

# **Fuels and Petrochemicals Division**

Held at the 2024 AIChE Annual Meeting

San Diego, California, USA  
27-31 October 2024

ISBN: 979-8-3313-1658-7

**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© (2024) by AIChE  
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

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

### **ADVANCES IN BIOFUELS PRODUCTION AND ALTERNATIVE FUELS I**

134a Harmonized Cost and Availability Estimates for Emerging Fuels and Energy Carriers .....	1
<i>Doris Oke, Troy Hawkins, John Field, Ling Tao, Paige Jadun, Saurajyoti Kar, Krishna Reddi, Udayan Singh</i>	
134b Sustainability Assessment of Grass to Sustainable Fuel Pathways.....	9
<i>Pallavi Dubey, Lisa Schulte, Mark M. Wright</i>	
134c Modeling and Analysis of Sustainable Aviation Fuel Production Pathways.....	10
<i>Pratyush Agarwal, Zhen Hou, Lili Yu, Lingxiang Li, Pushpesh Sharma, Darin Campbell, Shu Wang</i>	
134d Comparing Ways to Incorporate Biomass into E-Fuel Production .....	11
<i>Simone Mucci, Alexander Mitsos, Dominik Bongartz</i>	
134e HeatPath™ Catalyst Technologies and DETCHEM™ Accessible Simulation Tools to Produce Sustainable Aviation Fuels.....	13
<i>Anna L. Tonkovich, Eric Daymo, Yong Wang, Cody Lockhart, Matthew Seabaugh, Akash B. Shirasath, Matthias Hettel, Olaf Deutschmann</i>	
134f Process Design for the Conversion of Lignocellulosic Biomass into Sustainable Aviation Fuel .....	25
<i>Nurul F. P. Sulaiman, Hyerim Kim, Kyeongsu Kim</i>	

### **ADVANCES IN PETROLEUM PRODUCTION AND REFINING I**

28a Kinetics and Mechanism of Multiscale Formation and Inhibition in Oilfield Industries.....	27
<i>Glavic Tikeri, Ali Alshami</i>	
28b Use of Nanoparticles to Control Formation Damage Due to Fines Migration in the Production - State of the ART .....	28
<i>Edwars Naranjo, Lourdes Orejuela-Escobar, Inés Hernández</i>	
28c Low-Temperature Demulsification of High Waxy and High Water Cut Pickering Crude Oil Emulsion.....	44
<i>Vidhya Vijaykumar, Jyoti Seth, Vinay Juvekar, Rochish Thaokar, Pooja Verma</i>	
28d Controlled Release of Asphaltene Inhibitors from Nanomaterials in Oil and Gas Production.....	46
<i>Taeyoung Chang, Shuhao Liu, Chuxin Lei, Taehyung Park, Po-Wei Huang, Craig Klevan, Kurt Pennell, Linda Abriola, Guihua Yu, Keith P. Johnston</i>	
28e Effect of Normal Alkanes in the Solubility and CO <sub>2</sub> Thickening Effect of Poly-1-Decene Olygomer for IOR Application.....	47
<i>Tomás Chávez-Miyauchi, Abbas Firoozabadi</i>	
28f A Novel Core Annular Flow Inducing Device for Energy-Efficient Transportation of High Viscous Oil .....	48
<i>Ekta Tayal, Sneh Singh, Sayan Halder, Gargi Das, Chirodeep Bakli, Subhabrata Ray</i>	
28g Paraffin Deposition in Stratified Gas and Oil Production Lines.....	51
<i>Abdulaziz Alhejaili, Elijah Bell, Nagu Daraboina</i>	

28h Towards an Integrated Wide Approach for Sustainable Upstream Field Recovery .....	52
<i>Shakeel Ramjanee</i>	
28i Machine Learning on Heterogeneous Data Sets of Adsorption Energies .....	60
<i>Avery Hill, Gbolade Kayode, Matthew Montemore</i>	
28j CO <sub>2</sub> -Soluble Wettability-Altering Surfactants for CO <sub>2</sub> Huff-And-Puff in Fractured Formations .....	61
<i>Abdullah Shaheer, Lauren Burrows, Angela Goodman, Deepak Tapriyal, Foad Haeri, Robert M. Enick</i>	
28k Formulation and Evaluation of Nanofluids for Enhanced Oil Recovery in Tight Carbonate Reservoirs: A Laboratory Study .....	63
<i>Fatemah Al-Shareedah, Osamah Alomair, Abdulaziz Al-Dhwaihi, Nyeso Azubuike</i>	
28l Evaluation of Locally Developed Zwitterionic Surfactants for Enhanced Oil Recovery Application in Harsh Reservoirs.....	64
<i>Muhammad Israr, Masooma Nazar, Syed M. S. Hussain, Muhammad S. Kamal, Mohammad Alotaibi, Mohanad Fahmi</i>	

## **DEVELOPMENTS IN ALTERNATIVE FUELS AND ENABLING TECHNOLOGIES**

476b Electro-Biodiesel Empowered by Co-Design of Microorganism and Electrocatalysis .....	65
<i>Kainan Chen, Peng Zhang, Yayun Chen, Chengcheng Fei, Jiali Yu, Jiahong Zhou, Susie Dai, Joshua Yuan</i>	
476c Development of a Soft Sensor for Intensified Ethanol Fermentation Process using Deep Learning and Augmented Dataset.....	66
<i>Hyun Kwon, Elmer C. Rivera, Celina K. Yamakawa, Carlos Rosell</i>	
476d Novel Dimethyl Ether Production Technology - Green Alternative for Diesel Engine .....	67
<i>Andrzej Rogala</i>	
476e Performance and Cost Analysis of Fueling Heavy-Duty Hydrogen Fuel-Cell Electric Vehicles.....	69
<i>Hla Tun, Krishna Reddi, Amgad Elgowainy</i>	
476f Design, Modeling, and Eco-Technoeconomic Analysis of Ammonia Co-Firing in a Natural Gas Combined Cycle Plant.....	70
<i>Haoxiang Lai, Lingyan Deng, Guiyan Zang, Angiras Menon, Emre Gencer, Ahmed Ghoniem, Robert J. Stoner</i>	
476h Insights into the Deep-Sea Gas Hydrate Dissociation in the Indian Offshore: An Integrated Study of the Mechanistic, Environmental, and Economic Dynamics.....	71
<i>Dibyaruup Majumdar, Sanjay M. Mahajani</i>	
476i Comparable Techno-Economic Analysis of Wet Waste Hydrothermal Liquefaction with Different Biocrude Upgrading Strategies .....	72
<i>Shuyun Li, Yuan Jiang, Daniel Santosa, Karthikeyan Ramasamy, Huamin Wang, Andrew J. Schmidt, Michael R. Thorson</i>	

## **WASTE FEEDSTOCKS TO FUELS AND PETROCHEMICALS II**

206a Plant-Wide Modeling and Techno-Economic Analysis of Microwave-Assisted Gasification Process for H <sub>2</sub> Generation using a Mixed Feedstock of Biomass and Plastics.....	73
<i>M. Emdadul Haque, Opeyemi Ogunniyan, Pranali Muley, Ashraf Abedin, Dushyant Shekhawat, Debangsu Bhattacharyya</i>	

206b Closing the Loop on Polystyrene using Chemical Recycling: Thermodynamic, Economic, and Emissions Analysis.....	75
<i>Michael Timko, Madison R. Reed, Bernardo C. Dominguez, Elizabeth Belden, Nikolaos Kazantzis</i>	
206c Plastic Derived Oil and Bio Feedstock Integration into Refineries: The Key to Unlocking Circular Polymers at Scale .....	76
<i>Rasha Daadoush, Maria Soliman, Vishvedeep Bhat, Nicolas Goyheneix</i>	
206d Sustainable Aviation Fuel from Municipal Solid Waste via Methanol Pathway.....	77
<i>Francesca Pierobon, Steven Phillips, Dilara Goreke, Udishnu Sanyal, Mond F. Guo, Karthikeyan Ramasamy, Yuan Jiang</i>	
206e Life Cycle Analysis of Closed Looped Plastics Waste to Olefin via Process Simulation .....	78
<i>Wajid Shaik, Ghoncheh Rasouli</i>	
206f How Much is Surface Dopant Enough to Maximize CO <sub>2</sub> -to-Liquid Chemicals Conversion at Industrially Relevant Current Density? .....	80
<i>Thuy D. N. Phan, James Ellis, Anantha V. Nagarajan, Bret H. Howard, Giannis Mpourmpakis, Douglas Kauffman</i>	
206g Catalytic Hydrodeoxygenation of Bio-Oil Produced from Co-Pyrolysis of Biomass and PET Plastic Waste.....	81
<i>Janaki Komandur, Kaustubha Mohanty, Vinu Ravikrishnan</i>	
206h Production of Propylene from Polypropylene Waste via Direct Microwave Catalytic Upcycling .....	82
<i>Chunlin Luo, Brandon Robinson, Jianli Hu, Yuxin Wang</i>	

## **DEVELOPMENTS IN SHALE GAS AND NATURAL GAS**

645a Modeling and Simulation for the Natural Gas Midstream Value Chain .....	83
<i>Qiang Xu, Parthkumar Babariya, Jatin Sutariya</i>	
645d Technoeconomic Framework of Natural Gas Pyrolysis as an Alternative to Flaring and Venting in the Oil Extraction Sector.....	84
<i>Silvia Pelucchi, Paolo Mocellin, Federico Galli</i>	
645f Magnetic Surfactants for Cost-Effective Control of Shale Swelling in Drilling Fluids .....	87
<i>Syed M. S. Hussain, Muhammad S. Kamal, Mobeen Murtaza, Shirish Patil</i>	

## **DEVELOPMENTS IN ALTERNATIVE FUELS AND ENABLING TECHNOLOGIES II**

535a Large-Scale CO <sub>2</sub> Utilization for Production of Methanol in Carbon-Intensive Jurisdictions .....	88
<i>Yurley K. A. Jaimes, Jubil Joy, Amit Kumar</i>	
535b Highly Selective Synthesis of Liquid Petroleum Gas from CO <sub>2</sub> Hydrogenation Over Czza/β-Zeolite Catalyst.....	89
<i>Kaiying Wang, Shiguang Li, Miao Yu, Xinhua Liang</i>	
535c Development of Property-Based Models for the Estimation of the Net Heat of Combustion of Aviation Fuels.....	90
<i>Hasan Mashni, Benedict T. Enderle, Uwe Bauder, Georg Eckel, Patrick C. Le Clercq</i>	

535d Study on Single-Step Hydrogenation of Soybean Oil for Biofuel with ZSM-5 Supported Nickel-Molybdenum Bimetallic Catalysts .....	98
<i>Yu-Hsuan Cheng, Bing-Hung Chen, Duu-Jong Lee</i>	

535e Well-to-Wake Cost and Emissions Assessments for Iron Ore Shipping in the Western Australia–East Asia Green Corridor .....	100
--	-----

*Christopher Douglas, Santosh Shanbhogue, Haoxiang Lai, Mohammad Ostadi, Ahmed Ghoniem, Guiyan Zang*

535g Electrochemical Control and Modulation of the Flammability of Ionic Liquid Fuels.....	101
<i>Prithwish Biswas, Afrida Anis, Michael Zachariah</i>	

535h Synthesis, Characterization, and Performance of Alkyl Levulinate-Diesel Blends.....	102
<i>Sampath Karunaratne, Scott Eaton, Ravikant Patil, Sampath Gunukula, Clayton Wheeler</i>	

535i Low-Temperature Fabrication of Dense Ba(Zr,Y)O <sub>3</sub> Coating via Sol-Gel Processes for Metal-Supported Protonic Ceramic Fuel Cells .....	103
<i>Hyunghoon Song, Jaeseok Lee, Joongmyeon Bae</i>	

### **INTEGRATED BIREFINERIES: TECHNOLOGIES AND TEA/LCA**

328a Techno-Economic Assessment of Biofuel Production from the Hydrothermal Liquefaction of Macroalgae .....	104
<i>Micheal Asama, Fernando Resende, Aaditya Khanal</i>	

328b Corn Stover to High Value Carbon for Energy Storage.....	105
<i>Khang Huynh, Bharathkiran Maddipudi, Anuradha Shende, Rajesh Shende</i>	

328c Techno-Economic Assessment of Sustainable Biolubricant Production from Lignin and Waste Cooking Oil .....	106
<i>Elena Barbera, Andrea Guarise, Randy Maglinao, Sandeep Kumar</i>	

328d Integrated Processing of Agriculture Residue: Techno-Economic Analysis and Life Cycle Assessment .....	107
<i>Bharathkiran Maddipudi, Khang Huynh, Zoe Fickbohm, Anuradha Shende, John E. Aston, Sandeep Kumar, Ram Gupta, Rajesh Shende</i>	

328e Opportunities of Bio-Naphtha Beyond Gasoline Blend: A Comprehensive Techno-Economic and Life-Cycle Analysis .....	108
<i>Shuang Xu, Yuan Jiang, Dilara Goreke, Huamin Wang</i>	

328f Surfactant Assisted Hydrothermal Liquefaction for Oil and Hydrochar .....	109
<i>Bharathkiran Maddipudi, Khang Huynh, Zoe Fickbohm, Anuradha Shende, Rajesh Shende</i>	

328g the Biofine Process: Carbon-Negative Fuels and Chemicals - A Status Report .....	110
<i>Stephen Fitzpatrick</i>	

### **POSTER SESSION: FUELS AND PETROCHEMICALS DIVISION**

379a Modular Processing of Flare Gas for Hydrogen and Carbon Nanofibers .....	112
<i>Jessica Hauck, Kent J. Warren, Samantha Harshberger, Boning Wang, Andrew Broerman, Theodore Champ, Mija H. Hubler, Alan W. Weimer</i>	

379b Optimization of Process Parameters in Resin-Wafer Electrodeionization for Enhanced Gluconic Acid Recovery from Hemicellulose Hydrolysate.....	113
<i>Olabode Akindolani, Jamie Hestekin</i>	
379c Application of Ethanol Reforming in Internal Combustion Engines: Evaluation of Efficiency .....	114
<i>Daniel P. P. Rodrigues, Silvio S. Sumioshi, Gustavo V. Olivieri, Ricardo Torres</i>	
379d an Updated Chemical Kinetic Model of NH <sub>3</sub> and NH <sub>3</sub> /H <sub>2</sub> Oxidation using Reaction Mechanism Generator (RMG).....	116
<i>Chuangchuang Cao, Alon G. Dana, Kfir Kaplan, Angiras Menon, Kevin Spiekermann, William H. Green</i>	
379e Process Design of Oxy-Fuel Combustion Combined Cycles for Carbon Capture using LNG Regasification.....	117
<i>Wei Wu, Yu-Hsun Tsai</i>	
379f Fast Pyrolysis of Raw and Acid-Washed Cattle Manure in a Fluidized Bed Reactor for the Production of Bio-Oil.....	122
<i>Jae-Rak Jeon, Syarif Hidayat, Jinsoo Kim, Hyun-Tae Hwang, Seung-Soo Kim</i>	
379g Integrated Production of Methanol and Hydrogen: A Decarbonization Framework for Petrochemical Industry.....	123
<i>Usama Ahmed</i>	
379h Synthesis of Surfactants and Evaluation of Their Potential for Enhanced Oil Recovery Applications.....	124
<i>Masooma Nazar, Muhammad Israr, Syed M. S. Hussain, Muhammad S. Kamal, Mohammad Alotaibi, Mohanad Fahmi</i>	
379i Reaction Behaviors During Induction Period of Crox for Fluidized-Bed Propane Dehydrogenation .....	125
<i>Dae S. Park, Hawon Park, Yong-Ki Park</i>	
379j Hydrogenation of Pyrolysis Fuel Oil Over Pt/MCM-41 Catalysts .....	126
<i>Jong-Ki Jeon, Seung Kyo Oh, Sooyeon Hong, Yehee Kim, Seyeon Won</i>	
379k Catalytic Oxidation Desulfurization of Dibenzothiophene by Bronsted-Lewis Acid Ionic Liquids.....	129
<i>Ran Liu, Yali Yao, Xinying Liu, Fatang Li</i>	
379l Novel Technological Roadmap from Fossils to Clean and Cheap Fuels Manufactured Domestically and Distribute .....	131
<i>David Judbarovski</i>	
379m Development of a Calculator for Gibbs Energy of Formation.....	133
<i>Isaac Gamwo</i>	
379n Sustainable Solution for the Effective Removal of Poly Aromatic Hydrocarbons from Petroleum Fractions.....	134
<i>Zainab Alaithan, Mohammed Alkhunaizi, Emad Shafī, Nadrah Alawani</i>	
379p Electrohydrodynamic Processing in Biosolvents Production from Waste Polylactide .....	135
<i>Sabina Wilkanowicz, Peng-Kai Kao</i>	

## **PROPERTIES AND PHASE EQUILIBRIA FOR FUELS AND PETROCHEMICALS**

267a Modeling Vapor Liquid Equilibrium in Novel Binary Mixtures using Machine Learning.....	136
<i>Mohammad Alam, Charles McGill</i>	
267b Improving the Thermodynamic Consistency Between Vapor Pressure, Heat of Vaporization, and Liquid and Ideal Gas Heat Capacity Predictions for Associating Chemicals .....	137
<i>Cassandra Guffey, Neil Giles, Thomas Knotts, Wade V. Wilding</i>	
267c Assessing the Accuracy of Predicting the Cloud Point of Biodiesel using Ideal Solution Theory .....	138
<i>Anthony Malshyti, Michael Senra</i>	
267d A Novel Method for Correlating and Extrapolating Liquid Viscosity from Near the Melting Point to Near the Critical Point using a Model Based on a Cotangent Function. ....	139
<i>Brayton Young, Neil Giles, Thomas Knotts, Wade V. Wilding</i>	
267e Increasing the Yield of High-Value, Liquid-Crystalline-Forming Pyrene Pitch Oligomers.....	140
<i>Jack Schmidt, Mark Thies</i>	
267f Prediction of the Density and Viscosity of Visbroken Heavy Oils using Regular Solutions and Expanded Fluid Models.....	141
<i>Jose A. B. Alcazar, Camilo A. L. Lago, Amirabbas Abbaspour, Florian F. Schoegl, Harvey W. Yarranton</i>	
267g Phase Behavior Modeling of Gasoline Systems.....	142
<i>Xiangwei Liu</i>	
267h Prediction of Cetane Number using Molecular Graph Modularity and Functional Groups in Artificial Neural Networks .....	143
<i>Cristopher Arvizu, Jorge Aburto, Elias Martinez-Hernandez</i>	

## **RECENT DEVELOPMENTS IN FUEL PROCESSING FOR HYDROGEN PRODUCTION I**

477a Microwave Catalytic Decomposition of Natural Gas to Clean Hydrogen and Carbon Nanomaterials via Modular Process Intensified Production.....	144
<i>Changle Jiang, Jianli Hu, Brandon Robinson, Juan A. Lopez-Ruiz, Yuan Jiang, Robert A. Dagle, Sherafghan Iftikhar, Luke Neal, Fanxing Li, Xinyuan Zhu, Wenyuan Li, Xingbo Liu, George Skoptsov</i>	
477b Effect of Support on Iron-Based Catalyst Toward CO <sub>2</sub> -Free H <sub>2</sub> Production from Methane Pyrolysis .....	146
<i>Divakar R. Aireddy, Daniel Haynes</i>	
477d Induction-Heated Molten Salt Reactor for Methane Pyrolysis .....	147
<i>Zhennan Ru, Chenghao Wan, Calvin Lin, Connor Cremers, Pinak Mohapatra, Dorothy Mantle, Ariana Hofelmann, Juan Rivas, Jonathan Fan</i>	
477e Economic Comparison of Methane Pyrolysis Processes for Hydrogen Production Based on Various Molten-Metal Catalysts .....	149
<i>Semie Kim, Young-Il Lim, Uen-Do Lee, Youn-Bae Kang</i>	
477f Hydrogen from Natural Gas with No Greenhouse Gas Emissions.....	150
<i>Eric D. Wachsman</i>	

477g Palladium Membrane Technology for Low-Carbon Hydrogen Production.....	151
<i>Alaa Albasry, Hassan Khalaf, Mohamed Draze, Abdulbari Alqarni, Minseok Bae, Stephen Paglieri, Aadesh Harale</i>	
477h Life Cycle Assessment of Methane Pyrolysis Through a 3-Stage Catalytic Membrane System .....	152
<i>Yuming Wen, Iskandar Halim, Jie Chang, Sibudjing Kawi, Chi-Hwa Wang</i>	

### **VALUE-ADDED CHEMICALS FROM NATURAL GAS**

597a Sustainable Chemicals Program Leveraging Stranded and Underutilized Natural Gas as Feedstocks .....	153
<i>Daniel Haynes, Jared Ciferno</i>	
597c Microwave-Driven Non-Oxidative Methane Coupling using Mo/CeO <sub>2</sub> Catalyst for Ethylene Production: Insight into the Effect of Metal Promoters.....	155
<i>Brhanu K. Desta, Alazar Araia, Jianli Hu</i>	
597b Conceptual Design of a Novel Industrial Complex for Simultaneous Production of Electricity, Urea, and LNG with Extremely Low Greenhouse Gas Emissions .....	157
<i>Ying Liu, Song Wang, Qiang Xu, Yinlun Huang</i>	
597d Non-Catalytic Direct Partial Oxidation of Methane to Methanol in a Wall-Coated Microreactor .....	158
<i>Kelly Cohen, Justin Blanchard, Paul Rodriguez, Kevin Kelly, James Dorman, Kerry Dooley</i>	
597f Efficient Conversion of Ethane and Propane at Room Temperature and Ambient Pressure .....	159
<i>Wenxuan Liu, Qi Lu</i>	
597g Effect of Titania Structure and Particle Size on Titania-Supported Iridium-Ruthenium Catalysts in the Oxidative Transformation of Methane .....	160
<i>Helena Weaver, Li-Yin Hsiao</i>	
597h Regulating Lattice Oxygen Property of TiO <sub>2</sub> Redox Catalyst for Enhanced Oxidative Dehydrogenation of Ethane .....	161
<i>Xiaoqiao Zhang</i>	

### **WASTE FEEDSTOCKS TO FUELS AND PETROCHEMICALS I**

74a Experimental Study of Intrinsic Kinetics for the Pyrolysis of Polypropylene in a Microreactor using Detailed Compositional and Principal Component Analysis .....	162
<i>Barbara A. Perez, Hilal E. Toraman, Varaha Jonnalagedda</i>	
74b Strategies to Decarbonize Top 5 Industrial Chemicals and Its Implication on Greenhouse Gas Emissions .....	164
<i>Arpit Bhatt, Ling Tao</i>	
74c Hydrogen Enhanced Conversion of Municipal Solid Waste to Methanol using Natural Gas Pyrolysis: Potential Net GHG Reduction Impacts.....	165
<i>Mohammad Ostadi, Daniel R. Cohn, Guiyan Zang, Leslie Bromberg</i>	
74d Conversion of Biomass-Derived Compounds into Jet Fuel-Range Hydrocarbons using Hierarchical Zeolite Catalysts .....	166
<i>Oditi Siakpebru, LakshmiPrasad Gurrala, Ana C. Morais</i>	

74f Evaluating Pyrolysis Gas from Waste Plastics as a Fuel for Portable Power Generation .....	167
<i>Topher Taylor, Brian Eggart, Daniel Kulas, Sarvada Chipkar, Jeff Naber, David Shonnard</i>	
74g Co-Gasification of Plastic, Coal Refuse, and Biomass for Hydrogen-Rich Syngas Production.....	168
<i>Muhammad A. Bashir, Sittichai Natesakhawat, Jennifer Weidman, Nicholas Means, Fan Shi, Jonathan Lekse, McMahan Gray, Ping Wang</i>	
74h Gasification of Coal/Plastic Mixtures: Fundamental Studies in a Laminar Entrained-Flow Reactor .....	169
<i>Afeez Kareem, Kevin Whitty</i>	

## **ADVANCES IN BIOFUELS PRODUCTION AND ALTERNATIVE FUELS II**

205a Production Marine Diesel Fuels from Olive Mill Wastewater Sludge.....	170
<i>Foster Agblevor, Hamza Abdellaoui, Kamel Halouani</i>	
205b Two-Stage Hydroconversion of Algal Oil to Sustainable Aviation Fuel (SAF).....	171
<i>Priscilla Manteaw, Adeniyi Lawal</i>	
205c Ozone-Cracking of Lipids to Synthesize Biokerosene and Its Combustion Performance in Diesel Engines.....	172
<i>Junli Liu, Nathan S. Mosier</i>	
205d Biokerosene Produced from Ozone Cracking Lipids and Its Combustion Tests in a Diesel Engine.....	173
<i>Junli Liu, Nathan S. Mosier</i>	
205e Catalytic Hydropyrolysis of Beetle-Killed Trees for the Production of Transportation Biofuels .....	174
<i>Oluwanisola Makinde, Fernando Resende</i>	
205f Oligomerization of Ethylene on Novel Ni-Siral Catalysts .....	175
<i>Kristinoba Olotu, Fernando Resende</i>	
205g Effects of Solvents and Upgrade on the Hydrothermal Liquefaction Products of Saccharina Latissima .....	176
<i>Mayokun Oke, Fernando Resende</i>	

## **ADVANCES IN PETROLEUM PRODUCTION AND REFINING II**

73a Thickening of Supercritical Carbon Dioxide by Poly-1-Alkene Oligomers .....	177
<i>Tomás Chávez-Miyauchi, Taniya Kar, Abbas Firoozabadi</i>	
73b Impact of Pressure on Thermodynamic Behavior of Waxy Model Oil with Methane.....	178
<i>Bala S. K. Ala, Nagu Daraboina</i>	
73k A Comparative Economic Evaluation of Treatment Versus Re-Injection of Produced Water in Texas Oil Extraction Operations.....	179
<i>Matthew K. Ajakaiye, M. R. Riazi, Francisco H. Fernandez</i>	
73d Initiation Steam Cracking of Hydrocarbons by Hyperbranched Poly(amidoamine) (PAMAM) Initiator .....	180
<i>Yunbo Yu, Tinghao Jia, Yu Ren, Jingdai Wang, Yongrong Yang, Congjing Ren, Yao Yang</i>	
73f Catalytic Upgrading of Used Motor Oil for Marine Diesel Fuel Applications.....	181
<i>Foster Agblevor, Hamza Abdellaoui</i>	

73g Advanced Catalytic Process for Monetizing Heavy Aromatics Stream in Aromatics Complex to Increase Paraxylene Production.....	182
<i>Qi Xu, Mohammad Alabdullah, Robert Hodgkins</i>	
73h Nonthermal Plasma Assisted Catalytic Crude Oil Upgrading Under Methane .....	183
<i>Hua Song</i>	
73j 3-Reactor Chemical Looping System for Point Source CO <sub>2</sub> Capture and Subsequent Utilization for Liquid Fuel Production .....	185
<i>Krutarth Pandit, Xiaofeng Jiang, Falguni Akulwar, Danwyn Aranha, Rushikesh Joshi, Liang-Shih Fan</i>	

## **RECENT DEVELOPMENTS IN FUEL PROCESSING FOR HYDROGEN PRODUCTION II**

536a Enhanced Syngas Production with Reduced Tar Emissions: Optimization of Catalytic Biomass Gasification in Bubbling Fluidized Beds .....	186
<i>Kshitij Tewari, Changle Jiang, Brandon Robinson, Debangsu Bhattacharyya, Jianli Hu</i>	
536b Optimizing the Combustion Synthesis of FeAl <sub>x</sub> O <sub>y</sub> Catalysts for Microwave-Assisted Thermocatalytic Dehydrogenation of Fossil Fuels.....	187
<i>Zachary Chanoi, Laura A. M. Espinoza, Evgeny Shafirovich</i>	
536c Microwave-Assisted Biochar Gasification: Effect of Metal Promoted Fe <sub>3</sub> O <sub>4</sub> , Water Cofeeding, and Biochar Composition on Syngas Production .....	188
<i>Duy Hien Mai, Ashraf Abedin, Xinwei Bai, Dushyant Shekhawat, Pranjali Muley</i>	
536d Fuel Flexible, Compact, High Pressure, Fuel Processor for H <sub>2</sub> Generation from Sustainable Feedstocks .....	189
<i>Hani Hawa, Subir Roychoudhury, Seung-Hyuck Hong</i>	
536e Innovative Pressurized Diesel Reforming for Sustainable Hydrogen Production Using Advanced PtRu-CGO Catalyst .....	190
<i>Hyeone Lee, Yeongwoo Kim, Junwoo Park, Joongmyeon Bae</i>	
536f Modeling of Fluidized Bed Sorption-Enhanced Biomass Gasification for Hydrogen Production using Aspen Plus .....	191
<i>Jieun Kim, David R. Wagner, Kevin Whitty</i>	
536h Towards Circular Economy: Optimisation of Co-Culture Fermentation for Biohydrogen Production from Flour Mill Waste.....	193
<i>Akanksha Jain, Eshaan Agarwal, Gobinath Rajagopalan</i>	

## **RECENT DEVELOPMENTS IN FUEL PROCESSING FOR HYDROGEN PRODUCTION III**

596a Design Study for Hydrogen Production Through Fluidized Bed Heated Steam Methane Reforming (SMR) Combined with Chemical-Looping Combustion (CLC) .....	195
<i>Tobias Pröll, Anders Lyngfelt</i>	
596b Methane Dry Reforming Over Ni Catalysts on High Oxygen Conductivity Supports .....	197
<i>Xuan Pham, Janet Baffoe, Corey Leclerc</i>	
596i Non-Thermal Plasma Catalytic CO <sub>2</sub> Hydrogenation Over a Hydroxyapatite Supported Ni Catalyst: Effect of Severe Process Conditions on CO Production.....	198
<i>Esma I. Achouri</i>	

596e Novel Metal Carbide (MXene) Based Catalyst for Industrial-Scale Electrochemical Production of Hydrogen .....	199
<i>Yue Wu, Xiaopeng Liu</i>	
596f Membrane-Based Hydrogen Separation from Syngas Towards Refinery Decarbonization.....	200
<i>Ragad Aldilaijan, Osamah Siddiqui, Stephen Paglieri, Minseok Bae, Alaa Albasry, Mohamed Draze, Abdulbari Alqarni, Ahmed Naimi, Aadesh Harale</i>	
596g Noncatalytic Solid-State Hydrolysis of Sodium Borohydride with Sodium Metaborate Hydrate to Form an Isomorphous Hydrates.....	201
<i>Hyun-Tae Hwang, Savannah Murt, Garrett Matheny</i>	
596h Self-Sustained Hydrogen Production from Ammonia Decomposition.....	202
<i>Amr Ibrahim, Sung H. Park, Saman E. Gerami, Jennifer Naglic, Jochen Lauterbach, Miao Yu</i>	
596c Potential of Ni-Supported Upgraded Slag Oxide Pellets Towards Higher than Atmospheric Pressure Syngas Production from Methane Reforming.....	203
<i>Muhammad I. Malik, Nicolas Abatzoglou, Esma I. Achouri, Juan P. D. Ramirez</i>	

#### **Author Index**