

Catalysis and Reaction Engineering Division

Presentations at the 2010 AIChE Annual Meeting

**Salt Lake City, Utah, USA
7-12 November 2010**

Volume 1 of 2

ISBN: 978-1-61782-164-6

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© (2010) by AIChE
All rights reserved.

Printed by Curran Associates, Inc. (2011)

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

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
Web: www.proceedings.com

TABLE OF CONTENTS

Volume 1

Oxygen Reduction Reaction On Pt-Terminated Second Generation Core-Shell Alloy Catalysts	1
<i>Jeffrey A. Herron, Jiao Jiao, Konstanze Hahn, Guowen Peng, Radoslav R. Adzic, Manos Mavrikakis</i>	
Comparative Studies of Oxygen Reduction On Metals in Acidic and Basic Media: Experimental and Computational Insights	3
<i>Adam Holewinski, Suljo Linic</i>	
Dissolution-Resistant Materials for Oxygen Reduction Catalysts	4
<i>Gustavo E. Ramirez-Caballero, Perla B. Balbuena</i>	
Platinum Thin-Coated Palladium Nanotubes for the Oxygen Reduction Reaction	5
<i>Shaun Alia, Yanqi Zhang, Qian Xu, Kurt Jensen, Christian Contreras, Yushan Yan</i>	
Novel Oxygen Reduction Catalyst Development in a pH-Flexible Microfluidic Platform	6
<i>Molly Jhong, Fikile R. Brushett, Matt Thorum, Hung T. Duong, Andrew A. Gewirth, Andrzej Wieckowski, Paul J.A. Kenis</i>	
Electrocatalytic Oxygen Reduction and Oxygen Evolution On Manganese Oxide Surfaces	8
<i>Thomas F. Jaramillo, Yelena Gorlin</i>	
Mechanism Reconciliation — Non C-C Cleavage Electrooxidation on Platinum In Acid	10
<i>Jim Yang Lee, Chin Hsien Cheng</i>	
Autothermal Reforming of Fossil and Renewable Fuels	11
<i>Lanny D. Schmidt</i>	
Virtual Reality Dynamic Simulators in the Chemical Engineering Curriculum	12
<i>Andy Biaglow</i>	
CO₂ Capture with Enzyme Synthetic Analogue	13
<i>Harry Cordatos</i>	
Hydrogen Production From Methanol Over Gold Supported on ZnO and CeO₂ Nanoshapes	14
<i>Matthew Boucher, Nan Yi, Branko Zugic, Rui Si, Howard Saltsburg, Maria Flytzani-Stephanopoulos</i>	
Selective Hydrogenolysis and Oxidation of Glycerol Over Supported Metal Catalysts in the Aqueous Phase	15
<i>Robert J. Davis</i>	
A Transformational Energy Product — The Dow™ POWERHOUSE™ Solar Shingle	16
<i>Dave Parrillo</i>	
Direct Carbonylation of Nitrobenzene to Phenylisocyanate with Microreaction System	17
<i>Yoshihiro Takebayashi, Kiwamu Sue, Satoshi Yoda, Takeshi Furuya, Kazuhiro Mae</i>	
Mass Transfer Enhancement by Gas Injection to Liquid-Liquid Slug Flow	23
<i>Nobuaki Aoki, Ryuichi Ando, Kazuhiro Mae</i>	
Kinetics of High-Pressure Multiphase Homogeneous Catalyst Systems in Continuous Flow Microreactors	32
<i>Jaroslav Keybl, Klavs F. Jensen</i>	
Experimental and Numerical Studies On the Gas-Liquid Distributions in Microchannels	33
<i>Li Dai, Feng Xin</i>	
Channel Structural Design of Microdevices by Superstructure-Based Approach	53
<i>Yuto Tsuji, Osamu Tonomura, Manabu Kano, Shinji Hasebe</i>	
Hydrogenation in Microreactors with Immobilized Catalytic Nanoparticles	54
<i>Rui Lin, Robert Y. Ofoli, Ruel Freemantle, Sherine O. Obare</i>	
Activation of Chemical Reactions in Microstructured Reactors: Employing Corona Discharge	55
<i>Alexandre F.T. Yokochi, Kevin Caple, Goran Jovanovic</i>	
Numerical and Analytical Coarse-Graining Strategies Based On Relative Entropy Minimization	57
<i>M. Scott Shell, Todd Smith</i>	
A Systematic Coarse-Graining Method to Predict the Structure and Properties of Polymer-Nanoparticle Mixtures	58
<i>Youthachack Landry Khounlavong, Venkat Ganesan, Victor Pryamitsyn</i>	
Systematic Multiscale Modeling of Polymer/Fullerene Bulk Heterojunctions for Photovoltaic Applications	59
<i>David M. Huang, Adam J. Moulé, Roland Faller</i>	
A Coarse-Grained Model for Explicit Solvation of DNA by Water and Ions	60
<i>Robert C. DeMille, Thomas E. Cheatham, III, Valeria Molinero</i>	
Twist Propagation in Two-Nucleosome Arrays: Monte Carlo Simulations and Theory	61
<i>Martin Kenward, Irina V. Dobrovolskaia, Gaurav Arya</i>	

Raft Registration Across Bilayers by Coarse-Grained Molecular Dynamics	62
<i>Diego A. Pantano, Michael L. Klein, Preston B. Moore, Dennis E. Discher</i>	
Multiscale Molecular Modeling to Investigate the Aggregation of Polyamidoamine Dendrimers in Solution	63
<i>Seung Ha Kim, Monica H. Lamm</i>	
New Catalysts for Selective C-N Coupling Reactions During HCN Synthesis From Ammonia and Methane	64
<i>Lars C. Grabow, Felix Studt, Frank Abild-Pedersen, Vivien G. Petzold, Jesper Kleis, Jens K. Nørskov</i>	
Surface Properties and Performance of Ag- and Cu-Promoted Pd/Al₂O₃ Prepared by Surface Redox Method in the Selective Hydrogenation of Acetylene	66
<i>Seok Ki Kim, Ji Hoon Lee, Sang Heup Moon</i>	
Size and Shape Specific Chemistry of Uniform, Well-Defined Ag Nanoparticles of Different Shapes in Catalytic Ethylene Epoxidation	70
<i>Phillip Christopher, Suljo Linic</i>	
Optimizing Base Strength of Nitrogen-Substituted FAU Zeolite	71
<i>Vishal Agarwal, George W. Huber, W. Curtis Conner, Scott M. Auerbach</i>	
New Bis(pyridyl)Siloxane-Pd(OAc)₂ Catalytic Complexes for the Selective Oxidation of Alcohols to Aldehydes: A DFT Study	72
<i>Ivan A. Konstantinov, John M. Galloway, Michael N. Missaghi, Harold H. Kung, Linda J. Broadbelt</i>	
Optimal Broad Pore Networks to Improve Resistance to Catalyst Deactivation--Application to Hydrodemetalation	73
<i>Sanjeev M. Rao, Marc-Olivier Coppens</i>	
Methanol Electro-Oxidation: A First Principles Study	75
<i>Jeffrey A. Herron, Peter Ferrin, Yoshitada Morikawa, Manos Mavrikakis</i>	
Thermochemical Conversion of Biomass to Biofuels — Process Demonstration Unit Test Results	76
<i>Ravi Chandran, Dave Newport, Kym Arcuri, Sean Whitney, Daniel Leo, Shawn Freitas</i>	
Improvements in Steam Pretreatment of Lignocellulosic Biomass, for Bioethanol Production, Using New/Combination of Catalysts	84
<i>Sanam Monavari, Mats Galbe, Guido Zacchi</i>	
Rare Earth Metal Triflate Co-Catalyzed Low Severity Dilute Acid Pretreatment of Lignocellulosic Biomass	85
<i>John Degenstein, Melvin P. Tucker, Yun Ji</i>	
Low Cost Medium for Starch Particle Fermentation	86
<i>Gordon A. Hill, Devin Bear, Nancy Bawa, Catherine Niu, William J. Roesler</i>	
Production of Carboxylic Acids From Acidogenic Fermentation of Algefiber® (Sea Weed Sludge) Using a Mixed Culture of Marine Microorganisms	87
<i>Sampath A. Karunarathne, M. Clayton Wheeler, G. Peter van Walsum</i>	
Wet Biomass to Gasoline: An Integrated Hybrid Process of Anaerobic Digestion and Bromine Mediated Biogas Conversion to Hydrocarbon Fuel	91
<i>Eric W. McFarland, Jeffrey H. Sherman, Daniel J. Auerbach, Sagar B. Gadewar, Vivek Julka</i>	
Improved Activity of Carbon-Supported Platinum Electro catalysts: Synthesis and Characterization	92
<i>Samuel St. John, Indrajit Dutta, Anastasios Angelopoulos</i>	
Gold Stabilized Platinum and Palladium Nanotubes	93
<i>Shaun Alia, Yanqi Zhang, Qian Xu, Kurt Jensen, Christian Contreras, Yushan Yan</i>	
Non-Pt-Group Catalysts for Alkaline Direct Ethanol Fuel Cells	94
<i>Astrid Stadlhofer, Viktor Hacker</i>	
SEM and TEM Studies of Electrode Structure in PEM Fuel Cells	95
<i>Qianping He, David J. Keffer, Thomas A. Zawodzinski, David C. Joy</i>	
Influence of a Pore-Former in the Performance of a Direct Formic Acid Fuel Cell	96
<i>Akshay S. Bauskar, C.A. Rice-York</i>	
Microfluidic Platforms for Catalyst and Electrode Development	97
<i>Molly Jhong, Fikile R. Brushett, Paul J. A. Kenis</i>	
Electrochemical Impedance Analysis of Formic Acid Electrooxidation	99
<i>Eric Broaddus, Scott A. Gold</i>	
Surface Chemistry of Furanic Species On the (111) Surfaces of Pd and Pt	100
<i>Simon H. Pang, Clay M. Horiuchi, J. Will Medlin</i>	
Developing Relationships Between the Local Geometric Structure and Chemical Reactivity of Alloy Catalysts Based On Their Measured Electronic Structure	101
<i>Hongliang Xin, Neil Schweitzer, Eranda Nikolla, Suljo Linic</i>	
Semi-Empirical Rate Constants for Complex Chemical Kinetics: First-Principles Assessment and Rational Refinement	102
<i>Matteo Maestri, Karsten Reuter</i>	

Density Functional Theory Studies of C-H Activation On a Pdo(101) Thin Film Grown On Pd(111)	103
<i>Aravind R. Asthagiri, Jason F. Weaver, Abbin Antony</i>	
Interaction of Ethylene and Nitrogen Atoms On the Pt (111) Surface	104
<i>Jun Yin, Michael Trenary, Randall Meyer</i>	
The Reactivity of Polyols On Pd(111)	105
<i>Michael Griffin, Will Medlin</i>	
Strong Kinetic Isotope Effect in the Dissociative Chemisorption of H₂ On a Pdo(101) Thin Film	106
<i>Can Hakanoglu, Jeffery M. Hawkins, Aravind R. Asthagiri, Jason F. Weaver</i>	
Coulometric Titration Studies of the Redox Properties of Bulk and Supported Vanadia and Molybdena Catalysts	107
<i>Ivan Baldychev, Raymond J. Gorte, John M. Vohs</i>	
Ferroelectric Oxide Surfaces: Switchable Chemistry and Chemical Switches	108
<i>M.W. Herdich, H. Mönig, K. Garrity, A. Kolpak, J. Hoffman, C.H. Ahn, S. Ismail-Beigi, E.I. Altman</i>	
Selective Synthesis of Sub-Nanometer Diameter Narrow Diameter Distribution SWNT	109
<i>Lisa D. Pfefferle, Codruta Zoican-Loebick, Fang Ren, Magda Majewski</i>	
Realizing Direct Hydrocarbon Solid Oxide Fuel Cells	110
<i>Steven McIntosh</i>	
Electrodes for Solid Oxide Fuel Cells and Electrolyzers	111
<i>Raymond J. Gorte</i>	
Reduction of Stochastic On-Lattice Chemical Kinetics Models to Well-Mixed Descriptions Via Singular Perturbation	112
<i>Michail Stamatakis, Dionisios G. Vlachos</i>	
A Coarse-Grained Approach to Agent-Based Computations: Coarse Bifurcation Analysis, Rare Event Analysis, and a Patch Dynamics Scheme	113
<i>Ping Liu, William Gear, Giovanni Samaey, Ioannis G. Kevrekidis</i>	
A Continuum-Atomistic Hybrid Simulation of Droplet Spreading On a Flat Solid Surface	116
<i>Hongfei Wu, Kristen A. Fichthorn, Ali Borhan</i>	
Multiphysics Simulation of Interfacial Phenomena by Fluctuating Hydrodynamics	117
<i>Barry Shang, Jhih-Wei Chu</i>	
Evaluation of Metamodeling Techniques for Discrete-Time Approximations	118
<i>Andres F. Hernandez Moreno, Martha A. Grover</i>	
A Novel Computational Architecture for Construction and Execution of Modular, Multiscale, Multi-Algorithmic Dynamical Models	120
<i>Leonard A. Harris, Justin S. Hogg, Mohammad Fallahi-Sichani, Jennifer J. Linderman, Denise E. Kirschner, James R. Faeder</i>	
Managing Multi-Scale Modeling Issues in Chemical Engineering — a Computer-Aided Framework	121
<i>Martina Heitzig, Gürkan Sin, Peter Glarborg, Rafiqul Gani</i>	
Use of the Ornstein-Zernike Percus-Yevick Equation to Extract Interaction Potentials From Pair Correlation Functions	123
<i>Qifei Wang, David Keffer, Donald M. Nicholson, Brock Thomas</i>	
Field Biased Molecular Simulation Technique for Complex Fluids	124
<i>Amir Vahid, JRichard Elliott</i>	
Spatial Updating Monte Carlo in the Great Grand Canonical Ensemble	125
<i>G. Orkoulas</i>	
Systematic Identification of Coarse Variables in Biomolecular Systems through Dimensionality-Reduction Tools: Reconstruction and Navigation of Free-Energy Landscapes	127
<i>Miguel A. Amat, Lilia V. Bravewolf, Andrew L. Ferguson, Gerhard Hummer, Ioannis G. Kevrekidis</i>	
Dimerization of Protegrin-1 Peptides in Different Environments	129
<i>Victor Vivcharuk, Yiannis N. Kaznessis</i>	
A Multi-Scale Approach to Modeling Aqueous Electrolyte Mixtures at High Pressure	130
<i>Angelo Lucia, Brian Bonk, David Freeman, Jae W. Lee, Richard Waterman</i>	
Multi-Scale Modeling of Polymer Electrolyte Membrane Fuel Cells	131
<i>Robert L. Smith, Pil Seung Chung, Jan Steckel, Lorenz T. Biegler, Myung S. Jhon</i>	
Synthesis Gas Conversion to Higher Alcohols On Copper	133
<i>Carrie A. Farberow, Manos Mavrikakis</i>	
Improving Carbon-Tolerance of Ni Reforming Catalysts and Electro-Catalysts by Surface Alloying and the Impact of Alloying On the Surface Chemistry	134
<i>Eranda Nikolla, Suljo Linic</i>	
Designing the Metal- and Substrate-Binding Properties of Tripodal Organosiloxane Ligands: The Role of Intramolecularity	135
<i>Michael N. Missaghi, John M. Galloway, Harold H. Kung</i>	

First Principles Based Bimetallic Catalyst Prediction for the Ammonia Decomposition Reaction	136
<i>Danielle A. Hansgen, Jingguang G. Chen, Dionisios G. Vlachos</i>	
Surface Segregation in Alloy Thin Films: A High-Throughput Study	138
<i>Deepika Priyadarshini, James B. Miller, Bryan D. Morreale, Andrew J. Gellman</i>	
On the Role of Bulk Hydrogen in Carbon Dioxide Hydrogenation On Ni(111) and Ni(110) Surfaces	139
<i>Guowen Peng, Manos Mavrikakis</i>	
Synthesis and Characterization of Mesoporous Semi-Crystalline Mixed Gallium-Niobium Oxide Phases	140
<i>Chinmay A. Deshmane, Moises A. Carreon, Jacek B. Jasinski</i>	
Cryogenic CO₂ Capture for Improved Efficiency at Reduced Cost	141
<i>Stephanie Stitt Burt, Andrew Baxter, Chris Bence, Larry L. Baxter</i>	
Characteristics of Aminosilicones Used for CO₂ Capture	153
<i>Sarah Genovese, Benjamin R. Wood, Robert J. Perry, Michael O'Brien, Sam D. Draper</i>	
Post-Combustion CO₂ Capture Via Formation of Aminosilicone Carbamate Salt Powders in Spray Dryers	154
<i>Robert M. Enick, Karl Johnson, Hong-bin Xie, Deepak Tapriyal, Bing Wei, Robert J. Perry, Sarah Genovese, Benjamin R. Wood, Michael O'Brien</i>	
Micro-Structured Adsorption Bed for Rapid CO₂ Capture & Regeneration	155
<i>Wei Liu, Haiying Wan, Shari Li, Nathaan Canfield</i>	
CO₂ & Steel Slag for Industrial Mineral Carbonation: Chemistry and Economics Are On Our Side	156
<i>Michael Wyrsta</i>	
Ultra-Stable Calcium Oxide Absorbents for High Temperature CO₂ Capture	157
<i>Liyu Li, David L. King, Zimin Nie, Xiaohong Li, Chris Howard</i>	
Carbon Capture by Carbonate Mineralization	158
<i>Anjana Meel, Michael F. Doherty</i>	
Biomass Pretreatment to Improve Bio-Oil Stability	160
<i>Najeeb M. Kuzhiyil, Dustin Dalluge, Robert C Brown</i>	
Process Design Data for Liquid Phase Pyrolysis of Biogenic Feedstock	161
<i>Verena Mertlitz, Nikolaus Schwaiger, Matthäus Siebenhofer, Edgar Ahn, Peter Pucher</i>	
Rapid Method for the Determination of Total Acid Number (TAN) of Biooils	165
<i>Foster A. Agblevor, Jingai Shao</i>	
Fractional Catalytic Pyrolysis of Biomass for Stable Pyrolysis Oils and Hydrocarbon Fuels Production	168
<i>Foster A. Agblevor, Ofei Mante, S. Ted Oyama, Francine Battaglia, Ron McClung</i>	
In Situ Catalytic Upgrading of Biooil with Novel and Commercial Catalysts, From Bench to Pilot Plant Scale	169
<i>K. G. Kalogiannis, S. D. Stephanidis, S. S. Voutetakis, A. A. Lappas</i>	
Fast Pyrolysis of Algal Biomass	175
<i>Balakrishna Maddi, Sridhar Viamajala, G. Glenn Lipscomb, Sasidhar Varanasi</i>	
Direct Coupled Catalytic Upgrading of Switchgrass Pyrolysis Bio-Oil Vapors	176
<i>Jonathan Peters, Xiaohan Zhang, Trung Pham, Roberto Galiasso, Lance Lobban, Daniel Resaco, Richard G. Mallinson</i>	
Integrated Pyrolysis Quench Catalytic Cascade for Insitu Product Stabilization and Upgrading	185
<i>Shaolong Wan, Xiaohan Zhang, Trung Pham, Roberto Galiasso, Lance Lobban, Daniel Resasco, Richard G. Mallinson</i>	
Selective Dehydration of Monosaccharides to 5-Hydroxymethylfurfural: Catalyst and Solvent Effects	186
<i>Mark H. Tucker, Anthony Crisci, Susannah L. Scott, James A. Dumesic</i>	
Systematic Evaluation of Bio-Oil Hydrotreating Catalysts	187
<i>Haijun Wan, Jackson W. Ford, Raghunath V. Chaudhari, Bala Subramaniam</i>	
Transition Metal Catalyzed Oxidation of Lignin and Lignin Model Compounds in Room Temperature Ionic Liquids	188
<i>Joseph Zakzeski, A. L. Jongerijs, P. C. A. Bruijninx, B. M. Weckhuysen</i>	
Sol-Gel and Solution Combustion Synthesized Ni/Al₂O₃ Catalysts for Aqueous-Phase Reforming of Ethanol	189
<i>Banasri Roy, Corey Leclerc</i>	
Electrochemical Conversion of Glycerol	190
<i>Kanako Okada, Levi Thompson</i>	
Study On An Environmentally Benign Process of Ethylene Glycol Production From Syngas	192
<i>Jing LV, Yujun Zhao, Baowei Wang, Shengping Wang, Yan Xu, Zhenhua Li, Xinbin Ma, Jinyu Han</i>	
Carboxylation of Glycerol in a Biodiesel Plant	195
<i>Yasar Demirel, Nghi Nguyen</i>	

Progress in Nutrient Recovery From Anaerobically Digested Wastes	200
<i>Shulin Chen, Quanbao Zhao, Craig Frear</i>	
A Spectrophotometric Method for Quantitative Determination of Xylose In Fermentation Medium	201
<i>Patrisha J. Pham, Rafael Hernandez, Benjamin Estill, Andro H. Mondala, William T. French</i>	
Transesterification of Activated Sludge Oil by Ionic Liquid Supported Acid Catalysis	202
<i>Patrisha J. Pham, Rafael Hernandez, Dyane Marie Acevedo Vélez, William T. French</i>	
Pressure Cycles of Ozonation and Aeration for Activated Sludge Solubilization	203
<i>Chia-Jung Cheng, Andy Hong</i>	
An Evaluation of Production of Fuels From Sewage Sludge	204
<i>Y. Madueke, Ramalingam Subramaniam, Cunwen Wang, Stephen Dufreche, Mark Zappi, Rakesh Bajpai</i>	
Application of Coal Fly Ash as a Catalyst in the Transesterification Reaction for Biodiesel Production	205
<i>Omotola. O Babajide, Leslie Petrik, Nicholas Musyoka, Bamikole Amigun</i>	
Biodiesel Production From Algae - Obstacles and Challenges	208
<i>Heike Fruhwirth, Clemens Borkenstein, Josef Knoblechner, Robert Raudner, Edgar Ahn, Matthäus Siebenhofer</i>	
Novel Photobioreactor for Biodiesel and Electricity	210
<i>Gordon A. Hill, Pranabendu Mitra, Divya Sasi, Erin E. Powell</i>	
Micro Chemical Processing Technology for Production of Biodiesel Fuel	211
<i>Tricia Thomas, Robert Dacus III, Jennifer Lewis, Rob Mebane, Jim Hiestand, Rob Bailey, Mary Lowe, Frank Jones</i>	
Sulfur Level Changes in Brown Grease Conversions with Sulfuric Acid and Heterogeneous Zirconia-Supported Metaloxides Catalysts	219
<i>Manhoe Kim, Craig DiMaggio, Shuli Yan, Steven O. Salley, K. Y. Simon Ng</i>	
Plantwide Design and Control of Biodiesel Production Processes Via Two-Step Syntheses or by Simultaneous Esterification/Transesterification	220
<i>Jian-Kai Cheng, Yin-Heng Shen, Yong-Tang Jhuang, Chuan-Chen Chao, Jeffrey D. Ward, I-Lung Chien, Cheng-Ching Yu</i>	
Production of Biodiesel Using Dimethyl Carbonate as the Methylating Agent: A Glycerol-Free Biofuel	222
<i>Michael Miguez, Tracy J. Benson, Samir Budhathoki</i>	
Roger Schmitz — The Quintessential Academic	223
<i>Arvind Varma</i>	
Nonlinear Phenomena in Metabolic Systems	224
<i>Doraiswami Ramkrishna</i>	
Multiplicity and Stability of Olefin Polymerization Particles and Reactors	225
<i>W. Harmon Ray</i>	
Collective Dynamic Behavior of Coupled Chemical Oscillators	226
<i>John L. Hudson, Craig G. Rusin, Sarah E. Johnson, Karen Blaha, Matthew Clark</i>	
The Need for Next-Generation Engineering Methods for Electrochemical Systems	227
<i>Richard Alkire</i>	
Roger Schmitz: The Ultimate Research Advisor	229
<i>Theodore Tsotsis</i>	
Analysis and Optimization of the Design Aspects of Electrically Heated Converters for Automotive Emission Control	230
<i>Se H. Oh, Edward J. Bissett</i>	
Influential Teacher and Valuable Colleague	231
<i>Mark J. McCready</i>	
Engineering Reactions with Ionic Liquids	232
<i>Joan F. Brennecke</i>	
Adaptation of the Design of a Gas Phase Photoreactor for the Degradation of BTX (benzene, toluene, xylene)	233
<i>Ingrid Damaris López Quintero, Hugo Felipe Camargo Vargas, Sebastián Hernández Sierra, Víctor Manuel Sarria Muñoz</i>	
Selective Catalytic Photoreduction of CO₂ On Pt/TiO₂ Nanotube for Renewable Energy	257
<i>Qin-Hui Zhang, Yi-Juan Hong, Jian-Guo Yu</i>	
Photocatalytic Water-Splitting by Ru-Doped Titania Nanotubes	258
<i>Elizabeth Ranney, Johannes Schwank</i>	
Development of Dispersed-Type Sonophotocatalysis Using Piezoelectric Effect Caused by Ultrasonic Resonance	259
<i>Naohito Hayashi, Eiki Kasai</i>	
Ultrasound-Assisted Oxidative Desulfurization of Natural Gasoline	260
<i>S. William Hoy IV, David Ramage, Nicholas Shurgott, David Wintergrass, Florian Schattenmann</i>	
Biodiesel Production by Microwave and Ultrasonic Assisted Heterogeneous Catalysis	267
<i>Ronen Weingarten, Wm. Curtis Conner, George W. Huber, Paul J. Dauenhauer, Geoffrey Tompsett</i>	

Microwave-Activated Functionalization of Bare-Surfaced Metal Nanoparticles On Graphene Derivatives: Avenue for Carrier Manipulation, Enhanced Catalytic Activity and Raman Amplification	268
<i>Kabeer Jasuja, Josh Linn, Vikas Berry</i>	
Cobalt Zeolitic Imidazolate Frameworks for the Oxidation of Lignin and Lignin-Related Model Compounds	269
<i>Joseph Zakzeski, Agnieszka Dbczak, P. C. A. Bruijninx, B. M. Weckhuysen</i>	
Catalytic Conversion of Biomass Pyrolysis Oil to Syngas and Chemicals	270
<i>Jacob S. Kruger, Lanny D. Schmidt</i>	
Hydrogenolysis of Biomass Derived Polyols Using Bimetallic Catalysts	271
<i>Debdut Roy, Bala Subramaniam, Raghunath V. Chaudhari</i>	
Experimental Studies and Reaction Kinetics of Lipid Synthesis From Lipomyces Starkeyi	272
<i>Satish Patil, Ramalingam Subramaniam, Cunwen Wang, Mark Zappi, Stephen Dufreche, Rakesh Bajpai</i>	
The Influence of Reaction Conditions On Product Selectivity During the Oxidation of Glycerol Over Supported Gold Catalysts	273
<i>Bhushan N. Zope, Robert J. Davis</i>	
The Effects of Solvents On Glucose to HMF Conversion	274
<i>Dajiang Liu, Xinying Wang, Mark Nimlos, Ranil Wickramasinghe, Xianghong Qian</i>	
The Use of Nanoparticle Oxides as Supports for Cobalt-Based Fischer-Tropsch Catalysts	275
<i>Robert J. Colmyer</i>	
Electricity-Carbohydrate-Hydrogen (ECHO) Cycle for Sustainability	276
<i>Percival Zhang, Weidong Huang</i>	
Novel Approach to CO₂ Utilization for Power Generation Using An Electrochemical Reactor	277
<i>Jose A. Vega, Casey Chartier, Shawna Smith, William Mustain</i>	
A New Aqueous Mineral Carbonation Process Utilizing Bipolar Membrane Electrodialysis	278
<i>Yoshinobu Abe, Hiroki Nagasawa, Atsushi Izuka, Akihiro Yamasaki, Yukio Yanagisawa</i>	
Functionalized Polyaniline Composite Particles for CO₂ Sequestration and Fertilizer Conversion	283
<i>Yong Min, J. James Lee</i>	
Amine Promotion of CO₂ Conversion for Artificial Photosynthesis	284
<i>Wei Zhu, Brian A. Rosen, Richard I. Masel</i>	
Electrochemical Conversion of CO₂ to Syngas in An Electrochemical Reactor	285
<i>Devin T. Whipple, Paul J.A. Kenis</i>	
Enhanced Hydrogen Production with Integrated Carbon Sequestration Using Mg(OH)₂ Sorbent	286
<i>Kyle J. Fricker, Ah-Hyung Alissa Park</i>	
High Purity p-Xylene Production Via m-Xylene Isomerization Over Pt-HZSM-5 Catalyst : Use of An Extractor-Type Catalytic Membrane Reactor Equipped with a Nanocomposite MFI-Alumina Membrane Tube as Separation Unit	287
<i>Michael O. Daramola, A.J. Burger, Anne Giroir-Fendler</i>	
Tuning Selectivity of Dimethyl Ether-to-Hydrocarbons On H-MFI by Changing the Composition of the Hydrocarbon Pool	293
<i>Samia Ilias, Aditya Bhan</i>	
A Novel Framework for 3-Dimensional Shape-Induced Reaction Selectivity in Zeolite Structures	294
<i>Eric L. First, Chrysanthos E. Gounaris, James Wei, Christodoulos A. Floudas</i>	
Effects of Zeolite Channel Size and Connectivity On the Rate and Selectivity of n-Hexane Hydroisomerization	296
<i>Hsu Chiang, Aditya Bhan</i>	
Model Compound Study of Phenolic Compounds Conversion Over Acidic Zeolites During Bio-Oil up Grading	297
<i>Xinli Zhu, Richard G. Mallinson, Daniel Resasco</i>	
Consequences of Entropy for Reactions within Constrained Zeolite Environments	298
<i>Rajamani Gounder, Enrique Iglesia</i>	
Production of Jet and Diesel Fuel Range Alkanes From Waste Hemicellulose-Derived Aqueous Solutions	299
<i>Rong Xing, Ayyagari V. Subrahmanyam, Hakan Olcay, Wei Qi, Michael F. Malone, G. Peter van Walsum, Hemant P. Pendse, George W. Huber</i>	
Catalytic Strategies to Convert Biomass Into Liquid Hydrocarbons	300
<i>David Martin Alonso, Jesse Q. Bond, Dong Wang, James A. Dumesic</i>	
Acid Functionalized Nanoparticles for Hydrolysis of Lignocellulosic Feedstocks	303
<i>Myles Anton Ikenberry, Leidy Pena, Donghai Wang, Keith L. Hohn</i>	
Heterogeneous Catalysts for the Conversion of Glucose to 5-(hydroxymethyl)Furfural (HMF)	304
<i>Eranda Nikolla, Manuel Moliner, Yuriy Roman, Mark E. Davis</i>	

Theoretical Study of the Mechanism of Fructose Dehydration to Hydroxymethylfurfural in the Aqueous Phase	305
<i>Stavros Caratzoulas, Dionisios G. Vlachos</i>	
Kinetics and Mechanism for Acetone Hydrogenation by Ru/Carbon	306
<i>Mohit Bhatia, Adriaan van Heiningen, G. Peter van Walsum, M. Clayton Wheeler</i>	
Gas Phase Butanal Self-Condensation Over Supported MgO and CeZrOx: A Searching for Acid-Tolerant Solid Base Catalysts	307
<i>Wenqin Shen, Geoff A. Tompsett, W. Curtis Conner Jr., George W. Huber</i>	
First-Principles Investigation of the Environment-Dependent Mechanisms of Alkali Promotion in Heterogeneous Catalysis	308
<i>Hongliang Xin, Suljo Linic</i>	
DFT Studies of Coverage Dependent Dipole-Dipole Interactions and Effect of Uniform Electric Field On Chemisorption of CO and NO On Pt(111)	309
<i>Prashant Deshlahra, Eduardo E Wolf, William Schneider</i>	
Selective Activation of Methyl Acetate On Pd Surfaces	310
<i>Lijun Xu, Ye Xu</i>	
Methane Dehydrogenation On Platinum-Based Nanocluster Catalysts	311
<i>Nathan A. Fine, Cynthia S. Lo</i>	
Theoretical Investigation of Reaction Pathways of the Deoxygenation of Propanoic Acid to Propane Over Pd(111) Model Surfaces	312
<i>Andreas Heyden, Jianmin Lu</i>	
Density Functional Theory Studies of Hybrid Production of Biorenewable Aromatic Feedstocks	313
<i>Jin Yang, Ashwin Ramasubramaniam, Paul Dauenhauer</i>	
Structural Sensitivity of the Water Gas Shift Reaction in Platinum Surfaces	314
<i>Michail Stamatakis, Dionisios G. Vlachos</i>	
Catalysis In a Pocket: The MCM-22 Story	315
<i>Thomas F. Degnan</i>	
Toward the Design of Catalysts	316
<i>W.N. Delgass</i>	
Redox Sites In H-Zeolites and Their Role In Alkane Cracking and Dehydrogenation	317
<i>Raul F. Lobo</i>	
Toward Rational Development of Deep Hydrodesulfurization Catalysts	318
<i>Teh C. Ho</i>	
Coking Resistant, High-Temperature Stable Ni@SiO₂ Core-Shell Catalysts	319
<i>Lu Zhang Whaley, Goetz Vesper</i>	
Hydrogenolysis Selectivity Enhancements Via Catalyst Surface Modification	320
<i>Troy D. Gould, J. Will Medlin</i>	
Tuning the Selective Oxidation of CHOH to Dimethoxymethane Over Supported V₂O/TiO₂/SiO₂ with TiO₂ Nanoligands	321
<i>Kevin Doura, Israel E. Wachs</i>	
The Use of Oxygen Plasma in Activation of Dendrimer-Derived Rh and Pt Catalysts	322
<i>Zahra Nazarpour, Paul T. Fanson, Shunguo Ma, Oleg S. Alexeev, Michael D. Amiridis</i>	
Homogeneous Catalysts Immobilized On Carbon Coated Cobalt Nanoparticles	323
<i>Alexander Schatz, Robert N. Grass, Wendelin J. Stark</i>	
Highly Active and Selective Au/MO_x (M = Fe, Co) Catalysts for the Dehydrogenation of Naphthenes	325
<i>Simone Goergen, Brian Ricks, Peng Wu, Maria Flytzani-Stephanopoulos, Rui Si</i>	
Effects of Preparation Conditions On Au/TS-1 for Gas-Phase Propylene Epoxidation	326
<i>Wen-Sheng Lee, Fabio H. Ribeiro, W. Nicholas Delgass</i>	
New Developments in the Catalytic Cycle of L-Proline-Promoted Aldol-Type Reactions	328
<i>Ivan A. Konstantinov, Linda J. Broadbelt</i>	
Mechanism Development for Hypergolic Propellant Systems: MMH and DMAZ	329
<i>Nicole Labbe, Young-Seok Kim, Phillip Westmoreland</i>	
The Direct Epoxidation of Propene in the Explosive Regime in a Microreactor - A Study Into the Reaction Kinetics	331
<i>T. Alexander Nijhuis, Jiaqi Chen, Jaap C. Schouten</i>	
Reaction Pathways of Hydroxylamine and Ammonia Oxide	337
<i>Qingsheng Wang, Cindy Wei, Sam Mannan</i>	
RING — A Rule-Based Reaction Generation Tool for Modeling Diverse Chemical Transformations	338
<i>Srinivas Rangarajan, Aditya Bhan, Prodromos Daoutidis</i>	
Enantioselective Hydrogenation of C=N Double Bond by RuTsDPEN Catalyst — Spectral and DFT Investigation of the Mechanism	339
<i>Marek Kuzma, Petr Kacer, Jiri Vaclavik, Radek Majdloch, Petr Novak, Libor Cerveny</i>	

Catalytic Conversion of Lignin Fractions of Biomass	345
<i>Daniel E. Resasco, Lance Lobban, Richard Mallinson, Xinli Zhu, Teerawit Air, Lei Nie, Sunya Sunya</i>	
Tin-Containing Zeolites Are Highly Active Catalysts for the Isomerization of Glucose in Water	346
<i>Manuel Moliner, Yuriy Roman, Mark E. Davis</i>	
Catalytic Activity of Mixed Mesoporous Gallium-Niobium Oxides	347
<i>Chinmay A. Deshmane, Paul Ratnasamy, Moises A. Carreon</i>	
Catalytic Behavior of Brønsted Acid Sites In MWW and MFI Zeolites	348
<i>Dongxia Liu, Aditya Bhan, Michael Tsapatsis, Saleh H. Al Hashimi</i>	
Nano Self-Assembly Synthesis and Characterization of Large Pore Volume Bulk Nickel Catalyst	349
<i>Ping Li, Yingjie Jin, Fenghua Zhang, Fei Li, Liyan Shang</i>	
Novel Mesoporous Gamma-Alumina Catalyst Supports	363
<i>Baiyu Huang, Stacey J. Smith, Rebecca E. Olsen, Calvin H. Bartholomew, Brian F. Woodfield, Julia Boerio-Goates</i>	
Catalytic Hydroprocessing of Bio-Oil Derived From Catalytic Fast Pyrolysis of Biomass to Produce Hydrocarbon Products	364
<i>Alan H. Zacher, Doug Elliott, Daniel Santosa</i>	
Bio-Oil Upgrading through Hydrodeoxygenation	365
<i>Weihua Deng, Zheng Li, Robert C. Brown</i>	
Effect of Sulfur On CoMo/Al₂O₃ Catalyst for the Coal Pyrolysis	366
<i>Qinglan Hao, Chang Wang, Guiju Li</i>	
Aqueous-Phase Hydrogenation of Acetic Acid On Monometallic Catalysts: A Combined Experimental and Theoretical Study	373
<i>Ye Xu, Hakan Olcay, George W. Huber</i>	
Layered Solid Acid Catalysts for the Production of Biofuels From Algal Lipids	375
<i>Griffin W. Roberts, Susan Stagg-Williams</i>	
Simultaneous Esterification and Transesterification for Biodiesel Production	382
<i>Shuli Yan, Craig DiMaggio, Siddharth Mohan, Manhoe Kim, Huali Wang, Steven Salley, Simon Ng</i>	
Understanding Deoxygenation Reactions to Produce Fungible Transportation Fuels On An Optimized Supported Pt Catalyst	383
<i>Kyle W. Elam, Phuong T. Do, Min Shen, Rolf Jentoft, L.L. Lobban, Daniel E. Resasco</i>	
NO Reduction by H₂ On Platinum Catalysts	384
<i>Carrie A. Farberow, Masayuki Yoshimura, Enrique Iglesia, Manos Mavrikakis</i>	
First Principles Simulation of Intermediate Steps in Nitrate Reduction On Metal Catalysts	385
<i>Dorrell C. McCalman, William F. Schneider</i>	
On the Reaction Mechanism of Methanol Synthesis and the Water Gas Shift Reaction On Cu	386
<i>Lars C. Grabow, Manos Mavrikakis</i>	
Exceptions to the d-Band Model of Chemisorption On Metal Surfaces: The Dominant Role of Repulsion Between Adsorbate States and Metal d-States	387
<i>Hongliang Xin, Suljo Linic</i>	
Simple Adsorbate Diffusion Barriers On Transition-Metal Stepped Surfaces and Nanoparticles	388
<i>Guowen Peng, Manos Mavrikakis</i>	
The Influence of the Metal and Coadsorbates On the Activation of C-H and O-H Bonds Over Transition Metal Surfaces	389
<i>David Hibbitts, Matthew Neurock</i>	
Energetics and Statistics of O₂ Dissociation Over Pt(111) Surface at Finite Coverages	390
<i>Chao Wu, David Schmidt, Christopher M. Wolverton, William F. Schneider</i>	
Theoretical Insights Into the Electrochemical Reduction of CO₂ Into Hydrocarbon Fuels	391
<i>Andrew A. Peterson, Frank Abild-Pedersen, Felix Studt, Jan Rossmeisl, Jens K. Nørskov</i>	
Optically Active Metallic Nano-Structures as Platforms for Efficient Coupling of Thermal and Photonic Stimuli for Energy Efficient Chemical Conversion	392
<i>Phillip Christopher, David B. Ingram, Suljo Linic</i>	
The Hunt for New Catalysts: Continuous Electrochemistry	393
<i>E. Victoria Dydek, Montana V. Petersen, Daniel G. Nocera, Klavs F. Jensen</i>	
Surface Enhanced Raman Studies of Processes Occurring On Pt Under Electrochemical Conditions	394
<i>Shannon Klaus, Boon-Siang Yeo, Alexis T. Bell</i>	
Oxide and Oxynitride Materials for Direct Photoelectrochemical Water Splitting Using Visible Light	395
<i>Peter Khalifah, Limin Wang, Alexandra Reinert, Andrew Malingowski, Peichuan Shen, Alexander Orlov</i>	
The Role of Phosphorus in Nitrogen-Doped Graphite Oxygen Reduction Catalysts in PEM Fuel Cells	396
<i>Dieter von Deak, Elizabeth J. Biddinger, Katie A. Luthman, Umit S. Ozkan</i>	
Enantioselective Chiral Nanoparticles	397
<i>A.J. Gellman, Nisha Shukla, Melissa Bartel</i>	

Exploiting Recent Advancement in the Field of Nanotechnology in Heterogeneous Catalysis: Shaped Metallic Nanostructures as Selectivity Catalysts, Photo-Catalysis, and Platform for the Characterization of Surface Chemical Reactions.....	398
<i>Phillip Christopher, David B. Ingram, Suljo Linic</i>	
Methanol Steam Reforming Over Gold Supported On ZnO Nanoshapes	399
<i>Matthew Boucher, Nan Yi, Branko Zugic, Rui Si, Howard Saltsburg, Maria Flytzani-Stephanopoulos</i>	
Supported Bimetallic Cu/Ni Core-Shell Nanoparticles: Controlled Synthesis and Catalytic Activity in Water-Gas-Shift Reaction	400
<i>Jiann-Horng Lin, Vadim V. Gulians</i>	
Fine Tuning of the Acid/Base Properties of Pt/Alumina for Enantioselective Reactions.....	401
<i>Bjoern Schimmoeller, Fatos Hoxha, Tamas Mallat, Frank Krumeich, Sotiris E. Pratsinis, Alfons Baiker</i>	
OMS - Dendron Hybrids Possessing Chiral Groups and Their Catalytic Efficacy.....	403
<i>Daniel F. Shantz, Benjamin Hamilton</i>	
Thermodynamic Analysis and Experimental Results of Fe-Ni-Cu Metal Nanoparticles Preparation by Solution Combustion Synthesis for Catalytic Hydrogen Production	404
<i>Alexander S. Mukasyan, Eduardo E. Wolf, Anand Kumar</i>	
Ionic Liquids: From Fundamental Researches to Industrial Applications.....	405
<i>Suojiang Zhang, Xiaomin Liu</i>	
Artificial Photosynthesis: Conversion of CO₂ at Low Temperature and Potential Using Ionic Liquids.....	406
<i>Brian A. Rosen, John Haan, Wei Zhu, Rich Masel</i>	
Gas Sorption in Ionic Liquid-Carbon Nanotube Composite Materials	407
<i>Wei Shi, Dan C. Sorescu</i>	
Ionic Liquids Assisted Preparation of Cellulose Coated Bacterial Biosorbents	408
<i>Yeoung-Sang Yun, Thuy T.P. Pham, Myunghee Song, Sung Wook Won, Robin D. Rogers</i>	
High Absorption Performance of HCl in 1-Octyl-3-Methylimidazolium Chloride.....	409
<i>Shuo Li, Zhen Zhang, Xiangping Zhang, Suojiang Zhang</i>	
Adsorption Separation of Reaction Product From Ionic Liquid Reaction Mixture for Conversion of Biomass Into 5-Hydroxymethylfurfural (HMF).....	412
<i>Wei Liu, Feng Zheng, Heather Brown, Allan Cooper</i>	
Membrane Extraction of Reaction Product From Ionic Liquid Reaction Process.....	413
<i>Jian Zhang, Wei Liu</i>	
Magnetic Imaging of Naphthas II: Feed Component Detection and Influence On Olefin Yields.....	414
<i>Preetinder S. Virk</i>	
In-Situ UV-Vis-NIR Diffuse Reflectance Spectroscopic Investigation of n-Butane Isomerization On H-Mordenite and Pt/H-Mordenite at Various H₂ Partial Pressures	415
<i>Matthew Wulfers, Friederike C. Jentoft</i>	
Modeling of Hydrocracking: Methodology	419
<i>Nadège Serrand, Hugues Dulot, Denis Guillaume, Slavik Kasztelan, Johannes A. Lercher</i>	
Microkinetic Modeling of Catalytic Reforming of Oxygenated Hydrocarbons.....	421
<i>Michael Salciccioli, Ying Chen, Dion G. Vlachos</i>	
Toluene Total Oxidation Over CuO-CeO₂/Al₂O₃ Catalyst: Nature and Role of Oxygen Species	423
<i>Vladimir Galvita, Unmesh Menon, Guy B. Marin</i>	
Kinetics of Reaction Networks with Multiple Overall Reactions.....	428
<i>Saurabh Vilekar, Ilie Fishtik, Ravindra Datta</i>	
Computational Methods for Reaction Pathway Analysis: Strategies Using Quantum Mechanical Calculations and Microkinetic Modeling Techniques	429
<i>Kathryn R. Bjorkman, Linda J. Broadbelt</i>	
Effect of Inorganics in Biomass On Rhodium Catalysts for Millisecond Autothermal Reforming	430
<i>Reetam Chakrabarti, Lanny D Schmidt</i>	
Reverse Water Gas Shift Chemistry and Catalytic Oxidative Reforming of Volatile Organics Derived From Boiling Intermediate Cellulose	431
<i>Paul J. Dauenhauer</i>	
Biomass Conversion to Hydrogen-Rich Product Gas Via Alkaline Hydrothermal Treatment.....	432
<i>Thomas Ferguson, Ah-Hyung Alissa Park</i>	
Microkinetic Modeling of Ethylene Glycol Decomposition On Pt and Ni-Pt Bimetallic Catalysts	433
<i>Michael Salciccioli, Dion Vlachos</i>	
Yield of Dimethyl Ether and Gasoline as a Function of Size of ZSM-5 Crystals.....	434
<i>Ali A. Rowanghi, Caroline Häggström, Olov Öhrman, Jonas Hedlund</i>	
Catalytic Conversion of Biogas to Transportation Fuels and Chemicals.....	435
<i>Sagar B. Gadewar, Zachary Komon, Eric W. McFarland, Peter Stoimenov, Aihua Zhang</i>	
Potassium Promoted CoMo Sulfide as a Catalyst for the Synthesis of Higher Alcohols From Syngas	437
<i>Juan J. Bravo Suarez, Bala Subramaniam, R. V. Chaudhari</i>	

DFT and Parameterized-Model Studies On the Reactivity of Heterogeneous Catalyst Surfaces: Alloying and Coverage Effects	438
<i>Nilay Inoglu, John R. Kitchin</i>	
Support Effects On the Catalytic Properties of Pt-Au Bimetallic Nanoparticles: A Multi-Scale Simulation Study	439
<i>Brian H. Morrow, Daniel E. Resasco, Alberto Striolo</i>	
Nucleation and Growth of Pd-Ag Bimetallic Catalyst On Anatase TiO₂(101) Surface: A First-Principles DFT Study	440
<i>You Han, Ming Zhang, Chenhong Xu, Wei Li, Jinli Zhang</i>	
Investigating the Dissolution of Platinum-Based Alloy Catalysts for Fuel Cells Using Kinetic Monte Carlo and Density Functional Theory Simulations	442
<i>Rafael Callejas-Tovar, Perla B. Balbuena</i>	
A Density Functional Theory Study of Hydride Transfer Over Zeolites Utilizing a Periodic Modeling Approach	444
<i>Gregory M. Mullen, Michael J. Janik</i>	
Theoretical Studies of Alkene Isomerization and Dimerization in Zeolites	445
<i>Joseph S. Gomes, Martin Head-Gordon, Alexis T. Bell</i>	
A DFT Study of the Mechanism of Zeolite-Catalyzed Carbonylation of Dimethoxymethane — A Critical Step along the Path From Synthesis Gas to Mono-Ethylene Glycol	446
<i>Vladimir Shapovalov, Alexis T. Bell</i>	
Highly Active Hydrogen Evolution Catalysts Based On Monolayer Pt On Tungsten Carbide	447
<i>Daniel V. Esposito, Sean T. Hunt, Kevin D. Dobson, Brian E. McCandless, Robert W. Birkmire, Jingguang G. Chen</i>	
Visible Light Semiconductor Photo-Catalysis Enhanced by Ag Nanoparticle Plasmon Resonance	449
<i>David B. Ingram, Phillip Christopher, Suljo Linic</i>	
Density Functional Theory Determination of Potential Dependent Anion Adsorption of Relevance to Cathode Performance of Microbial Fuel Cells and Microbial Electrolysis Cells	450
<i>Michael J. Janik, Iman Savizi, Bruce E. Logan</i>	
Nanostructured MoS₂ for Solar Hydrogen Production	451
<i>Thomas F. Jaramillo, Zhebo Chen, Jakob Kibsgaard, Shin-Jung Choi</i>	
Nanostructured Transition Metal Carbide Based Electrocatalysts for Triglyceride Hydrogenation	452
<i>Adam Lausche, Levi Thompson</i>	
Stability and Catalytic Properties of La_{0.75}Sr_{0.25}Cr_{0.50}Mn_{0.40}T_{0.10}O_{3-δ} (T = Co, Fe, Mn, Ni or V) for Solid Oxide Fuel Cell Anodes	455
<i>Michael Van den Bossche, Steven McIntosh</i>	
Membranes Technologies for Chemical Processes to Produce Clean Water and Energy, Biofuel and Pharmaceuticals	457
<i>T.S. Chung</i>	
Microreactor for Industrial Application: Technical and Economical Benefits	458
<i>Sergio Pissavini</i>	
Design Enhancements of a High Temperature, Ceramic Micro-Channel Heat Exchanger	459
<i>Merrill Wilson, James N. Cutts, Joseph R. Fellows</i>	
Toward Low-Cost Fabrication of Microchannel Process Technologies — Cost Modeling for Manufacturing Development	467
<i>Steven D. Leith, Dale A. King, Brian K. Paul</i>	
A Compact Integrated Warm Syngas Overall Cleanup System	475
<i>Liyu Li, David L. King, Baowei Chen, Chris Howard</i>	
Pyrolysis of Biomass and Coal in a Free Fall Reactor	476
<i>Shaoping Xu</i>	
Solar Thermochemical Production of Metal Nitrides and Ammonia Utilizing Transition Metal Reactants	477
<i>Ronald Michalsky, Peter H. Pfromm</i>	
Robust Nanostructured Noble Metal/ Ceria/Lanthana Catalysts for Water-Gas-Shift	478
<i>Shuang Liang, Götz Vesper</i>	
Preparation and Characterization of Fischer-Tropsch Active Co/SiO₂ Catalyst Modified with a Chelating Agent	479
<i>Ashish S. Bambal, Alaa Kababji, Vidya Sagar Guggilla, Todd H. Gardner, Edwin L. Kugler, Dady B. Dadyburjor</i>	
Catalytic Activity of Graphite Nanofibers	485
<i>Andrew R. Ferens, Randy D. Weinstein</i>	
Free-Standing Platinum Nanoflower-SWCNTs Based Electrocatalyst: Synthesis, Characterization, and Application	486
<i>Liang Su, Wenzhao Jia, Cynthia B. Beacham, Honorio Valdés Espinosa de los Monteros, Yu Lei</i>	

Atomistic Simulations of Micromixing and Segregation Phenomena in Ternary Nanoalloys	487
<i>Subbaraman Ramachandran, Subramanian Sankaranarayanan</i>	
Catalytic Oxidative Desulfurization of Model Diesel	488
<i>Janetta Yakshimuradova, Dongxing Liu, Robert Forest, F. Carl Knopf, Kerry M. Dooley</i>	
A Simple Method for Preparing Metal Nanoparticles Inside Multi-Walled Carbon Nanotubes and Their Transmission Electron Microscopy Image Analysis	493
<i>Xiaoming Wang, Nan Li, Lisa D. Pfefferle, Gary L. Haller</i>	
An in-Situ EELS Study of Co-Based Fischer-Tropsch Catalysts	494
<i>Yuan Zhao, Theresa Feltes, John R. Regalbuto, Randall Meyer, Robert F. Klie</i>	
An Fe/Cu/K/SiO₂ Fischer-Tropsch Catalyst Prepared by Solvent-Deficient Co-Precipitation	502
<i>Kyle M. Brunner, Abinash Paudel, Calvin H. Bartholomew, William C. Hecker</i>	
A Model Cobalt/Silica Fischer Tropsch Nanocomposite Catalyst Preparation by Surface Functionalization	503
<i>Bijith Mankidy, John Wolan, Babu Joseph, Vinay K. Gupta</i>	
Tailoring the Properties of Flame-Made Mixed Metal-Oxide Catalysts	504
<i>Bjoern Schimmoeller, Alfons Baiker, Sotiris E. Pratsinis</i>	
The Platinum Atomic Layer Deposition On TiO₂ and Its Effect On Photoactivity	506
<i>Yun Zhou, David M. King, Xinhua Liang, Alan W. Weimer</i>	
Synthesis of Nano Structured Photocatalyst Using Supercritical Fluids	507
<i>Haitao Li, Sermin G. Sunol, Aydin Sunol</i>	
A Microfabricated Carbon Dioxide Sensor for Portable Applications	515
<i>Brian A. Rosen, Amin Salehi-Khojin, Rich Masel</i>	
Ammonia Gas Sensing by Zeolite-Fiber Optic Device: Effects of Surface Modification and Operation Temperature	516
<i>Xiling Tang, Zhi Xu, Seok-Jhin Kim, Junhang Dong</i>	
Infrared Optical Imaging for Advanced Gas Leak Detection	517
<i>Anisa Safitri, Xioadan Gao, M.S. Mannan</i>	
Si:WO₃ Sensors for Highly Selective Detection of Acetone for Easy Diagnosis of Diabetes by Breath Analysis	527
<i>Marco Righettoni, Antonio Tricoli, Sotiris E. Pratsinis</i>	
Modeling of a Catalytic Microsensor for the Selective Detection and Quantification of Ethanol in Multi-Component Hydrocarbon Fuel Mixtures	533
<i>Joseph E. Gatt, Hari Nair, Rong Zhang, Chelsey D. Baertsch</i>	
Surface Oxides: Thermodynamics and Energetic Correlations for Surface Oxides of Transition Metal Surfaces	534
<i>Spencer D. Miller, John R. Kitchin</i>	
Study of the Surface Reactivity of a Selective Catalytic Reduction (SCR) Catalyst: V₂O₅	535
<i>Ana Suarez Negreira, Jennifer Wilcox</i>	
A First Principles Analysis of Methanol Dehydration Over Tungstated Zirconia	536
<i>Hui Xu, Matthew Neurock</i>	
First Principles Study of Propane Oxidation On Supported and Unsupported V₂O₅ Catalysts: C-H Bond Activation and Reaction Path Analysis	538
<i>Konstantinos Alexopoulos, Marie-Françoise Reyniers, Guy B. Marin</i>	
Probing the Mechanism of Propane Ammoxidation Over Mo-V-Te-Nb-O Catalyst — Insights From First-Principles Calculations	542
<i>Muthukumar Kaliappan, Junjun Yu, Ye Xu, Vadim V. Guliants</i>	
Structural Stability and Catalytic Activity of Lanthanum-Based Perovskite Oxides	543
<i>Sergey N. Rashkeev, Lucia M. Petkovic, Vivek P. Utgikar, Thomas M. Lillo</i>	
A DFT Study of Peroxide Decomposition Over Copper Paddlewheels within Metal-Organic Frameworks	544
<i>Patrick Ryan, Linda J. Broadbelt, Randall Q. Snurr</i>	
Filtered Models for Reacting Gas-Solid Flows	545
<i>William Holloway, Sankaran Sundaresan</i>	
CFD Modeling and Simulation of Forced Periodic Operation of Trickle Bed Reactors	547
<i>Yining Wang, Jinwen Chen, Mugurel Munteanu, Faical Larachi</i>	
Predicting Residence Time Distribution in Gas-Phase Exothermic Reactors with Non-Reacting CFD Model	548
<i>Hua Bai, Max Tirtowidjojo</i>	
Model for Heterogeneous Feed Vaporization: Effect of Catalyst Particle Porosity	549
<i>Dariusz Orlicki, Kenneth Bryden, Wu-Cheng Cheng</i>	

CFD Studies of Shaped Steam Reforming Catalyst Particles	550
<i>Anthony G. Dixon, Alexandre Troupel, Justin Boudreau, Anne Rocheleau, M. Ertan Taskin, Michiel Nijemeisland, Hugh Stitt</i>	
Micro-Scale CFD Modeling of Packed-Beds	551
<i>Daniel P. Combest, P. A. Ramachandran</i>	
Formation and Removal of Ba-Carbonates/Carboxylates On Pt/Ba/Al₂O₃ Lean NO_x Traps	555
<i>Vincent Kispersky, Saurabh S. Chaugule, Aleksey Yezerets, Neal W. Currier, Fabio H. Ribeiro, W. Nicholas Delgass</i>	
Strontium-Doped Perovskites Rival Platinum Catalysts for Treating NO_x in Simulated Diesel Exhaust	557
<i>Chang Hwan Kim, Gongshin Qi, Wei Li</i>	
Effect of H₂ On the Denox Performance of Ag/Al₂O₃ Catalyst by Simulated Diesel with OHC	558
<i>Pyung Soon Kim, Mun Kyu Kim, In-Sik Nam, Byong K. Cho, Se H. Oh</i>	
TAP Studies of NO_x Reduction Using H₂ and NH₃	564
<i>Ashok Kumar, Xiaolin Zheng, Michael Harold, Vemuri Balakotaiah</i>	
Kinetics of the CO + NO, CO + NO + H₂ and CO+ NO+ H₂+H₂O Reactions Over Pt/BaO/Al₂O₃ Monolith	566
<i>Prasanna R. Dasari, Michael P. Harold, Rachel L. Muncrief</i>	
Various Effects of CO₂ in Pt-BaO/Al₂O₃ Lean NO_x Trap Catalysts	568
<i>Do Heui Kim, Ja Hun Kwak, Janos Szanyi, Xianqin Wang, Guosheng Li, Charles H. F. Peden</i>	
Lean-NO_x Trap/SCR Aftertreatment Catalysts for Automotive Emission Control	569
<i>Johannes W. Schwank, Xiaoyin Chen</i>	
Pulsed Temperature Activation in Heterogeneous Catalysis	570
<i>Jasper Stolte, A.C.P.M Backx</i>	
Investigation Into the Sensitivity of Low Temperature CO Oxidation On a Pt Based Catalyst	577
<i>Robert Henderson, Shirish S. Punde, Bruce J. Tatarchuk</i>	
Some Uses and Misuses of FCC Catalyst Testing Experimental Data	578
<i>George M. Bollas, Dariusz Orlicki, Hongbo Ma</i>	
Modeling of Diesel Particulate Regeneration for Transient Driving Schedules	583
<i>Di Huang, Jason M. Keith</i>	
Mathematical Modeling of Gasoline Combustion in a Spark Ignited Internal Combustion Engine	584
<i>Pankaj Kumar, Matthew Franchek, Karolos Grigoriadis, Vemuri Balakotaiah</i>	

Volume 2

A Numerical Study of Multicomponent Mass Diffusion and Convection in Porous Pellets for Methanol Production	585
<i>Kumar Ranjan Rout, Ameeya Kumar Nayak, Hugo Atle Jakobsen, Jannike Solsvik</i>	
Vacuum Gas Carburizing - Effect of Acetone On Pyrolysis of Acetylene	605
<i>Rafi Ullah Khan, Waheed Afzal, Dominic Buchholz, Siegfried Bajohr, Frank Graf, Rainer Reimert</i>	
Burnout of Soot Particles Derived From a JP-8 Surrogate in a Two- Stage Premixed Burner	611
<i>Carlos A. Echavarría, Cristina Jaramillo, Adel F. Sarofim, JoAnn S. Lighty</i>	
Chemical Kinetic Modeling of Fischer-Tropsch Diesel Fuel Combustion	612
<i>S. Mani Sarathy, Charles K. Westbrook, William J. Pitz, Marco Mehl</i>	
A Functional Group Based Kinetic Model for the Simulation of High Molecular Weight Fuel Surrogates	613
<i>Marco Mehl, William J. Pitz, Charles K. Westbrook, S. Mani Sarathy, Henry J. Curran</i>	
Detailed Modeling of Low-Temperature Alkane Oxidation: High-Pressure Rate Rules for Alkyl+O₂ Reactions	614
<i>Hans-Heinrich Carstensen, Lam Huynh, Anthony Dean</i>	
Comparison of Fuel Rich and Stoichiometric Premixed Toluene Flames	620
<i>Wenjun Li, Bin Yang, Phillip Westmoreland, Tina Kasper, Nils Hansen</i>	
Numerical Investigation of Advanced Engine Combustion with CFD and Detailed Chemical Kinetics Using On-the-Fly Reduction	622
<i>Kaiyuan He, Ioannis P. Androulakis, Marianthi Ierapetritou</i>	
Developing An Extensible Projection-Based Model Reduction Technique Bounding Approximation Error	624
<i>Geoffrey M. Oxberry, William H. Green, Paul I. Barton</i>	
Continuous Flow Reactors of Microchannels for Pharmaceuticals and Fine Chemicals	629
<i>Marc Winter, Chevalier Berengere, Frank Schmidt, Yi Jiang</i>	

Micromixing Characterization through Competitive Parallel Reactions in a Vessel Agitated by a Primary Impeller and a High Shear Homogenizer	630
<i>Micaela Caramellino, Piero M. Armenante</i>	
Energetic Materials Process Development through Kinetic and Process Models	631
<i>Jerry S. Salan</i>	
Selective Lactose Conversion to Lactobionic Acid Via Aerobic Oxidation Over Gold-Based Mesoporous Catalysts.....	632
<i>Luis-Felipe Gutiérrez, Safia Hamoudi, Khaled Belkacemi</i>	
A Spray Reactor for One-Step Polymer-Grade Terephthalic Acid (TPA) Production.....	633
<i>Meng Li, Fenghui Niu, Xiaobin Zuo, Daryle H. Busch, Bala Subramaniam</i>	
Extraction of Nickel From Spent Catalyst Using Acidophilic Bacteria.....	634
<i>Bina Singh, Priangshu m Sarma, Ajoy. k Mandal, Banwari Lal</i>	
Applications for Microfibrillar Entrapped Catalysts: VOC Oxidation at Microsecond Residence Times	635
<i>Sabrina Wahid, Bruce Tatarchuk</i>	
Microfibrillar Entrapped Catalysts for Low Temperature CO Oxidation	636
<i>Shirish S. Punde, Bruce J. Tatarchuk</i>	
CO₂ Photoreduction by Nanostructured Composite Photocatalytic Materials Synthesized by a Furnace Aerosol Reactor System	637
<i>Wei-Ning Wang, Jinho Park, Pratim Biswas</i>	
Determination of the Absorption and Scattering Coefficients for TiO₂ Using Monte Carlo Simulations and Macroscopic Balances	638
<i>Jesus Moreira del Rio, Benito Serrano, Aaron Ortiz Gomez, Hugo de Lasa</i>	
Photocatalytic Thermodynamic Efficiency Factors (PTEF) During Enhanced Phenol Degradation by Iron Ions	640
<i>Benito Serrano-Rosales, Jesus Moreira, Aaron Ortiz Gomez, Hugo de Lasa</i>	
NH₃ Interactions with O₂ and NO Over Pd-Based FCC CO Emission Control Additives	649
<i>Behnam Bahrami, Vasileios G. Komvokis, Udayshankar Singh, michael S. Ziebarth, Oleg S Alexeev, Michael D Amiridis</i>	
Oxidative Reforming of Ethanol for Hydrogen Production On Fe/Ni/Cu Multicomponent Catalysts.....	651
<i>Anand Kumar, Alexander Mukasyan, Eduardo E. Wolf</i>	
Highly Active Molybdenum Dioxide Catalysts for the Partial Oxidation of Biodiesel.....	652
<i>Oscar G. Marin Flores, Timothy Turba, Caleb Ellefson, Joe Breit, M. Grant Norton, Su Ha</i>	
Influence of Particle Size and Sulfur Tolerance in ATR Over Ni Catalysts	653
<i>Joseph M. Mayne, Kevin A. Dahlberg, Thomas A. Westrich, Andrew R. Tadd, Johannes W. Schwank</i>	
Mechanistic Study of Methanol Interaction with IB Metals (Cu and Au) Doped Ceria.....	655
<i>Nan Yi, Rui Si, Howard Saltsburg, Maria Flytzani-Stephanopoulos</i>	
Shape, Acid-Base Properties and Crystal Plane Effects of Nanoscale CeO₂ On the Activity of Ru-CeO₂ Catalysts for the Water Gas Shift Reaction.....	656
<i>Ying Li, Zhijian Mei, Maohong Fan</i>	
Reforming of Glycerol Over Pt/C and Pt-Re/C in Aqueous Phase: Understanding Catalyst Function and Reaction Pathways for Hydrogen Production.....	657
<i>Liang Zhang, Ayman Karim, David L. King, Yong Wang</i>	
Kinetics of Glycerol Oxidation Over Pt-Bi/C Catalyst	658
<i>Wenbin Hu, Brian Lowry, Arvind Varma</i>	
Effective Limits of CO₂ and Methane Recycle to Mixed Alcohol Reactors Operated with Metal Sulfide Catalysts	659
<i>Jessey E. Hensley</i>	
On the Optimisation of Industrial Scale Oxidation Processes by Combining Fundamental Chemistry and Multi-Phase Hydrodynamics	660
<i>Praveen Lawrence, Alfredo Ramos, Sujin Lee, In Seon Kim, Sean Bermingham</i>	
Can We Control the Hydrodynamics of Slurry Bubble Columns?	663
<i>Nasim Hooshyar, Peter J. Hamersma, Robert F. Mudde, J. Ruud van Ommen</i>	
Impact of Internals On the Heat Transfer Rate and Coefficient in a Bubble Column	664
<i>Rahman S. Abdulmohsin, Muthanna H. Al-Dahhan</i>	
Identification of Various Transition Velocities in An Air-Polyethylene Fluidized Bed Based On Chaos Analysis of Computed Tomographic Scans	672
<i>Stoyan Nedelchev, Ahmed Fadha, Muthanna H. Al Dahhan</i>	
To Advance the Fundamental Understanding of the Hydrodynamics of TRISO Fuel Coaters by Systematically Investigating the Operating Variables Using Optical Probe and Pressure Transducers Techniques.....	681
<i>Muthanna Al-Dahhan, Shreekanta Aradhya</i>	

Kinetic Stability of Nitrogen-Substituted Siliceous FAU Zeolite From First Principles	682
<i>Vishal Agarwal, George W. Huber, William C. Conner, Scott M. Auerbach</i>	
Modifying Palladium(II) Oxidation Catalyst Performance through the Introduction of a Novel Multifunctional Siloxane Framework	683
<i>John M. Galloway, Ivan A. Konstantinov, Michael N. Missaghi, Linda J. Broadbelt, Harold H. Kung</i>	
Molybdenum Carbide-Supported Metal Catalysts: Synthesis, Characterization, and Catalytic Properties	685
<i>Josh A. Schaidle, Neil M. Schweitzer, Levi Thompson</i>	
TiO₂-B/Anatase Core-Shell Heterojunction Nanowires for Photocatalysis	687
<i>Bin Liu, Ankur Khare, Eray S. Aydil</i>	
Development of Acid Stable Transition Metal Oxide Electrocatalysts and Supports	688
<i>Peter Khalifah, Bingfei Cao, R. R. Adzic</i>	
Nanostructured Palladium Catalysts On Viral Templates	689
<i>Cuixian Yang, Amy K. Manocchi, Byeongdu Lee, Hyunmin Yi</i>	
Liquid Phase Aldol Condensation with Shape Selective Amine-Substituted Zeolites	690
<i>Wenqin Shen, George W. Huber, Geoff A. Tompset</i>	
Selectivity Control by Modification of Supported Metal Catalysts with Alkanethiol Monolayers	691
<i>Carolyn Schoenbaum, Stephen Marshall, Daniel Schwartz, Will Medlin</i>	
Enhanced Heat Transfer Catalyst Structure for Fisher Tropsch Synthesis	692
<i>Min Sheng, Donald R. Cahela, Bruce Tatarchuk</i>	
Controlled Synthesis of Bifunctional Acid/Base Catalysts for CO₂ Capture and Reaction	711
<i>Pria Young, Justin M. Notestein</i>	
Colloidal Synthesis of Tantalum (Oxy)Nitride Clusters	712
<i>Chiun-Teh Ho, Ke-Bin Low, Randall J. Meyer, Preston T. Snee</i>	
New Catalytic Materials for the Direct Epoxidation of Propylene by Molecular Oxygen	713
<i>Anusorn Seubsai, Michael Kahn, Selim Senkan</i>	
Thermal Stability of Hydrocarbon Fuels	714
<i>Wing Tsang</i>	
Steam Cracking of Heavy Oil Fractions: Harnessing On-Line GCxGC	716
<i>Steven P. Pyl, Carl M. Schietekat, Kevin M. Van Geem, Marie-Françoise Reyniers, Guy B. Marin</i>	
Coupled Kinetics and Transport in the Mixing Region of a Hydrocarbon Reformer	725
<i>Sunyoung Kim, Huayang Zhu, Hans-Heinrich Carstensen, Robert Kee, Anthony Dean, Joongmyeon Bae</i>	
Kinetics of High Temperature Reaction in Ni-Al System: Influence of Mechanical Activation	728
<i>Ya-Cheng Lin, Alexander S. Shteinberg, Alexander S. Mukasyan</i>	
Kinetic Modeling of Ethane and Propane Pyrolysis at SOFC Operating Conditions	729
<i>Chen Xu, Ahmed Al Shoaibi, Hans-Heinrich Carstensen, Anthony Dean</i>	
Physical and Chemical Structure of Biochars Produced From Different Feedstocks and Under a Variety of Pyrolysis Conditions	733
<i>Hao Sun, William C. Hockaday, Caroline A. Masiello, Kyriacos Zygourakis</i>	
Combustion Characteristics of Alternative Fuels: Butanol Isomers	735
<i>Michael R. Harper, Kevin M. Van Geem, Steven P. Pyl, Guy B. Marin, William H. Green</i>	
Facile, High-Yield Synthesis of Nanocrystalline ZSM-5 Rich in Framework Aluminum	744
<i>Vanessa Mortola, Adriana Ferreira, Joseph Fedeyko, Christopher Downing, Jose Bueno, Mayfair C. Kung, Harold H. Kung</i>	
Synthesis of Hydrothermally Stable Silica-Niobium Oxide Catalysts	745
<i>Yomaira J. Pagán-Torres, Hien N. Pham, Joseph A. Libera, Jeffrey W. Elam, Christopher L. Marshall, Abhaya K. Datye, James A. Dumesic</i>	
Atomic Layer Deposition of Pt On WC for Fuel Cell Applications	746
<i>Irene Hsu, Brian G. Willis, Jingguang G. Chen</i>	
The Electrostatic Synthesis of Supported Au Catalysts with a Novel Cationic Precursor	747
<i>John R. Regalbuto, Sean Barnes</i>	
Fundamental Studies On Impregnation and Drying for Supported Catalyst Preparation Using DSC and Electron Tomography	748
<i>Tamara M. Eggenhuisen, Petra E. de Jongh, Krijn P. de Jong</i>	
Mechanisms of Drying of Supported Catalysts for Low and High Metal Loadings	752
<i>Xue Liu, Johannes Khinast, Benjamin J. Glasser</i>	
Experiments and Modelling On Preparation of Supported Porous Catalysts	754
<i>Milos Marek, Vladimir Novak, Petr Koci, Frantisek Stepanek, Milan Kubicek</i>	
Electrically Heated Catalysts for Hybrid Applications: Mathematical Modeling and Analysis	755
<i>Karthik Ramanathan, Se H. Oh, Edward J. Bissett</i>	
Catalytic Coating on Metal Substrate for Soot Oxidation	756
<i>Changsheng Su, Paul J McGinn</i>	

Characterizing Heterogeneous Aging of a Monolith-Supported Oxidation Catalyst	758
<i>William Epling, April Russell, Cary Henry, Aleksey Yezerets, Neal Currier</i>	
A Kinetic Model for NH₃ SCR On Cu-BEA Zeolite Using Micro Calorimetry Data	759
<i>Norman Wilken, Krishna Kamasamudram, Neal W. Currier, Ramya Vedaiyan, Aleksey Yezerets, Louise Olsson</i>	
Kinetics and Mechanistic Studies of Selective Catalytic Reduction of NO_x On Fe Based Zeolite Monolith Catalysts	763
<i>Pranit S. Metkar, Michael Harold, Vemuri Balakotaiah, Rachel L. Muncrief</i>	
Deactivation Kinetics and Deactivation Mechanism During the Selective Reduction of NO_x Catalyzed by Metal-Zeolites	764
<i>Angel Martinez-Hernandez, Sergio A. Gómez, Gustavo A. Fuentes</i>	
Effects of Fuel Type On Dual SCR Aftertreatment	765
<i>Galen B. Fisher, Craig DiMaggio, Dan Trytko, Ken M. Rahmoeller, Mark Sellnau</i>	
Autothermal Reforming of Logistics Fuel by Noble-Metal Catalysts	766
<i>Andrew R. Tadd, Suljo Linic, Hongliang Xin</i>	
Silicon Micro-Reactors to Power Portable Electronics	767
<i>Sagar Gururaj, Naveed Ansari, W. R. Ashurst, Bruce Tatarchuk</i>	
Ethanol Reforming in Micro Structures	768
<i>Gerd Rabenstein, Viktor Hacker, Matthaus Siebenhofer</i>	
Indirect Formic Acid Fuel Cell with Room Temperature Catalytic Dehydrogenation	769
<i>Kwong-Yu Chan, Huanqiao Li, Siu Wa Ting, Jenkin Tsui</i>	
Rare Earth Oxysulfides as High-Temperature Catalysts for the Water-Gas Shift Reaction	770
<i>Ioannis Valsamakis, Maria Flytzani-Stephanopoulos</i>	
Predictive Kinetics of the Water Gas Shift Reaction On Pt(111) Via Reaction Route Graph Analysis	771
<i>Saurabh Vilekar, Ilie Fishtik, Ravindra Datta</i>	
Computing Blend Time with Mean Age Distribution in Batch Stirred Tank Reactors	772
<i>Minye Liu</i>	
A Comparison of One Dimensional Turbulence (ODT) and Direct Numerical Simulation (DNS) of Non-Premixed Flames with Extinction	773
<i>David O. Lignell, Devin S. Rappleye</i>	
Analysis of the Micro-Mixing Time in FDF Methods	775
<i>Juan M. Mejía, Amsini Sadiki, Farid Chejne, Alejandro Molina</i>	
Approach towards a Quantitative Description of Microstructured Cyclone Type Mixers	785
<i>Andreas Kölbl, Manfred Kraut, Achim Wenka, Roland Dittmeyer</i>	
Evaluation of SGS Scalar Flux Models in a Turbulent Liquid Flow	789
<i>Juan M. Mejía, Amsini Sadiki, Alejandro Molina, Farid Chejne, Camilo Parra, Pradeep Pantangi</i>	
Scale-up of the Production of Monofunctional Polysiloxanes	800
<i>Georg Witek, Matthäus Siebenhofer, Frank Uhlig, Enes Aksamija</i>	
Synthetic Reactions In a Biphasic System of Emulsified Water and Supercritical CO₂	802
<i>Alireza Bahari, Gary A. Leeke</i>	
Intensified Liquid Phase Ethylene Epoxidation: Thermodynamics, Mass Transfer and Kinetic Studies	803
<i>Madhav Ghanta, Hyun Jin Lee, Daryle H. Busch, Bala Subramaniam</i>	
Continuous Homogeneous Hydroformylation Using Nanofiltration Membrane for Catalyst Containment	804
<i>Zhuanzhuan Xie, Jing Fang, William Kirk Snively, Ranjan Jana, Jon Tunge, Bala Subramaniam</i>	
Ionic Liquid Synthesis in CO₂-Expanded Liquids	805
<i>Sylvia O. Nwosu, Jay C. Schleicher, Aaron M. Scurto</i>	
Nearcritical Water for Facile Deprotection Reactions and Benign Urea Production	806
<i>Ryan Hart, Elizabeth Cope, Pamela Pollet, Charles L. Liotta, Charles A. Eckert</i>	
Kinetic Study of the Reformation of Military Logistic Fuel (JP-8) In Supercritical Water	807
<i>Jason W. Picou, Jared S. Bouquet, Michael S. Stever, Sunggyu Lee</i>	
Reaction Induced by Pulsed-Discharge Micro-Plasma in Supercritical Fluids	816
<i>Motonobu Goto, Mitsuru Sasaki, Diono Wahyu, Koichi Nagafuchi, Tsuyoshi Kiyari, Takao Namihira, Hidenori Akiyama</i>	
Peering Into Supercritical-Water Biomass Gasification with Neutron Radiography	822
<i>Andrew A. Peterson, Frederic Vogel, Jefferson W. Tester</i>	
Supercritical Water Gasification of Phenol	823
<i>Chad Michael Huelsman, Phillip E. Savage</i>	
Reaction Rate Parameters for Supercritical Water Gasification of Various Biomass Species	824
<i>Yukihiko Matsumura, Yasunao Yamashita, Shuhei Inoue, Yoshifumi Kawai, Tomoaki Minowa, Yoji Noda, Yoshihisa Shimizu</i>	

A Decoupling Methodology for Wood Gasifier Modeling: From Laboratory Scale Kinetic Measurements to Pilot Plant Simulation. Application to a Dual Fluidized Bed Gasifier.....	825
<i>Olivier Authier, Guillaïn Mauviel, Monique Ferrer, Az-Eddine Khalfi, Jacques L��d��</i>	
Can the Effluent of An Efficient Biomass Carbonizer Be Combusted?	828
<i>Javier ��brego, Toshiaki Hanaoka, Michael J. Antal Jr.</i>	
Design of Exergy Recuperative Fluidized Bed Drying System for Biomass.....	829
<i>Muhammad Aziz, Chihiro Fushimi, Yasuki Kansha, Kazuhiro Mochidzuki, Shozo Kaneko, Atsushi Tsutsumi</i>	
Development of the Pair Distribution Function for the Study of Supported Catalyst Formation	830
<i>Liliana Gamez, Maria Martinez-Inesta</i>	
Impregnated Layer Combustion Synthesis: a Novel Methodology to Prepare Multi-Component Catalysts, Fundamentals and Experiments	831
<i>Anand Kumar, Alexander Mukasyan, Eduardo E. Wolf</i>	
Fundamentals of Melt Infiltration for Supported Catalyst Preparation. the Case of CO/SiO₂ Fischer Tropsch Catalysts	832
<i>Tamara M. Eggenhuisen, Petra E. de Jongh, Krijn P. de Jong</i>	
Investigation of Noble Metal Choice and Preparation Scale On Cobalt Fischer Tropsch Catalysts	835
<i>Kari M. Cook, Brad Hancock, Robson P. S. Pegu��n, William C. Hecker, Calvin H. Bartholomew</i>	
Engineering Bimetallic Catalyst Preparation Via Strong Electrostatic Adsorption	837
<i>John R. Regalbuto, Chongjiang Cao</i>	
DFT Studies On the Promotional Effect of Platinum for the Reduction of CoPt Bimetallic Catalyst in Fischer Tropsch Synthesis.....	838
<i>Nianthrini Balakrishnan, Venkat R. Bhethanabotla, Babu Joseph</i>	
Bioleaching of Nickel From Spent Catalyst Using Acidophilic Bacteria	846
<i>Bina Singh, Priyangshu M. Sarma, Ajoy K. Mandal, Banwari Lal</i>	
Hydrogen Production of Aqueous Phase Reforming From Glycerol	852
<i>Gwansu Shin, Jiyeon Kim, Dhanapalan Karthikeyan, Dong-Ju Moon, Jong-Ho Kim, Nam Cook Park, Young Chul Kim</i>	
The Effect of the Addition of Promoter to Ni Supported Perovskite, Hydrotalcite and Metal Oxide Catalysts On the Autothermal Reforming of Propane	853
<i>WooRi Kim, GaYoung Choi, Dong Ju Moon, Gon Seo, Young Chul Kim, Nam Cook Park</i>	
Influence of Niobium Precursor and Calcination Temperature On the Dehydration of Glycerol.....	854
<i>Young Yi Lee, Young Chul Kim, Nam Cook Park, Jong Ho Kim, Dong Ju Moon, Jae soon Shin</i>	
Development of An Acidity Scale for Br��nsted Acidic Ionic Liquids.....	855
<i>Rajeev Davuluru, Kevin N. West, James H. Davis Jr.</i>	
Effect of Kinetics On Fischer-Tropsch SBCR Performance	856
<i>Laurent Sehabiague</i>	
Steam Reforming of n-Hexadecane Over Nickel Xerogel Catalysts	857
<i>Vidya Sagar Guggilla, Jale F. Akyurtlu, Ates Akyurtlu</i>	
Reversible Addition Fragmentation Chain Transfer Polymerization of PMMA Using Flow through Reactor	859
<i>Jung Yoo Jin, JaeHoon Choe, Kwang Ho Song</i>	
Experimental and Computational Studies of Oxygen Reduction On Platinum and Silver Catalysts in Acidic and Basic Media	860
<i>Adam Holewinski, Suljo Linic</i>	
A Non Isothermal Maxwell-Stefan Diffusion Model for Design of Catalytic Membrane for Hydrogen Production From Ethanol Reforming	861
<i>bhanu Vardhan Reddy Kuncharam, Benjamin. A Wilhite</i>	
Hydroformylation by Using Rhodium Tethered On Selectively Functionalized Silica and High-Pressure IR Study	862
<i>Jong Ki Jeon, Ki Chang Song, Jung A. Bae, Jin-Heong Yim, Young Soo Ko, Young-Kwon Park</i>	
Designer Solid Acid Catalysts for Producing Biofuels From Algal Oils.....	865
<i>Griffin W. Roberts, Susan Stagg-Williams</i>	
Theoretical Investigation of the Three-Phase Boundary of Ceria Supported Noble Metal Clusters.....	872
<i>Sara Aranifard, Salai C. Ammal, Andreas Heyden</i>	
Theoretical Investigation of Oxygen Ion Transport in Doped Perovskite and Double Perovskite Structures of SrTiO₃ and Sr₂Fe_{1.5}Mo_{0.5}O₆ for Solid Oxide Fuel Cell Applications.....	873
<i>Suwit Suthirakun, Salai C. Ammal, Andreas Heyden</i>	
Low-Dimensional Models for Real Time Simulations of Catalytic Aftertreatment Systems.....	874
<i>Saurabh Y. Joshi, Michael Harold, Vemuri Balakotaiah</i>	
Simulation of An Advanced Fischer-Tropsch Reactor Technology.....	875
<i>Natalie Hamad, Sally S Nicola, Elfatih Elmalik, Aswani Mogalicherla, Fadwa T. Eljack, Nimir O. Elbashir</i>	

Development of Near-Critical Water Reaction System for Utilization of Woody Lignin as Fuel and Chemical Resources.....	876
<i>Hee-Jun Eom, Yoon-Ki Hong, Young-Moo Park, Sang-Ho Chung, Kwan-Young Lee</i>	
Active Species in Single-Walled Carbon Nanotube (SWNT) Synthesis From Silica-Supported Cobalt Catalysts	877
<i>Nan Li, Xiaoming Wang, Salim Derrouiche, Gary L. Haller, Lisa D. Pfefferle</i>	
Methane Steam Reforming Over Ni Catalysts Supported On Structured Ceramic Foams	878
<i>Geofrey Goldwin, James Richardson</i>	
Pulsed-Field Gradient NMR Investigations of Zeolite Nucleation and Growth	879
<i>Alejandra R. Rivas-Cardona, Daniel F. Shantz</i>	
Study of Pure-Silica ZSM-5 Zeolite Growth From Solutions.....	880
<i>Xiang Li, Daniel F. Shantz</i>	
Heterogeneity of N- and O- Arylation Reactions Catalyzed by Cu(II) Exchanged Zeolite	881
<i>L. Al-Hmoud</i>	
Combinatorial Biocatalytic Synthesis of New Resorcylic Acid Lactones	882
<i>Jia Zeng, Jonathan Valiente, Jixun Zhan</i>	
Green, One-Pot Synthesis for Preparation of TiO₂ Supports.....	883
<i>Rebecca E. Olsen, Stacey J. Smith, Baiyu Huang, Calvin H. Bartholomew, Julia Boerio-Goates, Brian F. Woodfield</i>	
Synergistic Effects of Anionic Surfactant and 0.30 T Static Magnetic Field On the Activity and Structure of Catalase	884
<i>Jingyu Ran, Shaoyi Jia, Yong Liu, Songhai Wu, Wei Zhang</i>	
Simulation of An Ethylene Wall Fire Using the One-Dimensional Turbulence Model.....	893
<i>Elizabeth I. Monson, David O. Lignell</i>	
Effects of Support On the Reaction Mechanism of Iron Based Chemical Looping Gasification Particles — Platinum Marker and Computational Studies	894
<i>Fanxing Li, Siwei Luo, Zhenchao Sun, Xiaoguang Bao, L. - S. Fan</i>	
High Volumetric Reactivity Structure and Testing	895
<i>Qiang Gu, Bruce Tatarchuk</i>	
Characterization and Surface Chemical Reactions of Doped ZnO/Silica Sorbents Upon H₂S Adsorption	903
<i>Divya Repala, Alexander Samokhvalov, Bruce J. Tatarchuk</i>	
The Effect of Solvents and Other Parameters On Drug Oxidation Via Biomimetic Catalysis.....	904
<i>Alvaro A. Rodriguez, Chelsea N. Monty</i>	
Thermogravimetric Analysis of Combustion and Gasification of Lignocellulosic Biomass and Its Components.....	905
<i>Hyung Chul Yoon, Aldo Steinfeld</i>	
Hydrogen Generation From Acetic Acid and Ammonia Using Pd-Based Membrane Reactors	906
<i>Alejandrina Campanella, Sameer H. Israni, Michael P. Harold</i>	
Hetero-Bimetallic Rhodium-Molybdenum Homogeneous Hydroformylation. the Most Recent Example of Catalytic Binuclear Elimination (CBER)	908
<i>Chuanzhao Li, Shuying Cheng, Martin Tjahjono, Martin Schreyer, Marc Garland</i>	
Non-Steady-State Catalyst Characterization with Thin Zone TAP Experiments	909
<i>Evgeniy Redekop, Gregory S. Yablonsky, Denis Constaes, Xiaolin Zheng, Gabriel Veith, John T. Gleaves</i>	
Acidic Catalysts From Activated Carbon to n-Pentane Isomerization	913
<i>Alberto Hernandez-Zapien, Yolanda Pliego-Bravo, Guillermo Sandoval-Robles, Ricardo Garcia- Alamilla</i>	
Binary Interaction Between Polyethylene and Polypropylene: Effects On Thermal Degradation and Product Distribution	921
<i>Ujwala Hujuri, Sasidhar Gumma, Alope Kumar Ghoshal</i>	
A Model for the Prediction of Coke Deposition During Thermal Cracking of Ethane/Propane Mixtures	922
<i>Astrid Yuliana Ramirez Hernández, Alejandro Molina Ochoa, Luis Oswaldo Almanza Sr.</i>	
An Alternative Biofuel: Bio-LPG From Biomass-Derived Organic Acids.....	931
<i>Branko Zugic, Maria Flytzani-Stephanopoulos</i>	
Synthesis of Higher Alcohols From Syngas Over K Promoted Cu-Co-Zn Catalyst in Supercritical n-Hexane.....	932
<i>Rui Xu, Sihe Zhang, Christopher B. Roberts</i>	
Production of Middle Distillate Range Transportation Fuels From Synthesis Gas Using Fischer Tropsch Synthesis Technology Under Supercritical Phase.....	933
<i>Sihe Zhang, Ed Durham, Rui Xu, Christopher Roberts</i>	

Synthesis of BDF From Sunflower Oil in a Countercurrent Trickle-Bed Reactor Packed with a CaO Catalyst	934
<i>Sung Mo SON, Katsuki Kusakabe</i>	
A Novel Reactor for Preparing Cellulose Acetate Esters	935
<i>Pratik N. Bhandari, Milford A. Hanna</i>	
Structure of Flame-Made Vanadia/Silica and Catalytic Behavior in the Oxidative Dehydrogenation of Propane	936
<i>Bjoern Schimmoeller, Yijiao Jiang, Sotiris E. Pratsinis, Alfons Baiker</i>	
Catalytic Study of Template-Ion Exchanged Ni/MCM-41 as Used for the Direct Transformation of Ethene Into Propene	940
<i>Tino Lehmann, Tanya Wolff, Christof Hamel, Volker M. Zahn, Andreas Seidel-Morgenstern</i>	
Epoxidation of Hexafluoropropylene	943
<i>David Lokhat, Maciej Starzak, Deresh Ramjugernath</i>	
Belt Drying and Microwave Drying of Supported Catalysts	954
<i>Xue Liu, Johannes Khinast, Benjamin J. Glasser</i>	
Synthesis and Characterization of Titanium-Containing Mesoporous Silica	955
<i>Kazumi Oda, Katsuki Kusakabe</i>	
Fabrication of Ultra Low Loading Anodes for Proton Exchange Membrane Fuel Cells	956
<i>Christian Contreras, Kurt Jensen, Shaun Alia, Shuang Gu, Yushan Yan</i>	
A New Solubility Model to Capture the Intrinsic Kinetics of Biodiesel Formation From Palm Oil	957
<i>Kanjane Gunvachai, Klaus Hellgardt</i>	
Transesterification of Canola Oil Into Biodiesel Catalyzed by Nanopowder Calcium Oxide	959
<i>Lina Zhao, Zheyang Qiu, Susan M. Stagg-Williams</i>	
Branched-Chain Alcohol Esters as Low-Temperature Biofuel Constituents	960
<i>Venkata KS Pappu, Victor M. Kanyi, Dennis J. Miller</i>	
The Conversion of Lipids Derived From Activated Sludge Into Biofuels	961
<i>Emmanuel D. Revellame, Rafael Hernandez, W. Todd French, Earl G. Alley, William E. Holmes</i>	
A Novel Class of Solid Base Catalysts in Transesterification of Vegetable Oils with Methanol	962
<i>Shuli Yan, Craig DiMaggio, Siddharth Mohan, Manhoe Kim, Huali Wang, Steven Salley, Simon Ng</i>	
Kinetics of Free Fatty Acid Esterification On Sulfated Zirconium Oxide	963
<i>Nourredine Abdoulmoumine, Nuttapol Lerkkasemsan, Luke E. K. Achenie, Foster A. Agblevor</i>	
Designing Reforming Catalysts to Condition Biomass Derived Syngas	985
<i>Kim Magrini, Whitney Jablonski, Yves Parent, Matthew M. Yung</i>	
A DFT Study of Desulfurization and Tar Cracking of Gasifier Effluents Over Ceria-Based Rare-Earth Oxides	986
<i>Adam D. Mayernick, Michael Janik, Kerry M. Dooley</i>	
Development of a Catalytic Reactor for Conditioning of Biomass Generated Producer Gas and Evaluation of Selected Commercial Catalysts	987
<i>Ajay Kumar, Hasan K. Atiyeh, Danielle Bellmer, Raymond L. Huhnke</i>	
Comparison and Characterization of Bimetallic, Ni-Based Catalysts for Conditioning of Biomass-Derived Syngas	988
<i>Matthew M. Yung, Kimberly A. Magrini-Bair, Whitney S. Jablonski, Jessica Olstad</i>	
Autothermal Oxidative Pyrolysis of Alternative Hydrocarbon Feedstocks	989
<i>Christine M. Balonek, Joshua L. Colby, Lanny D. Schmidt</i>	
Production of Bio-Oil and Hydrogen From Sawdust Via Pyrolysis and Catalytic Steam Reforming	990
<i>Ebrahim Salehi, Jalal Abedi, Thomas G. Harding, Fakhry Seyedeyn</i>	
Performance Enhancement of Low Temperature Water Gas Shift Catalysts by Palladium-Iron and Platinum-Iron Interactions	994
<i>Jorge Pazmino, Luis Bollmann, Vincent Kispersky, Damion Williams, Mayank Shekhar, Jeffrey T. Miller, Jeffrey W. Elam, Anil Mane, W. Nicholas Delgass, Fabio Ribeiro</i>	
Determination of the Active Site for Nanoparticle Gold Water-Gas Shift Catalysts Using a Model Support	995
<i>W. Damion Williams, Mayank Shekhar, Wen-Sheng Lee, Vincent Kispersky, Jun Wang, W. Nicholas Delgass, Fabio H. Ribeiro, Seung Min Kim, Eric A. Stach, Jeffrey T. Miller, Lawrence F. Allard</i>	
Deactivation of Gold-Ferrocene Very Low Temperature Water-Gas Shift Catalysts	996
<i>Carl R. F. Lund, Gaurav N. Vajani</i>	
Ultra-Low Temperature Water-Gas-Shift Reaction with Homogeneous Supported Ionic Liquid Phase (SILP) Catalysts	997
<i>Sebastian Werner, Normen Szesni, Richard W. Fischer, Marco Haumann, Peter Wasserscheid</i>	
Kinetic Studies On Au and Pt Catalysts Supported On Model Al₂O₃ and TiO₂ for the WGS Reaction	999
<i>Mayank Shekhar, W. Damion Williams, Wen-Sheng Lee, W. Nicholas Delgass, Fabio H. Ribeiro, Seung Min Kim, Eric A. Stach, Jeffrey T. Miller</i>	

Pt-Re Interaction Under Hydrothermal Environment In Aqueous Phase Reforming of Bioliquid for Hydrogen Production	1000
<i>Liang Zhang, Ayman Karim, David L. King, Yong Wang</i>	
Stability and Performance of Microreactor Stacks for Coupling of Exothermic and Endothermic Reactions	1001
<i>Matthew S. Mettler, Georgios D. Stefanidis, Dion Vlachos</i>	
Coupling of Endothermic and Exothermic Reactions in Cross-Flow Microreactors	1003
<i>Venkat Reddy Regatte, Niket S. Kaisare</i>	
Membrane Reactor Technology for Aqueous-Phase Hydrogenation of Biomass Derived Intermediates	1005
<i>Mandeep Kular, Neha Dhiman, Mary Rezac</i>	
Pure Hydrogen Extraction From Ethanol Via Integrated Micro-Membrane Reactors	1006
<i>Daejin Kim, Angela Moreno, Benjamin A. Wilhite</i>	
Development, Optimization, and Scale-up of a Breakthrough Reactor Technology	1007
<i>Hassan Taheri</i>	
Prediction of Continuous Kneader Reactor Processes From Batch Data	1008
<i>Boyd T. Safrit</i>	
Calculation of Sugar Yields From High Solid Hydrolysis of Lignocellulosic Biomass	1014
<i>Yongming Zhu, Marco Malten, Mads Torry-Smith, Hui Xu</i>	
Diffusion-Adsorption Measurements of Solutes in Cellulose Fiber Beds Using Magnetic Resonance Imaging	1015
<i>David M. Lavenson, Emilio J. Tozzi, Michael J. McCarthy, Robert L. Powell</i>	
Breaking the Barrier to Obtain High Yields On Enzymatic Hydrolysis Using Low Enzyme Loadings	1016
<i>Yoshiki Ueno, Makoto Ikeo, Naohisa Inoue, Daisuke Taneda</i>	
A Dynamic Model for Cellulosic Biomass Hydrolysis: Validation of Hydrolysis and Product Inhibition Mechanism	1023
<i>Jonas Eeclø, Chien-Tai Tsai, Ricardo Morales-Rodríguez, Krist V. Gernaey, Anne S. Meyer, Gürkan Sin</i>	
Syngas Fermentation: Reaction Kinetics and Pressure Dependencies of the Clostridial P11 Hydrogenase Enzyme	1025
<i>Bradley E. Skidmore, Douglas R. Tree, Jason M. Bray, Ryan A. Baker, Dila R. Banjade, Randy S. Lewis</i>	
Secondary Hydrolysis of Pretreatment Liquor Obtained From Continuous High-Solids Dilute-Acid Pretreatment of Corn Stover	1026
<i>Suan Shi, Y. Y. Lee, Richard Elander, Nick Nagle</i>	
Methane Oxidative Coupling: Synthesis of Membrane Reactor Networks	1027
<i>Hamid Reza Godini, Stanislav Jaso, Harvey Arellano-Garcia, Günter Wozny</i>	
Testing of Methane Steam Reforming in a Novel Structured Catalytic Reactor Providing Flow Impingement Heat Transfer	1029
<i>Paul A. Erickson, Jonathan J. Feinstein, Michael P. Ralston, David D. Davieau, Ian K. Sit</i>	
Determination of Kinetics and Controlling Regimes for Propylene and Methane Oxidation On Pt/Al₂O₃ Monolithic Catalyst	1037
<i>Saurabh Y. Joshi, Yongjie Ren, Michael Harold, Vemuri Balakotaiah</i>	
Simulation Study of Microburners with Spatial Catalyst Structuring	1038
<i>Niket S. Kaisare</i>	
A Lattice-Boltzmann Approach to Two-Phase Flow with High Density Ratios in Inclined Channels of Structured Packings	1039
<i>Mohammad R. Kamali, Jurriaan J.J. Gillissen, Sankaran Sundaresan, Harry E.A. Van den Akker</i>	
Multiphysics Modeling in Chemical Reaction Engineering	1041
<i>Henrik von Schenck, Jasper M. Van Baten</i>	
Carbon Dioxide Fixation in Two Plug Flow Reactors in Series Over a Copper Based Methanol Synthesis Catalyst in the First Reactor and a Cobalt Based Fischer-Tropsch Synthesis Catalyst in the Second Reactor	1042
<i>Yali Yao, Diane Hildebrandt, David Glasser, Xinying Liu</i>	
Catalytic Combustion of Butanol and Ethanol	1044
<i>Ivan C. Lee, Douglas A. Behrens</i>	
Studies On Redox Reactions of Iron-Based Chemical Looping Particles in Absence of Pore Structure	1045
<i>Zhenchao Sun, Fanxing Li, Siwei Luo, Deepak Sridhar, Liang Zeng, Hyung Rae Kim, Andrew Tong, Liang-Shih Fan</i>	
Conversion of Ethanol to 1-Butanol On Zirconia Based Catalytic Systems	1046
<i>Prashant Reuben Daggolu, Mark White</i>	
Chemical Kinetic Modeling of Biodiesel Combustion	1047
<i>S. Mani Sarathy, William J. Pitz, Charles K. Westbrook, Marco Mehl</i>	
Catalytic and Non-Catalytic Gasification of Cysteine in Supercritical Water for Hydrogen Production	1048
<i>Emhemmed A.E.A Youssef, George Nakhla, Paul A. Charpentier</i>	

Production of Ethanol From Biomass-Derived Syngas	1049
<i>Weihua Deng, Zheng Li, Yulin Huang, Victor S.-Y. Lin, R. C. Brown</i>	
Aqueous Phase Reforming Over Carbon Nanotube Supported Catalysts	1050
<i>Xiaoming Wang, Nan Li, Zhiteng Zhang, Lisa D. Pfefferle, Gary L. Haller</i>	
Nanoparticle Molybdenum Dioxide: a Highly Active Catalyst for the Partial Oxidation of Aviation Fuels	1051
<i>Oscar G. Marin Flores, Timothy Turba, Caleb Ellefson, Joe Breit, M. Grant Norton, Su Ha</i>	
Reaction Sequence for Syngas Production From Propane Using Ceria-Supported Pt and Ni Catalysts	1052
<i>Mayuri Mukka, Tapan K Das, Vijaya Bansode, Edwin L. Kugler, Dady B. Dadyburjor</i>	
Catalytic Partial Oxidation of Butanol for Hydrogen Production	1053
<i>Ivan C. Lee, Jeff St Clair</i>	
Low Activation Energy Dehydrogenation of Formic Acid at Ambient Temperature and Pressure	1054
<i>Kwong-Yu Chan, Siu Wa Ting, Jayashree BABY, Nicole K. VAN Der Laak, Shaoan Cheng</i>	
Partial Oxidation of Ethanol Over Platinum-Tin Catalysts for Hydrogen Generation	1067
<i>Kavi Geetharani Loganathan, Corey Leclerc</i>	
Adsorption of Polyfunctional Molecules Onto Zeolites for the Development of Biorefinery Separation Processes	1068
<i>Elizabeth E. Mallon, Aditya Bhan, Michael Tsapatsis</i>	
Esterification of Free Fatty Acids with Methanol Over Metaloxides Supported ZrO₂ Catalysts	1069
<i>Manhoe Kim, Craig DiMaggio, Shuli Yan, Steven O. Salley, K. Y. Simon Ng</i>	
Aqueous Processing of Cellulosic Biomass to Reactive Intermediates for Biological and Catalytic Conversion to Liquid Fuels and Other Products	1070
<i>Deepti Tanjore, Charles Wyman</i>	
Catalytic Conversion of Hemicellulose Sugars to Furfural in Ionic Liquid Media	1071
<i>Akinwale Shittu, Thehaznan (Thihal) K. Ponnaiyan, Bin Li, Wenwen Zhang, Sridhar Viamajala, Sasidhar Varanasi</i>	
Consolidated Acid Catalysis and Extraction of Fermentable Sugars From Switchgrass in Ionic Liquids	1072
<i>Timothy C. R. Brennan, Blake A. Simmons, Harvey Blanch, Bradley M. Holmes</i>	
Dilute Sulfuric Acid Pretreatment of Corn Stover Assisted by Renewable Carbonaceous Catalysts	1073
<i>Erik M. Kuhn, Joseph Shekuro, Richard T. Elander, Nicholas J. Nagle, Clare J. Dibble</i>	
Mechanistic Models for High-Solids Loading Pretreatment and Enzymatic Hydrolysis of Lignocellulosic Biomass	1074
<i>Andrew J. Griggs, Erik M. Kuhn, Xiaowen Chen, James J. Lischeske, Melvin P. Tucker, Jonathan J. Stickel</i>	
Modeling for Identification of Operating Strategies for Continuous Simultaneous Saccharification and Fermentation (cSSF)	1075
<i>Yi Jin, Jiacheng Shen, Jian Shi, Mirvat Ebrik, Charles Wyman</i>	
Molecular Modeling of Cellulose Pyrolysis Using Molecular Dynamics	1076
<i>Vishal Agarwal, George W. Huber, William C. Conner, Scott M. Auerbach</i>	
Reaction Kinetics of Transesterification of Canola Oil to Biodiesel Catalyzed by Nanopowder Calcium Oxide	1077
<i>Lina Zhao, Zheyang Qiu, Susan M. Stagg-Williams</i>	
Water-Only Flowthrough Pretreatment of Poplar and Birchwood Xylan	1078
<i>Heather L. McKenzie, Nancy L. Engle, Joshua F. Emory, Bruce A. Tomkins, Timothy J. Tschaplinski, Gary J. Van Berkel, Charles E. Wyman</i>	
Comparative Pyrolysis Kinetics for One Legume and Two Grass Hays	1079
<i>Joseph J. Biernacki, Jessica Murillo, Prejeeth Ambuken, C. Pat Bagley</i>	
New Fischer-Tropsch-Ready Syngas Preparation Strategies From Coal and Natural Gas	1080
<i>Thomas A. Adams II, Paul I. Barton</i>	
Micro-Structured Monolithic-Catalyst Bed as Compact and High Throughput Reactor System for Conversion of Syngas to Liquid Fuels	1081
<i>Wei Liu</i>	
Microfibrillar Entrapped Catalyst Structure for Alternative Fuel Production	1082
<i>Hongyun Yang, Norman E. Sammons Jr., Troy J. Barron, Bruce J. Tatarchuk</i>	
Catalytic Conversion of Methane to Higher Hydrocarbons Over Molybdenum Based Bifunctional Metal Catalysts	1083
<i>Sanchit Majhi, K. K. Pant</i>	
Methanol Production From Syngas — An Aspen Plus Simulation and Modeling	1084
<i>Ramalingam Subramaniam, Cunwen Wang, Mark Zappi, Stephen Dufreche, Rakesh K. Bajpai</i>	
Alkali Metal Promoted Catalysts for the Conversion of Synthesis Gas to Mixed Alcohols	1085
<i>Daniel M. Ginosar, Lucia M. Petkovic, Harry W. Rollins, Kyle C. Burch, Bernd Schaefer</i>	

Catalytic Conversion of Syngas to Liquid Hydrocarbons Over Potassium Promoted Cobalt/SiO₂ Catalyst	1086
<i>Sanchit Majhi, K. K. Pant, Mrunal Khobragade</i>	
Application of Top-Down Ecological Control Principles to Maximize Algal Productivity in Open Pond Systems	1087
<i>Belinda S.M. Sturm, Val H. Smith, Frank Jerry deNoyelles</i>	
Maximizing Productivity in Batch Reactors of Microalgae Nannochloropsis Gaditana	1089
<i>Ming Ren, Kimberly Ogden</i>	
Photobioreactor Productivity Enhancement Offered by Oscillatory Flow Mixing	1090
<i>Benjamin J. Taylor, Malcolm Mackley</i>	
Effects of Total Inorganic Carbon On Growth of Chlorella Vulgaris	1091
<i>Jinsoo Kim, Joo-Youp Lee, Kaniz F. Siddiqui</i>	
Effects of CO₂ On South African Fresh Water Microalgae Growth	1097
<i>Edmore Kativu, Tonderayi S Matambo, Diane Hildebrandt, David Glasser</i>	
Investigation of Chlorella Microalgae Cultivation On Anaerobically Digested Manure	1098
<i>Amarjeet S. Bassi, Gureet Chandok, Shaikh Razzak, Peter Schnurr</i>	
Carbon Formation and Catalyst Deactivation 3D Simulations of Hydrogen-Producing Reactions in a Fixed-Bed Reactor	1099
<i>Mohsen Behnam, Anthony G. Dixon, Michiel Nijemeisland, Hugh Stitt</i>	
Molybdenum- Zeolite Catalysts for Conversion of Light Hydrocarbons to Fuels and Chemicals	1101
<i>Lucia M. Petkovic, Daniel M. Ginosar, Kyle C. Burch, Harry W. Rollins</i>	
Improvement of Catalytic Hydrogen Production From Methane Using Dense Ba_{0.5}Sr_{0.5}Co_{0.8}Fe_{0.2}O_x Ceramic Membranes	1102
<i>Sedigheh Faraji, Karen Nordheden, Susan Stagg-Williams</i>	
Cluster-Expansion-Based Modeling of the Coverage Dependence of Adsorbate Binding at a Metal Surface	1103
<i>David J. Schmidt, William F. Schneider, Wei Chen, Christopher M. Wolverton</i>	
H₂ Generation On Low Content Pt Supported Over Nano Size Mesoporous TiO₂	1104
<i>Wei Shao, Luzheng Zhang, Robert L. Lee, Xiaohua Lu</i>	
Sulfur Tolerant Doped Fe/Ce Catalysts for the High Temperature Water Gas Shift Reaction — TPR and Mossbauer Spectroscopic Study	1105
<i>Krishna Reddy Gunugunuri, Manasa Sridhar, Punit Boolchand, Panagiotis Smirniotis</i>	
A Brief Review of BTEM Spectral Analysis. in Situ and On-Line FTIR, Raman, NMR and DRIFT Studies	1106
<i>Effendi Widjaja, Chuanzhao Li, Wee Chew, Feng Gao, Liangfeng Guo, Shuying Cheng, Martin Tjahjono, Srilakshmi Chilukoti, Chacko Jacob, Marc Garland</i>	
Theoretical Simulation and Experimental Results On Multilayer Enhanced Infrared Reflection Absorption Spectroscopy (MEIRAS); a Novel In-Situ Technique to Study CO Adsorption and Oxidation On Thin Film Model Pt Catalysts	1107
<i>Prashant Deshlahra, Eduardo E. Wolf</i>	
Investigation of Methane Aromatization Over Mo/ZSM-5 Catalysts with Operando Spectroscopy and DFT Calculations	1108
<i>Israel E. Wachs, Jih-Mirn Jehng, Simon G. Podkolzin</i>	
Investigation of the Reaction of Rh₂(CO)₄Cl₂ with Two Dienes by in-Situ Vibrational Spectroscopies, Spectral Reconstruction and DFT Study	1109
<i>Feng Gao, Marc Garland</i>	
The Production of Alkanes From Algae	1110
<i>Stuart W. Churchill, Liane S. Carlson, Michael Y. Lee, Chukuemeka A.E. Oje, Arthur Xu</i>	
An Economic Evaluation of Lipid Production by Cultivation of Algae — A Critical Path Analysis	1117
<i>Ramalingam Subramaniam, Cunwen Wang, Stephen Dufreche, Mark Zappi, Barbara C. Benson, Rakesh Bajpai</i>	
An Integrated Algal Culture System for Biofuel Production Based On Mixotrophic and Heterotrophic Growth Modes	1118
<i>Shulin Chen, Zhanyou Chi, Yubin Zheng, Ben Lucker</i>	
Biofuel Feedstock Production From Microalgae Grown in Municipal Wastewaters	1119
<i>Sage R. Hübel, Mark S. Lemos, John C. Cushman</i>	
Two-Step, Catalyst-Free Biodiesel Production From Wet Algal Biomass	1120
<i>Robert Levine, Tanawan Pinnarat, Phillip E. Savage</i>	
The Sustainable Conversion of Algal Sugars Into Butanol	1121
<i>Jamie Hestekin, Thomas M. Potts, Jianjun Du, Robert R. Beitle, Edgar C. Clausen</i>	
In-Situ FTIR Studies On Cobalt-Rhenium Based Catalysts for Conversion of Syngas to Oxygenates	1122
<i>Nitin Kumar, K. Jothimurugesan, James J. Spivey</i>	

Role of Various Activated-Carbon Supports On Properties and Fischer-Tropsch Synthesis of Supported Fe-Mo-Cu-K Catalysts.....	1123
<i>Wenping Ma, Edwin L. Kugler, Dady B. Dadyburjor</i>	
Fischer-Tropsch Synthesis On Co/Al₂O₃ Catalyst — Effect of Gas Space Velocity.....	1124
<i>Zhendong Pan, Matin Parvari, Dragomir B. Bukur</i>	
Effects of Interference Techniques On Fischer-Tropsch Product Distributions.....	1126
<i>James M Bucher, Galen B Fisher, Johannes W. Schwank</i>	
A Fugacity Based Kinetic Model for Supercritical Fischer —Tropsch Synthesis Over Cobalt-Based Catalytic Systems.....	1127
<i>Aswani K Mogalicherla, Elfatih Elmalik, Nimir O. Elbashir</i>	
Microkinetic Study of CO Adsorption and Dissociation On Fe Catalysts.....	1135
<i>Calvin H. Bartholomew, Uchenna P. Paul, Hu Zou, Denzil Frost, William C Hecker</i>	
Temperature Excursions of Fischer-Tropsch Synthesis Occurring in a Fixed Bed Investigated Using a 2-D (r,z) Reactor Model.....	1137
<i>Donald Cahela, Min Sheng, Tunde Dokun, Bruce Tatarchuk</i>	
Synthesis, Characterization, and Catalytic Behavior of SiO₂-Supported, Well-Defined Fe(III) Sites.....	1139
<i>Dario Prieto-Centurion, Justin M. Notestein</i>	
Effects of Composition and Structure On the Basicity of Oxygen in Bismuth Molybdate and Bismuth Vanadomolybdate Thin Films.....	1140
<i>Andrew (Bean) Getsoian, Alexis T. Bell</i>	
Direct Synthesis of Diethyl Carbonate From Ethanol and Carbon Dioxide Using Ce_xZr_{1-x}O₂ Catalysts.....	1142
<i>Wei Wang, Shengping Wang, Xinbin Ma, Jinlong Gong</i>	
Existence of Vanadium Umbrella Structure in Biocatalyst Systems Only.....	1143
<i>Julie E. Molinari, Israel E. Wachs, Simon G. Podkolzin</i>	
Modeling Defects in TiO₂ and Their Importance in Surface Chemistry.....	1144
<i>N. A. Deskins, Roger Rousseau, Michel Dupuis</i>	
Reactivity of Epitaxial Vanadium Oxide Layers.....	1146
<i>Min Li, E.I. Altman</i>	
Controlled Nuclearity of Hybrid, Supported Manganese Oxides for Controlling Catalytic Oxidation Rates and Selectivities.....	1147
<i>Andrew Korinda, Nicholas Schoenfeldt, Justin M. Notestein</i>	
Revised Mechanism of La Stabilization for La-Doped Alumina Catalyst Supports.....	1148
<i>Stacey J. Smith, Rebecca E. Olsen, Kari M. Cook, Baiyu Huang, Calvin H. Bartholomew, Brian F. Woodfield, Juliana Boerio-Goates, Branton J. Campbell</i>	
Mechanistic Investigation On the Role of Zirconium in the Oxidation of Methanol to Formaldehyde On Bilayered VO_x/ZrO_x/SiO₂ Catalysts.....	1149
<i>William C. Vining, Jennifer Strunk, Alexis T. Bell</i>	
The Support Effect in Heterogeneous Catalysis by Oxide Supported Gold (Au): A Combined Experimental and Theoretical Investigation.....	1150
<i>Siris Laursen, Suljo Linic</i>	
Reduction of Gold Species and Changes in Ce³⁺/Ce⁴⁺ Surface Ratio During CO-PROX Deactivation Catalyzed by Aux/CeO₂.....	1151
<i>José A. Hernández, Sergio A. Gómez, Gustavo A. Fuentes</i>	
Synthesis and Evaluation of Au-Pd/SiO₂ Bimetallic Catalysts Prepared Using Electroless Deposition Method.....	1152
<i>Jayakiran Rebelli, Saeedreza Abbaspour, Abraham Rodriguez, Christopher Williams, John Monnier</i>	
Structure Property Relationships of Supported Pt/Ni Bimetallic Catalysts: Correlating Pt-Ni Bimetallic Bond Formation to Catalytic Activity.....	1153
<i>William W. Lonergan, Dionisios G. Vlachos, Jingguang G. Chen</i>	
CO Chemisorption IR Studies On Supported Nanofabricated Pt/TiO₂ Catalytic Junctions.....	1155
<i>Prashant Deshlahra, Eduardo E. Wolf</i>	
Effect of Pt Dispersion On Observed Kinetics During Oxidations of H₂, C₃H₆ and CH₄ On Pt/Al₂O₃ Monolithic Catalyst.....	1156
<i>Saurabh Y. Joshi, Yongjie Ren, Michael Harold, Vemuri Balakotaiah</i>	
Catalytic Properties of Morphology-Controlled Pd Nanoparticles Synthesized by One-Pot and Sequential Reagent Addition Syntheses.....	1157
<i>Selma Hokenek, Selasi Blavo, John Ammerman, John N. Kuhn</i>	
Structural Changes of Alumina Supported Metal Catalysts in Aqueous Environments.....	1158
<i>Ryan Ravenelle, John C. Crittenden, Carsten Sievers</i>	
Strong Interactions Between Molybdenum Carbide and Metal Catalysts: The Source of Enhanced Dispersion and Catalytic Activity.....	1160
<i>Neil M. Schweitzer, Joshua Schaidle, Suljo Linic, Levi Thompson</i>	

Significance of Pre-Treatment on Surface Interactions and Performance of Eggshell Cobalt/SiO₂ Catalyst for Fischer Tropsch Synthesis	1161
<i>Syed Ali Zeeshan Gardezi, Babu Joseph, John T. Wolan</i>	
Green Chemistry with Microreactors and Novel Catalysts	1163
<i>Sunitha Tadepalli, Geatesh Tampy</i>	
Hydrodeoxygenation of Pyrolysis Oil in a Microreactor	1164
<i>Narendra Joshi, Adeniyi Lawal</i>	
Polymer Membrane Separations for Microreactors	1165
<i>Thomas Schafer</i>	
Enzyme Catalyzed Polymerization Reactions in Microreactors	1166
<i>Santanu Kundu, Atul S. Bhangale, William E. Wallace III, Richard A. Gross, Kathryn L. Beers</i>	
Membrane Microreactor for Enzyme-Catalyzed Degradation of Pectin	1167
<i>Muhd. Nazrul Hisham Zainal Alam, Manuel Pinelo, Anne S. Meyer, Gunnar E. Jonsson, Krist V. Gernaey</i>	
Separation Processes in Micro Reaction Technology	1168
<i>T. Dietrich, Andreas Freitag, Ralf Scholz, Stefan Link, Jan-Wilhelm Thies</i>	
Structurally Optimized Microreactors: A Design Example for Immobilized Yeast Cultivations	1170
<i>Rita L. Fernandes, Daniel Schäpper, Fridolin Okkels, Anna Eliasson Lantz, Henrik Bruus, Krist V. Gernaey</i>	
Hybrid Atom Transfer Radical Polymerization System for Balanced Polymerization Rate and Polymer Molecular Weight Control	1171
<i>Santiago Faucher, Shiping Zhu</i>	
Impact of Mixed Initiator Monolayers On the ATRP of Polystyrene From Silica Nanoparticle Surfaces	1172
<i>David L. Green, Daniel Sunday</i>	
In Situ-Polymerized CNT/Polyimide Nanocomposites: Effect of Reaction Stoichiometry On the Glass Transition Properties of the Nanocomposites	1173
<i>Dae Hwan Kim, James M. Caruthers, R. Byron Pipes, You-Yeon Won</i>	
Polymerization of Emulsified Microemulsions	1175
<i>Jennifer O'Donnell, Todd Thorson</i>	
Controlling Molecular Weight of Poly(2-Hydroxyethyl Methacrylate) with Keeping Low Dispersity	1177
<i>Masaki Kubo, Takayuki Kondo, Hideki Matsui, Naomi Shibasaki-Kitakawa, Toshikuni Yonemoto</i>	
Theoretical Evidence to Diradical Self-Initiation in Spontaneous Thermal Polymerization of Methyl Methacrylate	1180
<i>Sriraj Srinivasan, Myung Won Lee, Michael C. Grady, Masoud Soroush, Andrew M. Rappe</i>	
Creating Porous Block Copolymers Using ADMET Depolymerization Mechanisms	1181
<i>Kyra L. Sedransk, Geoff D. Moggridge</i>	
Author Index	