

# **Catalysis and Reaction Engineering Division**

**Core Programming Topic at the 2011 AIChE Annual Meeting**

**Minneapolis, Minnesota, USA  
16-21 October 2011**

**Volume 1 of 2**

**ISBN: 978-1-61839-739-3**

**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© (2011) by AIChE  
All rights reserved.

Printed by Curran Associates, Inc. (2012)

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

AIChE  
3 Park Avenue  
New York, NY 10016-5991

Phone: (203) 702-7660  
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: 845-758-2634  
Email: [curran@proceedings.com](mailto:curran@proceedings.com)  
Web: [www.proceedings.com](http://www.proceedings.com)

# TABLE OF CONTENTS

Volume 1

<b>Mechanistic Modeling of Fast Pyrolysis of Cellulose to Predict Bio-Oil Composition</b> .....	1
<i>Vinu Ravikrishnan, Linda J. Broadbelt</i>	
<b>Mixed Rare Earth Oxides (REOs) for Desulfurization and Tar Removal From Gasifier Effluents</b> .....	2
<i>Rui Li, Joseph Bridges, Weishi Kong, Kerry. M. Dooley</i>	
<b>Multi-Scale Study On the Pyrolysis of Sustainable Biomass Feedstock</b> .....	3
<i>Jessica D. Murillo, Joseph J. Biernacki, C. Pat Bagley</i>	
<b>Catalytic Cracking of Oak Pyrolytic Vapors Via Bench-Scale In-Situ Fixed-Bed Catalysis</b> .....	4
<i>David J. Mihalcik, Akwasi A. Boateng, Charles A. Mullen, Neil Goldberg</i>	
<b>A Dual-Stage Laminar Entrained Flow Reactor (LEFR) and Plug Flow Reactor (PFR) System for Studying Biomass Pyrolysis and Gasification</b> .....	5
<i>Mark W. Jarvis, Calvin Mukarakate, David Robichaud, Mark Nimlos</i>	
<b>Reforming of Residual Tars and Oils From Biomass Gasification</b> .....	6
<i>Lyman Frost, Elango Elangovan, J. Hartvigsen</i>	
<b>Low Temperature Gasification of Impregnated Biomass Feedstock</b> .....	7
<i>Foster Agblevor, Ofei Mante, Allen Aradi, Tze-Chi Jao</i>	
<b>Database Driven Discovery of Materials and Catalysts</b> .....	8
<i>Thomas Bligaard</i>	
<b>Fuels and Chemicals From Biomass: Challenges and Opportunities From a Systems Perspective</b> .....	9
<i>Prodromos Daoutidis</i>	
<b>Materials Design Workbench: An Open-Access Database for Materials and Molecular Design</b> .....	10
<i>Glen Allen Ferguson, Jeff Greeley, Peter Zapol, Larry A. Curtiss, Svetlozar Evtimov Nestorov, Ian T. Foster, David Landis, Jens Strabo Hummelshøj, Karsten W. Jacobsen, Thomas Bligaard, Jens Nørskov</i>	
<b>Model-Based Design of Catalysts</b> .....	12
<i>W. Nicholas Delgass, Mahdi Abu-Omar, James M. Caruthers, Fabio Ribeiro, William F. Schneider, Kendall T. Thomson, Grigori Medvedev, Jun Wang, John Clay, Mary Jones, Wen-Sheng Lee, Jorge Pazmino, Kaiwalya Sabnis, Mayank Shakhar, Stephen D. Stamatidis, Jeffery M. Switzer, D. Keith Steelman, Nicholas Travia, W. Damion Williams, Silei Xiong</i>	
<b>Photocatalytic Degradation of Organic Molecules On Visible-Light-Active Sn(II)-Containing Photocatalysts</b> .....	14
<i>Bharat Boppana, Raul F. Lobo</i>	
<b>Detailed Microkinetic Modeling for Emissions Oxidation From Engine Exhaust</b> .....	15
<i>Hom Sharma, Angela M. Moreno, Ashish B. Mhadeshwar</i>	
<b>Influence of Co-Doped Metals On Mn/TiO<sub>2</sub> Catalyst and Its Effect On Selective Reduction of NO with NH<sub>3</sub> At Low-Temperatures</b> .....	16
<i>Thirupathi Boningari, Krishna Reddy Gunugunuri, Panagiotis Smirniotis</i>	
<b>Unusual Low-Temperature Ammonia Oxidation Behavior In Zeolite-Based SCR Catalysts</b> .....	17
<i>Krishna Kamasamudram, Aleksey Yezerets, Neal Currier</i>	
<b>Experimental and Kinetic Modeling Study of Selective Catalytic Reduction of NO<sub>x</sub> On Fe- and Cu-Based Zeolitic Monolithic Catalysts</b> .....	18
<i>Pranit S. Metkar, Michael P. Harold, Vemuri Balakotaiah</i>	
<b>NO<sub>x</sub> Reduction Over Perovskite Based Lean NO<sub>x</sub> Trap</b> .....	20
<i>Gongshin Qi</i>	
<b>Nitrate Formation/Decomposition On Ba-, and K-Based Model LNT Catalysts: Similarities and Differences</b> .....	21
<i>Do Heui Kim, Kumudu Mudiyansele, Janos Szanyi, Ja Hun Kwak, Charles H. F. Peden</i>	
<b>Mechanistic Study of Methane Hydrate Nucleation Under Realistic Conditions</b> .....	22
<i>Brandon C. Knott, Michael F. Doherty, Baron Peters</i>	
<b>Development of a Coarse -Grained Model, and Its Application to Free Energy Studies In Proteins</b> .....	23
<i>Spyridon Vicatos, Anna Rychkova, Anatoly Dryga, Arieh Warshel</i>	
<b>Coarse-Graining Proteins Using Relative Entropy Theory</b> .....	24
<i>M. Scott Shell, Scott Carmichael, Aviel Chaimovich</i>	
<b>A Multi-Scale Modeling Study of MDH-Catalyzed Methanol Oxidation: The Effect of the Ion In the Enzyme Active Site</b> .....	25
<i>Purnima Kharidehal, Daniela S. Mainardi</i>	
<b>Dynamics and Control of Aggregate Thin Film Surface Morphology for Improved Light Trapping: Implementation On a Large-Scale Kinetic Monte-Carlo Simulation</b> .....	46
<i>Jianqiao Huang, Xinyu Zhang, G. Orkoulas, Panagiotis D. Christofides</i>	
<b>A Predictive Control Approach for Thin Film Growth of Photovoltaic Systems</b> .....	48
<i>Ali Rahnamoun, Antonios Armaou</i>	
<b>Moment Closure for Chemical Reactions</b> .....	50
<i>Yiannis Kaznessis, Fatemeh Ghasemi</i>	
<b>Multiscale Analysis and Simulation of Bubbly Flow</b> .....	51
<i>Ning Yang, Zongying Wu, Jianhua Chen, Jinghai Li</i>	
<b>Core-Shell Type Magnetically Active Fe<sub>3</sub>O<sub>4</sub>@Au Nanoparticles As Supported Nanocatalysts for CO Oxidation</b> .....	52
<i>Sarthak Gaur, Fariq Mohammad, Challa S. S. R. Kumar, James J. Spivey</i>	

<b>High Oxygen Reduction Activity From Electroless Co-Deposition of Ag and MnOx Nanodomains On Carbon</b> .....	54
<i>Daniel A. Slanac, Anthony Lie, Joel A. Paulson, Keith J. Stevenson, Keith P. Johnston</i>	
<b>Monometallic Gold, Palladium and Bimetallic Gold-Palladium Catalysts for the Methanol Steam Reforming Reaction</b> .....	55
<i>Matthew B. Boucher, James Kammert, Chongyang Wang, Nan Yi, Maria Flytzani-Stephanopoulos</i>	
<b>"Finding the Right Fit": Catalysis and Confinement At the Nanoscale</b> .....	56
<i>Rajamani Gounder, Enrique Iglesia</i>	
<b>Nanostructure Architecture of Pt Based Electrocatalysts for Energy Conversion Applications</b> .....	57
<i>Chao Wang, Nenad Markovic, Vojislav Stamenkovic</i>	
<b>Confinement-Induced Reactivity</b> .....	58
<i>Julibeth M. Martinez-De La Hoz, Perla B. Balbuena</i>	
<b>Viral-Templated Palladium Nanocatalysts for Suzuki Coupling Reaction</b> .....	59
<i>Cuixian Yang, Amy K. Manocchi, Byeongdu Lee, Hyunmin Yi</i>	
<b>Keynote Speaker Abstract: Design of Hydrophobic Zeolites Containing Lewis Acid Active Sites for the Isomerization of Glucose In Aqueous Media</b> .....	60
<i>Mark E. Davis, Eranda Nikolla, Yuriy Roman, Manuel Moliner, Sonjong Hwang</i>	
<b>Perovskites As Alternative Catalysts for Solid Oxide Fuel Cell Anodes: Effect of Dopants</b> .....	61
<i>Hyunkyoo Choi, Umit S. Ozkan</i>	
<b>Hybrid Organic-Inorganic Materials for Heterogeneous Catalysis: Development of Highly Structured Multifunctional Silicon Surfaces</b> .....	63
<i>Heidrun Gruber-Woelfler, Peter Feenstra, Georg J. Lichtenegger, Eleonora Polo, Johannes G. Khinast</i>	
<b>Supports As Co-Catalysts for Activating Molecular Oxidation Catalysts</b> .....	65
<i>Nicholas Schoenfeldt, Andrew Korinda, Randall J. Meyer, Justin M. Notestein</i>	
<b>Unsupported NiMoW Sulfide Catalysts Prepared by Thermal Decomposition of Thiosalts for Hydrodesulfurization of Dibenzothiophene</b> .....	66
<i>Yanjiao Yi, Christopher T. Williams, Guang Xiong, Changhai Liang</i>	
<b>Reactive Nanoparticles Immobilized In Hydrogel for Toxic Organics Degradation</b> .....	68
<i>Li Xiao, D. B. Bhattacharyya</i>	
<b>Steam Gasification of a Cellulose Surrogate Over a Fluidizable Ni/-Alumina Catalyst: A Kinetics Model</b> .....	69
<i>Enrique Salaices</i>	
<b>Review of Fast Pyrolysis of Biomass</b> .....	70
<i>Aditya Kashyap, Vijay Kumar Agarwal</i>	
<b>Cellulose Pyrolysis Residence Time Distribution and the Mechanism of Reactive Boiling Ejection of Aerosols From Biomass</b> .....	71
<i>Paul Dauenhauer, Andrew R. Teixeira, David P. Schmidt, Kyle G. Mooney</i>	
<b>Intensification of Biofuel Synthesis by Microwave Irradiation</b> .....	72
<i>Armando Quitain, Mitsuru Sasaki, Motonobu Goto, Shunsaku Katoh</i>	
<b>Hydrogenation of Cellulose to Sorbitol Over Sulfated Zirconia Supported Ru Catalysts</b> .....	82
<i>Yufei Niu, Hua Wang, Mingrui Liu, Jinyu Han</i>	
<b>Kinetic Modeling of Tandem Hydrogenolysis/Reforming of Glycerol to 1,2-Propanediol with In Situ Formed Hydrogen In a Batch Slurry Reactor</b> .....	88
<i>Arely A. Torres, Debdut S. Roy, Bala Subramaniam, Raghunath V. Chaudhari</i>	
<b>Green Synthesis of Platinum/Gold Bimetallic Nanoparticles Supported Onto Hydrotalcite Surface As Heterogeneous Catalyst for Selective Oxidation of Glycerol</b> .....	89
<i>Duangta Tongsakul, Chuchaat Thammacharoen, Sanong Ekgasit, Shun Nishimura, Kohki Ebitani</i>	
<b>Incorporation of AquaporinZ Via Binary-Lipid Langmuir Monolayers</b> .....	97
<i>Guo Fei Sun, Hu Zhou, Yi Li, Kandiah Jeyaseelan, Arunmozhiarasi Arumugam, Tai-Shung Chung</i>	
<b>Planar Biomimetic Aquaporin-Incorporated Triblock Copolymer Membranes On Porous Solid Supports</b> .....	98
<i>Phuoc H. H. Duong, Tai-Shung Chung, Kandiah Jeyaseelan, Arunmozhiarasi Arumugam, Minghui Hong</i>	
<b>Ultrafast Water Permeation of Biomimetic Membranes Embedded with Aquaporin for Water Reuse and Desalination</b> .....	99
<i>Honglei Wang, Tai-Shung Chung, Yen Wah Tong, Zaichun Chen, Minghui Hong, Kandiah Jeyaseelan, Arunmozhiarasi Arumugam</i>	
<b>Forward Osmosis: Potential Use In Desalination and Water Treatment</b> .....	100
<i>Ali Altaee</i>	
<b>Influence of Sublayer Structure On Concentration Polarization and Membrane Performance In FO Processes</b> .....	121
<i>Jincai Su, Rui Chin Ong, Bradley J. Helmer, Tai-Shung Chung</i>	
<b>Optimization of a Louisiana Native Algal Co-Culture for Biofuel Production</b> .....	123
<i>Rong Bai, Maria Teresa Gutierrez-Wing, Michael G. Benton, Kelly A. Rusch</i>	
<b>Controls of Microalgal Biomass and Lipid Production In Municipal Wastewater-Fed Bioreactors</b> .....	124
<i>Belinda S. M. Sturm, Val H. Smith, Marie-Odile Fortier, Edward Peltier, Frank Jerry Denoyelles</i>	
<b>Effects of Total Inorganic Carbon and Nitrogen Concentrations On Lipid Formation In Chlorella Vulgaris</b> .....	125
<i>Jinsoo Kim, Joo-Youp Lee, Kaniz F. Siddiqui</i>	
<b>Medium Optimization for Enhanced Lipid Production by Chlorella Protothecoides UTEX25</b> .....	127
<i>Kuan-Chen Cheng, Ming Ren, Kimberly Ogden</i>	
<b>Single-Cell Growth Kinetics of Algae, Chlorella Vulgaris</b> .....	128
<i>Alim Dewan, Jihye Kim, Swastika S. Bithi, Marci Kerls, Siva A. Vanapalli, M. Nazmul Karim</i>	
<b>Modeling and Optimization of Algae Based Biodiesel Production</b> .....	130
<i>Soumya Yadala, Selen Cremaschi</i>	
<b>Modeling the Effects of Pt Dispersion During NOx Storage and Reduction on Pt/BaO/Al<sub>2</sub>O<sub>3</sub></b> .....	132
<i>Bijesh M. Shukya, Vemuri Balakotaiah, Michael P. Harold</i>	

<b>NOx Storage and Reduction by Multilayer Monolithic Catalysts</b> .....	133
<i>Yi Liu, Micheal Harold, Dan Luss</i>	
<b>The Effect of Accelerated Hydrothermal Aging On NH<sub>3</sub>-SCR Over Cu-Hbea Catalyst</b> .....	134
<i>Norman Wilken, Kurnia Wijayanti, Krishna Kamasamudram, Neal W. Currier, Raniya Vedaiyan, Aleksey Yezerets, Louise Olsson</i>	
<b>Sulfur Poisoning of NO<sub>x</sub> Storage Reduction Catalysts: Influence the Noble Metal Position of Mono- and Bimetallic Rh and Pt</b> .....	137
<i>Robert Büchel, Sotiris E. Pratsinis, Alfons Baiker</i>	
<b>Mechanistic Transient Kinetic Analysis of the NH<sub>3</sub>-NO/NO<sub>2</sub> SCR Reactions Over a Cu-Zeolite Catalyst for Automotive Applications</b> .....	139
<i>Enrico Tronconi, Isabella Nova, Massimo Colombo</i>	
<b>NO<sub>x</sub> Reduction by CO Over Noble Metal-Based FCC CO Emission Control Additives</b> .....	140
<i>Behnam Bahrami, Vasileios G. Komvokis, Michael S. Ziebarth, Oleg Alexeev, Michael D. Amiridis</i>	
<b>Adsorption and Activation of n-Alkanes On a PdO(101) Thin Film</b> .....	142
<i>Jason F. Weaver, Aravind Asthagiri, Jose Hinojosa Jr., Can Hakanoglu, Abbin Antony, Jeffery M. Hawkins</i>	
<b>Multiscale Modeling of the Water-Gas Shift Reaction At the Three Phase Boundary of Pt/TiO<sub>2</sub> and Pt/CeO<sub>2</sub> Catalysts</b> .....	143
<i>Salai C. Ammal, Sara Aranifard, Andreas Heyden</i>	
<b>Understanding of Environment-Dependent Mechanisms of Alkali Promotion In Heterogeneous Catalysis Using First-Principles Based Monte Carlo Simulation</b> .....	144
<i>Hongliang Xin, Suljo Linic</i>	
<b>Formic Acid Decomposition On Transition Metals: Trends Through Density Functional Theory Studies</b> .....	145
<i>Jessica Scaranto, Lars C. Grabow, Scott D. Tonelli, Jeffrey A. Herron, Suyash Singh, Brandon J. O'Neill, James A. Dumesic, Manos Mavrikakis</i>	
<b>Selective Activation and Conversion of Simple Carboxylic Acids and Esters</b> .....	146
<i>Ye Xu, Lijun Xu</i>	
<b>Hydrogenation of Lactic Acid to Propylene Glycol and Propanoic Acid: A Selectivity Challenge</b> .....	148
<i>Suyash Singh, Manos Mavrikakis</i>	
<b>Molecular Investigation of Catalytic Isomerization of Glucose to Fructose</b> .....	149
<i>Samir H. Mushrif, Nima Nikbin, Stavros Caratzoulas, Vinit Choudhary, Stanley Sandler, Vladimiro Nikolakis, Dionisios G. Vlachos</i>	
<b>Particle Based Multi-Scale Modeling of the Dynamic Response of Hexahydro-1,3,5-Trinitro-s-Triazine (RDX): Constant Energy Dissipative Particle Dynamics with Coarse-Grained Density Dependent Potentials</b> .....	150
<i>Joshua D. Moore, Sergei Izvekov, Martin Lital, John K. Brennan</i>	
<b>Temperature-Accelerated Molecular Dynamics Reveals That Insulin Can Undergo Large-Scale Conformational Reorganization On Binding to Its Receptor</b> .....	152
<i>Harish Vashisth, Cameron F. Abrams</i>	
<b>Multiscale Modeling for Phospholipid Bilayer Simulations</b> .....	153
<i>Emily Curtis</i>	
<b>A Coarse Grained Model of Inhibitors to Scavenger Receptor Uptake to LDL</b> .....	154
<i>Michael Tomasini, M. Silvina Tomassone</i>	
<b>Multiscale Molecular Modeling of Fullerol-Dendrimer Complexes</b> .....	155
<i>Seung Ha Kim, Monica H. Lamm</i>	
<b>Multiscale Modeling of Perfluoropolyether Lubricants with Functional Endgroups</b> .....	156
<i>Robert Smith, Pil Seung Chung, Lorenz T. Biegler, Myung S. Jhon</i>	
<b>Nanoparticles At the Water-Decane Interface: Evidence of Emergent Behavior From Equilibrium Multi-Scale Simulations</b> .....	158
<i>Heng Fab, Alberto Striolo</i>	
<b>Dealloyed Pt<sub>x</sub>Ni<sub>1-x</sub> Thin Films for Oxygen Reduction Reaction</b> .....	159
<i>Carlos Hangarter, Yihua Liu, Vladimir Oleshko, Leonid Berdersky, Thomas Moffat</i>	
<b>Autoreduction Kinetics of a Sn-Pt Complex to Pt Metal for the Formation of Pt Nanoparticles</b> .....	160
<i>Samuel St. John, Anastasios Angelopoulos</i>	
<b>Decomposition of Isopropanol As a Probe for Acidic and Basic Sites On Graphite Nanofibers</b> .....	161
<i>Randy D. Weinstein, Andrew R. Ferens, Robert Giuliano</i>	
<b>Thermal Stability of Nickel-Silica Core-Shell Nanocatalysts</b> .....	162
<i>Lu Zhang Whaley, Fan Shi, Gätz Vesper</i>	
<b>In-Situ FTIR Spectroscopy to Study the Size Effect of Cobalt Nanoparticles On Carbon Monoxide Oxidation</b> .....	164
<i>Bijith Mankidy, Babu Joseph, Vinay Gupta</i>	
<b>Na-Promoted Pt Catalysts In Core-Shell Structure for the Low-Temperature Water-Gas-Shift Reaction</b> .....	165
<i>Yuan Wang, Danny Pierre, Yanping Zhai, Maria Flytzani-Stephanopoulos</i>	
<b>Twin Flame Spray Pyrolysis Production of Pt/K/Al<sub>2</sub>O<sub>3</sub> NO<sub>x</sub> Storage-Reduction Catalysts</b> .....	168
<i>Robert Büchel, Sotiris E. Pratsinis, Alfons Baiker</i>	
<b>A Study On Sulfonated Cross-Linked Chitosan Resin As Solid Acid Catalyst</b> .....	172
<i>Yuting Xu, Lichun Dong</i>	
<b>Carbon-Nanotubes/Metal Oxide Hybrid Catalysts As Novel Reactive-Separation System In Water-Oil Emulsions</b> .....	173
<i>Jimmy A. Faria, M. Pilar Ruiz, Daniel E. Resasco</i>	
<b>Hybrid Sulfonic Acid Catalysts Based On Silica -Supported Poly(Styrene Sulfonic Acid) Brush Materials and Their Application In Ester Hydrolysis</b> .....	174
<i>Christopher W. Jones, Wei Long</i>	
<b>Oxidative Coupling of Methane Using Novel Catalytic Materials</b> .....	175
<i>Ranjita Ghose, Hyun Tae Hwang, Arvind Varma</i>	

<b>Aqueous-Phase Reforming of Bio-Oil Model Compounds Over Pt-Re/C</b> .....	176
<i>Jie Fu, Sikander H. Hakim, Brent H. Shanks</i>	
<b>A Novel Experimental Technique for Study of Isothermal Pyrolysis of Cellulose</b> .....	177
<i>Matthew S. Mettler, Dionisios G. Vlachos, Paul Dauenhauer</i>	
<b>Determining Kinetics and Mechanisms of Model Compounds to Understand Chemistry of Algae Liquefaction In High Temperature Water</b> .....	179
<i>Shujauddin M. Changi, Phillip E. Savage</i>	
<b>Catalytic Studies of Reforming of Oxygenates</b> .....	181
<i>Sarah A. Tupy, Tushar Vispute, George W. Huber, Jingguang G. Chen, Dionisios G. Vlachos</i>	
<b>Theoretical and Experimental Study of Glycolaldehyde Reaction Pathways On Ni/Pt(111) and Ni/WC Surfaces</b> .....	182
<i>Weiting Yu, Mark Barteau, Jingguang Chen</i>	
<b>The Effects of Water On Sugar Reactions</b> .....	184
<i>Xianghong Qian, Mark Nimlos, David K. Johnson, Michael E. Himmel</i>	
<b>Kinetic Study of the Hydrothermal Liquefaction of Microalgae</b> .....	185
<i>Peter J. Valdez, Phillip E. Savage</i>	
<b>Rules of Thumb for Reactor Design and Process Conditions for Thermochemical Treatment of Chromated Copper Arsenate (CCA) Treated Wood Waste</b> .....	186
<i>Lieve M. Helsen, Frederic Cuypers</i>	
<b>Biomass Pyrolysis and Gasification: Engineering Rules of Thumb</b> .....	189
<i>Michael J. Antal</i>	
<b>Rule of Thumb for Design of Catalytic Pyrolysis of Biomass In Bubbling Fluid Bed Reactor</b> .....	190
<i>Foster Agblevor, Ofei Mante</i>	
<b>Rule of Thumb for Reactor Design and Process Conditions for Supercritical Water Gasification of Wet Biomass</b> .....	191
<i>Yukihiko Matsumura</i>	
<b>Rule of Thumb for Reactor Design and Process Condition for Biodiesel Production</b> .....	192
<i>Masato Kouzu</i>	
<b>Rule of Thumb for Design and Analysis of Biomass Utilization System</b> .....	197
<i>Kazuhiro Mochizuki, Akiyoshi Sakoda</i>	
<b>Ozone Removal At Micro-Second Contact Time for Aircraft Cabin Air Using Microfibrous Entrapped Catalysts</b> .....	198
<i>Qiang Gu, Bruce Tatarчук</i>	
<b>In Situ and Operando X-Ray Absorption Spectroscopy On Cu-Zeolite Catalysts for Fast SCR by Ammonia</b> .....	199
<i>Vincent F. Kispersky, Jun Wang, Aleksey Yezzerets, Neal W. Currier, Jeffrey T. Miller, W. Nicholas Delgass, Fabio H. Ribeiro</i>	
<b>Catalytic Removal of Volatile Organic Compounds Over the Three-Dimensionally Ordered Mesoporous or Macroporous MOx (M = Co, Fe, Mn, Cr) Catalysts</b> .....	200
<i>Hongxing Dai, Yunsheng Xia, Ruzheng Zhang, Lei Zhang, Jiguang Deng, Yingshu Liu, Kai Wang, Hong He, Jian Li</i>	
<b>Role of CeO<sub>2</sub> In the Total Oxidation of Toluene Over CuO-CeO<sub>2</sub>/Al<sub>2</sub>O<sub>3</sub></b> .....	203
<i>Unmesh Menon, Vladimir V. Galvita, Hilde Poelman, Vitaliy Bliznuk, Guy B. Marin</i>	
<b>The Effect of Ca<sup>2+</sup> and Al<sup>3+</sup> Additions On the Stability of Potassium Disilicate (K<sub>2</sub>Si<sub>2</sub>O<sub>5</sub>) As a Soot Oxidation Catalyst</b> .....	208
<i>Changsheng Su, Paul J. McGinn</i>	
<b>On the Activity and Selectivity of Ag/Al<sub>2</sub>O<sub>3</sub> Catalyst During the Lean Reduction of NO by C<sub>3</sub>H<sub>8</sub> Studied At High Space Velocities</b> .....	211
<i>M. Eugenia Hernández-Terán, Isidro Mejía-Centeno, Sergio A. Gómez, Gustavo A. Fuentes</i>	
<b>Mechanistic Investigation of Ethanol SCR of NO<sub>x</sub> Over Ag/Al<sub>2</sub>O<sub>3</sub></b> .....	213
<i>William Johnson II, Josh A. Pihl, Galen B. Fisher, Todd J. Toops</i>	
<b>Density Functional Theory Research On Mechanisms and Rate-Determining States of Cyclohexanone Ammoxidation Over Titanium Silicalite-1</b> .....	215
<i>Feng Xin, Yanying Qi</i>	
<b>Understanding Hydrocarbon Reactivity In Zeolites with Molecular Dynamics Simulations</b> .....	217
<i>Paul M. Zimmerman, Martin Head-Gordon, Alexis T. Bell</i>	
<b>A Theoretical Investigation of the Methylation of Olefins by Surface Methyl Groups On Zeolites</b> .....	218
<i>Mark N. Mazar, Saleh Al Hashimi, Aditya Bhan, Matteo Cococcioni</i>	
<b>Density Functional Theory Study of Propane Ammoxidation Over Mo-V-Te-Nb-O M1 Catalyst</b> .....	219
<i>Junjun Yu, Muthukumar Kaliappan, Vadim V. Gulians, Ye Xu</i>	
<b>Active Sites for Olefin Metathesis On WO<sub>3</sub> Catalysts : A Density Functional Theory Study</b> .....	220
<i>Zhuo Cheng, Cynthia S. Lo</i>	
<b>Role of Ceria In Ti<sub>0.9</sub>Ce<sub>0.1</sub>O<sub>2</sub> Materials for Adsorptive Desulfurization</b> .....	221
<i>Michael J. Janik, Siddharth Sitamraju, Jiahua Guo, Chunshan Song</i>	
<b>DFT Study of the Hg Oxidation Mechanism Over the V<sub>2</sub>O<sub>5</sub>-TiO<sub>2</sub>(001) Surface</b> .....	222
<i>Ana Suarez Negreira, Jennifer Wilcox</i>	
<b>Reaction Engineering of New Energy Technologies</b> .....	223
<i>Lanny D. Schmidt</i>	
<b>A Chemical Perspective On the Conversion of Biomass to Fuels</b> .....	224
<i>Aditya Bhan</i>	
<b>Water-Tolerant Lewis Acids for the Activation of Biomass-Derived Molecules</b> .....	225
<i>Yuriy Roman</i>	
<b>Future Directions and Research Challenges In Biomass Pyrolysis</b> .....	226
<i>Paul Dauenhauer</i>	

<b>Modern Catalytic Technologies for Converting Biomass to Renewable Fuels and Chemicals: An Overview of the Catalysis Center for Energy Innovation</b> .....	228
<i>Dion G. Vlachos</i>	
<b>Online Kinetic Analysis of Reactions In a Microreactor System</b> .....	229
<i>Jason S. Moore, Christopher D. Smith, Norbert Heublein, Klavs F. Jensen</i>	
<b>Comparison of Catalyst Preparation In Microreactors: Atomic Layer Deposition Vs. Impregnation</b> .....	230
<i>Huiliang Shi, Yi Cheng</i>	
<b>Enzyme Hydrolysis of Soyabean Oil in 3-phase Slug Flow Microreactors</b> .....	231
<i>Jiri Cech, Walter Schrott, Michal Pribyl, Dalimil Snita</i>	
<b>Oxidative Coupling of Methane (OCM) In a Microchemical Reactor</b> .....	239
<i>Sen Liu, Shuang Liang, Gätz Vesper</i>	
<b>Hydrogenation in Microreactors with Immobilized Noble Nanocatalysts</b> .....	241
<i>Rui Lin, Xianfeng Ma, Robert Ofoli</i>	
<b>Chemisorption and Physisorption Rates On Catalysts Using Microfluidic ATR-FTIR Spectroscopy</b> .....	243
<i>T. J. A. Renckens, Guido Mul, Michiel Kreutzer</i>	
<b>Supported Bimetallic Catalysts for the Production of <math>\gamma</math>-Valerolactone</b> .....	244
<i>Jesse Q. Bond, David Martin Alonso, Stephanie G. Wettstein, Drew J. Braden, James A. Dumesic</i>	
<b>Catalytic Synthesis of High-Octane Fuels From Biologically-Derived Sources</b> .....	245
<i>Samuel Blass, Aditya Bhan, Lanny Schmidt</i>	
<b>Improved Pyrolysis Oil Properties Through Catalytic Deoxygenation</b> .....	246
<i>John R. Carpenter, Maruthi Pavani, Matthew Von Holle, David Dayton, Raghbir Gupta</i>	
<b>Methanol and Ethanol Coupling Reactions to Oxygenates Over Copper Containing Mixed Metal Oxides</b> .....	247
<i>Juan J. Bravo-Suarez, Bala Subramanian, Raghunath V. Chaudhari</i>	
<b>Investigation of Benzofuran Deoxygenation In Sub and Supercritical Water</b> .....	249
<i>Jacob G. Dickinson, Phillip E. Savage</i>	
<b>Increasing the Hydrothermal Stability of Alumina Based Catalysts</b> .....	250
<i>Ryan M. Ravenelle, Maximilian W. Hahn, John R. Copeland, Adam Van Pelt, Carsten Sievers</i>	
<b>Design of Active and Stable Catalysts for the Hydrodeoxygenation of m-Cresol</b> .....	251
<i>Andrew J. Foster, Phuong T. Do, Jingguang G. Chen, Raul F. Lobo</i>	
<b>Ethanol Synthesis From Syn-Gas: How Surface Diffusion of Intermediates Impacts the Product Distributions Predicted for Bimetallic Catalysts</b> .....	253
<i>Ming He, James McAliley, David A. Bruce</i>	
<b>Development and Application of a ReaxFF Description for Formation of Hydrocarbons On Iron and Iron Carbide Fisher-Tropsch Catalysts</b> .....	258
<i>Chenyu Zou, Adri Van Duin, Dan C. Sorescu</i>	
<b>Investigation of Structure Sensitivity for the CO Oxidation Chemistry On Pt and Au</b> .....	259
<i>Michail Stamatakis, Dionisios G. Vlachos</i>	
<b>Selective Methane-to-Methanol Oxidation On Bimetallic Transition Metal Surfaces</b> .....	260
<i>Kathryn Bjorkman, Linda J. Broadbelt</i>	
<b>Mechanistic Studies of Oxygen Reduction by Hydrogen On PdAg(110)</b> .....	261
<i>Carrie A. Farberow, Andres Godinez-Garcia, Juan Francisco Perez-Robles, Omar Solorza-Feria, Manos Mavrikakis</i>	
<b>A First Principles Analysis of the Selective Hydrogenation of Unsaturated Ketones: Influence of Hydrocarbon Structure</b> .....	263
<i>Bing Hao, Matthew Neurock</i>	
<b>Reaction Free Energies In Solutions for Glucose Conversion Into Biomass Intermediates</b> .....	265
<i>Vinit Choudhary, Dionisios G. Vlachos, Stanley I. Sandler</i>	
<b>In Situ Spectroscopic Investigation of the Surface Dependence of CO Oxidation Over CeO<sub>2</sub> Nanocrystals with Well-Defined Surface Planes</b> .....	266
<i>Zili Wu, Meijun Li, Steven H. Overbury</i>	
<b>Condensed Phase Ketonization of Bio-Oil Model Compounds: Catalysis by Ceria Nanoparticles</b> .....	267
<i>Ryan W. Snell, Brent H. Shanks</i>	
<b>Microstructural Characterization of Bulk Ab Planes In Mo-V-Te-(Ta, Nb)-O M1 Phase Catalyst by Aberration-Corrected High Angle Annular Dark Field (HAADF) STEM</b> .....	268
<i>Jungwon Woo, Albina Borisevich, Miaofang Chi, Vadim Guliants</i>	
<b>Probing A Mixed Fe<sub>2</sub>(MoO<sub>4</sub>)<sub>3</sub>-MoO<sub>3</sub> Catalyst to Elucidate the Active Phase and Site for the Oxidative Dehydrogenation of Ethanol</b> .....	270
<i>Shane A. Bates, Jeffrey T. Miller, W. Nicholas Delgass, Chelsey D. Baertsch</i>	
<b>Surface Speciation and Alkane Oxidation with Fe(III) Sites On Alkali-Modified Oxide Supports</b> .....	271
<i>Dario Prieto-Centurion, Justin M. Notestein</i>	
<b>Consequences of Composition and Acid Strength for Catalysis On Solid Acids</b> .....	272
<i>Robert T. Carr, Josef Macht, Matthew Neurock, Enrique Iglesia</i>	
<b>Density Functional Theory Evaluation of Rare-Earth Oxides for Biomass Gasification Effluent Cleanup</b> .....	274
<i>Matthew D. Krcha, Adam D. Mayernick, Michael J. Janik, Kerry. M. Dooley</i>	
<b>Session Introduction</b> .....	275
<i>Concetta La Marca</i>	
<b>Progress and Challenges in Automotive Exhaust Catalysis</b> .....	276
<i>Robert McCabe</i>	
<b>NOx Abatement for Lean Burn Engines</b> .....	N/A
<i>Patrick Burk</i>	

<b>Low-Dimensional Models for Real Time Simulations of Catalytic After-Treatment Systems</b> .....	278
<i>Vemuri Balakotiah</i>	
<b>Advanced Emission Control Strategies for Gasoline Engines with Special Emphasis on the Development of Pd-Based Technologies</b> .....	279
<i>John Nunan</i>	
<b>Evaluation of Alternative Fuels to Replace Coal In Cement Manufacturing</b> .....	280
<i>Steve R. Duke, Anton Schindler, Don Stafford</i>	
<b>Kinetics Study of Calcium Carbonate Decomposition At High CO<sub>2</sub> Environment</b> .....	281
<i>Yong-Hua Duan, Jian Zhang, Delong Xu, Hui Li, Le-Le Yang, Xiao Fan, Wen-Bin Yang, Yongxiang Ren, Yong Min</i>	
<b>Application of Ionic Liquids In the Aluminum Electrorefining</b> .....	282
<i>Yong Zheng, Xingmei Lu, Suojiang Zhang</i>	
<b>Novel Zeolite Membranes for Energy-Efficient Air Dehumidification and Conditioning</b> .....	284
<i>Rong Xing, Yuxiang Rao, Wei Liu</i>	
<b>An Osmotic Membrane Dehumidifier</b> .....	285
<i>Arthur S. Kesten, Jack N. Blechner</i>	
<b>Ethanol/Water Biomass Feedstock Separation Through Inorganic A-Type Zeolite Membrane on Thin Porous Ni Sheet Support</b> .....	289
<i>Yuxiang Rao, Rong Xing, Wei Liu</i>	
<b>A Novel SHF Process for Conversion of AFEX-CS to Ethanol Featuring High Ethanol Productivity, Enzyme Recycling, and Yeast Cells Reuse</b> .....	290
<i>Ming Jie Jin, Christa Gunawan, Nirmal Uppugundla, Shishir Chundawat, Bruce Dale, Venkatesh Balan</i>	
<b>Concentration of a Solids-Free Lignocellulose Hydrolysate for Very High Gravity Fermentation: Inhibition Effects</b> .....	291
<i>Steven J. Schneiderman, Todd J. Menkhaus, Patrick C. Gilcrease</i>	
<b>Separate Processing of Hemicellulose and Cellulose to Optimize Ethanol Production From Corn Stover</b> .....	292
<i>Alexandre Chapeaux, Nancy Dowe, Daniel J. Schell</i>	
<b>Ethanol and Furfural Production From Corn Stover Using Hybrid Fractionation Process with Zinc Chloride and Simultaneous Saccharification and Fermentation (SSF)</b> .....	293
<i>Chang Geun Yoo, Tae Hyun Kim, Monlin Kuo</i>	
<b>Fischer Tropsch Synthesis Via Biomass Derived Synthesis Gas</b> .....	294
<i>Syed Ali Gardezi, Babu Joseph, John T. Wolan</i>	
<b>Integrations of Biosurfactant Production Into Advanced Biorefineries</b> .....	295
<i>William Coloma, Mustafa E. Marti, Michelle Pynn, Gabriel Reznik, Kevin Jarrell, Buddhi Lamsal, Charles E. Glatz</i>	
<b>Nanoparticle Synthesis Using Reversible Ionic Liquids</b> .....	296
<i>Amy Rohan, Emily Nixon, Rani Jha, Manish Talreja, Pamela Pollet, Charles Liotta, Charles Eckert</i>	
<b>Synthesis, Characterization and Catalytic Application of Dendrimer-Mediated Nickel and Iron Alloy Nanoparticles Containing An Average of 40 Atoms</b> .....	297
<i>Vanessa A. Castillo, John Kuhn</i>	
<b>Scalable Synthesis of Palladium Nanoparticle Catalysts by Atomic Layer Deposition</b> .....	298
<i>Xinhua Liang, Lauren Blinn, Brittany Michael, Alan W. Weimer</i>	
<b>A First-Principle Study of Pt Clusters On Anatase TiO<sub>2</sub> (101) Surfaces</b> .....	299
<i>Yun Zhou, Christopher L. Muhich, Charles B. Musgrave, Alan W. Weimer</i>	
<b>Size Dependence of Sulfur Deactivation Using Silica Supported Platinum Nanoparticles</b> .....	300
<i>Lyndsey M. Baldyga, J. N. Kuhn</i>	
<b>Silica-Supported Ruthenium Nanoparticles for Hydrogenation of Pyruvic Acid In the Aqueous Phase</b> .....	301
<i>Xianfeng Ma, Rui Lin, James E. Jackson, Robert Y. Ofoli</i>	
<b>Single-Step, Plasma-Based Synthesis of Supported Nanoparticle Catalysts</b> .....	302
<i>Travis Koh, Michael Gordon</i>	
<b>Mechanistic Modeling of Simultaneous Enzymatic Saccharification of Cellulose and Xylan Using Continuous Distribution Kinetics</b> .....	303
<i>Ambarish Nag, Andrew J. Griggs, Jonathan J. Stickel, Michael A. Sprague, James J. Lischeske</i>	
<b>Kinetic Modeling of Cellulose Hydrolysis with First Order Inactivation of Adsorbed Cellulases</b> .....	304
<i>Zhuoliang Ye, R. Eric Berson</i>	
<b>Observing and Modeling Cellulosic Substrate Depolymerization by Commercial Enzyme Cocktails Using Confocal Fluorescence Microscopy</b> .....	305
<i>Jeremy S. Luterbacher, Jose M. Moran-Mirabal, Larry P. Walker</i>	
<b>Effects of Mixing Quality On the Kinetics of Biomass Liquefaction</b> .....	306
<i>David M. Lavenson, Emilio J. Tozzi, Tina Jeoh, Michael J. McCarthy, Robert L. Powell</i>	
<b>Coupled Fluid-Dynamics and Population-Balance Kinetic Models for Enzymatic Hydrolysis of Biomass</b> .....	307
<i>Michael A. Sprague, Jonathan Stickel, Andrew Griggs</i>	
<b>Flow and Transport Properties In High-Solids Biomass Slurries</b> .....	308
<i>James J. Lischeske, Jonathan J. Stickel</i>	
<b>New Fischer-Tropsch-Ready Syngas Preparation Strategies From Coal and Natural Gas Using Solid Oxide Fuel Cells</b> .....	309
<i>Thomas A. Adams II, Paul Barton</i>	
<b>Tri-Reforming of Methane and CO<sub>2</sub>: A Novel Concept for Catalytic Production of Solid Waste Syngas with Desired H<sub>2</sub>/CO Ratios for Liquid Biofuels</b> .....	310
<i>Devin M. Walker, John T. Wolan, John N. Kuhn, Philip Saraneeyavongse</i>	
<b>Effects of Biomass Contaminants (N and Cl species) On Fischer Tropsch Synthesis</b> .....	311
<i>Fan Shi, Adefemi Egbebi, Ward A. Burgess</i>	



<b>Thermal Processing Techniques to Improve Metal Sulfide Mixed Alcohol Catalyst Performance</b> .....	312
<i>Jesse E. Hensley, Kellen Costelow, Martin Menart, Jason Thibodeaux, Matt Yung</i>	
<b>Supercritical Adiabatic Reactor for Fischer Tropsch Synthesis</b> .....	326
<i>Ed Durham, Mario Richard Eden, Christopher Roberts</i>	
<b>Methane Conversion towards Liquid Fuel Production Over Promoted Mo/MFI Catalyst: Effect of Zinc, Tungstan, Galuim</b> .....	327
<i>Sachchit Majhi, Pravakar Mohanty, K. K. Pant</i>	
<b>Thermal Decomposition and Cobalt Species Transformation of Carbon Nanotubes Supported Cobalt Catalyst for Fischer-Tropsch Synthesis</b> .....	328
<i>Zhenhua Li, Suli Bai, Chengdu Huang, Jing Lv, Jinyu Han</i>	
<b>Control of Isobutane Cracking Selectivity Over H-ZSM-5 by High-Temperature Pretreatments</b> .....	332
<i>Jang Ho Yun, Raul F. Lobo</i>	
<b>Exocyclic and Endocyclic C-C Bond Cleavage – Mechanism and Site Requirements</b> .....	333
<i>David W. Flaherty, Alper Uzun, Enrique Iglesia</i>	
<b>Catalytic Pyrolysis of Biomass: The Effect of Hydrothermal Treatment of FCC Catalyst and ZSM-5 Additive</b> .....	335
<i>Ofei Mante, Foster A. Agblevor, Ron McClung</i>	
<b>Supported Palladium Catalysts for Decarboxylation of Fatty Acids</b> .....	336
<i>H. Henry Lamb, Jeremy G. Immer, Jeffery P. Ford</i>	
<b>Co-Processing Methane and Biomass-Derived Oxygenates Over Mo/ZSM-5 Catalysts for Making Hydrocarbon Fuels</b> .....	337
<i>Do-Young Hong, Aditya Bhan</i>	
<b>Pilot Scale Evaluation of Ni-Based Reforming Catalyst Performance for Syngas Production</b> .....	338
<i>Whitney S. Jablonski, Steven D. Phillips, Kim Magrini, Calvin J. Feik, Katherine R. Gaston</i>	
<b>Accelerated Catalytic Processing of Fossil and Biorenewable Feedstocks Using Avantium's Technology and Methodologies</b> .....	339
<i>Alejandro Perez De Santana, Pieter Imhof</i>	
<b>Activation Studies of An Iron-Based Fischer-Tropsch Catalyst In a Slurry Reactor</b> .....	347
<i>Qinglan Hao, Liang Bai, Hongwei Xiang, Yongwang Li</i>	
<b>Effect of Ammonia In Syngas On the Fischer-Tropsch Behavior of a Precipitated Iron Catalyst</b> .....	356
<i>Weiping Ma, Gary Jacobs, Jungshik Kang, Dennis Sparks, Burtron H. Davis</i>	
<b>Aldehydes and Ketones From Fischer Tropsch Synthesis</b> .....	358
<i>Ed Durham, Sihe Zhang, Rui Xu, Christopher B. Roberts</i>	
<b>Influence of Support Composition, Base Promoter and Catalyst Passivation On Higher Alcohol Synthesis Over Molybdenum Carbide</b> .....	359
<i>Heng Shou, Robert J. Davis</i>	
<b>Mixed Oxide Supports Derived From Layered Metal Hydroxides to Reduce Methanol Selectivity In the Catalytic Synthesis of Higher Alcohols Over Potassium-Promoted Molybdenum Sulfide Catalysts</b> .....	360
<i>Michael R. Morrill, Nguyen Tein Thao, Christopher W. Jones, Pradeep K. Agrawal, David J. Barton, Daniela Ferrari, Robert J. Davis, Heng Shou</i>	
<b>Synthesis of Higher Alcohols From Syngas Over a K Promoted Cu-Co-Zn Catalyst In Supercritical Hexanes</b> .....	361
<i>Rui Xu, Sihe Zhang, Ed Durham, Christopher B. Roberts</i>	
<b>Effect of Modifiers On Zirconia-Based Catalysts for Isosynthesis</b> .....	362
<i>Nicholas E. McGuire, Narasimharao Kondamudi, Lucia M. Petkovic, Daniel M. Ginosar</i>	
<b>Role of Band-Filling, Oxidation State, and Strain On Perovskite Reactivity</b> .....	363
<i>John R. Kitchin</i>	
<b>Energetic Electron Induced Chemical Reactions On Metal Surfaces: First-Principles Based Electron Scattering Model</b> .....	364
<i>Hongliang Xin, Phillip Christopher, Suljo Linic</i>	
<b>Development and Application of a Hybrid QM/MM Method for the Computational Investigation of Reactions At Metal/Water Interfaces</b> .....	366
<i>Muhammad M. Faheem, Andreas Heyden</i>	
<b>Connecting Molecular Processes to Macrokinetic Observables Using First-Principles Simulations</b> .....	367
<i>William F. Schneider, Chao Wu, David Schmidt</i>	
<b>Optimization-Based Methods for Catalysis: Developing Improved Approaches to Microkinetic Modeling and Their Application to Methanol Synthesis</b> .....	368
<i>Patricia B. Rubert-Nason, Lars C. Grabow, Lorenz Biegler, Manos Mavrikakis, Christos Maravelias</i>	
<b>Computational Characterization of Pd/Ceria Catalysts Using DFT+U and ReaxFF</b> .....	370
<i>Thomas Patrick Senfile, Adam Mayernick, Adri Van Duin, Michael Janik</i>	
<b>Molecular Simulations of the Oxidation of Platinum-Based Alloy Catalysts for Fuel Cells</b> .....	371
<i>Rafael Callejas-Tovar, Perla B. Balbuena</i>	
<b>Promoting Selectivity In Heterogeneous Catalysis with Self-Assembled Monolayers</b> .....	372
<i>Carolyn Schoenbaum, Rudy Kahsar, Daniel K. Schwartz, J. Will Medlin</i>	
<b>Novel Oxidation Pathway for Low Temperature Conversion of Methane to Methanol: A Spectroscopic Investigation</b> .....	373
<i>Mayfair C. Kung, Sean S.-Y. Lin, Harold H. Kung</i>	
<b>Dispersed Ta(V): A Site-Isolated Epoxidation Catalyst and Unexpected Reactivity In Selective Hydrogenation / Hydrodenitrogenation</b> .....	374
<i>Justin M. Nostein, Natalia Morlanes-Sanchez, Mark Bachrach, Tobin J. Marks</i>	
<b>Polymer Anchored Cu(II) and Mn(II) Complex Catalysts for the Oxidation of Styrene</b> .....	376
<i>Shishir Sinha, Sweta Sharma, Shri Chand, Prakash Biswas</i>	

<b>A Combined Experimental and Computational Study of the Selective Hydrogenation of Acrolein On Supported Silver Alloy Catalysts</b> .....	384
<i>Carolina Gomez, Haojuan Wei, Neng Guo, Tianpin Wu, Christopher Marshall, Jeffrey T. Miller, Randall J. Meyer</i>	
<b>Studies of NH<sub>3</sub> Formation Over Pt/BaO/Al<sub>2</sub>O<sub>3</sub> LNT Monolith In the Presence of Excess Water</b> .....	385
<i>Prasanna R. Dasari, Michael Harold, Rachel L. Muncrief</i>	
<b>Development of Palladium Oxide Catalysts Supported On Nanoparticle Oxides for C-H Activation and C-C Coupling Reactions</b> .....	387
<i>Helena E. Hagelin-Weaver, Luke M. Neal, Justin J. Dodson</i>	
<b>Bringing Broader Understanding of Step Growth Polymerization</b> .....	388
<i>W. Harmon Ray</i>	
<b>Polyelectrolyte Brushes In Multi-Valent Ionic Media</b> .....	389
<i>Matthew Tirrell</i>	
<b>Adventures with and Insights Into the Bayesian Design of Experiments In Complex Polymerizations</b> .....	390
<i>Alexander Pentlidis, Afsaneh Nabifar</i>	
<b>Novel Pathways for Biomass-to-Liquid Fuel Production</b> .....	393
<i>Rakesh Agrawal, Dhari S. Mallapragada, Fabio H. Ribeiro, W. Nicholas Delgass</i>	
<b>Application of Multi-Objective Optimization In Polymer Reaction Engineering</b> .....	394
<i>Ajay K. Ray</i>	
<b>Self-Organized Nano-Lens Arrays by Intensified Dewetting of Polymer Thin-Film</b> .....	395
<i>Ankur Verma, Ashutosh Sharma</i>	
<b>Optimization Studies Based On CFD Modeling of a Multiple Tube Reactor for Solar-Thermal Processes</b> .....	399
<i>Janna Martinek, Alan W. Weimer</i>	
<b>CFD Based Simulation of Heat Transfer In a Fixed Bed Reactor Tube</b> .....	400
<i>Mohsen Behnam, Anthony G. Dixon, Michiel Nijemeisland, E. Hugh Stitt</i>	
<b>Effect of Spatial Segregation On Commensalistic Cultures - Series Reactors</b> .....	401
<i>Satish J. Parulekar</i>	
<b>Modeling the Start-up Phase of Fischer Tropsch Synthesis In a Fixed Bed Reactor: Strategizing the Optimum Operation</b> .....	402
<i>Syed Ali Gardezi, Babu Joseph, John T. Wolan</i>	
<b>Modeling and Optimization Studies of Combined LNT-SCR Catalyst Systems</b> .....	403
<i>Arun S. Kota, Dan Luss, Balakotaiah Vemuri</i>	
<b>A Parameterized Iron-Zeolite SCR Model Calibrated to Reactor Data</b> .....	404
<i>Seth Deland, Gordon Parker, Jason Keith, John Johnson</i>	
<b>Accurate Treatment of Electrostatics During Molecular Simulations In Nanoporous Crystals without Assigning Point Charges to Framework Atoms: Application In Material Selection for Flue Gas Separation</b> .....	405
<i>Taku Watanabe, David Sholl</i>	
<b>Molecular Dynamics Studies of Diffusion and Solvation of Rubidium Bromide Solutions In Nanoconfinement</b> .....	406
<i>Katherine A. Phillips, Jeremy C. Palmer, Keith E. Gubbins</i>	
<b>An Electronic Structure Based Understanding of Amine-Carbon Dioxide Interactions for CO<sub>2</sub> Capture</b> .....	407
<i>Anita S. Lee, John R. Kitchin</i>	
<b>Engineering Protein-Carbohydrate Binding Affinity Via Glycosylation: A General Strategy to Improve Cellulase Performance</b> .....	408
<i>Courtney B. Taylor, Clare McCabe, Lintao Bu, Michael E. Himmel, Michael F. Crowley, Gregg T. Beckham</i>	
<b>Multi-Scale Models for Poly (1, 3-cyclohexadiene) (PCHD) Polymer</b> .....	409
<i>Qifei Wang, David J. Keffer, Suxiang Deng, Jimmy W. Mays</i>	
<b>Band Gap Engineering In Donor-Acceptor Conjugated Copolymers</b> .....	410
<i>Ying-Chieh Hung, Shiang-Tai Lin</i>	
<b>Structure and Diffusion of Furans and Other Cellulose-Derived Compounds In Solvents Via MD Simulation</b> .....	411
<i>Brooks D. Rabideau, Ahmed E. Ismail</i>	
<b>Transfer Hydrogenation to Produce Chemicals and Fuels From Lignocellulosic Biomass Using Furfural As a Platform Molecule</b> .....	412
<i>Stephanie G. Wettstein, Elif I. Gurbuz, Mei Chia, James A. Dumesic</i>	
<b>The Effects of Acetate Anion On Cellulose Dissolution and Reaction In Imidazolium Ionic Liquids</b> .....	413
<i>Hongbo Du, Xianghong Qian</i>	
<b>Upgrading Pyrolysis Bio-Oils by Hydrodeoxygenation Over Non-Sulfided NiMo/Al<sub>2</sub>O<sub>3</sub> Catalysts Using Guaiacol As a Model Compound</b> .....	414
<i>Zhong He, Xianqin Wang</i>	
<b>Production of Green Aromatics From Catalytic Fast Pyrolysis of Lignocellulosic Biomass</b> .....	415
<i>Jungho Jae, George W. Huber</i>	
<b>Bifunctional Materials for the Catalytic Conversion of Cellulose Into Soluble Renewable Biorefinery Feedstocks</b> .....	416
<i>Damian Reyes-Luyanda, Josseant Florez-Cruz, Pedro J. Morales-Pérez, Luis G. Encarnación-Gómez, Fengyuan Shi, Paul M. Voyles, Nelson Cardona-Martínez</i>	
<b>Etherification of Biomass Derived Molecules for Effective Diesel Fuel Production</b> .....	417
<i>Eric R. Sacia, Alexis T. Bell</i>	
<b>Hydrodeoxygenation of Guaiacol with Rh Based and CoMo and NiMo Catalysts</b> .....	419
<i>Yu-Chuan Lin, Chia-Liang Li, Hou-Peng Wan, Hom-Ti Lee, Chiung-Fang Liu, Ying-Hsi Chang</i>	
<b>Catalysts for Gas-to-Liquids Conversion – Effects of Support Type and Gas Space Velocity</b> .....	434
<i>Zhendong Pan, Dragomir B. Bukur</i>	
<b>Assessment of Pore Diffusion Limitations for the Near Critical and Supercritical Fischer-Tropsch Synthesis</b> .....	436
<i>Aswani K. Mogalicherla, Nimir O. Elbashir</i>	

<b>Development of a Comprehensive and Flexible Model for Fixed-Bed Fisher-Tropsch Reactors</b> .....	444
<i>Joseph W. Pratt</i>	
<b>Influence of Gas Flowrate On Behavior of High Thermal Conductivity Microfibrous Entrapped Catalyst for Exothermic FTS Reaction</b> .....	446
<i>Donald Cahela, Min Sheng, Bruce J. Tatarchuk</i>	
<b>In Situ FTIR Study for Tri Reforming Process</b> .....	460
<i>Yishan Zhang, Juan Cruz, Tracy J. Benson</i>	
<b>The Role of Added Promoters In Reducing the Deactivation of Co Catalyst Used In Fischer Tropsch Synthesis</b> .....	461
<i>Nianthrini Balakrishnan, Babu Joseph, Venkat Bhethanabotla, D. Yogi Goswami</i>	
<b>First Principle Guided Design of Cobalt Fischer-Tropsch Catalysts with Enhanced Stability</b> .....	463
<i>Kong Fei Tan, Jie Chang, Armando Borgna, Mark Saey</i>	
<b>Mass Transfer with Surface Chemical Reaction In Fischer-Tropsch Synthesis: Simulation by a Lattice Boltzmann Method</b> .....	464
<i>Mohammad R. Kamali, Jurriaan J. J. Gillissen, Sankaran Sundaresan, Harry E. A. Van Den Akker</i>	
<b>Micro-Scale Modelling of Flow and Particle Transport In Porous Media Via CFD</b> .....	465
<i>Daniele Marchisio, Federica Lince, Tiziana Tosco, Rajandrea Sethi</i>	
<b>Packing Low Tube-to-Particle Diameter Ratio Packed Beds for CFD Simulation</b> .....	466
<i>Genong Li, Aniruddha Mukhopadhyay, Yi Dai, Chi-Yang Cheng</i>	
<b>CFD Simulations of An Ethylene Flame and Propylene Flares</b> .....	475
<i>Kanwar Devesh Singh, Hitesh Vaid, Daniel H. Chen, Helen Lou, Kuyen Li, Xianchang Li, Christopher Martin</i>	
<b>Comparative Study of Spouted Bed Hydrodynamics Based On Dimensionless Approach Using Optical Probes and CFD</b> .....	476
<i>Shreekanta Aradhya, Al-Dahhan Muthanna</i>	
<b>CFD Study of Heavy Oil Gasification In An Entrained-Flow Gasifier</b> .....	478
<i>Vikram Sreedharan, Bjørn H. Hjertager, Tron Solberg</i>	
<b>SMR3D: An Industrial CFD Tool for Large Steam Methane Reformer Design Optimization</b> .....	489
<i>Julien Cances, Frédéric Camy-Peyret, Dieter Ulber</i>	
<b>Impact of Lignin Extraction and Cellulose III Conversion On the Enzymatic Digestibility of Corn Stover</b> .....	502
<i>Leonardo Da Costa Sousa, Shishir Chundawat, Nirmal Uppugundla, Bruce Dale, Venkatesh Balan</i>	
<b>The Effects of Cationic Polyelectrolyte On the Pretreatment and Enzymatic Hydrolysis of Corn Stover</b> .....	503
<i>Shaowen Ji, Ilsoon Lee</i>	
<b>Novel Lignocellulosic Biomass Pretreatment Using a Modified Taylor-Couette Mixer for Biofuels and Biomaterials</b> .....	504
<i>Wei Wang, Ilsoon Lee</i>	
<b>Modeling and Scale up of CO<sub>2</sub>-Water Pretreatment of Guayule Biomass</b> .....	505
<i>Ehsan Moharreri, J. Richard Elliott</i>	
<b>Effect of Transition Metal Catalyst On Lignin Oxidation During Alkaline Hydrogen Peroxide Pretreatment</b> .....	506
<i>Zhenglun Li, David Hodge</i>	
<b>Progress Toward Biological Pretreatment - Understanding Plant Cell Wall Degradation by Termite and White-Rot Fungi</b> .....	507
<i>Shulin Chen, Jing Ke, Dhrubojyoti D. Laskar, Jijiao Zeng</i>	
<b>Synthesis and Characterization of Bimetallic Overlayer Aqueous Phase Reforming Catalysts</b> .....	508
<i>Joseph Holles, Michael Skoglund</i>	
<b>Particle Size Effects On the Selective Dehydrogenation of Cyclohexane Over Pt Particles</b> .....	510
<i>Qiang Qian, Matthew Neurock, Stefan Vajda, Lisa D. Pfefferle, Gary L. Haller</i>	
<b>Synthesis, Characterization, and Testing of Shaped PtAg Nanoparticle Catalysts</b> .....	512
<i>Louis Jones, Michael Gordon</i>	
<b>Well Defined, Supported MnOx Oxidation Catalysts Via Controlled Decomposition of Coordination Complexes</b> .....	513
<i>Andrew Korinda, Nicholas Schoenfeldt, Justin M. Notestein</i>	
<b>Examination of the Effects of the Catalysts Functionality On the Selective Oxidation of Methanol</b> .....	514
<i>Erum Qayyum, John Kuhn</i>	
<b>Adsorption and Subsequent Surface Reactions of Bifunctional Compounds From Bio-Oil Vapors On Oxide Supports</b> .....	515
<i>Chandramouli Vaddepalli, Friederike C. Jentoft</i>	
<b>Population Balance Modeling of Particles with Random Behavior. Application to Gene Regulatory Processes</b> .....	522
<i>Doraiswami Ramkrishna, Che-Chi Shu</i>	
<b>Hydrogen Generation From Ammonia Borane for PEM Fuel Cell Applications</b> .....	525
<i>Arvind Varma</i>	
<b>Understanding Dispersion Polymerizations In Open and Confined Reaction Spaces towards New Applications</b> .....	526
<i>Kyu Yong Choi, Laleh Emdadi, Carla Luciani, Sang Yool Lee, In Hak Baick</i>	
<b>Early Stages of Crystal Growth In Supersaturated Solutions of Calcium Sulfate Hemihydrate Examined by Time-Resolved Cryogenic Transmission Electron Microscopy</b> .....	528
<i>Amitesh Saha, Arijit Bose, Jinkee Lee, Anubhav Tripathi, Sabrina Pancera, Andreas Kemper, Michael Bräu</i>	
<b>Exploiting Chaos: Should Polymerization Reactors Be Chaotic?</b> .....	529
<i>Sadhan C. Jana, Chang Do Jung</i>	
<b>Processing and Characterization of PVDF Films</b> .....	530
<i>Devang V. Khakhar</i>	
<b>Control Emulsions, Suspensions, and Solids Separation with Inline Particle Size Measurements In Dark Crude Oil</b> .....	531
<i>Anjan P. Pandey, Des O'Grady</i>	
<b>Alternatives to Tailings Ponds for Oil Sand Tailings Disposal</b> .....	532
<i>Yuming Xu, Tadeusz Dabros</i>	

<b>Gas Flow Behavior In FCC Disengagers Vessel with Different Outlet Tube Length of Primary Cyclone Separator</b> .....	533
<i>Jiangyun Wang, Yu Mao, Juan Wang, Meili Liu</i>	
<b>Reclamation of Spent Drilling Fluids by Cross-Flow Microfiltration</b> .....	534
<i>Yanling Wu</i>	
<b>Technology Development and Demonstration of a Low-Temperature Fluidized-Bed Biomass Dryer</b> .....	535
<i>Charles J. Coronella, Mike P. Matheus, Victor R. Vasquez</i>	
<b>Sulfur Species During Deactivation and Regeneration of Ni-Based Catalysts Used for Conditioning Biomass-Derived Syngas</b> .....	536
<i>Matthew M. Yung, Singfoong Cheah, Kimberly A. Magrini-Bair, John Kuhn</i>	
<b>Deactivation Behavior of MWCNTs and Activated Carbon-Supported Alkali-Promoted Trimetallic Co-Rh-Mo Sulfide Catalysts for Higher Alcohols Synthesis From Synthesis Gas</b> .....	537
<i>Venkateswara Rao Surisetty, Janusz A. Kozinski, Ajay K. Dalai</i>	
<b>Heterogeneous Adsorbate Based Kinetic Modeling</b> .....	538
<i>Max Tirtowidjojo, Christina Zarth, Liping Zhang, Debashis Chakraborty, Naoko Akiya</i>	
<b>Investigate the Impacts of Aging Temperature and Aging Gas On LNTs</b> .....	539
<i>Yisun Cheng, Robert McCabe, Xiaoyin Chen, Johannes W. Schwank</i>	
<b>Deactivation Model for Commercial Pd-Only TWCS</b> .....	541
<i>Sung Bong Kang, Seok Jun Han, In-Sik Nam, Byong K. Cho, Chang Hwan Kim, Se H. Oh</i>	
<b>High Throughput Study of Pt-Pd Catalysts for DOC Applications: XRD and STEM Characterization</b> .....	543
<i>Obiefune K. Ezekoye, Andrew Drews, Robert W. McCabe, Robert Kudla, George W. Graham, Xiaoqing Pan</i>	
<b>Hydrocarbon Deactivation of a Cu/Zelite SCR Catalyst</b> .....	544
<i>William Epling, Jin-Yong Luo, Cary Henry, Krishna Kamasamudram, Neal Currier, Aleksey Yezerets</i>	
<b>Hydrogen Generation by Formic Acid Decomposition Over Sub-Nm Gold Species</b> .....	545
<i>Nan Yi, Howard M. Saltsburg, Maria Flytzani-Stephanopoulos</i>	
<b>Robust Nanostructured Noble Metal/ Ceria/Lanthana Catalysts for Water-Gas-Shift</b> .....	546
<i>Shuang Liang, Gatz Vesper</i>	
<b>Steam Reforming of Ethanol/Gasoline Mixtures: Deactivation, Regeneration and Stable Performance</b> .....	547
<i>Amanda Simson, Bob Farrauto, Marco Castaldi</i>	
<b>Ambient Pressure PES Study of CeO<sub>2</sub> Supported Catalysts for Water Gas Shift Reaction</b> .....	549
<i>M. Cem Akatay, Jorge Pazmino, Mayank Shekhar, W. Damion Williams, Anil Mane, Eric A. Stach, W. Nicholas Delgass, Jeffrey W. Elam, Fabio H. Ribeiro, Dmitry Zemlyanov</i>	
<b>Evaluation of Rh-Pyrochlore Coated Monolith for the Reforming of Diesel Fuel</b> .....	550
<i>Daniel J. Haynes, David A. Berry, Dushyant Shekhawat, Mark Smith, Matthew M. Seabaugh</i>	
<b>Sulfur-Resistant Lanthanide Oxysulfide Catalysts for the High-Temperature Water-Gas Shift Reaction</b> .....	552
<i>Ioannis Valsamakis, Joseph Lessard, Maria Flytzani-Stephanopoulos</i>	
<b>Activity and Selectivity of Bimetallic Catalysts In Hydrogenolysis of Sugars and Sugar Alcohols</b> .....	553
<i>Xin Jin, Bala Subramaniam, Raghunath V. Chaudhari</i>	
<b>Hydrodeoxygenation Pathways and Selectivity Descriptors for the Conversion of Propanoic Acid to Alkanes Over Pd(111) Catalysts</b> .....	555
<i>Andreas Heyden, Jianmin Lu</i>	
<b>Kinetics and Mechanism of Acetic Acid Esterification with Ethanol On Zeolites</b> .....	556
<i>Jeremy Bedard, Hsu Chiang, Lanny Schmidt, Aditya Bhan</i>	
<b>A Kinetic and Mechanistic Study of the Selective Oxidation of 5-Hydroxymethylfurfural Over Supported Metal Catalysts</b> .....	557
<i>Sara E. Davis, Bhushan N. Zope, Levi R. Houk, Erin C. Tamargo, Abhaya Datye, Robert J. Davis</i>	
<b>Production of Gamma-Valerolactone From Corn Stover by Selective Extraction and Hydrogenation of Levulinic Acid</b> .....	558
<i>David Martin Alonso, Stephanie G. Wettstein, Jesse Q. Bond, James A. Dumesic</i>	
<b>Hydrogenolysis of Succinic Acid to GBL, Butanediol : Catalysis &amp; Kinetic Studies</b> .....	559
<i>Raghunath V. Chaudhari, Xuchao Li</i>	
<b>Investigation of Liquid Phase 1,2-Propanediol Dehydration Using Zeolite Catalysts</b> .....	560
<i>Vladimiro Nikolakis, Tim Courtney, Stavros Caratzoulas, Raul F. Lobo, Jingguang G. Chen, Dion G. Vlachos</i>	
<b>Density Functional Theory Study of Enhanced One Dimensional Mobility of Oxygen On Strained LaCoO<sub>3</sub> (001) Surface</b> .....	561
<i>Jeong Woo Han, Bilge Yildiz</i>	
<b>A First-Principles Comparison of Heterogeneous and Electrocatalytic Alcohol Oxidation Over Au and Pt Catalysts</b> .....	562
<i>David D. Hibbitts, Bhushan N. Zope, Robert J. Davis, Matthew Neurock</i>	
<b>MoS<sub>2</sub> Nanostructures As Efficient, Stable, and Earth-Abundant Catalysts for Hydrogen Evolution In Acid</b> .....	564
<i>Zhebo Chen, Dustin R. Cummins, Benjamin Reinecke, Ezra Clark, Mahendra K. Sunkara, Thomas F. Jaramillo</i>	
<b>Electrocatalysis for CO<sub>2</sub> Reduction to Hydrocarbons: Theory-Driven Design Principles Developed From Transition Metals</b> .....	565
<i>Andrew A. Peterson, Jens K. Nørskov</i>	
<b>Composite Plasmonic Metal/Semiconductor Photoelectrodes for Overall Water Splitting</b> .....	566
<i>David B. Ingram, Suljo Linic</i>	
<b>Plasmonic Nanostructures As Platforms for Efficient Coupling of Visible Light and Thermal Energy to Drive Chemical Transformations</b> .....	567
<i>Phillip Christopher, Hongliang Xin, Suljo Linic</i>	
<b>Mixed-Metal Oxide Electrocatalysts for Oxygen Evolution</b> .....	569
<i>Ethan L. Demeter, James R. Landon, John R. Kitchin</i>	

<b>Landfill Gas Clean-up Using a Flow-Through Catalytic Membrane Reactor</b> .....	570
<i>Nitin Narayanan Nair, Mirmohammedyousef Motamedhashemi, Fokion Egolfopoulos, Theodore Tsotsis</i>	
<b>Development of a High-Yield Semi-Continuous Multifunctional Ammonia Synthesis Reactor</b> .....	572
<i>Mark Huberty, Ed Cussler</i>	
<b>La<sub>2</sub>O<sub>3</sub> Modified Ni/Gamma-Al<sub>2</sub>O<sub>3</sub> Catalyst for Steam Gasification of Biomass Model Compounds In a CREC Riser Simulator</b> .....	573
<i>Jahirul Mazumder, Hugo I. Delasa</i>	
<b>A Hybrid Catalytic Membrane Reactor for Destruction of a Chemical Warfare Simulant</b> .....	574
<i>Mirmohammedyousef Motamedhashemi, Nitin Nair, Majid Monji, Fokion Egolfopoulos, Theodore Tsotsis</i>	
<b>A Novel Structured Catalyst with Enhanced Heat Transfer Characteristics for FTS</b> .....	576
<i>Min Sheng, Donald Cahela, Hongyun Yang, Bruce J. Tatarchuk</i>	
<b>Propylene Epoxidation On Supported Silver Catalysts: Insights Into Reaction Mechanism and Effect of Promoters and Butadiene Co-Feed</b> .....	577
<i>Apoorva Kulkarni, Marco Bedolla-Panjota, Mark A. Barteau, Raul F. Lobo</i>	
<b>Microkinetic Modelling of Toluene and o-Xylene Hydrogenation On a Pt Catalyst</b> .....	578
<i>Tapan Bera, Joris W. Thybaut, Guy B. Marin</i>	
<b>Influence of Pt Promoter On Fischer-Tropsch Initiation Pathways Over Cobalt Catalysts</b> .....	584
<i>Nianthrini Balakrishnan, Babu Joseph, Venkat R. Bhethanabotla, D. Yogi Goswami</i>	
<b>First Principle Reaction Path Analysis of the Fischer-Tropsch Synthesis Mechanism. Effect of CO Coverage On the Kinetics of the CO Insertion Mechanism</b> .....	586
<i>Mingkun Zhuo, Mark Saeys</i>	
<b>Analysis of Reaction Pathways for Ethanol Partial Oxidation On Platinum</b> .....	587
<i>Maura A. Koehle, Angela M. Moreno, Ashish B. Mhadeshwar</i>	
<b>Magnetic Imaging of AGOs II: Detection of Molecules In the Feed and Relation to Product Yields</b> .....	588
<i>Preetinder S. Virk</i>	
<b>Gas Phase Methane Oxidative Coupling Studied by Spatial Reactor Profiles and Microkinetic Numerical Simulations</b> .....	589
<i>Sardor Mavlyankariev, Oliver Korup, Michael Geske, Raimund Horn</i>	
<b>The Capture of Carbon Dioxide by Ionic Liquid</b> .....	592
<i>Suojiang Zhang, Jianmin Zhang</i>	

## Volume 2

<b>Structure and Thermochemistry of Phase-Changing Aminosilicone-Based CO<sub>2</sub>-Capture Absorbents</b> .....	593
<i>Benjamin R. Wood, Tiffany E. Westendorf, Sarah E. Genovese, Robert J. Perry, Michael J. O'Brien, Matthew L. Meketa, Thomas Perry, Ravi-Kumar Vipperla, Robert M. Enick, Lei Hong</i>	
<b>Phase-Changing Absorbents for CO<sub>2</sub> Capture</b> .....	594
<i>Sarah Genovese, Robert J. Perry, Michael O'Brien, Benjamin R. Wood, Tiffany Westendorf, Ravi-Kumar Vipperla</i>	
<b>Extension of Reversible Carbon Dioxide Binding by Frustrated Lewis Pairs to Other Phosphine and Amine Bases</b> .....	595
<i>Robert L. Thompson, Sheila Hedges, Damodaran Krishnan</i>	
<b>Low-Cost CO<sub>2</sub> Capture Using Enzyme Catalysis</b> .....	597
<i>Luan Nguyen, James Lalonde</i>	
<b>Research On Enzyme-Catalyzed Sequential Reduction of Carbon Dioxide</b> .....	598
<i>Wenfang Liu, Yanhui Hou, Benxiang Hou, Zhiping Zhao</i>	
<b>Electrocatalytic Conversion of CO<sub>2</sub> to Fuels On Metal Surfaces</b> .....	599
<i>Thomas F. Jaramillo, Kendra P. Kuhl, Etosha Cave</i>	
<b>DFT Studies of the Electrochemical Reduction of CO<sub>2</sub> to Alcohols On Cu/ZnO Catalysts</b> .....	600
<i>Aravind Asthagiri, Wenjia Luo</i>	
<b>Artificial Photosynthesis Utilizing Room Temperature Ionic Liquids</b> .....	601
<i>Brian A. Rosen, Richard I. Masel</i>	
<b>Photodissociation of CO<sub>2</sub> and Associated Photocatalytic Intermediates In Gas and On Surfaces</b> .....	602
<i>Chris Singer, Cynthia Lo</i>	
<b>Photocatalytic Reduction of CO<sub>2</sub> to Fuels by Modified TiO<sub>2</sub> Nanoparticles and Nanotubes</b> .....	603
<i>Ying Li, Qianyi Zhang, Lianjun Liu</i>	
<b>Photocatalytic Conversion of CO<sub>2</sub> to Fuel Using Black TiO<sub>2</sub></b> .....	604
<i>Miao Yu</i>	
<b>Water-Gas Shift Catalysis On Supported Au and Pt Catalysts</b> .....	605
<i>Mayank Shekhar, Jorge Pazmino, Wen-Sheng Lee, M. Cem Akatay, Eric A. Stach, Jeffrey T. Miller, W. Nicholas Delgass, Fabio H. Ribeiro</i>	
<b>Nanoarchitected Ni-ZrO<sub>2</sub> Catalysts for Hydrogen Production From Steam Reforming of Ethanol</b> .....	606
<i>Shuirong Li, Chengxi Zhang, Ping Na, Jinyu Han, Xinbin Ma, Jinlong Gong</i>	
<b>Mechanism for the Water-Gas Shift Reaction On Pt(111) and Catalyst Deactivation</b> .....	607
<i>David W. Flaherty, Wen-Yueh Yu, Zachary Pozun, Graeme Henkelman, C. Buddie Mullins</i>	
<b>Thermodynamic and Kinetic Modeling of the Water Gas Shift Reaction Using Supported Ionic Liquid Phase Catalyst Systems</b> .....	608
<i>Johannes Hartmann, Alexander Buchele, Wolfgang Arlt, Sebastian Werner, Peter Wasserscheid</i>	
<b>Renewable Hydrogen Generation by Steam Reforming of Acetic Acid Over Cu-Zn-Ni Catalyst Supported On Calcium Aluminate</b> .....	609
<i>Madhumita Patel, K. K. Pant</i>	

<b>Colloidal Synthesis and Characterization of Alumina-Supported Cu/Ni Core-Shell Nanoparticles In Water Gas-Shift Reaction</b> .....	610
<i>Jiann-Horng Lin, Vadim Guliants</i>	
<b>Modified Ferrites As Catalysts for High Temperature Water Gas Shift Reaction</b> .....	612
<i>Krishna Reddy Gunugunuri, Rajesh Koirala, Panagiotis Smirniotis, Punit Boolchand</i>	
<b>First Principles Analysis of the Selective Hydrogenolysis of Tetrahydrofurfuryl Alcohol Over Rh and ReOx Modified Rh Surfaces</b> .....	613
<i>Qiaohua Tan, David Hibbitts, Mei Chia, Yomaira J. Pagán-Torres, James A. Dumesic, Robert J. Davis, Matthew Neurock</i>	
<b>Oxygen-Free Oxidative Dehydrogenation of Ethane Over VO<sub>x</sub>/γ-Al<sub>2</sub>O<sub>3</sub> Catalyst In Riser Reactor Simulator</b> .....	615
<i>Sameer A. Al-Ghamdi, Hugo I. De Lasa, Maria Volpe</i>	
<b>Hydrolysis of Poly(1-4-β-glucan) Strands Derived From Cellulose Using Mild Acidity and Temperature</b> .....	623
<i>Oz Gazit, Alexander Katz</i>	
<b>Catalytic Hydroprocessing of Fast Pyrolysis Bio-Oil Model Compounds</b> .....	624
<i>Hajjun Wan, R. V. Chaudhari, Bala Subramaniam</i>	
<b>Production of Biodiesel by Direct Transesterification of Activated Sludge Using Supercritical Methanol</b> .....	625
<i>Adebola T. Coker, Rafael Hernandez, William T. French, Emmanuel Revellame, William Holmes, Guochang Zhang, Alexei V. Iretskii, Mark G. White</i>	
<b>Catalytic Production of 1,2-MPG From Glycerin</b> .....	626
<i>Sydney D. Sovine, Stephen Dufreche, Rakesh Bajpai, Mark Zappi</i>	
<b>Membrane Reactor Technology for Aqueous-Phase Hydrogenation of Glutamic Acid</b> .....	627
<i>Mandeep Kular, Neha Dhiman, Peter Pfromm, Mary Rezac</i>	
<b>Considerations for Research, Development and Commercialization/Scale-up of Biomass Pretreatment Processes</b> .....	628
<i>Dale Monceaux, Richard C. Agar, Charles E. Wyman</i>	
<b>Improving Corn Stover Reactivity In Low Severity Pretreatment Through Deacetylation and Disc-Refining</b> .....	632
<i>Xiaowen Chen, Joseph Shekiri, Mary Ann Franden, Min Zhang, Bonwook Koo, Sunkyu Park, Melvin Tucker</i>	
<b>Reducing Process Complexity for Cellulosic Ethanol</b> .....	633
<i>L. O. Ingram</i>	
<b>Co-Utilization of Methane In Steam-Biomass Gasification Using Concentrated Solar Energy</b> .....	635
<i>Aaron W. Palumbo, Erica L. Jorgensen, Alan W. Weimer</i>	
<b>Poly(oxymethylene) Dimethyl Ethers As Components of Tailored Diesel Fuel - Properties, Synthesis and Purification Concepts</b> .....	636
<i>Jakob Burger, Markus Siebert, Eckhard Ströfer, Michael Nilles, Hans Hasse</i>	
<b>Synthesis of Green Diesel Fuel From Fatty Acid Feedstocks Via Electrochemical Hofer-Moest Decarboxylation</b> .....	638
<i>Cody Wagner, Charles Coronella, Rainer Busch</i>	
<b>Quantitative Comparison of Chemical and Biological Cardboard's Lignin Degradation</b> .....	639
<i>Estefania Isaza, Rocio Sierra</i>	
<b>Isoconversional Methods Applied to Kinetic Modeling Oxidative Alkaline Pretreatment of Sugarcane Bagasse</b> .....	652
<i>Rocio Sierra, Cuellar Gerardo, Simbaqueba Andres, Auza Nicolas, Copete Diego</i>	
<b>Alkaline Deacylation of Corn Stover to Reduce Toxicity of Prehydrolyzates and Improve Enzymatic Hydrolysis</b> .....	653
<i>Urvi D. Kothari, Y. Y. Lee</i>	
<b>Deconstruction of Wheat Straw Lignin by Streptomyces Viridosporus As Insight Into Biological Degradation Mechanism</b> .....	654
<i>Jijiao Zeng, Deepak Singh, Dhrubojyoti D. Laskar, Shulin Chen</i>	
<b>A New Pretreatment and Processing System for Recalcitrant Biomass</b> .....	656
<i>Benjamin E. Levie, Dwight E. Anderson, Johnway Gao, Alan D. Lovas</i>	
<b>Economics of Pretreatment for Biological Processing</b> .....	664
<i>Ling Tao, Andy Aden, Richard T. Elander</i>	
<b>Pt-Free Electrocatalysts for Efficient Oxygen Reduction In Alkaline Fuel Cells: Experimental and Computational Insights</b> .....	665
<i>Adam Holewinski, Suljo Linic</i>	
<b>Electrochemical Characterization of a Platinum Nanotubule Array Electrode Structure Made Via Template Nanofabrication</b> .....	666
<i>Eric Broaddus, Joel Brubaker, Scott A. Gold</i>	
<b>Synthesis of Freestanding Metal-Platinum Core-Shell Structure with Well Defined Facets As Electro-Catalyst for the Oxygen Reduction Reaction</b> .....	667
<i>Yanqi Zhang, Qian Xu, Yushan Yan</i>	
<b>Double Gyroid Nanostructured Platinum As Highly Durable Oxygen Reduction Reaction Electrocatalyst</b> .....	668
<i>Thomas F. Jaramillo, Jakob Kibsgaard, Yelena Gorlin</i>	
<b>Highly Active and Durable Pt-Bimetallic Electrocatalysts</b> .....	669
<i>Chao Wang, Nenad Markovic, Vojislav Stamenkovic</i>	
<b>Linking Electrode Performance with Structure Using X-Ray Tomography</b> .....	670
<i>Molly Jhong, Fikile R. Brushett, Paul J. A. Kenis</i>	
<b>Anode Catalyst Layers for Direct Liquid Fuel Cells</b> .....	671
<i>Cynthia Ann Rice-York, Shilpa Beravelli, Akshay Bauskar</i>	
<b>Flow Regime Identification In Different Two-Phase Reactors Based On Extraction of Various Entropies From Gauge Pressure Fluctuations</b> .....	672
<i>Stoyan Nedeltchev, Shreekanta Aradhya, Faraj Zaid, Muthanna Al-Dahhan</i>	
<b>Incremental Identification of Reaction and Mass-Transfer Rates In Gas-Liquid Reaction Systems Using Tendency Modeling</b> .....	675
<i>Nirav Bhatt, Christos Georgakis, Dominique Bonvin</i>	

<b>Local Time-Averaged Heat Transfer Coefficient In a Pebble Bed</b> .....	677
<i>Rahman Abdulmohsin, Muthanna Al-Dahhan</i>	
<b>Trickle-Bed Reactor Studies for Selective Oxidation of Glycerol to Dihydroxyacetone Over Pt-Bi/C Catalyst</b> .....	678
<i>Gregory S. Honda, Wenbin Hu, Wesley Fleming, Arvind Varma</i>	
<b>Directed Evolution of Metalloenzymes for Organic Synthesis</b> .....	679
<i>Carl A. Denard, Lars Martin Jarenmark, Ramesh Giri, John F. Hartwig, Huimin Zhao</i>	
<b>Effect of Pebble Sizes On Axial Gas Dispersion In a Pebble Bed</b> .....	680
<i>Rahman Abdulmohsin, Muthanna Al-Dahhan</i>	
<b>Lignin Depolymerization and Deoxygenation In Ionic Liquids</b> .....	681
<i>Blair J. Cox, Thong Q. Ngo, John G. Ekerdt</i>	
<b>Preparation of Cellulose-Rich Materials From Cornstalks Using Biodegradable Ionic Liquids</b> .....	682
<i>Xiaofeng Zhang</i>	
<b>Preparation of Cellulose-Rich Materials From Cornstalks In Biodegradable Ionic Liquids</b> .....	683
<i>Shan Li, Minli Zhu, Xingmei Lu, Zengxi Li, Suojiang Zhang</i>	
<b>Preparation and Testing of Adsorbents for the Separation of Ionic Liquids From HMF</b> .....	685
<i>Yuxiang Rao, Alan Cooper, Heather Brown, Wei Liu</i>	
<b>Isobutane/1-Butene Alkylation Catalyzed by Ionic Liquid-Superacid Coupled Catalysts</b> .....	686
<i>Xueqi Xing, Guoying Zhao, Suojiang Zhang, Peng Cui, Hailing Ren</i>	
<b>Degradation of Poly(ethylene terephthalate) Wastes Catalyzed by Mn-Containing Ionic Liquid</b> .....	687
<i>Qian Wang, Xingmei Lu, Xiangping Zhang, Suojiang Zhang, Chunshan Li, Zengxi Li, Xueyuan Zhou, Minli Zhu</i>	
<b>Automatic Reaction Mechanism Generation with Group Additive Kinetics</b> .....	688
<i>Richard H. West, Joshua W. Allen, William H. Green</i>	
<b>Automation of Composition Modeling for Complex Petroleum Hydrocarbons by Homologous Series</b> .....	695
<i>Zhen Hou, Steven P. Pyl, Craig Bennett, Brian Moreno, Michael T. Klein</i>	
<b>Rule-Based Network Analysis of Complex Reaction Systems In Biomass Conversion</b> .....	696
<i>Srinivas Rangarajan, Aditya Bhan, Prodomos Daoutidis</i>	
<b>Progress towards Capturing Solvent Effects In Automatic Mechanism Generation</b> .....	698
<i>Amrit Jalan, Richard H. West, William H. Green</i>	
<b>Creating Thermodynamically Consistent Microkinetic Mechanisms for Heterogeneous Chemistry Based Upon Gas-Phase Properties</b> .....	706
<i>Claude Franklin Goldsmith, D. Wayne Blaylock, Raimund Horn</i>	
<b>Efficient Location of Transition State Structures Via the Freezing String Method</b> .....	707
<i>Paul M. Zimmerman, Andrew Behn, Martin Head-Gordon, Alexis T. Bell</i>	
<b>Reaction Mechanism Analysis Using Periodic Temperature Forcing</b> .....	708
<i>Ramanathan Srinivasan, Niket Kaisare</i>	
<b>Study On the Capture of Carbon Dioxide with Porous Covalent Triazine-Based Frameworks</b> .....	709
<i>Lu Bai, Xiangping Zhang, Guoying Zhao, Suojiang Zhang, Yi Nie, Haifeng Dong</i>	
<b>Development of Nanoparticle Catalyst for the Trireforming of CO<sub>2</sub>-Rich Flue Gases</b> .....	710
<i>Juan Cruz, Jackie W. Seaman, Yishan Zhang, Tracy J. Benson</i>	
<b>Material and Engineering Assessments of Electrochemical Processes for Carbon Capture Technology</b> .....	711
<i>Fritz Simeon, Michael C. Stern, Kristin Vicari, Howard Herzog, T. Alan Hatton</i>	
<b>High Temperature CO<sub>2</sub> and Sulfur Removal Using Carbonation-Calcination Reaction (CCR) Process: Results From Computer Simulations and Experiments</b> .....	712
<i>William Wang, Nihar Phalok, Shwetha Ramkumar, Niranjani Deshpande, Yao Wang, Robert Statnick, L.-S. Fan</i>	
<b>Novel Electrochemical Process for Capture of CO<sub>2</sub> From Power Plant Flue Gas</b> .....	713
<i>Saurav Datta, Yupu J. Lin, Michael P. Henry, Cynthia S. Millard, Jitendra Shah, Lisa Wesolowski, Rebecca L. Stiles, Jianwei Yuan, Robert W. Dorner, Wayne M. Carlson, Seth W. Snyder</i>	
<b>Combating Surface Passivation In the Mineralization of Carbon Dioxide</b> .....	714
<i>Edward J. Swanson, Ah-Hyung Alissa Park</i>	
<b>Evaluation of Modified Feedstocks for Deconstructionability</b> .....	715
<i>Seema Singh</i>	
<b>Discovery and Characterization of Cellulolytic Enzymes From the Wood Wasp Symbiont Streptomyces Sp. ActE</b> .....	716
<i>Taichi E. Takasuka, Adam J. Brook, Cameron R. Currie, Brian G. Fox</i>	
<b>Dissecting the Cellulosome Enzyme Complex: Assembly and Function</b> .....	717
<i>Yannick J. Bomble, Mark Nimlos, Michael E. Himmel, Michael F. Crowley</i>	
<b>Construction of Efficient Gram-Negative Biocatalysts for Lignocellulose Conversion</b> .....	718
<i>David Keating, Michael Schwalbach, Jeffrey Gardner, Mary Tremaine, Patricia Kiley, Robert Landick</i>	
<b>One-Step Production of Lactate and Isobutanol From Pretreated Biomass by Recombinant Cellulolytic Bacillus Subtilis</b> .....	719
<i>Xiaozhou Zhang, Chun You, Y.-H. Percival Zhang</i>	
<b>Development of Alkene Biofuels</b> .....	720
<i>Harry R. Beller, Ee-Been Goh</i>	
<b>CO<sub>2</sub> Methanation with Ru Decorated Carbon Nanotubes-Supported Catalysts</b> .....	721
<i>Randy L. Vander Wal, Jane Fujiyama-Novak, Chung-Hsuan Huang, Ganesh Rahul Bhimanapati, Susana Carranza</i>	
<b>Unique Processing Considerations for the Trireforming of CO<sub>2</sub> to Synthesis Gas</b> .....	723
<i>Tracy J. Benson, Juan Cruz, Yishan Zhang, Jackie W. Seaman</i>	
<b>CO<sub>2</sub> Methanation Over Supported Bimetallic Ni-Fe Catalysts: Effect of Support and Total Metal Loading</b> .....	724
<i>Dharmendra Pandey, Goutam Deo</i>	
<b>Reaction Mechanism Network of CO<sub>2</sub> Hydrogenation to Methanol On Cu(111)</b> .....	728
<i>Donghai Mei, Ya-Fan Zhao, Yong Yang, Charles Mims, Charles H. F. Peden, Jun Li</i>	

<b>Mechanism of CO<sub>2</sub> Reduction to Hydrocarbons Over Ti-SBA-15</b> .....	730
<i>Chieh-Chao Yang, Guido Mul</i>	
<b>Mechanistic Study of the Reaction of Ethylene Oxide and CO<sub>2</sub> Catalyzed by Salen Complexes</b> .....	731
<i>Maria Curet-Arana</i>	
<b>Synthesis, Physical Characterization and Hydrogen Generation by Methanol Dry Reforming Over Silica-Supported Size-Controlled Pd Nanoparticles</b> .....	732
<i>Selma Hokenek, John N. Kuhn</i>	
<b>Nickel-Based Autothermal Reforming Catalysts: Effect of Particle Size On Sulfur Tolerance</b> .....	733
<i>Johannes W. Schwank, Joseph M. Mayne, Kevin Dahlberg, Thomas Westrich, Andrew Tadd</i>	
<b>Effect of K and P On Rh Catalysts for Autothermal Reforming</b> .....	735
<i>Reetam Chakrabarti, Lanny Schmidt</i>	
<b>Aqueous-Phase Reforming of n-BuOH Over Ceramic Oxide Based Catalysts</b> .....	736
<i>Banasri Roy, Hannah Sullivan, Corey A. Leclerc</i>	
<b>Deactivation of Noble-Metal Catalysts During Autothermal Reforming of Jet Fuel</b> .....	740
<i>Andrew R. Tadd</i>	
<b>A Review of the Effect of Fuel Type and Sulfur Compound Variation on the Performance of Partial Oxidation Reforming Catalysts</b> .....	741
<i>Galen B. Fisher, Johannes W. Schwank</i>	
<b>Production of Concentrated Monosaccharide Solutions From Biomass Using CO<sub>2</sub>-H<sub>2</sub>O Mixtures At Varying Temperatures</b> .....	743
<i>Jeremy S. Luterbacher, Jefferson W. Tester, Larry P. Walker</i>	
<b>Structural Characterization of AHP-Pretreated Biomass</b> .....	744
<i>Muyang Li, David Hodge</i>	
<b>Pretreatment of Corn Stover for Bioethanol Production Using Low-Moisture Anhydrous Ammonia (LMAA); Ammoniation and Pretreatment</b> .....	745
<i>Chang Geun Yoo, Nhuan-John Nghiem, Kevin B. Hicks, Tae Hyun Kim</i>	
<b>Feedstock Mixture Effects On Sugar Monomer Recovery Following Dilute Acid Pretreatment and Enzymatic Hydrolysis</b> .....	746
<i>Michael J. Brodeur-Campbell, Jordan Klinger, David Shonnard</i>	
<b>Hydrolysate De-Acidification Using Resin-Wafer Electrodeionization</b> .....	749
<i>Yupo J. Lin, Saurav Datta, Michael Henry, Anthony Fracaro, Seth Snyder</i>	
<b>Biomimicry of the Fungal Consolidation of Biomass Pretreatment with Saccharification</b> .....	750
<i>Justin T. Kaffenberger, Jonathan S. Schilling</i>	
<b>Synthesis, Characterization and Oxygen Reduction Reaction Studies of Monometallic and Bimetallic Palladium-Based Nanoparticles for Proton Exchange Membrane Fuel Cell (PEM FC) Applications</b> .....	751
<i>Selasi Blavo, M. D. Sanchez, J. N. Kuhn</i>	
<b>First Principle Insights Into the Electrocatalytic Oxidation of Ethanol Over Pt and PtMo Surfaces</b> .....	752
<i>Fei Li, Matthew Neurock</i>	
<b>Electrocatalytic Processing of Polyols Based On Anion Exchange Membrane Fuel Cells</b> .....	753
<i>Wenzhen Li, Le Xin, Zhiyong Zhang</i>	
<b>Volcano Behavior of Pd<sub>3</sub>M@Pd<sub>3</sub>Pt Core-Shell Oxygen Reduction Electrocatalysts by Gradually Changing the Oxygen Binding Energies</b> .....	754
<i>Quang Thang Trinh, Mark Saeys</i>	
<b>Computational Modeling of Electrolyte/Cathode Electrocatalytic Interface In PEM Fuel Cells</b> .....	755
<i>Kuan-Yu Yeh, Michael V. Glasspool, Michael J. Janik, Janna K. Maranas</i>	
<b>Optimization of Electrodes Based On Polymer Properties of Hydrocarbon Polyelectrolyte for PEFCs</b> .....	756
<i>Tatsuya Nakajima, Takanori Tamaki, Hidenori Ohashi, Takeo Yamaguchi</i>	
<b>Development of Predictive Models for Screening Multimetallic Electrocatalysts</b> .....	758
<i>Hongliang Xin, Suljo Linic</i>	
<b>From Multi-Scale Methods to Virtual Process Engineering --- Efficient and Accurate Simulation of Multi-Phase Complex Systems</b> .....	759
<i>Ge Wei</i>	
<b>Point of Use Recyclable Bioreactor System for Bio-Agricultural Applications</b> .....	760
<i>Matthew A. Robinson, Henry Y. Wang</i>	
<b>The Study of Ultrasonic Irradiation Facilitating Fat Hydrolysis Reaction</b> .....	N/A
<i>Guangming Du</i>	
<b>Autothermal Hydrogen Production From Isobutanol for Fuel Cells</b> .....	762
<i>Reetam Chakrabarti, Jacob S. Kruger, Lanny Schmidt</i>	
<b>Sulfuric Acid Catalyzed Isobutane-Butene Alkylation Promoted with Ionic Liquids or Trifluoroethanol</b> .....	763
<i>Hailing Ren, Guoying Zhao, Suojiang Zhang</i>	
<b>Comparison of Different Process Routes From Coal with Energy and Exergy Analysis</b> .....	764
<i>Yuehua Yao, Xiangping Zhang, Suojiang Zhang</i>	
<b>Liquid-Liquid Mass Transfer In a Rotor-Stator Spinning Disc Reactor</b> .....	766
<i>Frans Visscher, John Van Der Schaaf, Mart H. J. M. De Croon, Jaap C. Schouten</i>	
<b>Study of Effect of Design and Operating Conditions On Spouted Bed Hydrodynamics</b> .....	770
<i>Shreekanta Aradhya, Al-Dahhan Muthanna</i>	
<b>Investigation of the Effect of Fluidized Bed Scale On the Solid Dynamics Using Sophisticated Optical Probe</b> .....	772
<i>Faraj M. Zaid, Stoyan Nedelchev, Muthanna Al-Dahhan</i>	



<b>An Approach for Efficient Conversion of Carbohydrates to Value Added Products Using Metal Coated Polymeric Membranes</b> .....	774
<i>Neha Dhiman, Peter Pfromm, Mary Rezac</i>	
<b>Characterization of the Degree of Turbulence In Bubble Columns Based On Chaos Analysis of CARPT Data</b> .....	775
<i>Stoyan Nedelchev, Muthanna Al-Dahhan</i>	
<b>Mechanisms and Energetics for Acid Catalyzed <math>\beta</math>-D-Glucose Conversion to 5-Hydroxymethylfurfural</b> .....	777
<i>Xianghong Qian</i>	
<b>Comparison of Performances for Diesel Fuels and Biodiesel In HCCI Engine Using Detailed Mechanism with On-the-Fly Reduction</b> .....	778
<i>Shuliang Zhang, Ioannis P. Androulakis, Marianthi G. Ierapetritou, Linda J. Broadbelt</i>	
<b>Understanding Solvent Effects In the Selective Conversion of Fructose to HMF: A Molecular Dynamics Investigation</b> .....	781
<i>Samir H. Mushrif, Stavros Caratzoulas, Dionisios G. Vlachos</i>	
<b>Reaction Control of Transient Systems: Identifying the Dominant Transition and Intermediate States</b> .....	782
<i>William D. Michalak, James B. Miller, Andrew J. Gellman</i>	
<b>Effects of Point Defects on the Oxygen Precipitates of Si Wafer Grown by Czochralski Method</b> .....	783
<i>Do Won Song, Kyo Kim, Young-Hee Mun</i>	
<b>Elucidation of Heterogeneous Catalysis Reaction Mechanisms Using a SCT Shock Tube Reactor</b> .....	789
<i>Hope H. Connolly, Marco J. Castaldi</i>	
<b>Global Rate Expressions for Reactions In Automotive Catalytic Converters</b> .....	791
<i>Nivedita Kumar, Ravikeerthi Thimmineni, Niket Kaisare, Preeti Aghalayam</i>	
<b>New Structure of Matter for High Performance Heterogeneous Catalytic VOC Oxidation At Short Contact Time</b> .....	793
<i>Sabrina Wahid, Bruce Tatarchuk</i>	
<b>Catalytic Evaluation of La<sub>1-x</sub>Sr<sub>x</sub>Cr<sub>1-y</sub>Mn<sub>y</sub>O<sub>3</sub>- In Propane Steam Reforming At Intermediate Temperature</b> .....	794
<i>Jung Min Sohn, Nak Hyeon Kim</i>	
<b>Behavioral Analysis of Heterogeneous Catalysts Type Zeolite (HZSM-5 and HBETA) on the Transesterification of Soybean Oil Modified with Fatty Acids</b> .....	795
<i>Isaac Nava, Horacio González, Alfredo Fuentes Gutiérrez</i>	
<b>DeNOx Performance of Combined LNT-SCR Catalyst Systems: A Simulation Study</b> .....	796
<i>Arun S. Kota, Dan Luss, Balakotaiah Vemuri</i>	
<b>The Study of the Asymmetric Transfer Hydrogenation of Imines by RuTsDPEN Catalyst – Theoretical and Practical Aspects</b> .....	797
<i>Marek Kuzma, Petr Kacer, Jiri Vaclavik, Jan Prech, Libor Cerveny</i>	
<b>Esterification of Iso-Amyl Alcohol with Benzoic Acid: A Kinetic Study</b> .....	805
<i>Yurany P. Jiménez, Yoshinori A. Casas, Cristian Ojalora, Gerardo Rodriguez, Iván D. Gil, Julio C. Vargas</i>	
<b>Feedstock to Tailpipe: A Catalysis Approach</b> .....	807
<i>Griffin W. Roberts, Susan Stagg-Williams</i>	
<b>A Study of the Effect of PVP As Stabilizing Agent In Platinum Nanoparticle Synthesis and the Implications Towards Oxygen Reduction Reaction</b> .....	808
<i>Selasi Blavo, Lyndsey M. Baldyga, John Kuhn</i>	
<b>Development of a Fluidized-Bed Catalytic Cracking (FCC) System with On-Line Product Analyses for Conversion of Activated Sludge to Green Fuels</b> .....	809
<i>William Holmes, Emmanuel D. Revellame, Rafael Hernandez, William T. French</i>	
<b>Design and Initial Testing of a Spouted-Bed Reactor for Biomass Catalytic Pyrolysis</b> .....	810
<i>Shoucheng Du, Julia Valla, George M. Bollas</i>	
<b>Novel Catalytic Materials for Oxidative Coupling of Methane</b> .....	812
<i>Ranjita Ghose, Hyun Tae Hwang, Arvind Varma</i>	
<b>Selective Oxidation of Glycerol to Dihydroxyacetone In a Trickle-Bed Reactor</b> .....	813
<i>Gregory S. Honda, Wenbin Hu, Wesley Fleming, Arvind Varma</i>	
<b>Long Carbon Chain Esters from Babassu Biodiesel Using Mesoporous Silica as Catalyst</b> .....	814
<i>Monica C. G. Albuquerque, Leandro S. Fernandes, Maria S. Vale, Diana C. S. Azevedo, Celio L. Cavalcante Jr.</i>	
<b>Copper Based Plasmonic Catalyst for Efficient and Selective Epoxidation of Propene</b> .....	815
<i>Marimuthu Andiappan, Suljo Linic</i>	
<b>Homogeneous Catalyzed Esterification of n-Butyric Acid with Isoamyl Alcohol: A Kinetic Study</b> .....	816
<i>Y. Páez, Jairo A. Duran, Alvaro Orjuela, Ivan D. Gil, Gerardo Rodriguez, Julio C. Vargas</i>	
<b>Deactivation and Regeneration of Commercial SCR Catalyst Used In a Coal-Fired Power Plant</b> .....	821
<i>Jung Bin Lee, Sung Nam Chun, Kwang Beom Hur, Sang Mun Jeong, Jong Dae Lee</i>	
<b>The Effect of Zn-Ni-Ferrite Catalyst for HTS Under LNG Reformate Condition</b> .....	823
<i>Myung Suk Lee, Joon Yeob Lee, Dae-Won Lee, Kwan-Young Lee</i>	
<b>Two-Nozzle Flame Synthesis of NOx Storage Reduction Catalysts</b> .....	831
<i>Robert Büchel, Sotiris E. Pratsinis, Alfons Baiker</i>	
<b>Methanol Partial Oxidation Over Palladium-, Platinum-, and Rhodium-integrated LaMnO<sub>3</sub> Perovskites</b> .....	836
<i>Chia-Liang Li, Yu-Chuan Lin</i>	
<b>Synthesis and Catalytic Properties of Nickel Silicide Catalysts for Selective Hydrogenation</b> .....	869
<i>Xiao Chen, Christopher T. Williams, Changhai Liang</i>	
<b>Role of Microwave Heating Strategies In Enhancing the Progress of a First Order Endothermic Reactions</b> .....	871
<i>Tanmay Basak, Madhuchhanda Bhattacharya</i>	
<b>Significantly Enhanced Reactor-Scale Efficiency and Catalyst Lifetime by Rational Design of the Hierarchical Catalyst Pore Network – Application to Hydrodemetalation</b> .....	873
<i>Sanjeev M. Rao, Marc-Olivier Coppens</i>	

<b>Density Functional Theory Study of External Zeolite Surfaces</b> .....	875
<i>Junbo Chen, N. A. Deskins</i>	
<b>Kinetics of the Gas-Phase Oxidation of Hexafluoropropylene In a Laminar Flow Reactor</b> .....	877
<i>David Lokhat, Deresh Ramjugernath, Maciej Starzak</i>	
<b>Theoretical Study of Externally Imposed Temperature Profiles In Continuous Reactors and Optimal Profiles for Exothermic Reactions</b> .....	878
<i>Dario A. Cruz, Jorge M. Gomez, Watson L. Vargas</i>	
<b>Atomic Layer Deposition for In-Situ Fabrication of Catalyst Supports</b> .....	879
<i>Staci A. Van Norman, Stefan Strähle, Nick Wannemacher, Aldo Steinfeld, John Falconer, Alan W. Weimer</i>	
<b>Optimal Design In Biodiesel Production From Esterification of Palmitic Acid In Excess Methanol</b> .....	880
<i>T. H. Dăng, Yi-Han Chan, Bing-Hung Chen, Duu-Jong Lee</i>	
<b>Autothermal Reforming of n-Dodecane Over Promoted Nickel Xerogel Catalysts</b> .....	881
<i>M. V. Phanikrishna Sharma, Jale Akyurtlu, Ates Akyurtlu</i>	
<b>Comparison of Microwave Drying and Regular Oven Drying of Supported Catalysts</b> .....	883
<i>Xue Liu, Johannes G. Khinast, Benjamin Glasser</i>	
<b>Fundamental Understanding of Adsorption of Aldehydes On Alumina</b> .....	N/A
<i>Zhimin Lu</i>	
<b>Catalytic Oxidation of Cyclohexane by Molecular Oxygen Using Polymer Anchored Catalysts</b> .....	886
<i>Shri Chand, Sweta Sharma, Shishir Sinha, Prakash Biswas</i>	
<b>Photocatalytic Conversion of CO<sub>2</sub> to Fuels by Nanostructured CeO<sub>2</sub>-TiO<sub>2</sub>/SiO<sub>2</sub> Catalysts</b> .....	891
<i>Cunyu Zhao, Ying Li</i>	
<b>Ionic Liquid Thin Film Technologies for Advanced Catalytic Processes</b> .....	892
<i>Peter Wasserscheid</i>	
<b>Theoretical Investigation of Hydrodeoxygenation of Methyl Propionate On Pd (111)</b> .....	893
<i>Sina Behtash, Andreas Heyden</i>	
<b>Determination of Controlling Regimes for Various SCR Reactions On Zeolite Based Monolithic Catalysts</b> .....	894
<i>Pranit S. Metkar, Michael P. Harold, Vemuri Balakotaiah</i>	
<b>Computational Study On Dry Reforming Reactions Over Pt/TiO<sub>2</sub> Catalysts</b> .....	895
<i>Zhuo Cheng, Cynthia S. Lo</i>	
<b>Synthesis of Mesoporous Aluminosilicates From Commercially Available Ferrierite and Application for Catalytic Reaction</b> .....	896
<i>Jong Ki Jeon, Nansuk You, Hyeonjoo Kim, Jin-Heong Yim, Seong Jun Lee, Young Kwon Park, Do Heui Kim</i>	
<b>Platinum Nanoparticles Embedded In Nanoporous Carbon Spheres As Shape Selective Catalyst</b> .....	898
<i>Maryam Peer, Ramakrishnan Rajagopalan, Henry C. Foley</i>	
<b>Effect of the Support of Metal Oxide Supported Ruthenium Catalysts for the Conversion of Cellulose Into Sugar Alcohols</b> .....	899
<i>Darlene Z. Galloza-Lorenzo, Rafael Mendez-Roman, Yomaira J. Pagán-Torres, James A. Dumesic, Nelson Cardona-Martinez</i>	
<b>High Throughput Screening of Catalytic Materials for JP-8 Fuel Reformation</b> .....	900
<i>John E. Bedenbaugh, Jochen Lauterbach</i>	
<b>Condensed-Phase Cellulose Pyrolysis</b> .....	902
<i>Matthew S. Mettler, Dionisios G. Vlachos, Paul J. Dauenhauer</i>	
<b>Approximate Approach for Kinetic Modeling of Complex Chemical Reaction Network</b> .....	904
<i>Jae Ho Lee, Sookil Kang, Young Kim, Sunwon Park, Deuksoo Park, Seungjun Lee, Sun Choi</i>	
<b>2,4-Di-Ter-Pentyl-Phenol Synthesis On Silica Gel Supported Phosphotungstic Acid Catalyst</b> .....	913
<i>Lichun Dong, Nicheng Chen</i>	
<b>Manipulation of the Hydrocarbon Pool for Methanol-to-Hydrocarbons On H-ZSM-5</b> .....	914
<i>Samia Ilias, Aditya Bhan</i>	
<b>Probing the Gold Active Sites In Au/TS-1 for Gas Phase Epoxidation of Propylene In the Presence of Hydrogen</b> .....	915
<i>Wen-Sheng Lee, M. Cem Akatay, Eric A. Stach, Fabio H. Ribeiro, W. Nicholas Delgass</i>	
<b>Bifunctional Mesoporous Silica for Cooperative Catalysis Prepared Through Sequential Grafting of An Organic Base and An Organic Acid</b> .....	916
<i>Nicholas Brunelli, Krishnan Venkatasubbaiah, Christopher W. Jones</i>	
<b>Product Selectivity In Catalytic Conversion of Benzyl Alcohol In Mesitylene Using Meso-/Microporous Zeolites</b> .....	917
<i>Dongxia Liu, Aditya Bhan, Michael Tsapatsis, Saleh Al Hashimi</i>	
<b>Effects of Synthesis Conditions and Dispersion On the Propene Oligomerization Activity of Ni-Containing Microporous Catalysts</b> .....	918
<i>Anton N. Mlinar, Alexis T. Bell</i>	
<b>Co-Feeding Lignin-Derived Compounds and Hydrocarbons On Different Acid Zeolites</b> .....	920
<i>Anh T. To, Teerawit A. Prasomsri, Lei Nie, Daniel E. Resasco</i>	
<b>Ethylene Oligomerization Catalyst Optimization Using Fundamental Kinetic Modeling</b> .....	921
<i>Kenneth Toch, Joris W. Thybaut, Mariam Arribas, Agustin Martinez, Guy B. Marin</i>	
<b>Direct Conversion of Lignocellulosic Biomass to Drop-In Hydrocarbon Fuel</b> .....	929
<i>Xuejun Pan, Li Shuai</i>	
<b>A Method for Rapid Screening of Catalysts for Hydrodeoxygenation of Biomass Intermediates</b> .....	930
<i>David K. Johnson</i>	
<b>A Novel Reactive Distillation Approach for Producing 1,3-Dihydroxyacetone From Glycerol</b> .....	931
<i>Xi Hong, Carl T. Lira, Dennis J. Miller</i>	
<b>Catalytic Oxidative Dehydration of Butanol Isomers: 1-Butanol, 2-Butanol and Isobutanol</b> .....	939
<i>Ivan C. Lee</i>	

<b>Effects of Reaction Conditions On the Acid-Catalyzed Hydrolysis of Miscanthus Dissolved In An Ionic Liquid</b> .....	940
<i>Sean J. Dee, Alexis T. Bell</i>	
<b>Secondary Thermochemical Xylo-Oligomer Hydrolysis of High-Solids Dilute-Acid Pretreatment Slurries</b> .....	941
<i>Erik M. Kuhn, Joseph Shekro, Nick J. Nagle, Richard T. Elander</i>	
<b>Single Molecule Spectroscopy for Characterization of Acid Acid Catalysts</b> .....	942
<i>Xiaojiao Sun, Alec Kirkeminde, Daniel A. Higgins, Keith L. Hohn</i>	
<b>Spectroscopic Investigation of CO Adsorption On Pt(100) at Near-Atmospheric Pressures Using PM-IRAS</b> .....	943
<i>John E. Bedenbaugh, Jochen Lauterbach</i>	
<b>A Novel Multilayer Infrared Absorption Spectroscopy (MEIRAS) Technique for Infrared Polarization Dependent Operando Study CO Adsorption and Oxidation On Thin Film and Nanowire Catalysts</b> .....	945
<i>Prashant Deshlahra, Eduardo E. Wolf</i>	
<b>Spatially Resolved Raman Spectroscopy In Catalytic Packed Bed Reactors</b> .....	947
<i>Michael Geske, Oliver Kortup, Raimund Horn</i>	
<b>Steady State Isotopic Transient Kinetic Analysis of Supported Pt and Au Nanoparticles for the Water Gas Shift (WGS) Reaction Using a Novel Operando Transmission Fourier Transform Infrared (FTIR) Reactor</b> .....	949
<i>Jun Wang, Vincent F. Kispersky, Jorge Pazmino, Mayank Shekhar, Wen-Sheng Lee, W. Damion Williams, M. Cem Akatay, Jeffrey T. Miller, W. Nicholas Delgass, Fabio Ribeiro</i>	
<b>Ambient Pressure PES Study of Al<sub>2</sub>O<sub>3</sub> Supported Catalysts for Water Gas Shift Reaction</b> .....	951
<i>M. Cem Akatay, Jorge Pazmino, Mayank Shekhar, W. Damion Williams, Anil Mane, Eric A. Stach, W. Nicholas Delgass, Jeffrey W. Elam, Fabio Ribeiro, Dmitry Zemlyanov</i>	
<b>Multiple Inline Spectroscopy for Multiphase Reaction Monitoring At High Pressure</b> .....	952
<i>Marcel A. Liauw, Sonja Hardy</i>	
<b>CFD Simulation of In-situ Drop Tube Furnace</b> .....	953
<i>Esam I. Jassim, Wayne S. Seames, Steven A. Benson</i>	
<b>The Thermal Decompositions of Benzyl and o-Xylyl Radicals</b> .....	965
<i>Raghu Sivaramakrishnan, Meng-Chih Su, Joe V. Michael</i>	
<b>Advances In Understanding Acetylene Combustion From MBMS Experiment and Modeling</b> .....	966
<i>Wenjun Li, Phillip Westmoreland, Tina Kasper, Nils Hansen, Bin Yang, Terrill A. Cool, Katharina Kohse-Höinghaus</i>	
<b>On the Role of O<sub>2</sub> + QOOH In Low-Temperature Ignition of Alkanes</b> .....	968
<i>Claude Franklin Goldsmith III, William H. Green, Stephen J. Klippenstein</i>	
<b>Oxy-Coal Combustion Flamelet Dynamics From High-Speed Video Analysis</b> .....	969
<i>Terry Ring, Husam El Gendy, Eric Eddings</i>	
<b>Modeling the Pyrolysis of Methyldecanoate and Methyldecanoate</b> .....	975
<i>Kevin M. Van Geem, Steven Pyl, Nick Vandewiele, Zhiming Zhou, Marie-Françoise Reyniers, Guy Marin</i>	
<b>Combustion Chemistry of Fischer-Tropsch and Hydrotreated Renewable Fuels</b> .....	984
<i>S. Mani Sarathy, Charles K. Westbrook, William J. Pitz, Marco Mehl</i>	
<b>Supported Manganese Triazacyclononane Cis-Dihydroxylation Catalysts</b> .....	985
<i>Nicholas Schoenfeldt, Andrew Korinda, Justin M. Notestein</i>	
<b>Reaction Development for Bench Scale, Continuous Synthesis of a Drug Substance</b> .....	986
<i>Patrick L. Heider, Soubir Basak, Louis Buchbinder, Rachael C. Hogan, Ketan Pimparkar, Aaron D. Wolfe, Klavs F. Jensen</i>	
<b>Practical and Selective Oxidation and Amination of Alcohols In Flow</b> .....	987
<i>Klaus Hellgardt, K. K. Hii, N. Zotova, F. Roberts</i>	
<b>Rotating Foam Reactors for Fine Chemical Synthesis</b> .....	988
<i>T. Alexander Nijhuis, M. A. Leon Mattheus, R. Tschentscher, J. Van Der Schaaf, J. C. Schouten</i>	
<b>Economic and Process Engineering Evaluations of Polymer-Grade Terephthalic Acid Production In A Spray Reactor</b> .....	989
<i>Meng Li, Fenghui Niu, Xiaobin Zuo, Daryle H. Busch, Bala Subramanian</i>	
<b>Model Studies of Supported Catalyst Preparation - Pd Deposition On Iron Oxide Films From the Liquid Phase</b> .....	990
<i>Martin Sterrer, Hui Feng Wang, Rhys Dowler, William Kaden, Hans-Joachim Freund</i>	
<b>Quantitative Understanding of the Aqueous Solid-Liquid Interface During Catalyst Synthesis</b> .....	991
<i>Jason Binz, Robert M. Rioux</i>	
<b>Preparation of Ni/Al<sub>2</sub>O<sub>3</sub> Catalysts for Aqueous Phase Reforming of Ethanol by Selective Electrostatic Adsorption Method</b> .....	993
<i>Kavi Geetharani Loganathan, Corey Leclerc</i>	
<b>Atomic Pair Distribution Study of the Growth of Metal Structures In Zeolites</b> .....	994
<i>Liliana Gamez, Maria Martinez-Inesta</i>	
<b>Modification of Carbon Supports for Novel Platinum-Based Water-Gas Shift Catalysts</b> .....	995
<i>Branko Zucic, Yanping Zhai, Howard M. Saltsburg, Maria Flytzani-Stephanopoulos</i>	
<b>Catalytic Study of Sulphated Zirconia From Conventional and Modified Conventional Methods for Fatty Acid Methyl Esters</b> .....	996
<i>Elizabeth J. Eterigho, Jonathan G. M. Lee, Adam P. Harvey</i>	
<b>Methanol Dehydration to Dimethyl Ether In An Autothermal Millisecond Residence Time Reactor</b> .....	1006
<i>Hui Sun, Lanny D. Schmidt</i>	
<b>Pd-Ni Electrocatalysts for Efficient Ethanol Oxidation Reaction In Alkaline Electrolyte</b> .....	1007
<i>Le Xin, Zhiyong Zhang, Kai Sun, Wenzhen Li</i>	
<b>Effects of Ammonia Substitution On Stability Limits and Emissions of Premixed Hydrogen/Air Flames</b> .....	1008
<i>Jaemoon Joo, Dong Hyun Um, Oh Chae Kwon</i>	
<b>Low-Pressure Hydrogenolysis of Vapor-Phase Glycerol Over Heterogeneous Catalysts</b> .....	1009
<i>D. Evan Piephoff, Jeremy G. Immer, M. Jason Kelly, H. Henry Lamb</i>	

<b>Understanding Pt-Re Catalysts Used for Aqueous Phase Reforming of Biomass</b> .....	1010
<i>Prashant Reuben Daggolu, Yong Wang, Zhehao Wei</i>	
<b>Pulse and Temperature Programmed Reaction Study of Acetic Acid Conversion to Hydrocarbon On TiO<sub>2</sub>/ZSM-5</b> .....	1011
<i>Prashant Reuben Daggolu, Mark G. White</i>	
<b>The Effects of Carbon-to-Oxygen Ratio Upon Supercritical Water Reformation for Hydrogen Production</b> .....	1012
<i>Jared S. Bouquet, Ryan E. Tschannen, Aaron C. Gonzales, Jason W. Picou, Sunggyu Lee</i>	
<b>Tailoring the Morphology and Structure of Zeolite Catalysts Through the Use of Molecular Modifiers</b> .....	1021
<i>Alexandra I. Lupulescu, Jeffrey D. Rimer</i>	
<b>Synthesis and Characterization of Tin(IV) MFI: Sodium Inhibits the Synthesis of Phase Pure Materials</b> .....	1022
<i>Nataly Garcia-Vargas, Scott Stevenson, Daniel F. Shantz</i>	
<b>Delamination of Layered Zeolite Precursors Under Mild Conditions</b> .....	1023
<i>Isao Ogino, Michael Nigra, Son-Jong Hwang, Einar Eilertsen, Jeong-Myeong Ha, Thomas Rea, Sheila Yeh, Stacey I. Zones, Alexander Katz</i>	
<b>Synthesis and Characterization of Tungsten Containing Ultra Large Pore Mesoporous Silicate KIT-6</b> .....	1024
<i>Anand Ramanathan, Bala Subramaniam, Rajamanickam Maheswari, Ulf Hanefeld</i>	
<b>Synthesis of Oxide Nanocavities for Size-Selective Catalysis</b> .....	1026
<i>Christian P. Canlas, Natalie Ray, Junling Lu, Sungsik Lee, Randall Winans, Jeffrey Elam, Peter C. Stair, Justin M. Notestein</i>	
<b>Synthesis and Characterization of Microporous Carbon Spheres Based Catalyst for Liquid Phase Hydrogenation Reactions</b> .....	1028
<i>Maryam Peer, Ramakrishnan Rajagopalan, Henry C. Foley</i>	
<b>Catalytic Hot-Gas Cleaning of Biomass Derived Syngas by CaMgO Nanocrystals</b> .....	1029
<i>Ali Rownagi, Ajay Kumar, Raymond Huhnke</i>	
<b>Tuning Oxygen Basicity and Metal Reducibility In Bismuth Vanadate-Molybdate Catalysts</b> .....	1030
<i>Andrew (Bean) Getsoian, Zheng Zhai, Alexis T. Bell</i>	
<b>Gold Catalysis Using Calixarene-Bound Nanoparticles</b> .....	1032
<i>Michael M. Nigra, Jeong-Myeong Ha, Alexander Katz</i>	
<b>A Novel Approach to Designing Supported Metal Oxide Catalysts</b> .....	1033
<i>Navaneetha Krishnan Nandakumar, Edmund G. Seebauer</i>	
<b>A Computational Approach for the Rational Design of Bimetallic Syn-Gas to Ethanol Catalysts</b> .....	1034
<i>Ming He, James McAliley, David A. Bruce</i>	
<b>Catalytic Conversion of Methane and Carbon Dioxide to Higher Value Products</b> .....	1039
<i>Vesna Havran, Milorad P. Dudukovic, Cynthia S. Lo</i>	
<b>Thermochemistry, Reaction Paths and Kinetics On the Isooctane Radical Reactions with O<sub>2</sub>: Kinetic Study At High Pressures</b> .....	1040
<i>Itaso Auzmendi-Murua, Suarwee Snitsiriwa, Joseph W. Bozzelli</i>	
<b>Reaction Kinetics for TMEDA As An Alternative Hypergolic Rocket Fuel</b> .....	1041
<i>Nicole Labbe, Phillip Westmoreland</i>	
<b>Theoretical Studies of HO<sub>2</sub> Radical Reactions of Relevance to Ethanol Combustion</b> .....	1043
<i>Raghu Sivaramakrishnan</i>	
<b>Themogravimetric Analysis of Press Mud for Energy Generation</b> .....	1044
<i>I. M. Mishra</i>	
<b>Advances In the Simulation of Detailed Chemistry In Reacting Flows</b> .....	1045
<i>Geoffrey M. Oxberry, Yu Shi, Raymond L. Speth, Paul I. Barton, William H. Green</i>	
<b>Pyrolysis Kinetics of Glucose Using Model Compounds</b> .....	1057
<i>Vikram Seshadri, Jordan Keith, Phillip Westmoreland</i>	
<b>Evaluation of Soots for Diesel Particulate Filter Development Studies</b> .....	1059
<i>Changsheng Su, Paul J. McGinn</i>	
<b>Effect of Compressed Gas Addition On H<sub>2</sub>/CO Tunability and Hydroformylation Catalysis In Gas-Expanded Liquids (GXLs)</b> .....	1061
<i>Zhuanzhuan Xie, Kirk Snavely, Swarup Maiti, Jon Tunge, Bala Subramaniam</i>	
<b>Ionic Liquid Production In CO<sub>2</sub>-Expanded DMSO</b> .....	1062
<i>Sylvia O. Nwosu, Aaron M. Scurto</i>	
<b>Selective Removal of Protecting Groups Using Water At Elevated Temperatures</b> .....	1063
<i>Wilmarie Medina-Ramos, Mike Mojica, Pamela Pollet, Rani Jha, Elizabeth D. Cope, Charles L. Liotta, Charles A. Eckert</i>	
<b>The Effects of Space Time and Glycerin to Methanol Ratio Upon the Supercritical Water Reformation of a Crude Glycerin Solution for Hydrogen Production</b> .....	1064
<i>Ryan E. Tschannen, Jared S. Bouquet, Aaron C. Gonzales, Sunggyu Lee</i>	
<b>Elongation of Alanine Induced by Discharged Plasma Under Hydrothermal Condition</b> .....	1076
<i>Atsushi Nagira, Koichi Nagafuchi, Hiroshi Watanabe, Mitsuru Sasaki, Motonobu Goto, Kunio Kawamura</i>	
<b>Continuous-Flow Reforming of Hydrocarbons Underground: Kinetic Analysis</b> .....	1083
<i>Yousef Alshammari, Klaus Hellgardt</i>	
<b>The Role of Cellulose Accessibility On Enzymatic Saccharification of Lignocelluloses</b> .....	1084
<i>Junyong Zhu, Zhiguang Zhu, Y.-H. Percival Zhang, Yonghao Ni, Zibin He, Xiaolin Luo</i>	
<b>Structural Studies On Recrystallized Ionic-Liquid (IL) Treated Lignocellulosic Biomass</b> .....	1085
<i>Indira Samayam, B. Leif Hanson, Paul Langan, Christopher J. Barr, Constance Schall</i>	
<b>Kinetics and Mechanism of Cellulase Hydrolysis of Nanocrystalline Cellulose</b> .....	1086
<i>Xiao Zhang, Xiaohui Ju</i>	
<b>Incremental Disassembling of Woody Biomass and Production of Biochemicals</b> .....	1087
<i>Shijie Liu</i>	

<b>Effect of Steam Explosion On Degradability and Accessibility of Loblolly Pine In Bioethanol Applications .....</b>	<b>1088</b>
<i>Yuzhi Kang, Sang Beom Kim, Prabuddha Bansal, Matthew Realff, Andreas S. Bommarius</i>	
<b>Change of Structure of Corncob with Dilute Acid and Lime Pretreatment and a Potential Process for Xylose Co-Production of Cellulosic Ethanol .....</b>	<b>1089</b>
<i>Jihong Li, Shizhong Li, Zhipei Yan, Qing Li, Liangcai Peng</i>	
<b>Green and High Efficient Enzyme Hydrolysis Process for Sweet Sorghum Bagasse .....</b>	<b>1090</b>
<i>Xinshu Zhuang, Wen Wang, Qiang Yu, Wei Qi, Qiong Wang, Xuesong Tan, Yu Zhang, Zhenhong Yuan</i>	
<b>Metal Distribution During Impregnation and Drying of Ni/Alumina and Ni-Mo/Alumina Catalysts .....</b>	<b>1091</b>
<i>Xue Liu, Johannes G. Khinast, Benjamin Glasser</i>	
<b>Simulations and Experiments of Dry Catalyst Impregnation for Improved Content Uniformity .....</b>	<b>1093</b>
<i>Frank Romanski, Atul Dubey, Yangyang Shen, Arthur W. Chester, M. Silvina Tomassone</i>	
<b>Preparation, Characterization and Evaluation of Group IB-Pd Bimetallic Catalysts Prepared by Electroless Deposition .....</b>	<b>1094</b>
<i>Yunya Zhang, Jayakaran Rebelli, Christopher T. Williams, John R. Monnier</i>	
<b>Investigation of Gold-Metal Oxide Interface: Active Site for Selective Oxidation .....</b>	<b>1096</b>
<i>Neema A. Mashayekhi, Mayfair C. Kung, Harold H. Kung</i>	
<b>Design and Preparation of Nanoengineered Multi-Component Catalysts for Fuel Cells and Lithium-Air Batteries .....</b>	<b>1097</b>
<i>Chuan-Jian Zhong</i>	
<b>The Effect of Pretreatment On Electrostatically Adsorbed Noble Metal Precursors .....</b>	<b>1098</b>
<i>Manuel Nieto, David Childers, John R. Regalbuto</i>	
<b>Biodiesel Production From Waste Cooking Palm Oil In a Continuous Reactive Distillation Column Catalyzed by Superacid Heteropoly Acid: Optimization Using Response Surface Methodology (RSM).....</b>	<b>1099</b>
<i>Iman Noshadi, Richard Parnas, Nor Aishah Saidina Amin, Alireza Zarei, Hadi Hezaveh, Sanaz Hesamedini, Samad Doostdar Somarin</i>	
<b>Production of Green Diesel From Brown Grease Via Decarboxylation.....</b>	<b>1100</b>
<i>Elvan Sari, Craig Dimaggio, Manhoe Kim, Steven O. Salley, K. Y. Simon Ng</i>	
<b>Reversed-Phase Ternary Phase Diagram for Commercial Biodiesel – Glycerol – Methanol.....</b>	<b>1102</b>
<i>Stephen N. Csernica, James T. Hsu</i>	
<b>Kinetics of Biodiesel Production From Non-Edible Vegetable Oils.....</b>	<b>1103</b>
<i>A. Chadha, R. Ravi, G. Ravikumar</i>	
<b>Production of Green Jet Fuel From Edible and Non-Edible Oils .....</b>	<b>1104</b>
<i>Harvind Kumar Reddy, Prafulla Patil, Tapaswy Muppaneni, Tanner Schuab, Peter Cooke, Shuguang Deng</i>	
<b>Biodiesel Production by Transesterification Using Heterogeneous Base Catalyst and Effect of Co-Solvent .....</b>	<b>1105</b>
<i>Arun K. Gupta, Goutam Deo</i>	
<b>Coal-to-Biomethane Potential of Microbial Consortia Native to Coal Seam Formation Waters.....</b>	<b>1110</b>
<i>Samuel Papendick, Gene Tyson, Joan Esterle, Suzanne D. Golding, Victor Rudolph, Patrick C. Gilcrease</i>	
<b>Synthesis and Characterization of Nanocrystalline Zeolites for Catalysis .....</b>	<b>1111</b>
<i>Sarah C. Larsen</i>	
<b>Kinetics and Mechanism of Olefin Methylation Reactions On Zeolites .....</b>	<b>1112</b>
<i>Ian M. Hill, Saleh Al Hashimi, Aditya Bhan</i>	
<b>Optimization of Reaction Networks In Zeolites .....</b>	<b>1113</b>
<i>Eric L. First, Chrysanthos E. Goumaris, James Wei, Christodoulos A. Floudas</i>	
<b>Direct Conversion of Ethylene to Propylene On Ni/MCM-41 – Insights Into Catalyst Structure .....</b>	<b>1115</b>
<i>Tino Lehmann, Tanya Wolff, Christof Hamel, Andreas Seidel-Morgenstern</i>	
<b>Structure-Property Relationships Between Fractal Description of Pore Structure and Catalyst Effectiveness In V-SBA-15 .....</b>	<b>1117</b>
<i>Alexander Zoelle, Michael A. Smith</i>	
<b>Consequences of Solvation and Acid Strength for Catalysis by Faujasite Zeolites .....</b>	<b>1118</b>
<i>Rajamani Gounder, Andrew J. Jones, Robert T. Carr, Enrique Iglesias</i>	
<b>Renewable Fuel From Activated Sludge Using Fluidized-Bed Catalytic Cracking (FCC) Process .....</b>	<b>1119</b>
<i>Emmanuel D. Revellame, William Holmes, Rafael Hernandez, William T. French</i>	
<b>Simultaneous Extracellular Polymeric Substance (EPS) and Lipid Production by Activated Sludge Via Fermentation of Glucose.....</b>	<b>1120</b>
<i>Patrisha J. Pham, Rafael Hernandez, Hien Nguyen, Andro H. Mondala, W. Todd French</i>	
<b>The Hydrolysis of Nylon6 In Ionic Liquid to Recycle Nylon Waste .....</b>	<b>1121</b>
<i>Xiao-Li Xia, Hai-Jun Wang</i>	
<b>Process Development for Efficient Utilization of Waste Plastic to Liquid Product for Rural Development In Nigeria: Gasification Option .....</b>	<b>1122</b>
<i>Bamikole Amigun, Christie Onyia, Bamidele Ogbe Solomon</i>	
<b>An Anaerobic Bacterial Treatment of Corn Stover to Prepare a Biorefining Feedstock .....</b>	<b>1123</b>
<i>James Maclellan, Zhengbo Yue, Robert Kraemer, Wei Liao</i>	
<b>Towards Developing Anaerobic Digestion Based Biorefinery – Research On Food Wastes As Feedstock .....</b>	<b>1125</b>
<i>Shulin Chen, Liang Yu, Jingwei Ma, Craig Frear</i>	
<b>Metal-Modified Tungsten Carbide (WC) for Catalytic and Electrocatalytic Conversion of Alcohols.....</b>	<b>1126</b>
<i>Thomas G. Kelly, Jingguang G. Chen</i>	
<b>Autocatalytic Decomposition of Chiral Aspartic Acid On Cu(110) Surface.....</b>	<b>1128</b>
<i>Bharat S. Mhatre, A. J. Gellman</i>	
<b>High Throughput Study of Catalytic Surface Chemistry Over Cu<sub>3</sub>Au<sub>7</sub>Pd<sub>1-x-y</sub> Alloys .....</b>	<b>1129</b>
<i>A. J. Gellman, James B. Miller, Petro Kondratyuk, Deepika Priyadarshini</i>	

<b>Enantioselective Hydrogenation of <math>\alpha</math>, <math>\beta</math>-Unsaturated Carboxylic Acid Over Cinchona-Modified Pd/Al<sub>2</sub>O<sub>3</sub>: a Spectroscopic and Kinetic Study</b> .....	1130
<i>Shuai Tan, Christopher T. Williams</i>	
<b>Au/Ni near-Surface Alloys As Potential Direct H<sub>2</sub>O<sub>2</sub> Synthesis Catalysts: A DFT Study</b> .....	1131
<i>Fuat E. Celik, Manos Mavrikakis</i>	
<b>Synergistic Effects In Reactions of Functionalized Alcohols On Pd(111)</b> .....	1132
<i>Simon H. Pang, Michael Griffin, Rhea Williams, J. Will Medlin</i>	
<b>A Combined Theoretical and Experimental Study of the Adsorption of Rh(CO)<sub>2</sub>(acac) on TiO<sub>2</sub>(110)</b> .....	1133
<i>Homa Khosravian, Zhu Liang, Alexander Uhl, Michael Trenary, Randall Meyer</i>	
<b>Polylactic Oligomers Degradation Kinetics</b> .....	1136
<i>Fabio Codari, Stefano Lazzari, Miroslav Soos, Davide Moscatelli, Massimo Morbidelli</i>	
<b>Pseudo-Solid State Polymerization In Amorphous Polymer Micro-Layers: A Novel Route to Produce Ultra-High Molecular Weight Polycarbonate</b> .....	1137
<i>In Hak Baick, Carla Luciani, Woojic Yang, Kyu Yong Choi</i>	
<b>Computational Study of Chain Transfer to Monomer Reactions In Thermal Polymerization of Methyl Acrylate</b> .....	1138
<i>Nazanin Moghadam, Masoud Soroush, Sriraj Srinivasan, Andrew M. Rappe, Michael C. Grady</i>	
<b>Synthesis and Characterization of Hyperbranched Polyacrylamide Using Semi-Batch RAFT Copolymerization of Acrylamide and N,N'-Methylenebisacrylamide</b> .....	1140
<i>Dunning Wang, Wen-Jun Wang, Bo-Geng Li, Shiping Zhu</i>	
<b>Photoinitiators As Copper(II) Reductants: A New Approach to the Copper-Catalyzed Azide-Alkyne Cycloaddition</b> .....	1141
<i>Brian Adzima, Christopher J. Kloxin, Christopher N. Bowman</i>	
<b>Conversion Control In Acrylate-Epoxy Hybrid Photopolymerizations with Hydroxyl-Containing Acrylates</b> .....	1142
<i>Gbenga I. Ajiboye, Julie L. P. Jessop</i>	
<b>In Line Monitoring of Residual Monomer by NIR Spectroscopy During Styrene-Divinylbenzene Solution Polymerization Reactions</b> .....	1143
<i>Dennis Chicoma Lara, María Verónica Carranza Oropeza, Leandro Gonçalves, Reinaldo Giucidi</i>	
<b>Fundamentals of Aerosol Reactor Design for Catalysts</b> .....	1149
<i>Sotiris E. Pratsinis</i>	
<b>Structure Sensitivity of Dimethyl Ether Electro-Oxidation</b> .....	1151
<i>Jeffrey A. Herron, Peter Ferrin, Manos Mavrikakis</i>	
<b>Structure-Activity Correlation for Relative Chain Initiation to Propagation Rates In Single-Site Olefin Polymerization Catalysis</b> .....	1152
<i>Thomas A. Manz, Shalini Sharma, Khamphée Phomphrai, Grigori Medvedev, Kendall T. Thomson, Mahdi Abu-Omar, W. Nicholas Delgass, James M. Caruthers</i>	
<b>Rational Catalyst Design for Oxygenate Reforming</b> .....	1153
<i>Michael Saliccioli, Dion G. Vlachos</i>	
<b>Shape- and Size-Specific Chemistry of Ag Nanostructures In Catalytic Ethylene Epoxidation</b> .....	1154
<i>Phillip Christopher, Suljo Linic</i>	
<b>Structure-Activity Relationships In Group IV Bis (Phenoxide) Amine and Diamine Olefin Polymerization Catalysts: A DFT and Kinetic Analysis</b> .....	1155
<i>Kendall T. Thomson, Xiong Silei, W. Nicholas Delgass, James Caruthers, Mahdi Abu-Omar, Jeff Switzer</i>	
<b>Enantioselective Hydrogenation of C=C Bond Over Cinchona-Modified Pd Catalyst</b> .....	N/A
<i>Shuai Tan</i>	
<b>Adsorbate Coverage Effects On Catalytic Reactivity At a Low-Symmetry, Kinked Surface</b> .....	1157
<i>Jason M. Bray, William F. Schneider</i>	
<b>Hydrogen-Release Kinetics From Pd(100): The Influence of H In the Surface, Subsurface, and Bulk States</b> .....	1159
<i>William D. Michalak, James B. Miller, Dominic Alfonso, Andrew J. Gellman</i>	
<b>Surface Structural Evolution During the Thermal Decomposition of a PdO(101) Thin Film</b> .....	1160
<i>Jason F. Weaver, Jose Hinojosa Jr.</i>	
<b>First Direct Demonstration of the Schwab Effect Via a Novel External Voltage Induced Control of Electron Transfer to Surface-CO Bond On Pt/TiO<sub>2</sub>/Au Multilayer Catalytic Nanodiode</b> .....	1161
<i>Prashant Deshlahra, Eduardo E. Wolf</i>	
<b>Surface Characterization Studies of Silver-Titania Adsorbents</b> .....	1163
<i>Zenda D. Davis, Bruce J. Tatarchuk</i>	
<b>Characterization and Surface Chemical Reactions of Model Cu-ZnO/Silica Sorbents Upon H<sub>2</sub>S Adsorption and Regeneration</b> .....	1164
<i>Divya Repala, Bruce J. Tatarchuk</i>	
<b>Dye-Sensitized Photocatalyst – A Breakthrough In Green Energy and Environmental Applications</b> .....	1165
<i>Pankaj Chowdhury, Hassan Goma, Ajay K. Ray</i>	
<b>The Role of Surface Deposited Pt on the Photoactivity of TiO<sub>2</sub></b> .....	1169
<i>Yun Zhou, Christopher Lawrence Muhich, Charles B. Musgrave, Alan W. Weimer</i>	
<b>Efficiency Factors In Photocatalytic Reactors for Air Treatment</b> .....	1170
<i>Juan M. Garcia Hernandez, Benito Serrano, Hugo I. De Lasa</i>	
<b>Visible Light Enhanced Selective Propylene Epoxidation Over Copper Based Catalyst</b> .....	1171
<i>Marimuthu Andiappan, Suljo Linic</i>	
<b>High-Temperature Photocatalytic Ethylene Oxidation Over TiO<sub>2</sub></b> .....	1172
<i>Thomas Westrich, Kevin A. Dahlberg, Massoud Kaviany, Johannes W. Schwank</i>	
<b>Transesterification of Soybean Oil with Microwave Heating Using Homogeneous and Heterogeneous Catalysts</b> .....	1173
<i>Christopher J. Gilbert, George W. Huber, W. Curtis Conner</i>	

<b>Influence of Microwave Band Irradiation On Catalytic Reforming Systems Operating Under Deleterious Conditions.....</b>	1174
<i>Steven Edmund, Johannes W. Schwank</i>	
<b>Autothermal Staged Reactors for Biomass Upgrading.....</b>	1175
<i>Michael Skinner, Samuel Blass, Hui Sun, Reetam Chakrabarti, Aditya Bhan, Lanny Schmidt</i>	
<b>Hydrogen Production by Catalytic Partial Oxidation of Methane On Reticulated Rhodium and Platinum Foam Catalysts.....</b>	1176
<i>Oliver Korup, Claude Franklin Goldsmith, Michael Geske, Raimund Horn</i>	
<b>Coupling Detailed Heterogeneous and Homogeneous Kinetics with Mass and Heat Transfer In Catalytic Reforming of Logistic Fuels.....</b>	1178
<i>Lubow Maier, Marco Hartmann, Steffen Tischer, Olaf Deutschmann</i>	
<b>In-Situ Fabrication of a Novel Microstructured Reactor by Atomic Layer Deposition.....</b>	1183
<i>Staci A. Van Norman, Stefan Strähle, Nick Wannemacher, Aldo Steinfeld, John Falconer, Alan W. Weimer</i>	
<b>Monolith Reactor Platform for Refinery Fuel Gas Utilization In High Value Applications.....</b>	1184
<i>Vasilis Papavassiliou, Raymond Drnevich, Ramchandra Watwe, John Scalise, Perry Pacouloute</i>	
<b>Hydrogenation of Dimethyl Oxalate to Ethylene Glycol On a Cu/SiO<sub>2</sub>/Cordierite Monolithic Catalyst: Enhanced Internal Mass Transfer and Stability.....</b>	1186
<i>Hairong Yue, Li Zhao, Yujun Zhao, Shengping Wang, Yongli Sun, Jun Wang, Jinlong Gong, Xinbin Ma</i>	
<b>Author Index</b>	