLAKOID TO COORDINATE PHOTO-ENZYME-COUPLED CATALYSIS FOR CARBON DIOXIDE UPGRADING .....</b>	<b>159</b>
<i>Shaohua Zhang, Jiafu Shi, Zhongyi Jiang</i>	
<b>(560BJ) A NOVEL APPROACH TO KINETIC MODELING OF HIGH TEMPERATURE CO<sub>2</sub> ADSORBENTS .....</b>	<b>160</b>
<i>Michael A. Smith, Charles Coe, Anthony Wallace, Simon Brooks</i>	
<b>(560BK) EXTRUSION OF PEROVSKITE OXIDE/ SILICA COMPOSITES FOR THERMOCHEMICAL CARBON DIOXIDE CONVERSION.....</b>	<b>161</b>
<i>Qian Li, Hanzhong Shi, Venkat R. Bhethanabotla, John N. Kuhn</i>	
<b>(560BL) UNDERSTANDING MECHANISMS OF CO<sub>2</sub> ELECTROREDUCTION ON Cu(100) WITH KINETIC MONTE CARLO SIMULATIONS .....</b>	<b>162</b>
<i>Tianyou Mou, Hemanth S. Pillai, Hongliang Xin</i>	
<b>(560BM) PROMOTING CO<sub>2</sub> HYDROGENATION ACTIVITY AND METHANOL SELECTIVITY OF Cu/CEO<sub>2</sub> CATALYST BY W-DOPING .....</b>	<b>163</b>
<i>Yong Yan, Wen Liu</i>	
<b>(560BN) A COMPUTATIONAL INVESTIGATION OF CATALYTIC UPGRADING OF CO<sub>2</sub> TO METHANOL OVER INDIUM OXIDE.....</b>	<b>164</b>
<i>Maximilian R. Cohen, Dionisios G. Vlachos</i>	
<b>(560BO) DFT INVESTIGATION OF THE MECHANISM AND SITE REQUIREMENTS FOR REVERSE WATER GAS SHIFT ON TRANSITION METAL SULFIDES.....</b>	<b>165</b>
<i>Ronak Upadhyay, Lohit Sharma, Jonas Baltrusaitis, Srinivas Rangarajan</i>	
<b>(560BP) INFLUENCE OF COORDINATION ENVIRONMENT AROUND ANCHORED SINGLE-SITE COBALT CATALYST FOR CO<sub>2</sub> HYDROGENATION .....</b>	<b>166</b>
<i>Juan Jimenez, Michael Royko, Jochen Lauterbach</i>	
<b>(560BR) CARBON DIOXIDE HYDROGENATION .....</b>	<b>167</b>
<i>Sascha Kleiber, Susanne Lux, Matthaeus Siebenhofer</i>	



<b>(560BS) MESOPOROUS SILICA SUPPORTED PEROVSKITE OXIDE FOR LOW TEMPERATURE THERMOCHEMICAL CO<sub>2</sub> CONVERSION .....</b>	<b>168</b>
<i>Jeremy Brower, Venkat R. Bhethanabotla, John Kuhn</i>	
<b>(560BU) PROMOTER AND SUPPORT EFFECTS ON TRANSITION METAL CARBIDES FOR CO<sub>2</sub> HYDROGENATION.....</b>	<b>169</b>
<i>Mitchell B. Juneau, Marc D. Porosoff</i>	
<b>(560BV) A METAL- AND SOLVENT-FREE SYNTHESIS OF AMINOALCOHOLS UNDER CONTINUOUS FLOW CONDITIONS.....</b>	<b>170</b>
<i>Abdo-Alslam Alwakwak, Ali Rownaghi, Fateme Rezaei</i>	
<b>(560BW) PROBING THE OXYGEN EVOLUTION REACTION EFFICACY OF PURE AND DOPED NIOOH (0001) USING HYBRID DENSITY FUNCTIONAL THEORY .....</b>	<b>171</b>
<i>Ananth Govind Rajan, John Mark P. Martinez, Emily A. Carter</i>	
<b>(560BX) DEFECT-ENGINEERED INTERFACE FOR EFFICIENT ELECTROCATALYST .....</b>	<b>172</b>
<i>Kishwar Khan, Zhengtang Luo</i>	
<b>(560BY) MECHANISMS FOR HYDROGEN EVOLUTION ON TRANSITION METAL PHOSPHIDES AND PT .....</b>	<b>173</b>
<i>Chenyang Li, Per Lindgren, Georg Kastlunger, Andrew A. Peterson, Tim Mueller</i>	
<b>(560BZ) MULTI-TASK MACHINE LEARNING TO PREDICT ORR CATALYST DESCRIPTORS AND PERFORMANCE ACROSS SURFACE COMPOSITION.....</b>	<b>174</b>
<i>Aini Palizhati, Seoin Back, Kevin Tran, Zachary Ulissi</i>	
<b>(560CB) POST-TRANSITION METAL NANOPARTICLES AS ELECTROCATALYSTS FOR NITROGEN REDUCTION TO AMMONIA .....</b>	<b>175</b>
<i>Zihao Yan, Huiyuan Zhu</i>	
<b>(560CC) ISOLATED DIATOMIC FE-NI METAL-NITROGEN SITES FOR SYNERGISTIC ELECTROREDUCTION OF CO<sub>2</sub>.....</b>	<b>176</b>
<i>Yongheng Xiong, Qin Zhong</i>	
<b>(560CD) REUTILIZATION OF BA0.75SR0.25CONDO6-T FOR OXYGEN REDUCTION REACTION IN ALKALINE .....</b>	<b>177</b>
<i>Yi Zhang, Hongxia Qu</i>	
<b>(560CE) ORBITALWISE COORDINATION NUMBER IN SEARCH OF METAL NANOCATALYSTS FOR OXYGEN REDUCTION.....</b>	<b>178</b>
<i>Siwen Wang, Noushin Omidvar, Emily Marx, Hongliang Xin</i>	
<b>(560CF) CONVERSION OF GLUCOSE TO LACTIC ACID USING AND ELECTROCATALYTIC CELL SYSTEM.....</b>	<b>179</b>
<i>Lars Ostervold III</i>	
<b>(560CG) THE ROLE OF SULFUR IN COSE(1-X)SX FOR ENHANCED OXYGEN ELECTROCATALYSIS.....</b>	<b>181</b>
<i>Swetha Ramani, Venkat R. Bhethanabotla, John Kuhn</i>	
<b>(560CH) DEVISABLE BOTTOM-UP/ TOP-DOWN PROCESS DIRECTED FACET-ENGINEERED PT NI POROUS FILMS AS EFFICIENT OXYGEN REDUCTION ELECTROCATALYSTS.....</b>	<b>182</b>
<i>Guanzhi Wang, Yang Yang</i>	
<b>(560CJ) PLASMONIC PEROVSKITE SEMICONDUCTOR FOR PHOTOELECTROCHEMICAL WATER SPLITTING .....</b>	<b>183</b>
<i>Zhao Li, Li Shi, Yang Yang</i>	
<b>(560CL) EXPLORATORY TEXTUAL DATA ANALYSIS FOR UNDERSTANDING THE RESEARCH DEVELOPMENT OF OXYGEN REDUCTION REACTION .....</b>	<b>184</b>
<i>Zheng Li, Hongliang Xin</i>	
<b>(560CM) ELECTROCHEMICAL OXIDATION OF METHANE AT PLATINUM ELECTRODES UNDER AMBIENT CONDITIONS.....</b>	<b>185</b>
<i>Michael Boyd, Allegra A. Latimer, Colin Dickens, Adam Nielander, Christopher Hahn, Jens K. Nørskov, Drew Higgins, Thomas F. Jaramillo</i>	
<b>(560CN) TRANSITIONAL METAL COORDINATED WITH N-DOPED CARBON NANOFIBER INTEGRATED WITH GRAPHENE FOR THE OXYGEN EVOLUTION REACTION IN ACID.....</b>	<b>186</b>
<i>Chaojun Lei, Lecheng Lei, Yang Hou</i>	
<b>(560CO) ENHANCING ORGANIC ELECTROSYNTHESIS THROUGH ARTIFICIAL INTELLIGENCE: THE CASE OF ADIPONITRILE ELECTROHYDRODIMERIZATION.....</b>	<b>187</b>
<i>Miguel Modestino, Daniela Blanco</i>	
<b>(560CP) THE ROLE OF OXYGEN INCORPORATION IN THE OXYGEN REDUCTION REACTION ACTIVITY OF MOLYBDENUM NITRIDE CATALYSTS .....</b>	<b>188</b>
<i>Melissa Kreider, Michaela Burke Stevens, Yunzhi Liu, Alessandro Gallo, Anton Ievlev, Apurva Mehta, Robert Sinclair, Laurie A King, Thomas F. Jaramillo</i>	

<b>(560CQ) POTENTIAL DEPENDENT KINETIC BARRIERS OF OXYGEN REDUCTION REACTIONS (ORR) ON PT (111).....</b>	190
<i>Shubham Sharma, Andrew A. Peterson</i>	
<b>(560CR) MECHANISTIC INSIGHTS INTO SOLUTION PHASE OXYGEN REDUCTION REACTIONS AND THE EFFECT OF METAL CATION DOPANTS .....</b>	191
<i>Saurin H. Rawal, William C. McKee, Benjamin Drewry, William A. Shelton Jr., Ye Xu</i>	
<b>(560CS) EFFECT OF IONOMER COVERAGE ON PT ELECTROCATALYST PERFORMANCE IN PEFCs.....</b>	193
<i>Timothy Van Cleve, Mason Mooney, Guanxiong Wang, Sadia Kabir, K. C. Neyerlin</i>	
<b>(560CT) ATOM-THICK IR-RICH SKIN ON PTIR NANOCUBE ELECTROCATALYSTS FOR EFFICIENT ETHANOL OXIDATION .....</b>	194
<i>Qiaowan Chang, Shyam Kattel, Xing Li, Dong Su, Jingguang G. Chen, Zheng Chen</i>	
<b>(560CU) TERNARY AND QUATERNARY MICROWAVE SYNTHESIZED ELECTROCATALYST FOR ETHANOL OXIDATION.....</b>	195
<i>Shelby Foster, Lauren F. Greenlee</i>	
<b>(560CX) MULTIFUNCTIONAL VANADIUM-DOPED COBALT OXIDE LAYER ON SILICON PHOTOANODES FOR EFFICIENT PHOTOELECTROCHEMICAL WATER OXIDATION.....</b>	196
<i>Zhuo Xing, Feng Ren, Xiaofeng Feng</i>	
<b>(560CY) A MICROKINETIC ANALYSIS OF THE CO ELECTRO-OXIDATION REACTION ON PT BIMETALLICS: UNDERSTANDING THE INTERPLAY OF BIFUNCTIONAL AND ELECTRONIC EFFECTS.....</b>	197
<i>Adam Baz, Adam Holewinski</i>	
<b>(560DA) ANALYSIS OF PEFC CATHODE CATALYST LAYER BASED ON RATE DEPENDENCY ON OXYGEN PARTIAL PRESSURE .....</b>	198
<i>Miho Kageyama, Kazuhiro Yamaguchi, Kento Takahashi, Yoshiyuki Hashimasa, Tomoyuki Matsuda, Motoaki Kawase</i>	
<b>(560DB) ELECTROSTATICALLY ENHANCED CATALYTIC PHASE TRANSFER HYDROGENATION OF ACETOPHENONE UNDER LOW EXTERNAL ELECTRIC FIELD .....</b>	201
<i>Nan Wang, Lawrence R. Weatherley</i>	
<b>(283B) THEORETICAL STUDY OF PHOTOCATALYTIC WATER SPLITTING IN A TUBE-IN-TUBE SETUP .....</b>	202
<i>Nopphon Weeranoppanant, Patchara Chaichon, Woraphin Saetung</i>	
<b>(560DC) SYNTHESIS AND CHARACTERIZATION OF PT-ZN INTERMETALLIC NANOCATALYSTS FOR LIGHT ALKANES OXIDATIVE DEHYDROGENATION.....</b>	210
<i>Zhuoran Gan, Muntaseer Bunian, William Sienicki, Sungsik Lee, Zheng Lu, Christopher L. Marshall, Yizhi Xiang, Yu Lei</i>	
<b>(560DD) PROCESS MODIFIED UV ASSISTED TiO<sub>2</sub> ADSORPTIVE DESULFURIZATION MECHANISM STUDY .....</b>	211
<i>Mingyang Chi, Bruce J. Tatarchuk</i>	
<b>(560DE) OPTIMIZED KINETIC PARAMETERS OF METALLOCENE CATALYZED OLEFIN POLYMERIZATION THROUGH MODELLING AND SIMULATION.....</b>	212
<i>Nikhil Prakash</i>	
<b>(560DI) CATALYTIC ETHYLENE DIMERIZATION TO 1-BUTENE USING AUTOMATED CONSTRUCTION OF MICROKINETIC MODELS WITH RMG-CAT .....</b>	213
<i>Emily Mazeau, Richard H. West, Katrin Blondal, C. Franklin Goldsmith</i>	
<b>(560DJ) METAL-PROMOTED DEHYDROAROMATIZATION OF ETHYLENE OVER ZSM-5 CATALYSTS .....</b>	214
<i>Yunwen Zhou, Hari Thirumalai, Lars C. Grabow, Jeffrey D. Rimer</i>	
<b>(560DK) NOBLE BI-METALLIC (PT-RU) CATALYST FOR DIESEL AUTOTHERMAL REFORMING – ACTIVITY TESTS AND CHARACTERIZATIONS.....</b>	215
<i>Jaemyung Lee, Jiwoo Oh, Joongmyeon Bae</i>	
<b>(560DL) AN INTERESTING FOUR-STAGE MODEL OF AU-PD/Ts-1 BIMETALLIC CATALYSTS FOR DIRECT PROPYLENE EPOXIDATION WITH H<sub>2</sub> AND O<sub>2</sub>.....</b>	216
<i>Zhishan Li, Weihua Ma, Qin Zhong</i>	
<b>(560DN) KINETIC MODELING OF CATALYTIC CRACKING OF PARAFFINIC NAPHTHA WITH MOLECULAR MECHANISM .....</b>	217
<i>Ha-Nui Jo, Kiwoong Kim, Jinsu Kim, Yoojin Han, Jae-Wook Shin, Young-Seek Yoon, In-Beum Lee</i>	
<b>(560DO) INVESTIGATION OF CERIA, VANADIA/CERIA AND GOLD/CERIA CATALYSTS BY OPERANDO RAMAN-ONLINE FTIR DURING TOLUENE OXIDATION .....</b>	218
<i>Qingyue Wang, Yingjian Luo, King Lun Yeung, Miguel A. Bañares</i>	

<b>(560DQ) RESEARCH ON BIFUNCTIONAL CATALYSTS FOR HYDROGEN PRODUCTION FROM DIMETHYL ETHER STEAM REFORMING .....</b>	<b>219</b>
<i>Jinghong Lian, Changqing Guo, Hongyi Tan, Zhida Wang, Yan Shi, Zhuoxin Lu, Changfeng Yan</i>	
<b>(560DR) ASSESSING THE ROLE OF ZR-AL INTERACTIONS IN OXIDE-GRAFTED ZR PRECURSORS FOR ETHYLENE OLIGOMERIZATION REACTIONS.....</b>	<b>220</b>
<i>Galiya Magazova, Joshua D. Wright, Neha Mehra, William F. Schneider, Jason C. Hicks</i>	
<b>(560DS) MECHANISTIC UNDERSTANDING OF THE ROLE OF GA IN THE DEHYDROGENATION OF ETHANE ON GA/AL<sub>2</sub>O<sub>3</sub> CATALYST .....</b>	<b>221</b>
<i>Sai Praneet Batchu, Stavros Caratzoulas, Dionisios G. Vlachos</i>	
<b>(560DT) EFFECTS OF P AND METAL COMPOSITION ON THE PERFORMANCE OF MONO- AND BIMETALLIC PHOSPHIDES FOR LIGHT ALKANE DEHYDROGENATION .....</b>	<b>223</b>
<i>Jessica A. Muhlenkamp, Jeonghyun Ko, William F. Schneider, Jason C. Hicks</i>	
<b>(560DV) MECHANISM OF OXIDATIVE DEHYDROGENATION OF ETHANE AT HIGH TEMPERATURES .....</b>	<b>224</b>
<i>Hilal Ezgi Toraman, Gerhard R. Wittreich, Dionisios G. Vlachos</i>	
<b>(560DW) SELF-ASSEMBLED POLYMER NANOREACTORS FOR CASCADE REACTIONS .....</b>	<b>225</b>
<i>Andrew Harrison, Matthew Nguyen, Christina Tang</i>	
<b>(560DX) TOWARDS SAFE PROCESS INTENSIFICATION OF PARTIAL OXIDATION REACTORS: THEORETICAL INSIGHTS INTO SELECTIVE ETHYLENE OXIDE FORMATION ON AG CATALYSTS .....</b>	<b>226</b>
<i>Siyuan Wu, Bruce J. Tatarchuk, Andrew J Adamczyk</i>	
<b>(560DY) MICROWAVE CATALYTIC REACTOR FOR CONVERTING LIGHT ALKANE TO AROMATICS .....</b>	<b>227</b>
<i>Xinwei Bai, Brandon Robinson, Terence Musho, Casey Killmer, Yuxin Wang, Jianli Hu</i>	
<b>(560DZ) SYNTHESIS OF HIGH PURITY NORBORNENE IN A MICROREACTOR UNDER SUPERCRITICAL CONDITIONS.....</b>	<b>228</b>
<i>Xin Xu, Yin Wu, Bei Yuan, Zhen Yao, Kun Cao</i>	
<b>(560EA) PREPARATION, CHARACTERIZATION, AND PERFORMANCE EVALUATION OF HIGH PERFORMANCE MESOPOROUS MATERIALS BASED HYDRODESULFURIZATION CATALYSTS .....</b>	<b>229</b>
<i>Shakeel Ahmed</i>	
<b>(560EB) ISOBUTANE ALKYLATION KINETICS WITH MIXED C<sub>4</sub> OLEFINS CATALYZED BY SULFURIC ACID.....</b>	<b>230</b>
<i>Ling Zhao, Weizhong Zheng, Piao Cao, Weizhen Sun</i>	
<b>(560EC) INFLUENCES OF METAL-MODIFICATION AND LAMELLAR ZEOLITE STRUCTURE ON ETHYLENE TO LIQUID AROMATICS CONVERSION REACTION USING MFI CATALYSTS .....</b>	<b>231</b>
<i>Luther Mahoney, Laleh Emdadi, Dat Tran, Ivan Lee</i>	
<b>(560ED) ASSESSMENT OF THE COKE DEPOSITED ON LAMELLAR METAL-MODIFIED MFI ZEOLITE CATALYSTS IN THE TRANSFORMATION OF ETHYLENE TO LIQUID AROMATICS .....</b>	<b>232</b>
<i>Laleh Emdadi, Luther Mahoney, Dat T. Tran, Ivan Lee</i>	
<b>(560EE) SYNTHESIS, CHARACTERIZATION AND MECHANISTIC STUDY OF STRUCTURED GA AND GAPT PROMOTED ZSM-5 IN ETHANE DEHYDROAROMATIZATION .....</b>	<b>233</b>
<i>Ashley Caiola, Brandon Robinson, Xinwei Bai, Yuxin Wang, Jianli Hu</i>	
<b>(560EG) CORE-SHELL STRUCTURED MIXED METAL OXIDES FOR OXIDATIVE DEHYDROGENATION OF ETHYLBENZENE UNDER A CYCLIC REDOX SCHEME .....</b>	<b>234</b>
<i>Xing Zhu, Yunfei Gao, Xijun Wang, Vasudev Pralhad Haribal, Junchen Liu, Fanxing Li</i>	
<b>(560EH) SELECTIVE HYDROGENATION OF ACETYLENE TO ETHYLENE OVER BI-METALLIC CATALYSTS.....</b>	<b>235</b>
<i>Qingyuan Li, Yuxin Wang, George Skoptsov, Jianli Hu</i>	
<b>(560EI) CATALYST DEVELOPMENT FOR OXIDATIVE COUPLING OF METHANE IN A GAS-SOLID VORTEX REACTOR.....</b>	<b>237</b>
<i>Saashwath Swaminathan Tharakaraman, Guy B. Marin, Mark Saeys</i>	
<b>(560EJ) IMPACT OF NI AND MG LOADINGS ON DRY REFORMING PERFORMANCE OF PT/CERIA-ZIRCONIA CATALYSTS.....</b>	<b>241</b>
<i>Yetunde O. Sokefun, Babu Joseph, John N. Kuhn</i>	
<b>(560EK) KINETICS OF O<sub>2</sub> ACTIVATION OVER CU-EXCHANGED ZEOLITES: IMPLICATIONS FOR PARTIAL METHANE OXIDATION .....</b>	<b>242</b>
<i>Daniel T. Bregante, Laura N. Wilcox, Rajamani Gounder, David Flaherty</i>	

<b>(560EL) EFFECT OF PROMOTER LOADING ON IRON SUPPORTED FISCHER-TROPSCH SYNTHESIS CATALYST AT HIGH-TEMPERATURE</b> .....	243
<i>Yajing Chang, Sreya Seby, David Weber, Babu Joseph, John N. Kuhn</i>	
<b>(560EM) MECHANISTIC ORIGINS OF THE HIGH-PRESSURE INHIBITION OF METHANOL DEHYDRATION RATES IN SMALL-PORE ACIDIC ZEOLITES</b> .....	244
<i>John R. Di Iorio, Alexander Hoffman, Claire T. Nimlos, Steven V. Nystrom Jr., David Hibbitts, Rajamani Gounder</i>	
<b>(560EN) FISCHER-TROPSCH SYNTHESIS ON NATURAL ZEOLITE-SUPPORTED FE CATALYSTS</b> .....	246
<i>Joshua Gorimbo, Roick Chikati, Adolph A. Muleja, Diakanua Nkazi</i>	
<b>(560EO) A ONE-STEP METHOD OF DURENE SYNTHESIS DIRECTLY FROM SYNGAS USING INTEGRATED CATALYST OF CU/ZNO/AL<sub>2</sub>O<sub>3</sub> AND CO-NB/HZSM-5</b> .....	247
<i>Minzhe Li</i>	
<b>(560EP) METAL-CONTAINING ZSM-5 CATALYSTS FOR THE DRY REFORMING OF METHANE: EXPLORING SYNERGISTIC EFFECTS</b> .....	248
<i>Megan Hoffman, Carlos Carrero, Raj Thakur, Justin Smith</i>	
<b>(560ER) LONG-TERM STABILITY OF MODIFIED FERRITE CATALYSTS FOR HIGH-TEMPERATURE WATER-GAS SHIFT REACTION AT ELEVATED PRESSURES</b> .....	249
<i>Devaiah Damma</i>	
<b>(560ES) SIZE EFFECT OF CO<sub>3</sub>O<sub>4</sub>-SUPPORTED PD NANOPARTICLE ON THE CATALYTIC ACTIVITIES OF CO OXIDATION AND WATER-GAS SHIFT</b> .....	250
<i>Rui Huang, Kyeounghak Kim, Myeong Gon Jang, Jeong Woo Han</i>	
<b>(560ET) HYDROGENATION OF DIMETHYL OXALATE TO ETHYLENE GLYCOL OVER MESOPOROUS SILICA SUPPORTED COPPER CATALYSTS</b> .....	251
<i>Xinbin Yu, Christopher Williams</i>	
<b>(560EU) HIGH YIELD TO LOWER HYDROCARBON IN FT SYNTHESIS: BASED ON MELTING EFFECTS ON ZNFE SPINEL</b> .....	252
<i>Wenlong Song, Huiqiu Wang, Yilin Hou, Zhaohui Chen, Dali Cai, Weizhong Qian</i>	
<b>(560EV) FISCHER-TROPSCH SYNTHESIS IN MICROSCALE-BASED REACTOR, EXPERIMENTAL AND MATHEMATICAL MODELING</b> .....	253
<i>Yousef Alanazi, Omar Mohamed, Andrew Traverso, Alexandre Yokochi, Goran Jovanovic</i>	
<b>(560EX) KINETIC MONTE CARLO STUDY ON MULTI-FACET COPPER CATALYTIC SURFACE FOR EFFICIENT METHANOL SYNTHESIS</b> .....	254
<i>Jiyeong Cho</i>	
<b>(560EY) METHANE PYROLYSIS IN MOLTEN METAL/SALT TWO-PHASE REACTORS</b> .....	255
<i>Nazamin Rahimi, Dohyung Kang, John Gelinas, Aditya Menon, Michael Gordon, Horia Metiu, Eric McFarland</i>	
<b>(560FA) DFT MODELING OF LIQUID SOLVENT EFFECTS ON THE CATALYTIC SURFACE REACTIONS IN FISCHER-TROPSCH SYNTHESIS</b> .....	256
<i>Alireza Asiaee, Kenneth M. Benjamin</i>	
<b>(560FB) AN EFFECTIVE MICROKINETIC MODELLING STRATEGY FOR DIRECT DME SYNTHESIS FROM SYNGAS OVER HYBRID CZA/FER CATALYST</b> .....	257
<i>Jongmin Park, Myung-June Park, Won Bo Lee, Jong Wook Bae</i>	
<b>(560FD) COMBINED DFT AND MICROKINETIC STUDY OF DRY REFORMING OF METHANE ON NI AND B PROMOTED NI SURFACES</b> .....	258
<i>Ojus Mohan, Shambhawi Shambhawi, Alexei Lapkin, Samir H. Mushrif</i>	
<b>(174CI) DETERMINATION OF KINETICS FOR METHANE DRY REFORMING USING PLASMA</b> .....	259
<i>Cassiane O. Martins, Frédéric Marias, Jean-Paul Robert-Arnouil, Stephanie Moyal</i>	
<b>(560FF) CORE-SHELL PT/AL<sub>2</sub>O<sub>3</sub>@CU/ZSM-5 CATALYST FOR AMMONIA SLIP CATALYST IN DIESEL AFTERTREATMENT</b> .....	263
<i>Ghosh Rajat, Michael Harold, Thuy T. Le, Jeffrey D. Rimer, Di Wang</i>	
<b>(560FG) THE ROLE OF NOBLE METALS (M=RH,PD,AG,AU,PT) PROMOTING ACTIVE OXYGEN ENHANCING SOOT OXIDATION IN CEO<sub>2</sub> VACANCY : EXPERIMENT WITH TIGHT CONTACT AND A DFT STUDY</b> .....	265
<i>Deok Yeon Jo, Jae Hwan Lee, Kwan-Young Lee</i>	
<b>(560FH) AN EXPERIMENTAL VERIFICATION OF PRESSURE DROP FOR REMOVAL OF VOC</b> .....	266
<i>David Jecha, Vladimir Brummer</i>	
<b>(560FI) IMPACT OF COPPER EXCHANGE PROTOCOL ON CU-CHA SCR ACTIVITY</b> .....	267
<i>Aibolat Koishybay, Chun-Te Kuo, Kyle Groden, Ayman M. Karim, Jean-Sabin McEwen, Daniel F. Shantz</i>	
<b>(560FJ) FIRST-PRINCIPLES STUDIES OF CO OXIDATION ON MGAL<sub>2</sub>O<sub>4</sub> SUPPORTED IRIIDIUM SINGLE ATOMS</b> .....	269
<i>Jiamin Wang, Yubing Lu, Ayman M. Karim, Hongliang Xin</i>	

<b>(560FK) PHOTOCATALYTIC DEGRADATION OF NOX USING CNT-TIO2 NANOCOMPOSITES</b> .....	270
<i>Bailey McAuley, Brian Everhart, Ahmed Abdulrazzaq Qasim Al Mayyahi, Placidus B. Amama</i>	
<b>(560FL) A TEMPORAL ANALYSIS OF PRODUCTS (TAP) STUDY OF PASSIVE NOX ADSORPTION (PNA) ON 1% PD/SSZ-13</b> .....	271
<i>Unmesh Menon, Hari Thirumalai, Bhuiyan Md. Rahman, Abhay Gupta, Michael Harold, Lars C. Grabow</i>	
<b>(560FM) THE EFFECT OF POLYETHYLENE GLYCOL MODIFICATION ON CROX/TIO2 CATALYSTS FOR NO OXIDATION</b> .....	273
<i>Fanyu Meng, Shule Zhang, Qin Zhong</i>	
<b>(560FN) CATALYTIC OXIDATION OF VOLATILE ORGANIC COMPONENTS (VOCS) OVER SILVER NANOPARTICLES DISPERSED IN MONODISPERSE TITANIA NANOSPHERES</b> .....	274
<i>Adarsh Bhat, Alexander Hill, Pallav Jani, Hiroko Ohtani, Kevin Ellwood, Johannes W. Schwank</i>	
<b>(560FO) MECHANISTIC STUDY OF WATER OXIDATION TO OZONE ON RUTILE SNO2 (110) WITH COMPUTATIONAL CHEMISTRY</b> .....	275
<i>Charles Griego, Angela Leo, Karthikeyan Saravanan, John A. Keith</i>	
<b>(560FQ) ENHANCED CO AND C3H6 CONVERSIONS ON SPINEL CATALYSTS: IMPACT OF CATALYST ARCHITECTURE</b> .....	276
<i>Zhiyu Zhou, Michael Harold, Dan Luss</i>	
<b>(560FR) ONE-POT SYNTHESIS OF GOLD EMBEDDED CERIA NANOSHAPES FOR CATALYTIC NO REDUCTION BY CO</b> .....	279
<i>Meijun Li, Xuanyu Zhang, Sheng Dai, Zili Wu</i>	
<b>(560FT) DESIGNING OF A NEW PROTOTYPE TO DETOXYFIFY CARCINOGENIC CR(VI) METAL FROM DRINKING WATER</b> .....	280
<i>Tuhin Kumar Maji, Samir Kumar Pal</i>	
<b>(560FU) CHEMICAL WARFARE AGENT SIMULANT DEGRADATION OVER METAL NANOPARTICLES SUPPORTED ON TIO2 AEROGELS</b> .....	281
<i>Ashley M. Pennington, Paul A. Desario, Catherine L. Pitman, Debra R. Rolison, Jeremy J. Pietron</i>	
<b>(560FV) FABRICATION OF NATURAL CLAY BASED NANOCOMPOSITE MATERIALS FOR ADVANCED CATALYTIC TREATMENT OF ORGANIC POLLUTANTS IN WASTEWATER</b> .....	283
<i>Adolph A. Muleja, Mukuna P. Mubiayi, Bhekie B. Mamba</i>	
<b>(560FW) PHOTOCATALYTIC METAL ORGANIC FRAMEWORK INDUCED AG NANOPARTICLES COMPOSITES FOR PHENOL DETECTION</b> .....	284
<i>Qian Liu, Cerasela Zoica Dinu</i>	
<b>(560FX) ENHANCEMENT OF HETEROGENEOUS SILVER AND COPPER CATALYSTS STABILITY FOR CATALYTIC OZONATION IN WATER</b> .....	285
<i>Wenwen Yang, Zheng Lu, Zhuoran Gan, Muntaseer Bunian, Xiankun Chen, Bernhard Vogler, Steve Heald, Tingting Wu, Yu Lei</i>	
<b>(560FY) IMPACT OF DEFECTS ON THE DECOMPOSITION OF CHEMICAL WARFARE AGENT SIMULANTS IN ZR-BASED METAL ORGANIC FRAMEWORKS</b> .....	286
<i>Minh Nguyen Vo, Jonathan Ruffley, J. Karl Johnson</i>	
<b>(560FZ) FABRICATION AND PERFORMANCE EVALUATION OF PHOTOCATALYTIC REACTOR FOR THE REMOVAL OF MALATHION FROM WASTE WATER</b> .....	287
<i>Sachin Mohan, Mohammed Ijas</i>	
<b>(560GA) INSIGHTS INTO H2S CATALYTIC OXIDATION PERFORMANCE ON ACTIVATED CARBON SUPPORTED CU-BASED CATALYST AT ROOM TEMPERATURE</b> .....	288
<i>Feiyue Fan, Long Zhao, Hong Hou</i>	
<b>(560GB) THE SYNERGISTIC EFFECT OF COPPER AND NIOBIUM SPECIES ON A NOVEL TI-BASED TERNARY OXIDE CATALYST FOR NOX REMOVAL WITH NH3</b> .....	289
<i>Xiaoxiang Wang, Su-Jing Li, Wei Li, Yao Shi</i>	
<b>(560GD) DEGRADATION OF GAS-PHASE O-XYLENE VIA NON-THERMAL PLASMA OVER FE DOPED LAMNO3 CATALYSTS:THE BYPRODUCTS CONTROL</b> .....	291
<i>Tianyu Shou, Yao Shi, Yi He</i>	
<b>(560GE) RECENT PROGRESSES IN ENHANCING THE HYDROTHERMAL STABILITY OF CU-SSZ-13 CATALYST FOR SELECTIVE CATALYTIC REDUCTION OF NOX WITH NH3</b> .....	293
<i>Yongdan Li</i>	
<b>(560GF) CATALYTIC OXIDATION OF VOC – MODELLING, REACTOR DESIGN AND INDUSTRIAL OFF GAS TREATMENT</b> .....	294
<i>Vladimir Brummer, David Jecha</i>	
<b>(560GG) IMPROVED CATALYTIC PERFORMANCE OF (RE, TM) CO-DOPED CERIA FOR CO OXIDATION</b> .....	295
<i>Hyung Jun Kim, Dongjae Shin, Jeong Woo Han</i>	

<b>(560GH) METAL OXIDE CATALYSTS FOR LOW TEMPERATURE NOX ADSORPTION</b> .....	296
<i>Raghav Kaushik Siddavaram, Huawang Zhao, Xiaoyin Chen, Johannes W. Schwank</i>	
<b>(560GI) SURFACE REDOX-ACID PAIR SITES REQUIRED FOR ACHIEVING HIGH PERFORMANCE FOR THE SELECTIVE CATALYTIC REDUCTION OF NOX WITH NH<sub>3</sub></b> .....	297
<i>Li Cao, Shaohua Xie, Ge Song, Xiaodong Wu, Fudong Liu</i>	
<b>(560GK) DESCRIPTOR-BASED MODELING OF CO OXIDATION OVER ALUMINA-SUPPORTED SINGLE METAL ATOMS</b> .....	298
<i>Konstantinos Alexopoulos, Dionisios G. Vlachos</i>	
<b>(560GM) FLAME-SYNTHEZED PD-TIO<sub>2</sub> CATALYST FOR OXYGEN REMOVAL FROM OXY-COAL COMBUSTION FLUE GAS</b> .....	299
<i>Sungyoon Jung, Nathan Reed, Gregory Yablonsky, Pratim Biswas</i>	
<b>(560GP) IN-SITU X-RAY ABSORPTION SPECTROSCOPY (XAS) STUDY ON BIMETALLIC IRON-NICKEL BASED NANOPARTICLES FOR OXYGEN EVOLUTION REACTION (OER) CATALYSIS</b> .....	300
<i>Prashant Acharya, Ryan H. Manso, Laszlo Kekedy Nagy, Sergio I. Perez Bakovic, Jingyi Chen, Lauren F. Greenlee</i>	
<b>(560GQ) STRUCTURE-PROPERTY RELATIONS OF PTWOX/C INVERSE CATALYSTS</b> .....	301
<i>Jiayi Fu, Weiqing Zheng, Shizhong Liu, Cong Wang, Stavros Caratzoulas, Raymond J. Gorte, Dionisios G. Vlachos</i>	
<b>(560GR) ANNEALING STUDIES OF COBALT SUPPORTED ON HYDROTHERMALLY SYNTHESISED CARBON SPHERES FOR FISCHER-TROPSCH SYNTHESIS</b> .....	302
<i>Mahluli Moyo</i>	
<b>(560GS) DESIGN AND EVALUATION OF NANOSTRUCTURED DOPED PEROVSKITE OXYGEN CARRIERS</b> .....	303
<i>Christopher L. Hanselman, Dominic Alfonso, Jonathan W. Lekse, De Nyago Tafen, Christopher Matranga, David C. Miller, Chrysanthos E. Gounaris</i>	
<b>(560GT) SYNTHESIS OF ZEOLITE-ENCAPSULATED METAL NANOPARTICLES VIA A CATIONIC POLYMER-ASSISTED STRATEGY FOR SUBSTRATE-SELECTIVE CATALYSIS</b> .....	304
<i>Hong Je Cho, Bingjun Xu</i>	
<b>(560GU) HIGH PERFORMANCE ENZYMATIC-TRANSESTERIFICATION IN AN ANHYDROUS GAS FLUX USING LIPASE ENCAPSULATED IN GRAPHENE OXIDE AEROGEL</b> .....	305
<i>Weina Xu, Zhongwang Fu, Gong Chen, Zheyu Wang, Yupei Jian, Yifei Zhang, Diannan Lu, Guoqiang Jiang, Jianzhong Wu, Zheng Liu</i>	
<b>(560GV) RATIONAL CATALYST DESIGN: KINETICS PUT INTO ACTION FOR SMALL OPEN DATA</b> .....	306
<i>Pedro S. F. Mendes, Sébastien Siradze, Laura Pirro, Joris W. Thybaut</i>	
<b>(560GW) NOVEL NANOSTRUCTURED TRANSITION METAL OXIDES FOR CATALYSIS</b> .....	312
<i>Yulian He</i>	
<b>(560GX) DEFECT ENGINEERING OF IN-SITU EXSOLVED NANOPARTICLE CATALYSTS ON PEROVSKITE SUPPORTS</b> .....	313
<i>Soham Shah, Samuel Sayono, Kandis L Gilliard Abdul-Aziz</i>	
<b>(560GY) CHARACTERIZATION OF CYCLODEXTRIN-BASED METAL-ORGANIC FRAMEWORKS WITH CATALYST MOLECULES</b> .....	314
<i>Anna Nagai, Wataru Michida, Mina Sakuragi, Katsuki Kusakabe</i>	
<b>(560GZ) SURFACE PHASE DIAGRAMS OF STRONTIUM TITANIUM OXIDE USING AN AUTOMATED AB-INITIO GRAND CANONICAL MONTE CARLO METHOD</b> .....	315
<i>Vignesh Bhethanabotla, Robert Wexler, Andrew M. Rappe</i>	
<b>(560HA) REGENERATION OF P<sub>2</sub>SO<sub>4</sub>ZR<sub>2</sub>Ti/SiO<sub>2</sub> BY HYDROGEN TREATMENT. PART I. SPENT CATALYST CHARACTERIZATION</b> .....	316
<i>Roberto E. Galiasso Tailleur, Carlos Farina, Rough P. Ronaldi</i>	
<b>(560HC) IN SITU SYNTHESIS OF ZN-DOPED ORDERED MESOPOROUS CARBON: STRUCTURE CHARACTERIZATION AND CATALYTIC PERFORMANCE EVALUATION</b> .....	326
<i>Baohe Wang, Huanhuan Han, Jing Zhu, Jing Ma</i>	
<b>(560HD) DEVELOPMENT OF AN ACCELERATED DEACTIVATION PROTOCOL FOR VACUUM GASOIL HYDROCRACKING CATALYSTS</b> .....	327
<i>July Carolina Vivas Báez, Gerhard D. Pirngruber, Alberto Silva Servia, Anne-Claire Dubreuil, David De Jesús Perez Martinez</i>	
<b>(560HE) INVESTIGATION ON CONTROL OF SURFACE REACTIVITY TOWARDS CARBON, OXYGEN, AND HYDROGEN OF INTERMETALLIC COMPOUNDS IN WET REFORMING OF HYDROCARBONS AND OXYGENATES</b> .....	329
<i>Yuanjun Song, Yang He, Siris Laursen</i>	

<b>(560HF) DUAL ROLE OF SURFACTANTS IN ZEOLITE SYNTHESIS AND CATALYST OPTIMIZATION .....</b>	<b>330</b>
<i>Aseem Chawla, Noemi Linares, Rui Li, Rishabh Jain, R. John Clark, James Sutjianto, Jeremy C. Palmer, Javier García-Martínez, Jeffrey D. Rimer</i>	
<b>(560HG) ELUCIDATING THE FACTORS GOVERNING THE ORGANIC-FREE INTERZEOLITE TRANSFORMATION .....</b>	<b>331</b>
<i>Rishabh Jain, Jeffrey D. Rimer</i>	
<b>(560HH) IN SITU ANALYSIS AND DYNAMIC RESPONSE SURFACE MODELING OF ENERGETIC MATERIAL HYDROLYSIS .....</b>	<b>333</b>
<i>Eric Gauthier, Edward Cooke, Peggy Sanchez, Melissa Jablonski</i>	
<b>(560HI) UNDERSTANDING MOLECULAR STRUCTURAL CHANGES IN SULFATED MIXED METAL OXIDES .....</b>	<b>334</b>
<i>Justin Marlowe, Adam Zuber, Aditya Khandare, George Tsilomelekis</i>	
<b>(560HJ) FIN-LIKE ZEOLITE CATALYSTS: A NEW CLASS OF HIERARCHICAL MATERIALS.....</b>	<b>335</b>
<i>Heng Dai, Yufeng Shen, Donglong Fu, Thuy T. Le, Taimin Yang, Matthias Filez, Xiaodong Zou, Bert M. Weckhuysen, Jeffrey D. Rimer</i>	
<b>(560HK) EXPLORATION OF SI-BASED PRECURSOR PYROLYSIS WITH THEORETICAL AND EXPERIMENTAL STUDIES OF SEMICONDUCTING NANOMATERIAL PROPERTIES.....</b>	<b>336</b>
<i>Yeseul Choi, Anjitha S. Geetha, Christian Martin, Guro M. Wyller, Thomas J. Preston, Andrew J Adamczyk</i>	
<b>(560HL) RAMAN-SPECTROKINETICS TO GAIN INSIGHTS ON SUPPORT EFFECTS OF SUPPORTED VANADIUM OXIDE CATALYSTS .....</b>	<b>338</b>
<i>Jorge Moncada, Kaitlyn Lawrence, William R. Adams, Carlos A. Carrero</i>	
<b>(560HM) NITROGEN-DOPED CARBON: A SUPPORT TO SYNTHESIZE ULTRA-SMALL AND STABLE PT-NANOPARTICLES.....</b>	<b>339</b>
<i>Fahim Rahman, Huynh Ngoc Tien, Hector Colon-Mercado, John R. Regalbuta</i>	
<b>(560HN) REACTIONS OF METHYL AND ETHYL FRAGMENTS ON A-CR2O3(10<sup>1</sup>-2) .....</b>	<b>340</b>
<i>Han Chen</i>	
<b>(560HO) COLLOIDAL GOLD NANOPARTICLES FOR CATALYTIC APPLICATIONS .....</b>	<b>341</b>
<i>Chinmay Joshi, Saptarshi Chakraborty</i>	
<b>(560HP) COUPLING THE MAGNETIC AND CATALYTIC PROPERTIES OF FE3O4 VIA SHAPE-CONTROLLED ROUTES AND CR DOPING .....</b>	<b>342</b>
<i>Natalia Da Silva Moura, Bradley Watson, Hunter Simonson, Pragathi Darapaneni, Kerry M. Dooley, James A. Dorman</i>	
<b>(560HQ) SYNTHESIS OF SUPPORTED METAL NANOPARTICLES BY CONTROLLING THE INTERACTION BETWEEN COLLOIDAL METAL NANOPARTICLES AND SUPPORTS.....</b>	<b>343</b>
<i>Laibao Zhang, David Cullen, Kunlun Ding</i>	
<b>(560HS) SYNTHESIS OF WELL-DEFINED HETEROGENEOUS CATALYSTS USING ATOMIC LAYER DEPOSITION .....</b>	<b>344</b>
<i>Bochuan Song, Helena Hagelin-Weaver</i>	
<b>(560HV) INITIAL STAGES OF CHLORIDE ENHANCED DEPASSIVATION OF CHROMIUM PROTECTED LAYER, A DENSITY FUNCTIONAL THEORY STUDY .....</b>	<b>345</b>
<i>Kofi Oware Sarfo, Pratik V. Murkute, Yongfeng Zhang, O. Burkan Isgor, Julie D. Tucker, Liney Arnadottir</i>	
<b>(560HW) ENGINEERING DOPANT POSITION IN CORE-SHELL CeO<sub>2</sub>-ZrO<sub>2</sub> NANOPARTICLES TO CONTROL CATALYTIC ACTIVITY .....</b>	<b>346</b>
<i>Behnam Safavinia, Pragathi Darapaneni, Orhan Kizilkaya, David Cullen, Jarod Larriviere, Kerry M. Dooley, James A. Dorman</i>	
<b>(560HX) ROLE OF SUPPORT REDUCIBILITY IN THE CATALYTIC ACTIVITY OF CO OXIDIZING REACTIONS ON Pd LOADED Cu-DOPED CERIA .....</b>	<b>347</b>
<i>Dongjae Shin, Myeong Gon Jang, Jeong Woo Han</i>	
<b>(560HZ) SEQUENTIAL H<sub>2</sub>-CO PULSE CHEMISORPTION FOR ESTIMATING IN-SITU Ni DISPERSION : APPLICATION ON ALD-COATED CATALYST .....</b>	<b>348</b>
<i>Shaik Afzal, Anuj Prakash, Patrick Littlewood, Tobin J. Marks, Eric Weitz, Peter C. Stair, Nimir Elbashir</i>	
<b>(560IA) KINETIC MODELLING OF THE AMMONIA TEMPERATURE PROGRAMMED DESORPTION OF ZSM-5 .....</b>	<b>349</b>
<i>Rebecca Gibson, Mark Simmons, Athanasios Tsolakis, Hugh Stitt, Stephen Schuyten, Robert Gallen</i>	
<b>(560IB) TO LEACH OR NOT TO LEACH? COMBINED DATA ANALYSIS TO ELUCIDATE THE LEACHING BEHAVIOR OF STRONGLY ACID RESIN SUPPORTED Pd AND PdCO NP CATALYST IN SUZUKI COUPLING.....</b>	<b>353</b>
<i>Beau Van Vaerenbergh, Jeroen Lauwaert, Joris W. Thybaut, Pieter Vermeir, Jeriffa De Clercq</i>	
<b>(560ID) AN AMBIENT PRESSURE XPS STUDY OF METHANE DISSOCIATION AND OXIDATION ON IrO<sub>2</sub>(110).....</b>	<b>356</b>
<i>Rachel Martin, Vikram Mehar, Christopher Lee, Stefano Albertin, Uta Hejral, Lindsay Merte, Edvin Lundgren, Jason F. Weaver</i>	

<b>(560JG) EFFECT OF PD PRECURSORS ON PD/TIO<sub>2</sub> CATALYSTS PREPARED BY DIFFERENT METHODS AND THEIR CATALYTIC ACTIVITY IN HYDROGENATION OF MALEIC ACID.....</b>	357
<i>Ye Eun Kim, Mi Yeon Byun, Jae Ho Baek, Kwan-Young Lee, Man Sig Lee</i>	
<b>(560IE) DEMONSTRATING THE POWER OF CUSTOM MODELING INTEGRATED INTO FLOWSHEET SIMULATION.....</b>	358
<i>Reza Haghpanah, Evan Bergman, Brad Metzler</i>	
<b>(560IF) GENERALIZED ADSORPTION MODELS ON METAL NANOPARTICLES.....</b>	359
<i>James Dean, Michael G. Taylor, Giannis Mpourmpakis</i>	
<b>(560IG) ENHANCING AB INITIO MICROKINETIC MODELS WITH MACHINE LEARNING.....</b>	360
<i>Huijie Tian, Srinivas Rangarajan</i>	
<b>(560IH) CATALYST DESIGN FOR GLYCEROL VALORIZATION THROUGH DATA SCIENCE, FIRST PRINCIPLES MODELING, AND EXPERIMENTAL VERIFICATION.....</b>	361
<i>Shenggang Li</i>	
<b>(560II) COUPLING EXPERIMENTAL KINETICS AND THERMODYNAMIC MODELING WITH IR SPECTROSCOPY AND MACHINE LEARNING FOR FUNDAMENTAL STUDIES AND FAST PRODUCT QUANTIFICATION.....</b>	362
<i>Natalia Rodriguez Quiroz, Joshua Lansford, George Tsilomelekis, Dionisios G. Vlachos</i>	
<b>(560IJ) ELUCIDATING REACTION PATHWAYS THROUGH COMBINED INSIGHTS FROM EXPERIMENTAL AND COMPUTATIONAL HAMMETT ANALYSIS.....</b>	363
<i>Shaama Mallikarjun Sharada, Zhenzhuo Lan</i>	
<b>(560IK) REACTION MECHANISM MODELING OF BY-PRODUCTS IN SEMICONDUCTOR MANUFACTURING PROCESS USING REACTION MECHANISM GENERATOR (RMG).....</b>	364
<i>Dongju Kang</i>	
<b>(560IL) MOLECULAR DYNAMICS SIMULATION OF GRAPHENE OXIDE-ENZYME ASSEMBLY FOR GASEOUS CATALYSIS.....</b>	365
<i>Zhongwang Fu, Gong Chen, Weina Xu, Lu Diannan, Jianzhong Wu, Zheng Liu, Zheyu Wang</i>	
<b>(560IM) THE DEVELOPMENT AND APPLICATION OF NOVEL YOLK@SHELL MATERIALS TO CO<sub>2</sub> RECYCLING.....</b>	366
<i>Cameron Alexander Hurd Price, Laura Pastor-Perez, Tomás Ramirez-Reina, Jian Liu</i>	
<b>(560IN) AN INVESTIGATION INTO THE CATALYTIC CYCLE OF CYTOCHROME P-450 INVOLVING 1-N-ALKYL-3-METHYLIMIDAZOLIUM CATIONS AS SUBSTRATE.....</b>	368
<i>Atiya Banerjee, Jindal K. Shah</i>	
<b>(560IO) DESIGN, SYNTHESIS AND EVALUATION OF IR@PT BIMETALLIC CATALYSTS FOR HIGH TEMPERATURE DECOMPOSITION OF SO<sub>3</sub> TO SO<sub>2</sub> IN THE HYS PROCESS FOR THERMOCHEMICAL WATER SPLITTING.....</b>	369
<i>Weijian Diao, John Meynard M. Tengco, Fahim Rahman, John R. Monnier, John R. Regalbuta, Daniel M. Ginosar, Birendra Adhikari, Claudio Cornale</i>	
<b>(560IQ) SOLID-SOLID REACTIONS: A VARIATION ON A CLASSICAL THEME.....</b>	370
<i>Minakshree Phutke, Akkihebbal K. Suresh</i>	
<b>(560IR) MODELING OF TRANSPORT-KINETIC INTERACTIONS IN VARIOUS DESIGN CONFIGURATIONS OF EGG-SHELL CATALYST PARTICLES.....</b>	371
<i>Anuradha Nagaraj, Patrick L. Mills</i>	
<b>(560IS) MECHANISM OF EFFLUENCE OF INTERNAL SUBSTANCE FROM PLURONIC MICELLES BY EXTERNAL STIMULI.....</b>	373
<i>Daisuke Kobayashi, Daiki Takemi, Atsushi Shono</i>	
<b>(560IT) DESI-MS BASED HIGH THROUGHPUT REACTION SCREENING TO GUIDE BULK/MICROFLUIDIC CHEMISTRY: A CORRELATION ANALYSIS BETWEEN DROPLET AND BULK/MICROFLUIDIC REACTION SYSTEMS.....</b>	374
<i>Botond Szilagyi, Zinia Jaman, David Logsdon, Harrison S. Ewan, Christina E. Ferreira, Tiago Jp Sobreira, David H. Thompson, Robert G. Cooks, Zoltan K. Nagy</i>	
<b>(560IU) UNDERSTANDING THE PROMOTIONAL EFFECTS OF ACIDS AND HALIDES ON DIRECT SYNTHESIS OF H<sub>2</sub>O<sub>2</sub> AND THEIR EFFECT ON THE NATURE OF CATALYTICALLY ACTIVE PD.....</b>	376
<i>Pranjali Priyadarshini, David Flaherty</i>	
<b>(560IV) STUDYING HETEROGENEOUS COBALT CATALYSTS FOR SULFITE OXIDATION TO COMPARE WITH THEORETICAL MODELS.....</b>	378
<i>Zachary Watson, Joseph Veglak, Gregory T. Neumann</i>	
<b>(560IW) DISTINGUISHING HOMOGENEOUS AND HETEROGENEOUS CATALYTIC PATHWAY IN CUPROUS OXIDE NANOPARTICLE-CATALYZED C-C COUPLING REACTIONS.....</b>	379
<i>Ravi Teja Addanki Tirumala, Marimuthu Andiappan</i>	



<b>(560IX) SYNTHESIS OF TETRAPROPYLAMMONIUM BROMIDE (TPABR)</b> .....	380
<i>Utkarsh Maheshwari, Vinit Ponshe, Ashwin Ponnapan</i>	
<b>(560IZ) BIFURCATION ANALYSIS OF COUPLED HOMOGENEOUS-HETEROGENEOUS REACTIONS IN MONOLITH REACTORS</b> .....	381
<i>Bhaskar Sarkar, Vemuri Balakotaiah, Meet Shah</i>	
<b>(560JA) VALIDATED CFD SIMULATIONS OF A BENCH-SCALE FIXED BED FISCHER-TROPSCH REACTOR</b> .....	382
<i>Jianqi Shen, Wei Hua Ho, Xinying Liu, Diane Hildebrandt</i>	
<b>(560JB) TWO-DIMENSIONAL HETEROGENEOUS REACTOR MODEL FOR AN EXOTHERMIC REACTION EXHIBITING DEACTIVATION BY FOULING: MODELING AND COMPUTATIONAL STRATEGY</b> .....	383
<i>Javier Ibáñez Abad, Jeroen Poissonnier, Joris W. Thybaut</i>	
<b>(560JC) MODELING OF POLYMERIZATION OF METHYL METHACRYLATE IN HOMOGENEOUS SYSTEMS AS A FRAMEWORK FOR PROCESSES IMPROVEMENTS</b> .....	388
<i>Antonio C. O. Intini, Reinaldo Giudici</i>	
<b>(560JD) TRIBUTYL CITRATE PRODUCTION FROM CALCIUM CITRATE: SOLID-LIQUID REACTION KINETICS</b> .....	389
<i>Andres F. Cabeza, Alvaro Orjuela</i>	
<b>(560JE) MECHANISM AND KINETICS OF METAL DISSOLUTION IN NITRIC ACID</b> .....	390
<i>G. Vamsi Vikram, S. Pushpavanam</i>	
<b>(560JF) DYNAMIC CATALYSIS AND SURFACE RESONANCE FOR TURNOVER FREQUENCY ENHANCEMENT</b> .....	393
<i>M. Alexander Ardagh, Omar A. Abdelrahman, Qi Zhang, Paul Dauenhauer</i>	
<b>(574A) HIERARCHICAL “NANOROLL” LIKE MOS<sub>2</sub>/Ti<sub>3</sub>C<sub>2</sub>TX HYBRID WITH HIGH ELECTROCATALYTIC HYDROGEN EVOLUTION ACTIVITY</b> .....	394
<i>Jiapeng Liu, Yizhe Liu, Danyun Xu, Yuanzhi Zhu, Wenchao Peng, Yang Li, Fengbao Zhang, Xiaobin Fan</i>	
<b>(574C) COPPER-CARBON NANOMATERIAL COMPOSITE COATINGS FOR DRAMATIC IMPROVEMENTS IN PHASE CHANGE HEAT TRANSFER</b> .....	395
<i>Anju Gupta, Aniket Rishi</i>	
<b>(574D) INVESTIGATION OF COAL PLASTIC COMPOSITE MATERIALS AS A SUSTAINABLE BUILDING MATERIAL ALTERNATIVE</b> .....	396
<i>Jason Trembly, Keerti Kappagantula, Yahya Taha Ayed Al Majali, Clive Tafadzwa Chirume</i>	
<b>(574E) COLLOIDAL, NANOELECTRONIC STATE MACHINES BASED ON 2D MATERIALS AS SMART AEROSOLIZED PROBES AND RECORDERS</b> .....	397
<i>Volodymyr Koman, Pingwei Liu, Daichi Kozawa, Albert Tianxiang Liu, Michael Strano</i>	
<b>(574F) HEXAVALENT CHROMIUM REMOVAL FROM WATER VIA COMPOSITE NANOFIBERS</b> .....	398
<i>Yang Lu, Jesse Horne, Joshua Perch, Zhanhu Guo, Evan K. Wujcik</i>	
<b>(637A) BUILDING MOMENTUM FOR SUSTAINABLE BEHAVIORS IN DEVELOPING REGIONS USING LOCALLY MANAGED DECENTRALIZED CIRCULAR ECONOMY PRINCIPLES</b> .....	399
<i>Jeffrey R. Seay, Chandni Joshi</i>	
<b>(637E) SUPPLY CHAIN OPTIMIZATION OF A LOCALLY-MANAGED DECENTRALIZED SOLUTION FOR CONVERSION OF WASTE PLASTIC TO FUEL IN DEVELOPING REGIONS</b> .....	400
<i>Chandni Joshi, Jeffrey R. Seay</i>	
<b>(637C) THERMOCHEMICAL ENERGY STORAGE INTEGRATION WITH THERMOELECTRIC POWER GENERATION</b> .....	401
<i>Renuka Bhatt, Griffin S. Drake, Nick Auyeung</i>	
<b>(637D) TECHNO-ECONOMIC ANALYSIS AND LIFE CYCLE ASSESSMENT OF DECENTRALIZED PREPROCESSING SYSTEM FOR FAST PYROLYSIS BIOREFINERIES WITH BLENDED FEEDSTOCKS IN THE SOUTHEASTERN USA</b> .....	402
<i>Kai Lan, Longwen Ou, Sunkyu Park, Stephen S. Kelley, Burton C. English, Yuan Yao</i>	
<b>(637B) AMMONIA DECOMPOSITION TO PRODUCE HYDROGEN USING CHEMICAL LOOPING APPROACHES: CONSIDERATIONS AND RESULTS FOR HIGH PRESSURE OPERATION</b> .....	404
<i>Mandar Kathe, Deven Baser, Michael Petrecca, L.-S. Fan</i>	
<b>(661A) SYNTHESIS AND PERFORMANCE EVALUATION OF NEW BLEACH ACTIVATORS</b> .....	405
<i>Xue (Ida) Chen, Ziyuan Song, Jianjun Cheng, Steve King</i>	
<b>(661B) SUSTAINABLE PRODUCT DESIGN: A LIFE-CYCLE APPROACH</b> .....	406
<i>Xiang Zhang, Lei Zhang, Ka Y Fung, Bhavik R. Bakshi, Ka Ming Ng</i>	

<b>(661C) COMBINED LIFE CYCLE ANALYSIS AND ENVIRONMENTAL RISK ASSESSMENT AS A TOOL TO EVALUATE THE CIRCULAR ECONOMY OF PLASTICS</b> .....	407
<i>Rachael H. Rothman, Rukayya Ibrahim Muazu, Jonathan Howse, Lorraine Maltby</i>	
<b>(661D) SUSTAINABILITY POTENTIAL OF MELAMINE NON-WOVEN PREPARED AS A HIGH-PERFORMANCE MATERIAL FOR THERMAL AND ACOUSTIC APPLICATIONS</b> .....	408
<i>Annamaria Vujanovic, Lidija Cucek, Damjan Murn, Marjan Ješelnik, Christoph Kindler, Igor Mihelic, Simona Lavric</i>	
<b>(661E) SHAPING TECHNOLOGY INNOVATION: A MULTISTAGE, MULTISCALE SUSTAINABILITY ASSESSMENT AND DECISION SUPPORT FRAMEWORK</b> .....	409
<i>Raha Gerami, Yinlun Huang</i>	
<b>(691A) ESTIMATING TRUE COST OF IONIC LIQUIDS USING MONETIZATION</b> .....	410
<i>Husain A. Baaqel, Ismael Diaz, Jason P. Hallett, Benoit Chachuat, Gonzalo Guillén-Gosálbez, Ángel Galán Martín</i>	
<b>(691B) OPTIMISED ACTIONS TO ENGAGE COOPERATIVE PARTNERSHIPS FOR AN EFFECTIVE CLIMATE CHANGE MITIGATION</b> .....	411
<i>Ángel Galán Martín, Carlos Pozo Fernández, Adisa Azapagic, Ignacio E. Grossmann, Niall Mac Dowell, Gonzalo Guillén-Gosálbez</i>	
<b>(691C) ACHIEVING CAMPUS CARBON NEUTRALITY - APPLICATION OF SUSTAINABLE ENGINEERING METHODS TO EVALUATE AND IDENTIFY TECHNICAL AND ECOLOGICAL SOLUTIONS</b> .....	412
<i>Michael Charles, Bhavik R. Bakshi</i>	
<b>(691D) ATTRIBUTIONAL TO CONSEQUENTIAL LIFE CYCLE ASSESSMENT – STEPS TOWARD A UNIFIED FRAMEWORK</b> .....	414
<i>Tapajyoti Ghosh, Kyuha Lee, Bhavik R. Bakshi</i>	
<b>(744A) APPLICATION OF GREEN-ACCOUNTING METHODS FOR THE ASSESSMENT OF THE CHICAGO METROPOLITAN AREA'S SUSTAINABILITY TRENDS</b> .....	416
<i>Bayou Demeke, Andres Argoti</i>	
<b>(744C) SUSTAINABILITY METRICS FOR MANAGING AND PROCESSING FOOD WASTES</b> .....	417
<i>Moises Gutierrez, Larry Erickson, Sigifredo Castro, Bin Liu</i>	
<b>(744D) SUSTAINABLE SOLUBLE COFFEE PRODUCTION USING DYNAMIC MEMBRANE PROCESSES</b> .....	418
<i>Michael Vincent Laurio, C. Stewart Slater, Mariano J. Savelski</i>	
<b>(744E) SUSTAINABILITY ASSESSMENT: UNCERTAINTY HANDLING AND IMPACT ON DECISION MAKING</b> .....	419
<i>Raha Gerami, Yinlun Huang</i>	
<b>(744F) STATISTICAL ANALYSIS OF STREAMLINED PROCESS SIMULATION-BASED GATE-TO-GATE ENERGY USE FOR CHEMICAL REACTIONS AND SEPARATIONS</b> .....	420
<i>Abhijeet Parvatker, Matthew J. Eckelman</i>	
<b>Author Index</b>	