

Liaison Functions 2015

Core Programming Area at the 2015 AIChE Annual Meeting

Salt Lake City, Utah, USA
8-13 November 2015

ISBN: 978-1-5108-1863-7

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2015) by AIChE
All rights reserved.

Printed by Curran Associates, Inc. (2016)

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

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

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

www.aiche.org

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

(39a) Get On Board: High-speed Rail Policy to Incentivize Growth and Planning	1
<i>Jami Summey-Rice</i>	
(39b) To Label or Not to Label: Addressing America's Genetically Modified Organism Policy	46
<i>Jill Schoborg</i>	
(39c) Bridging the Finance Gap for Carbon Capture and Storage	47
<i>Kathleen Wu</i>	
(52a) Contact Doping with Strong Polyelectrolytes for Organic Photovoltaics	54
<i>Thinh Le, Enrique D. Gomez</i>	
(52b) Quantifying Energy Barriers and Elucidating Charge Transport Mechanisms Across Interspherulite Boundaries in Solution-Processed Organic Semiconductor Thin Films	55
<i>Anna K. Hailey, Szu-Ying Wang, Yuanzhen Chen, Marcia M. Payne, John E. Anthony, Vitaly Podzorov, Yueh-Lin Loo</i>	
Abstract: Solution-Processed Energy Harvesting Electronic Devices Using Amine-Thiol Solvent Media (2015 Annual Meeting)	56
<i>Caleb Miskin</i>	
(52d) Control of Oxygen Defect Surface Injection in ZnO Via Sub-Monolayer Sulfur Adsorption	59
<i>Ming Li, Edmund G. Seebauer</i>	
(52e) Vapor Printing of Neutral Hole Transporting Polymer for Enhanced Efficiency and Stability of Organic Photovoltaics	60
<i>Won Jun Jo</i>	
(52f) Role of Molecular Linker in Charge Separation in All-Conjugated Block Copolymers	62
<i>Jorge Mok, Yen-Hao Lin, Rafael Verduzco</i>	
(52g) Charge Transport Modeling in Perovskite Hybrid Solar Cells	63
<i>Xu Han, Dimitrios Maroudas</i>	
(59a) Career Planning: Would I Fit or Be a Misfit? Understanding Organizational Culture, a workshop for Students and Young Professionals	64
<i>George Newcomb</i>	
(69a) Conversion of CO₂ through Heterogeneous Catalysis	65
<i>Jingguang G. Chen</i>	
(69b) Electrochemical Conversion of CO₂ into Value-Added Chemicals	66
<i>Paul J. A. Kenis</i>	
(69c) Hierarchical Inorganic Assemblies for the Photocatalytic Reduction of CO₂ by H₂O	67
<i>Heinz Frei</i>	
(69d) Efficient Photocatalysts for CO₂ Reduction	68
<i>Osamu Ishitami</i>	
(69e) Using Cascading Catalysis Concepts to Design Heterogeneous Catalysts	69
<i>Levi T. Thompson</i>	
(98a) Water Desalination By Shock Electrodialysis	70
<i>Nancy Lu</i>	
(98b) Exergy Analysis of a Power Plant in Abu Dhabi (UAE)	71
<i>Abdullah Alhosani</i>	
(98c) Insights into the Hydrothermal Stability of ZSM-5 Under Relevant Biomass Conversion Reaction Conditions	72
<i>David W. Gardner</i>	
(98d) Effects of Season and Heating Mode on Ignition and Burning Behavior of Ten Species of LIVE FUEL Measured in a FLAT-Flame Burner System	73
<i>Samantha Smith</i>	
(98e) Characterization and Particle Sizing of the Composition of E-Cigarette Aerosol	82
<i>Jordan Berger</i>	
(98f) Ammonia Removal from Aquaculture Stocking Water	83
<i>C. Martin</i>	
(98g) Impact of Chemical Dopants and Passivation Schemes on Carbon Nanotube Sheet Conductivity	84
<i>Colleen C. Lawlor</i>	
(98h) Films: Dynamics of Thin-Films Under Physiological Fluids and Shear Flow	85
<i>Monica Torralba</i>	
(98i) Photocatalytic Methanol Reforming on TiO₂	86
<i>Katelyn Dagnall</i>	
(98j) Room Temperature Shape Memory Polymers	87
<i>Heather Fairbairn</i>	
(114a) Poster Presentation Success: How to Prepare and Present a Winning Poster	88
<i>Alaina Levine</i>	
(139a) Methane Dehydro-aromatization (DHA) to Aromatic Liquids and Hydrogen by Supported MO_x/ZSM-5 (M=V, Cr, Mo, W and Re) Catalysts: Structure-Activity Relationships	89
<i>Israel Wachs, Yadan Tang, Jih-Mirn Jehng, James Gallagher, Jeffery A. Miller, Jie Gao, Simon G. Podkolzin</i>	

(139b) Alkane Conversion using Homogeneous Processes: Iodate and Periodate Mediated Alkane Functionalization	90
<i>T. Brent Gunnoe, George Fortman, Dominik Munz, Steven Kalman, John T. Groves, Nicholas Boaz, Michael Konnick, Roy Periana</i>	
(139f) Enhanced Hydrogen Production from Methane Steam Reforming Using a New Thin Layered Structural Coating on a Metal Substrate	91
<i>Michael Lugo, Nickolas Tiliakos, Juray De Wilde, Andrew W. Davis, Elaine C. Soltani, Dean Modroukas, Marco J. Castaldi</i>	
(139g) Strategies and Challenges in Biological Methane-to-liquid Fuel Conversion	92
<i>Steven Mansoorabadi</i>	
(761b) Low Temperature Electrochemical Upgrading of Methane to Methanol	93
<i>Travis J. Omasta, William Rigdon, Connor Lewis, William Mustain</i>	
(147a) Innovation from Beginning to End: Generating Ideas, Working with People, and Managing Projects	94
<i>Jack Hipple, Eldon Larsen</i>	
(151b) The Present - Answering the Call for Excellence	98
<i>Otis Shelton</i>	
(151c) Creating a Sustainable Future Direction for MAC: Imperative for Success	99
<i>Thomas Mensah, Cato T. Lauencin</i>	
(175a) Controlled Release from Polyelectrolyte Complex Drug Carriers	100
<i>Eric Brink</i>	
(175b) 3D Printed Microfluidic Device for Dynamic Investigation of the Blood Brain Barrier	101
<i>Hathija Noor</i>	
(175c) Self-Assembly Simulations of Polymer Functionalized Virus Capsids	102
<i>Sarah Libring</i>	
(175d) Investigation of the Interaction Between a Novel Drug Delivery System and an Epithelial Cell Layer	103
<i>Rachel Davis</i>	
(175e) Quantitative Analysis of Fundus Images for Grading of Vitreous Haze	104
<i>Tia Arvaneh</i>	
(175f) Developing a Strategy for Constructing Modular Biosensors	105
<i>Neil C. Dalvie</i>	
(175h) Immunomodulatory Amphiphilic Polyanhydride Microparticles for Peripheral Nerve Regeneration	123
<i>Eli Reiser</i>	
(176a) How to Entrepreneur - Getting Started	124
<i>Marc Privitera</i>	
(176b) How to Entrepreneur - Legal Matters, Intellectual Property Basics	125
<i>Charles Collins-Chase, Jennifer Roscetti, Jonathan Bachand</i>	
(176c) How to Entrepreneur - Financial Matters	126
<i>James Cortez</i>	
(176d) How to Entrepreneur - Building the Team	127
<i>Abbey Roy</i>	
(176e) How to Entrepreneur - A Young Professional's Adventure in an Entrepreneurial Organization	128
<i>Zack Privitera</i>	
(176f) How to Entrepreneur - The Contracts of Doing Business	129
<i>Anthony Orlor</i>	
(176g) How to Entrepreneur - Measuring the Effort	130
<i>Christina M. Borgese</i>	
(176h) How to Entrepreneur - Legal Matters, Intellectual Property Development in the Academic World	131
<i>Jonathan Bachand, Charles Collins-Chase, Jennifer Roscetti</i>	
(176i) Engineered Systems for Entrepreneurs in Academia and Industry	132
<i>D. Keith Roper</i>	
(176j) Mitigating Safety and Regulatory Risk in a Chemical Project Effort	134
<i>Michael Stern</i>	
(186a) Applied Fundamentals of Project Management—an Overview	135
<i>Eldon Larsen</i>	
(186b) The Application of Balanced Scorecards in Paper Manufacture	136
<i>Virgilio L. Gonzalez</i>	
(186c) Effectively Building a Project Management Work Breakdown Structure—How to Do It!	138
<i>Eldon Larsen</i>	
(186d) A Systematic Approach to Resource Management	139
<i>Alex Kalos</i>	
(237a) In-Vitro Dewetting Dynamics on Silicone Hydrogel Contact Lenses	140
<i>Chew Chai, M. Saad Bhamla, Gerald G. Fuller</i>	
(237b) Prediction of Vapor/Liquid Characteristics By Quantum Mechanics Data	141
<i>Marshall Knapp</i>	
(237c) Effect of Electrical Field on the Effective Parameters of Non-Newtonian Fluid	142
<i>Stephen Dueck</i>	
(237d) Degradation of a Thermoplastic Polyether Ester Elastomer in Downhole Conditions	151
<i>Cody Diaz</i>	
(237e) Alternative Sampling Densities in Non-Uniform Sampling	152
<i>Darien Craft</i>	
(237f) Dynamic Light Scattering Study of Sulfonated Polystyrene Ionomers in Benzene	153
<i>Nour Srouji</i>	

(237g) A DFT Study of Methanol Reforming on C- and N-Doped TiO ₂ (110) Rutile Surfaces	154
<i>Jacob Massa</i>	
(237h) Thermochemical Analysis of Intermolecular Vs. Intramolecular Reactions in Iridium Complexes	155
<i>Alyssa Bienvenu</i>	
(237i) Quantitative and Contextual Characterization of Plasmid Copy Number	156
<i>Emily Miller</i>	
(237j) A Novel Approach to Data Processing in High Throughput Material Science Experimentation	157
<i>Mark Albing</i>	
(240a) Adding Logic to Complex Protein Functions	159
<i>Wilfred Chen</i>	
(247a) Oxidative Coupling of Methane: Descriptors for Activity and Selectivity	160
<i>Gaurav Kumar, Sai Lap Jacky Lau, Michael J. Janik</i>	
(247b) The Effect of Halogenation of Erythrosine B on Amyloid-Beta 40 Oligomer Aggregation and Neurotoxicity in Alzheimer's Disease Using Molecular Modeling	162
<i>Hanbyeol Jin, Woo Yaa Lee, Sunju Kang, Jin Eun Shin, Joy Kim, Inchan Kwon, Seung Soon Jang</i>	
(247d) Entropic and Enthalpic Driving Forces on Morphology in Polymer Grafted Particle Filled Nanocomposites: Integral Equation Theory and Molecular Simulations	163
<i>Tyler B. Martin, Arthi Jayaraman</i>	
(247e) Hybrid Atomistic and Coarse-Grained Molecular Dynamics Simulations of Polyethylene Glycol (PEG) Chains in Explicit Water for Designing Peg Based Biomaterials	164
<i>Francesca Stanzione, Arthi Jayaraman</i>	
(247c) A New Lattice Monte-Carlo Simulation for the Dielectric Inhomogeneity of Ion-Containing Liquids	165
<i>Issei Nakamura, Xiaozheng Duan</i>	
(247f) Theoretical Investigation of Thermal Oxidation of Carbon-Coated Aluminum Nanoparticles Using the Reaxff Reactive Force Field	166
<i>Sungwook Hong, Adri Van Duin, Richard Yetter</i>	
(247i) Assessment and Improvement of Methods for Computing Net Atomic Charges in Periodic and Nonperiodic Materials	167
<i>Nidia Gabaldon Limas, Thomas A. Manz</i>	
(247g) Exploring of the Pre-Polymerization Coordination of 1-Vinylimidazole	168
<i>J. Ryan Hamilton, Asghar Abedini, C. Heath Turner, John W. Whitley, Jason E. Bara</i>	
(247h) Local Hydration Structures and Dynamic Properties of Tetra-Alkyl Ammonium Aqueous Solution Systems: An Insight from Molecular Dynamics Simulations	169
<i>Dengpan Dong, Justin B. Hooper, Dmitry Bedrov</i>	
(247j) Insight into Selective Catalytic Reduction on Cu-SSZ-13 from Molecular Simulation	170
<i>Christopher Paolucci, Atish A. Parekh, Ishant Khurana, John R. Di Iorio, Hui Li, Trunoyoyo Anggara, W. N. Delgass, Jeffrey T. Miller, Rajamani Gounder, Fabio H. Ribeiro, William F. Schneider</i>	
(247l) Molecular Modeling of Homogeneous Nucleation of [Bmim ⁺][Cl ⁻] from the Melt	171
<i>Yan Shen, Xiaoxia He, Francisco R. Hung, Erik E. Santiso</i>	
(247o) Equilibrium Properties of DNA Confined in Nanochannels: A Monte Carlo Chain Growth Approach	172
<i>Abhiram Muralidhar, Douglas R. Tree, Kevin D. Dorfman</i>	
(247n) Molecular Dynamics Simulations of Mixtures of Refrigerants and Deep Eutectic Solvents	173
<i>Rubaiyet Abedin, Francisco R. Hung, John C. Flake</i>	
(247p) The Mechanical Property of Dental Resin Composite Consisting of Bisgma and Tegdma Using Molecular Dynamics Simulations	174
<i>Jaeho Shin</i>	
(247r) Molecular Simulation of the Partitioning Phenomena of Oil and Dispersant Components in Air-Seawater-Oil System	175
<i>Zenghui Zhang, Thilanga Liyana-Arachchi, Paria Avij, Kalliat T. Valsaraj, Jennifer Field, Francisco R. Hung</i>	
(247t) Reaxff Reactive Molecular Dynamics Simulations with Explicit Electrons and Applications to Battery Interfaces	176
<i>Md Mahbulul Islam, Grigory Kolesov, Efsthimios Kaxiras, Adri C. T. Van Duin</i>	
(247u) Developing Reaxff Force Field to Study Syngas Combustion Kinetics and Extending It for Larger Hydrocarbons	177
<i>Chowdhury Ashraf, Adri Van Duin</i>	
(247q) Transport of Protein Shaped Colloids through Nanopores of Different Shapes	178
<i>Vincent Ustach, Roland Faller</i>	
(247x) Density Functional Theory Study of CO ₂ Adsorption on Surface-Modified Graphene with Nitrogen Heterogeneity	179
<i>Geun Sik Lim, Ki Bong Lee, Hyung Chul Ham</i>	
(247w) Molecular Dynamics Simulation of Lipid Bilayer Consisting of DPPC and Mppc: Effect of Configuration	180
<i>Young Kyoung Kim, Keewon Lee, Sang Eun Jee, Seung Soon Jang</i>	
(247y) Enhanced Oxygen Incorporation Near the Grain Boundary on Ytria-Stabilized Zirconia: A Density Functional Theory Study	181
<i>Kyeounghak Kim, Wonyoung Lee, Jeong Woo Han</i>	
(247z) Combining Spectroscopy Experiments and Molecular Simulation to Determine Structural and Mechanistic Details of Adsorbed Biomolecules	182
<i>Kayla Sprenger, Tobias Weidner, Jim Pfaendner</i>	
(247aa) Microscopic Diffusion of CO ₂ in Clay Nanopores	183
<i>Hassan Aljama, Chun-Yaung Lu, Jennifer Wilcox</i>	

(247s) Rapid Computation of Thermodynamic Properties over a Large Multidimensional Space of Nonbonded Parameters	184
<i>Levi N. Naden, Michael R. Shirts</i>	
(247m) Force Field Development of Chloroethenes	185
<i>Himanshu Goel, Neeraj Rai</i>	
(247ab) Mesoscaled Self-Assembly of 12-Hydroxystearate in Organic Solvents	186
<i>Ryan Gordon, Cameron F. Abrams</i>	
(247ae) Atomistic Simulations of Unfolded and Intrinsically Disordered Proteins	187
<i>Gul H. Zerze, Jeetain Mittal</i>	
(247ac) Online Tools for the Trappe Family of Force Fields	188
<i>Becky Eggimann, J. Ilja Siepmann</i>	
(247af) Unraveling the Dissolution Mechanism of Crystalline Cellulose in Alkaline-Urea Solutions	189
<i>Pan Chen, Ahmed E. Ismail</i>	
(247ag) Insight into the Formation Mechanism of Dimethyl Oxalate By Using the DFT Method	190
<i>Lixia Ling, Maohong Fan, Baojun Wang</i>	
(247ah) Molecular Dynamics Simulations Study of Poly(p-phenylene oxide) Based Polymer Membrane for Alkaline Fuel Cells	191
<i>Hongchao Pan, Justin B. Hooper, Dmitry Bedrov</i>	
(247k) Mie Potentials for Phase Equilibria: Application to Ethers and Sulfides	192
<i>Mohammad Barhaghi, Jeffrey J. Potoff</i>	
(247ai) Coarse-Grained Thermodynamic Models for Self and Directed Assembly of Small Ensembles of Colloidal Particles	193
<i>Raghuram Thyagarajan, Dimitrios Maroudas, Michael A. Bevan, David Ford</i>	
(247aj) Qnpr (Quantitative Nanostructure Property Relationship) Study for Describing Optical Properties of Plasmon Nanomaterials Using 3D Descriptors	194
<i>Shounak Datta, Robert Herring, Mario Richard Eden</i>	
(247ak) Self-Assembled Multilayer Stacking of Titanyl Phthalocyanines on Graphene Surface	195
<i>Lalitasri Ravavarapu, Pabitra Choudhury</i>	
(247al) Still Looking for the Magic Spot: Dispersing Modified Fe₂O₃ in Lamellar PS-PMMA Diblock Copolymer By Vapor-Annealing Deposition	196
<i>Paola Posocco, Yasmin Mohamed, Irati Barandiaran, Marina Zweyer, Giovanna Baldini, Erik Laurini, Maurizio Fermeglia, Galder Kortaberria, Sabrina Priol</i>	
(247ad) Artificial Neural Network Modeling of Alpha-Alkene Polymerization with Zirconocene/MAO Catalyst	197
<i>Nikhil Prakash</i>	
(249r) Simultaneous Optimization of the Design and Operation of Batch Reactive Distillation Processes	198
<i>Yu-Lung Kao, Jeffrey D. Ward</i>	
(249s) A Multi Criteria Design Approach Regarding the Economic Impact of Heat Recovery on Chemical Processes	199
<i>Timo Bohnenstaedt</i>	
(249i) Dynamic Heat Exchanger for Flow Transients	200
<i>Edris Ebrahimzadeh, Paul Wilding, Farhad Fazlollahi, Larry Baxter</i>	
(249e) Optimal Process Design Based on Energy and Exergy Analyses of Co-Gasification Power Plant with CO₂ Utilization	201
<i>Po-Chih Kuo, Wei Wu</i>	
(249k) Smart Process Operations in Fuels Industries: Applications and Opportunities	203
<i>Brenno C. Menezes, Jeffrey D. Kelly, Ignacio E. Grossmann, Lincoln F. L. Moro, Marcel Joly</i>	
(249d) Electrodeposition of Chromium from Chromium(III)-Ionic Liquid Solutions	204
<i>Liyuan Sun, Joan F. Brennecke</i>	
(249c) Studying Nonlinear Control System of Atmospheric Distillation Unit Using RGA Method	205
<i>Farhad Fazlollahi, Larry L. Baxter, S. Mohammad Hosseini, Sahar Ensani</i>	
(249b) Comparison Between Traditional and Dynamic Heat Exchangers through Experimental Verification and Aspen HYSYS Simulation	206
<i>Maryam Seied Habashi, Farhad Fazlollahi, Larry L. Baxter, Harrison Smith</i>	
(249f) A Process Engineering Perspective on the Small Scale Conversion of Natural Gas and Biomass to Transportation Fuels	207
<i>Asad H. Sahir, Yanan Zhang, Ling Tao</i>	
(249g) Mechanistic Understanding of the Mechanical-Activation Enhancement for TiO₂ Production Via Acidolysis of Ilmenite	208
<i>Xiaomei Wang, Shaojun Yuan, Changjun Liu, Siyang Tang, Hairong Yue, Chun Li, Bin Liang</i>	
(249j) Fischer-Tropsch Synthesis Under Periodic Operation in a Microstructured Reactor	209
<i>Véronique Le Courtois, Loïc Guillou</i>	
(249h) Design of Reactive Dividing Wall Column Using Difference Cascade Points in Composition Space	229
<i>Dohyung Kang, Jae W. Lee</i>	
(249m) Simultaneous Oxidation and 2-Octanol Extraction of Iron from Simulated Ilmenite Hydrochloric Acid Leachate	230
<i>Xiaomei Wang, Bin Liang, Li Lü, Pan Wu, Chun Li</i>	
(249o) Recovery of Marginal Gas from Marginal Wells with a Deep Well Reactor	231
<i>David Emerson, Amir Al Ghatta, Benjamin Woolston, Amit Kumar, Greg Stephanopoulos</i>	
(249p) Modeling and Optimization of Upgrading Reaction System in Gas to Liquid Process	232
<i>Jiwon Seo, Sungwon Hwang, Dong-Ju Moon</i>	

(249q) Conceptual Design of Distillation Columns for Azeotropic Systems Using a Rigorous Method	233
<i>Elsa Fernández-Martínez, Angel Castro-Agüero</i>	
(251n) Highly-Enhanced Water Resistant and Barrier Properties of Cross-Linked Poly(vinyl alcohol) Hybrid Films	234
<i>Mijin Lim, Jongchul Seo, Dowan Kim</i>	
(251w) Ultra-High Surface Area Three-Dimensional Porous Graphitic Carbon from Conjugated Polymeric Molecular Framework	237
<i>John To, Zheng Chen, Hongbin Yao, Jiajun He, Kwanpyo Kim, Ho-Hsiu Chou, Jennifer Wilcox, Yi Cui, Zhenan Bao</i>	
(251a) Hydration and Solute Diffusion in Keratin Fibers Using Novel Chromatographic Approach	238
<i>Naima Ali</i>	
(251o) Development of Layered Multi-Scale Porous Thin Films By Tuning Deposition Time and Molecular Weight of Polyelectrolytes	239
<i>Jing Yu, Oishi Sanyal, Andrew P. Izbicki, Ilsoon Lee</i>	
(251i) Molecular Dynamics Simulation of Twist Solitons in Isotactic Polypropylene Crystals	240
<i>Qin Chen, Scott T. Milner</i>	
(251b) Effect of Surface Roughness on the Adhesion Force Between a Mosquito Foot and Polymer Surfaces	241
<i>Leila Pashazanusi, Noshir S. Pesika</i>	
(251k) Temperature Responsive Gas and Water Vapor Permeabilities	242
<i>Dowan Kim, Jongchul Seo</i>	
(251l) Microwave Assisted Green Fabrication of Antibacterial Ag-Chitosan Films for Food Packaging Applications	244
<i>Gownolla Malegowd Raghavendra, Jeyoung Jung, Dowan Kim, Jongchul Seo, Seonghyuk Ko</i>	
(251x) Polymer Brush-Modified Silica Nanoparticles: Characterization of the Glass Transition Temperature, Fragility, and Physical Aging	246
<i>Shadid Askar, Tian Lan, Hannah Seo, John M. Torkelson</i>	
(251t) Tuning the Ionic Conductivity, Dielectric Constant, and Mechanical Properties in Protic Polymerized Ionic Liquid Homopolymers and Random Copolymers	247
<i>Christopher M Evans, Rachel Segalman</i>	
(251s) A Block Copolymer Self-Assembly Approach for Deterministic Doping of Semiconductors	248
<i>Bhooshan C. Popere, Rachel Segalman</i>	
(251p) Self-Assembly and Mechanical Properties of Graphene Containing Acrylic Triblock Copolymer Gels	249
<i>Mahla Zabet, Satish Mishra, Santanu Kundu</i>	
(251u) Magnetic Responsive Polymeric Colloids for Advanced Separations	250
<i>Adam E. Smith, Paul Scovazzo</i>	
(251f) Finite Element Modeling of Cavitation in a Soft Material	251
<i>Satish Mishra, Mahla Zabet, Seyed Meysam Hashemnejad, Santanu Kundu</i>	
(251v) Phase-Separated Thiol-Epoxy-Acrylate Hybrid Networks with Controlled Crosslink Density Synthesized By Simultaneous Thiol-Acrylate and Thiol-Epoxy Click Reactions	252
<i>Kailong Jin, Nathan Wilmot, William Heath, John M. Torkelson</i>	
(251g) Modeling of RAFT Polymerization Processes Using an Efficient Monte Carlo Algorithm in Julia	253
<i>Esteban Pintos, Claudia Sarmoria, Adriana Brandolin, Mariano Asteasuain</i>	
(251q) Synthesis and Characterization of Model Amine Curing Agents for Corrosion Protection	260
<i>John Vergara, Giuseppe R. Palmese</i>	
(251m) Encapsulation of Maleimide-Based Healing Agent and Reversible Diels-Alder Chemistry for Self-Healing and Corrosion Prevention	261
<i>Sadella Santos, Giuseppe R. Palmese</i>	
(251j) Predicted Dynamics of the Average Molecular Weight (MW) on Inverse Suspension Polymerization Process Using Multifunctionals Crosslinker	262
<i>Liliana Olivo, Lidiane Andrade, Reinaldo Giudici</i>	
(251c) Synthesis and Characterization of Cardanol Based Epoxy Systems	263
<i>Emre Kinaci</i>	
(251d) Cactus Based-Mucilage As an Alternative Natural Dispersant for Oil Spill Clean-up Operations	264
<i>Fei Guo, Tunan Peng, Daniela M. L. Stebbins, Wen Zhao, Rana Falahat, Sylvia Thomas, Ryan Toomey, Norma A. Alcantar</i>	
(251h) Molecular Structural Effects on Functional Oligomeric Nano Films and the Surface Morphology	265
<i>Pil Seung Chung, Wonyup Song, Myung S. Jhon</i>	
(251r) Improved Photopolymerization Kinetics of Vinyl Monomers in Coordinated Ionic Liquids	266
<i>John W. Whitley, Shellby Benefield, Michael Burnette, Jason E. Bara</i>	
(251z) Dynamics of Lithium Polymer Electrolytes Using X-Ray Photon Correlation Spectroscopy and Rheology	267
<i>Onyekachi Oparaji, Daniel Hallinan, Suresh Narayanam, Alec Sandy</i>	
(251e) Surface and Rheological Effects of Mucus/Mucin Coupled with Chitosan-Coated Gold Nanoparticles	268
<i>Erick S. Vasquez, Elizabeth Duggan, Jordan Metcalf, Santanu Kundu, Keisha B. Walters</i>	
(251aa) Conformations and Interfacial Properties of Weak Polyelectrolyte Brushes: Effect of Chain Architecture	269
<i>Chen Qu, Y. Elaine Zhu</i>	
(255d) Supercapacitive Behavior of Co(OH)₂/Graphene Nano Sheet Composite Prepared By Electrodeposition	270
<i>Hyun-Jeong Lee, Sang Mun Jeong</i>	
(255e) Nanostructured BaTiO₃/Cu₂O Heterojunction with Improved Photoelectrochemical Activity: Experimental and First-Principles Analysis	271
<i>Dipika Sharma</i>	
(255f) Early Damage Detection in Epoxy Matrices Via a Dimeric Anthracene Mechanophore	272
<i>Jason Wickham, Elizabeth M. Nofen, Aditi Chattopadhyay, Lenore L. Dai</i>	

(255g) Magnetic Polyvinyl Alcohol Nanocomposite Fibers Reinforced with Fe ₃ O ₄ Nanoparticles.....	273
<i>Yang Lu, John Zhanhu Guo, Evan K. Wujcik</i>	
(255c) Fabrication of CdTe Quantum Dots-Doped Supramolecular Hydrogel.....	274
<i>Xi Xie, Li-Ming Zhang</i>	
(255a) Design, Synthesis and Fabrication of Freestanding Aerogels of Graphene-Mixed Oxides for Air Treatment.....	275
<i>Weiyang Chen, Qingyue Wang, King Lun Yeung</i>	
(255b) Preparation of Highly Functionalized Thermoresponsive Composites Containing TiO ₂ /Fe ₃ O ₄ Nanoparticles	276
<i>Atsushi Matsumoto, Masanori Ochi, Junichi Ida, Tatsushi Matsuyama, Hideo Yamamoto</i>	
(255h) Interactions in Zeolite-Polymer Composites	277
<i>Cigdem Atalay-Oral, Melkon Tatlier</i>	
(274a) Award Submission: Electronic Platform for Real-Time Multi-Parametric Analysis of Cellular Behavior Post Exposure to Single-Walled Carbon Nanotubes	278
<i>Reem Eldawud, Alexandra Wagner, Chenbo Dong, Yon Rojanasakul, Cerasela Zoica Dinu</i>	
(274b) Award Submission: Silver Nanoparticle-Embedded Polymersome Nanocarriers for the Treatment of Antibiotic-Resistant Infections.....	279
<i>Benjamin M Geilich, Thomas J. Webster</i>	
(274c) Award Submission: Targeted Delivery of Microrna By Engineered Lipid Nanoparticles for the Treatment of Metastatic Breast Cancer	285
<i>Stephen L. Hayward, David Francis, Srivatsan Kidambi</i>	
(274d) Award Submission: Nanoscale Hydrogel Coatings for Rapid Sorting of Circulating Tumor Cells: Relating Marker Expression to Isolation Yield	286
<i>Jacob Lilly, Calvin Cahall, Gabriela Romero, Edward Hirschowitz, Brad Berron</i>	
(294a) Validation of Models and Procedures in Chemical Engineering.....	287
<i>John R. Grace</i>	
(297a) A Case Study in International Innovation and IP Respect: The Utah-Qinghai Ecopartnership (UQEP)	288
<i>Ed Watts</i>	
(297b) Patent Protection Across Borders: Tips for Obtaining International IP	289
<i>Ken Horton</i>	
(297c) Innovation with Asian Teams: Overcoming Stereotypes and Cultural Gaps.....	290
<i>Jeffrey Lindsay, Mukund Karanjikar</i>	
(297d) International Innovation, Licensing, and R&D: Panel Discussion	291
<i>Michael Alder, Mukund Karanjikar, Ken Horton, Ed Watts, Jeffrey Lindsay</i>	
(761c) Methane to Liquids Catalysis: In Search of a Holy Grail	292
<i>Jonas Baltrusaitis</i>	
(139e) Computational Insights of Alkane CH Activation and Functionalization by 6th-Row Main-Group Metals.....	293
<i>Daniel Ess</i>	
(139c) Designing Metal-Exchanged Zeolites for Non-Oxidative Methane Upgrade to Chemicals.....	294
<i>Jeffrey D. Rimer, Lars C. Grabow</i>	
(139d) Electrochemical Activation of Methane at Low Temperatures for Applications in Polymer Electrolyte Membrane Energy Conversion Devices	295
<i>Andrew M. Herring, Madhura Joglekar, Vihn Nguyen, T. Brent Gunnoe, Brian Trewyn</i>	
(761a) Achieving Mass-Transfer Requirements in Methane Gas-to-Liquid Bioreactors	296
<i>Damon Turney, Manizheh Ansari, Dinesh Kalaga, Sanjoy Banerjee, J. B. Joshi</i>	
(321a) Skin-Inspired Organic Electronic Materials and Devices.....	297
<i>Zhenan Bao</i>	
(768a) An Assessment of Energy Technologies and Research Opportunities.....	298
<i>Franklin (Lynn) Orr</i>	
(336a) Award Submission: Characterization of Viscoelastic and Cured Composite Properties of Styrene Functionalized Single-Walled Carbon Nanotubes in Unsaturated Polyester Resin	299
<i>Joyanta Goswami, Virginia A. Davis</i>	
(336b) Award Submission: Surface Pressure and Microstructure of Carbon Nanotubes Adsorbed at an Air-Water Interface.....	300
<i>Sahil R. Vora, Brice Bognet, Huseini S. Patanwala, Francisco Chinesta, Anson W. K. Ma</i>	
(336c) Anomalous Diffusion of Targeted Carbon Nanotubes in Cellular Spheroids.....	301
<i>Yichun Wang, Joong Hwan Bahng, Quantong Che, Jishu Han, Nicholas Kotov</i>	
(336d) Lightweight, Flexible, High-Performance Carbon Nanotube Cables By Scalable Flow Coating.....	302
<i>Francesca Mirri, Nathan Orloff, Matteo Pasquali</i>	
(336e) Disorder Engineering to Enhance the Limited Quantum Capacitance of Graphene-Based Electrochemical Capacitors.....	303
<i>Alexander Pak, Eunsu Paek, Gyeong Hwang</i>	
(336f) Enhanced Lithium-Sulfur Battery By Amine-Functionalized Carbon Nanotube Cathode.....	304
<i>Lin Ma, Lynden A. Archer</i>	
(336g) Sulfurized Carbon Nanosphere for Superperformance Lithium-Sulfur Battery Cathode.....	306
<i>Shuya Wei, Lynden A. Archer</i>	
(336h) Titanium Oxynitride Conformal Coating on Carbon Nanotubes As Energy Storage Materials.....	307
<i>Litao Yan, Gen Chen, Meng Zhou, Hongmei Luo</i>	
(379e) Imaging Approaches to Study and Manipulate Neural Behavior	308
<i>Mikhail G. Shapiro</i>	
(380a) The Art of Being an Entrepreneur	309
<i>Michael Saucier</i>	

(380b) Incubation, Collaboration and Creating the Innovative Environment	310
<i>William Orts</i>	
(380c) Building the Entrepreneurial Adventure	311
<i>Rick Hoggan</i>	
(380d) Entrepreneurial Perspectives	312
<i>Ricardo Levy</i>	
(380e) From an Investors Perspective	327
<i>John Rockwell</i>	
(380f) Investment Metrics - Sorting the Wheat from Chaff	328
<i>John Poulos</i>	
(380g) The Data Sets: Eos, Klrs, and Measurement Metrics	329
<i>Christina M. Borgese</i>	
(380h) Intellectual Property Development	330
<i>Charles Collins-Chase, Jennifer Roscetti, Jonathan Bachand</i>	
(380i) Financial Matters	331
<i>Justin Butler</i>	
(380j) The Exit Strategy - Built to Sell or Built to Last	332
<i>Ralph Kappelhoff</i>	
(441a) Metabolic Engineering For The Treatment of Metabolic Disease	333
<i>Martin Fussenegger</i>	
(442d) Seeding and Optimization of Batch Reactive Crystallization	334
<i>Hsing-Yu Wang, Jeffrey D. Ward</i>	
(442f) Habit Modification Efforts to Improve Particle Properties of a Pfizer Drug Candidate	335
<i>Anil Rane</i>	
(442g) Simulations of Flow Behavior of Oscillatory Opposed Dilute Gas-Solid Jets	336
<i>Shuyan Wang, Jin Sun, Baoli Shao</i>	
(442h) Comparison of Lattice Boltzmann and the Finite Volume Method within Respiratory Ducts	337
<i>Manuel Berger, Martin Pillei, Andreas Mehrle, Michael Kraxner</i>	
(442ab) Amorphous Nanopharmaceuticals Prepared By Highly Sustainable Electrostatically-Driven Drug-Polysaccharide Complexation	338
<i>Kunn Hadinoto, Chew Jia Wei</i>	
(442e) Evaluation of Bubble Size Distribution and the Effects on Silicon Particle Growth in a Silane Fluidized CVD Reactor	339
<i>Teng Wang, Shijie Lu, Caixia Chen</i>	
(442i) Investigation of Mixing and Segregation of Ordered Mixtures for DPI Formulations	340
<i>Saurabh Sarkar, Bruna Minatovicz, Kyrre Thalberg, Bodhisattwa Chaudhuri</i>	
(442j) Effect of Granular Collision Parameters on DEM Simulation of Bubble Distribution in Bubbling Fluidized Bed	341
<i>Yingya Wu, Li Peng, Xingying Lan, Jinsen Gao</i>	
(442k) Flash Drying Characteristics with Sub-Bituminous Coals in a Pressurized Micro-Riser Reactor	342
<i>In Seop Gwak, Jun Yeong Jang, Ji Hoon Shin, Ye Bin Kim, See Hoon Lee</i>	
(442m) A Coal Gasification of Indonesian Kideco Coal in Two Flow Regimes Fluidized Bed Gasifier with Recirculation of the Bed Surface Materials	343
<i>Gyoung-Tae Jin Jin, Young Cheol Park, Jong-Ho Moon, Seung-Yong Lee, Ho-Jung Ryu</i>	
(442o) A Hydrodynamic Study in 2D Two Flow Regimes Fluidized Bed	344
<i>Seung-Yong Lee, Gyoung-Tae Jin Jin, Young Cheol Park, Jong-Ho Moon, Ho-Jung Ryu</i>	
(442l) Attrition Characteristics of Limestone and Lime for in-Situ Desulfurization in a Circulating Fluidized Bed Combustor	345
<i>Ji Hoon Shin, Ye Bin Kim, In Seop Gwak, Jun Yeong Jang, Kyoung-Il Park, Jong-Min Lee, See Hoon Lee</i>	
(442n) Discrete Element Method Simulation of Non-Sphere Particles Using Super-Ellipsoids	346
<i>Zhao Yongzhi</i>	
(442p) Biot Number Effects on the Local Heat and Mass Transfer Rate in Fixed and Fluidized Beds	348
<i>Stefan Radl, Florian Krainer, Thomas Puffitsch, Christoph Kloss</i>	
(442q) Sintering Rate and Crystallinity Dynamics of Gold Nanoparticles By Atomistic Simulations	349
<i>Eirini Goudeli, Sotiris E. Pratsinis</i>	
(442r) Fabrication and Characterization of Nanostructured Ce₂NiMnO₆ By Solution Combustion Synthesis	350
<i>Almaz Saukhimov, Gabit Almanov, M. A. Hobosyan, Chamath Dannangoda, Serik Kunekov, Karen S. Martirosyan</i>	
(442u) Discrete Element Modelling of Flow Rate during Hopper Discharge	351
<i>Csaba Sinka, Reza Baserinia, Hasan Elmsahli</i>	
(442w) Active Contour Tracking of Individual Bubbles in CFD Simulation of Fluidized Beds	352
<i>M Helal Uddin, M Arafat H. Khan, Charles J. Coronella</i>	
(442s) Mechanistic Investigation of Bipolar Charging in Granular Materials: Experiments and Multi-Scale Models	353
<i>Raj Mukherjee</i>	
(442t) Particle Engineering through Continuous Solvent Precipitation	355
<i>Tiago Porfirio, Íris Duarte, João Vicente, Márcio Temtem</i>	
(442v) Development of an Isokinetic-Sampling Tool for Biomass Heating Plants	359
<i>Christian Mayerl, Michael Kraxner</i>	
(442x) Experimental and Computational Study of Liquid Bridge Formation Between Two Spheres	360
<i>Liza Ann Easo, Yuanyuan Xiao, Carl Wassgren</i>	

(442y) Finite Element Simulations of Granular Compaction Part 2: Paste Extruder	361
<i>Matthew Pruitt, Matthew Brown, Brandon Ennis, Bryan J. Ennis</i>	
(442z) Finite Element Simulations of Granular Compaction Part 1: Roller Compaction	362
<i>Matthew Brown, Matthew Pruitt, Shikha Patel, Bryan J. Ennis</i>	
(442aa) Development and Validation of a Numerical Simulation Tool for Rocket Exhaust Impingement upon a Regolith Soil Bed	363
<i>Kevin Buettner, Yu Guo, Peter Liever, Jennifer Sinclair Curtis</i>	
(442c) A Performance Study of an Experimental Vibrating Screen in Treating Water-Sand Slurry	364
<i>Saeid Benis, G. G. Chase</i>	
(442a) CFD Modeling of Gas-Liquid-Solid Flow in a Circulating Fluidized Bed	365
<i>Yingjie Liu, Jihe Yang, Xingying La, Jinsen Gao</i>	
(442b) Anomalous Dispersion of 'hedgehog' Particles	367
<i>Joong Hwan Bahng, Bongjun Yeom, Yichun Wang, Siu On Tung, Damon Hoff, Nicholas Kotov</i>	
(443a) Controlling Morphology and Polymorphism of a Zwitterionic Compound (OABA) Using Different Types of Additives and Solvents	368
<i>Elena Simone, Gerald Steele, Zoltan K. Nagy</i>	
(443b) Acquisition of Non-Intrusive, Benchmark Experimental Data for Particle-Laden Flows Using Laser Doppler Velocimetry	373
<i>Sarah E. Mena, Jennifer Sinclair Curtis</i>	
(443c) Study of Hopper Discharge of NON-Spherical Elongated Particles: Experiments and DEM Simulations	374
<i>Henna Tangri, Jennifer Sinclair Curtis</i>	
(443d) Air Pressure Effects on Flow Initiation and Flow Rate for Hopper Discharge	375
<i>Reza Baserinia, Csaba Sinka, Pavol Rajniak</i>	
(443e) Impact of Key Formulation Parameters on Properties and Performance of Strip Films Loaded with Griseofulvin Nanoparticles	376
<i>Scott M. Krull, Hardik Patel, Meng Li, Ecevit Bilgili, Rajesh N. Dave</i>	
(443f) Adhesion and Friction Between Dry Coated Particles	377
<i>Xiaoliang Deng, Rajesh N. Dave</i>	
(443g) Engineering Fluorescent Nanoparticles for Early Cancer Detection	378
<i>Humayun Shariff, Sutapa Barua</i>	
(443h) Modelling Picking & Sticking on Pharmaceutical Tablets	379
<i>Shrikant Swaminathan, Jon Hilden, Brian Ramey, Carl R. Wassgren</i>	
(504a) Metal Oxide Reaction Engineering and Particle Technology Science: A Gateway to Novel Energy Conversion Systems	380
<i>Liang-Shih Fan</i>	
(529a) Taking the Whole Family Overseas: Experiences and Tips for Survival	381
<i>William C. Hecker</i>	
(529b) Learning to Be Flexible	382
<i>Ramesh Rameswaran</i>	
(529c) Managing Innovation with Partners and Teams from India	383
<i>Mukund Karanjikar</i>	
(529d) Innovation with Chinese Teams: What Western Companies Need to Know for Success	384
<i>Jeffrey Lindsay</i>	
(186e) Chemical Engineering & the Challenge of Industrialization of Africa	385
<i>John Erinne</i>	
(592a) Keynote: CHO Cell Based Manufacturing - CHO Origin, Diversity, Genetics, Cloning, Metabolism - Past and Future	409
<i>Florian Wurm</i>	
(592b) Green Biotechnology Research in Europe: From Environmental Protection to a Circular Bioeconomy	410
<i>Spiros N. Agathos</i>	
(592c) Microdroplet Chemostats	411
<i>Piotr Garstecki</i>	
(592d) Scaling up and Down Cylindrical Orbshake Bioreactors: Engineering and Use of Osrs for High Density CHO Cell Cultures - 5 MI to 2500 L	412
<i>Maria De Jesus</i>	
(592e) Towards Personalised Healthcare Engineering: A New Paradigm in Blood Disorder Treatment	413
<i>Athanasios Mantalaris</i>	
(594a) Stable Biomedical Colloids for Imaging Contrast Agents and Drug Delivery Systems	414
<i>Yoonjee Park</i>	
(594b) Dynamics and Mechanism of Self-assembly and Formation of Functional Silk-based Structures from Silk Fibroin Protein Polymers	415
<i>Younjin Min</i>	
(594c) Lessons from Academic Experiences in the U.S. and Korea	416
<i>Jay H. Lee</i>	
(621cm) Selective Oxidation of Ethane to Acetic Acid over Mo16V6.37Nb2.05Pdx	417
<i>Yousef Alzaghayer, Waheed Almasry, Malik Alahmad</i>	
(621ci) Oxidative Dehydrogenation of 1-Butene to 1,3-Butadiene Using CO2 As Soft Oxidant	418
<i>Wenjin Yan, Jizhong Luo, Qing Yue Kouk, Yong Chuan Tan, Yan Liu, Armando Borgna</i>	
(621et) Pyrolysis of Polystyrene over SAPO-34 Catalyst	421
<i>Naime A. Sezgi, Tülay Bursalı, Timur Dogu</i>	

(621e) Liquid-Phase Hydrogenation of Chloronitrobenzene over PdCu Catalyst	422
<i>Yu-Wen Chen</i>	
(621ab) Bimetallic Au-Ag/CeO₂ Catalysts for CO Removal in Hydrogen Stream in Fuel Cell	423
<i>Yu-Wen Chen</i>	
(621bw) A Study on the Deactivation of Titania Based Cobalt Catalyst in Fischer-Tropsch Synthesis	424
<i>Adolph Muleja, David Glasser, Diane Hildebrandt, Yali Yao, Xinying Liu</i>	
(621eu) Magnetic Resonance Physicochemical Tomography for in Situ Studies of Heterogeneous Reactions	425
<i>Nanette Jarenwattananon, Louis Bouchard</i>	
(621u) Development of Shift Catalyst Reactive at Low Temperature in Coal-Fired Power Generation for Next Generation	426
<i>Takashi Sasaki, Tomoko Suzuki, Masaki Takaoka</i>	
(621g) Catalytic Membrane Process for Effective Treatment of Endocrine Disrupting Compounds in Water	434
<i>Hyun Kyung Kim</i>	
(621bm) Fabrication of Glass-Based Microfluidic Devices with Dry Film Photoresists As Pattern Transfer Masks for Wet Etching	435
<i>Lei Zhang, Wei Wang, Rui Xie, Xiao-Jie Ju, Liang-Yin Chu</i>	
(621ac) CO₂ Reduction to Methanol on CeO₂(110) Surface: Mechanistic Insight	436
<i>Neetu Kumari, M. Ali Haider, Nishant Sinha, Suddhasatwa Basu</i>	
(621ag) Dynamic Surface Reconstructions of Nanoporous Gold Catalysts during Activation and Selective Oxidation Reactions	438
<i>Branko Zugic, Michelle Personick, Dmitri Zakharov, Eric A. Stach, Robert J. Madix, Cynthia M. Friend</i>	
(621h) The One Step Oxidation of Methanol to Dimethoxymethane on V₂O₅/CeO₂ Catalysts	439
<i>Heqin Guo, Litao Jia, Bo Hou, Debao Li</i>	
(621bi) Preparation, Characterization and Catalytic Performance of Vanadium Oxide Supported on Titania Nanobundle for NH₃ Degradation	440
<i>Qingyue Wang, Hao Chen, Wei Han, King Lun Yeung</i>	
(621bq) Copper/Vanadia/Titania Bifunctional Catalysts for Ammonia Remediation	441
<i>Hao Chen, Wei Han, Qingyue Wang, King Lun Yeung</i>	
(621bz) Catalysts for Treating H₂S Malodor Problem at Ambient Temperature	442
<i>Gabriel Kei Bo Cheung, Hao Chen, Qingyue Wang, Wei Han, King Lun Yeung</i>	
(621c) Structure and Catalytic Performance of CoAl₂O₄-Al₂O₃ Supported Cobalt Catalyst for Fischer-Tropsch Synthesis	443
<i>Litao Jia, Jiankang Han, Bo Hou, Debao Li</i>	
(621ba) Active Ruthenium Catalysts Prepared By Cacumen Platycladi Leaf Extract for Liquid Phase Hydrogenation Reactions	444
<i>Yangqiang Huang, Youwei Cheng, Lijun Wang, Xi Li</i>	
(621cd) Acetophenone Hydrogenation on Rh/Al₂O₃ Catalyst: Intrinsic Reaction Kinetics and Effects of Internal Diffusion	445
<i>Shinbeom Lee, Zhiyang Yu, Arvind Varma</i>	
(621z) High-Temperature Water-Gas Shift Reaction over Ni/Xk/CeO₂ Catalysts: Suppression of Methanation Via Formation of Bridging Carbonyls	446
<i>Ming Li Ang, Usman Oemar, Yasotha Kathiraser, Eng Toon Saw, Chee How Kevin Lew, Yonghua Du, Armando Borgna, Sibudjing Kawi</i>	
(621q) Upgrading of Atmospheric Crude Oil Residue	447
<i>Saba Gheni</i>	
(621bt) Process Modeling of High Temperature Electrolysis for Liquid Fuel Production	448
<i>Chen Chen</i>	
(621ae) Coal-Supported Metallic Catalyst for Steam Reforming of Hydrocarbons	449
<i>Jiho Yoo, Soohyun Kim, Nikola Ruhswurmova, Paul Victor, Youngjoon Rhim, Jeonghwan Lim, Sihyun Lee</i>	
(621aj) Hydrogenation of Carbon Dioxide with Fe/Ni-Catalysts	450
<i>Georg Baldauf-Sommerbauer, Susanne Lux, Darren Kong, Matthäus Siebenhofer</i>	
(621t) Quantitative Determination of Number of Active Sites and Tofs for Cr₂O₃-Fe₂O₃ Water-Gas Shift Catalysts	451
<i>Minghui Zhu, Israel E. Wachs</i>	
(621ev) Ligand Effects on Gallium K Edge XANES: Implications for the Mechanism of Alkane Dehydrogenation in Gallium-Zeolite Catalysts	452
<i>Andrew (Bean) Getsoian, Ujjal Das, Jeffrey Camacho Bunquin, Guanghui Zhang, Jeffrey T. Miller, Adam S. Hock</i>	
(621av) Solar-Driven Electrochemical Reduction of Carbon Dioxide: Materials Selection, Operating Conditions, and Cell Design	453
<i>Meenesh R. Singh, Ezra Clark, Alexis T. Bell</i>	
(621ak) Fundamental Insights into the Connection Between Homogeneous and Heterogeneous Catalysts Via DFT Analyses	454
<i>Supareak Prasertdam, Perla B. Balbuena</i>	
(621cg) Effect of Pyrolysis Temperature on the Gasification Reactivity of Solvent Extracted Ash-Free Coals and Insoluble Residual Coals	455
<i>Youngjoon Rhim, Paul Victor, Jiho Yoo, Yongjin Kong, Wantaek Jo, Hokyung Choi, Jeonghwan Lim, Sihyun Lee</i>	
(621dc) Kinetics of Carbon Elimination in Silicon Kerf Using Thermo-Gravimetric Analysis Estimations	456
<i>Miguel Vazquez Pufleau, Tandeep S. Chadha, Gregory S. Yablonsky, Pratim Biswas</i>	

(621ah) Trends in Formic Acid Electro-Oxidation on Model Transition Metal Surfaces: A Density Functional Theory Study	457
<i>Ahmed Elnabawy, Jeffrey A. Herron, Jessica Scaranto, Peter Ferrin, Manos Mavrikakis</i>	
(621cn) Nitrating a Biofuel in a Reaction Calorimetry	458
<i>Imed Ben Talouba, Nordine Mouhab</i>	
(621co) Computational Study of Catalysts and Reaction Processes for Propene Epoxidation Using Molecular Oxygen As Oxidant without Co-Reductants	466
<i>Bo Yang, Thomas A. Manz</i>	
(621cj) A Novel Strategic Approach for the Optimal Design of Fischer-Tropsch Process	467
<i>Hyeju Song, Hyun-Jung Lee, Sungwon Hwang, Jeongeun Son</i>	
(621ck) Hyperbranched Polyethylene-Supported L-Proline: A Highly Selective and Recyclable Organocatalyst for Asymmetricaldol Reactions	468
<i>Jiaxu Li, Song Wang, Wen-Jun Wang, Bo-Geng Li</i>	
(621lv) C-H Bond Activation on Metal Oxides: Insights into the Role of Surface Lattice Oxygen	469
<i>Quang Thang Trinh, Jithin John Varghese, Samir H. Mushrif</i>	
(621cr) Characteristics of Ash-Free Coals Recovered By Vacuum Distillation and Dilution Precipitation from Solvent-Extracted Solution	470
<i>Hokyung Choi, Sangdo Kim, Jiho Yoo, Donghyuk Chun, Jeonghwan Lim, Youngjoon Rhim, Sihyun Lee, Hojung Kwon</i>	
(621cu) Catalytic Performance of Ru Catalysts Supporting on Different Carbon Material for Acetylene Hydrochlorination	477
<i>Hang Li, Lei Xu</i>	
(621ce) The Effectiveness of Sorption Enhanced Reaction Processes	478
<i>Hugo S. Caram, Fan Ni</i>	
(621aw) Surface Chemistry of Cellulosic Aldoses on Transition Metals	479
<i>Quang Thang Trinh, Chethana B. Krishnamurthy, Samir H. Mushrif</i>	
(621cv) Influence of Alkaline Earth Metals on Cellulose Pyrolysis	480
<i>Cheng Zhu, Saurabh Maduskar, Christoph Krumm, Paul J. Dauenhauer</i>	
(621cw) Tri-Reforming of Methane over Nickel-Based Catalysts	481
<i>Erdem Sasmaz, Peter Rassolov, Jochen Lauterbach</i>	
(621cx) Investigation of Biofuel Production By Electrochemical Hydrogenation of Furfural over Copper-Based Electrocatalysts	482
<i>Sungyup Jung, Elizabeth J. Biddinger</i>	
(621w) On the Origin of Enhanced Surface Reaction Kinetics and Charge Separation for p-n Hheterojunction on Co₃O₄/BiVO₄ Photoanodes	483
<i>Xiaoxia Chang, Tuo Wang, Jinlong Gong</i>	
(621i) Understanding Ethanol Hydrogen Abstraction Mechanism on CuNi Catalyst	487
<i>Anchu Ashok, Anand Kumar, Rahul Bhosale, Fares Almomani</i>	
(621bj) Calorimetric and Manometric Measurements for the Study of Sorption Properties and Surface Energetics of Catalysts	496
<i>Kristina Lilova, Link Brown</i>	
(621cz) Assessment Study of Cobalt Oxide and Manganese Oxide Catalyst for Three Way Catalytic Converter	497
<i>Charula Patel, Nm Bhatt, Srinivas Palanki</i>	
(621dd) Unraveling Metal/Lewis Acid Synergy in Hydrogenolysis of Furfuryl Alcohol	498
<i>Alexander V. Mironenko, Dionisios G. Vlachos</i>	
(621da) Multi B-Site Substituted La(Co_{1-x-y}Fe_xMn_y)O₃ Perovskites for the Conversion of Carbon Dioxide to Carbon Monoxide By Thermochemical Cycles	499
<i>Yolanda A. Daza, Debtanu Maiti, Bryan J. Hare, Adela E. Ramos, Venkat R. Bhethanabotla, John N. Kuhn</i>	
(621bc) Length-Dependent Photoreactivity in Highly Active Brookite Titania Nanorods	500
<i>Matteo Cargnello, Christopher B. Murray</i>	
(621bd) Kinetic and Thermodynamic Modelling of Methane Reforming Technologies: Comparison of Conventional Technologies with Dry Reforming	501
<i>Mohamed Sufiyan Challiwala, Mohammed Minhaj Houry, Patrick Linke, Nimir Elbashir</i>	
(621de) Bi-Reforming of Methane at Low Temperatures over Pt or Pd (Ni-Mg/ceria-zirconia) Catalysts	502
<i>Nada Elsayed, Nathan Roberts, Babu Joseph, John N. Kuhn</i>	
(621dh) Syntheses and Characterization of New Ionic Liquids	503
<i>Ricardo Torres, Andreia Morandim-Giannetti</i>	
(621dj) Fundamental Study of Cellulose Pyrolysis Kinetics and Chemistry	505
<i>Christoph Krumm, Alex D. Paulsen, Cheng Zhu, Saurabh Maduskar, Paul J. Dauenhauer</i>	
(621dk) Development of Quantitative Carbon Detector (QCD) for Calibration-Free Characterization of Unresolved Complex Mixtures	506
<i>Christoph Krumm, Saurabh Maduskar, Alex D. Paulsen, Paul J. Dauenhauer</i>	
(621bb) Construction of Hierarchical MgAl₂O₄ Spinel Micro-Particles and Porous Cubic Mn₂O₃ Microparticles Using Carbon Spheres As Templates	507
<i>Lichun Dong</i>	
(621cy) Kinetic Study of Gasification of Microalgae	508
<i>Reinaldo Giudici, Camila Emilia Figueira</i>	
(621as) Computational Design of Highly Selective Transition Metal Catalysts Encapsulated By Metal-Organic Frameworks for Butane Oxidation to 1-Butanol	509
<i>Sean T. Dix, Diego Gomez-Gualdron, Jiazhou Zhu, Rachel Getman</i>	

(621bo) Understanding the Catalytic Ring Opening of Furfural on Iridium	510
<i>Glen Jenness, Ke Xiong, Geun Ho Gu, Dionisios G. Vlachos, Jingguang G. Chen</i>	
(621k) Crosslinked Chitosan Coating on Magnetic Mesoporous Silica with Pre-Adsorbed Enzymes	511
<i>Inseon Lee, Kie Moon Woo, Sung-Gil Hong, Sunhyung An, Jinwoo Lee, Euichaul Oh, Jungbae Kim</i>	
(621f) Highly Loaded and Stabilized Carbonic Anhydrase in Magnetic Mesoporous Silica	512
<i>Han Sol Kim, Sung-Gil Hong, Kie Moon Woo, Seongbeen Kim, Jinwoo Lee, Jungbae Kim</i>	
(621l) Synergistic Catalytic Performance in the Synthesis of Cyclic Carbonates Based on Ionic Liquids	513
<i>Suojiang Zhang</i>	
(621aq) Preparation, Characterization and Performance of Ni/CeO₂-ZrO₂ Catalyst in the Reverse Water Gas Shift Reaction (RWGS)	515
<i>Changfeng Yan, Fengman Sun</i>	
(621aa) Sol-Gel-Derived Ni/La₂O₃-CaO Multifunctional Catalyst for Sorption Enhanced Steam Reforming of Acetic Acid	516
<i>Changfeng Yan, Yaping Xue</i>	
(621ap) Catalytic Oxidation of Kraft Lignin to Chemicals with Substituted N-Hydroxyphthalimide	517
<i>Changjun Liu, Yangyang Yu, Ning Chen, Siyang Tang, Hairong Yue, Houfang Lu, Bin Liang</i>	
(621s) The Use of Induction Heating for on-Demand Desorption and Catalytic Reaction	518
<i>Ales Zadrazil, Frantisek Stepanek</i>	
(621cp) Study of p-Cresol/Piperazine Complex Formation Using in Situ Raman Spectroscopy and DFT Calculation	519
<i>Min Huang</i>	
(621am) Preparation and Catalytic Performances of Functionalized Mesoporous Carbon Materials: A Combined Experimental and Molecular Simulation Study	520
<i>Xiuqin Dong, Lingtao Wang, Yifei Chen, Haoxi Jiang</i>	
(621dl) Methanol Synthesis from CO₂ and H₂	521
<i>Yussuf Kuti, Majeda Khraisheh, Mahmoud Bahnasi Khader, Mohammed Jaber Almarri</i>	
(621an) Process Design of Methanol to Propylene in Moving Bed	522
<i>Yuntao Jiang, Binbo Jiang, Jingdai Wang, Yongrong Yang</i>	
(621br) Probing the Mechanism of Optically Induced, Charge-Carrier Driven Chemical Transformations on Plasmonic Metal Nanoparticle Surfaces	523
<i>Calvin Boerigter, Robert Campana, Matthew Morabito, Suljo Linic</i>	
(621dm) Selective Hydrodeoxygenation of Furfural to 2-Methylfuran Using Fe-Cu/Silica Catalyst	524
<i>Huibo Sheng</i>	
(621dn) Surface Modification for Enhancing the Enantiospecificity of Chiral Cu Surfaces	526
<i>Ho Seong Song, Jeong Woo Han</i>	
(621ax) Rational Catalyst Design through Tailoring Nanostructure	527
<i>Yijin Kang, Nenad Markovic, Vojislav Stamenkovic</i>	
(621bn) Removal of Protein-Bound Uremic Toxins Using Displacer Infusion in Hemodialysis: A Novel Mathematical Model and Its Use for Optimizing Displacer Infusion	528
<i>Vaibhav Maheshwari, Stephan Thijssen, Doris Fuertinger, Franz Kappel, Peter Kotanko</i>	
(621o) Electrocatalytic Processing of Biorenewables for Generation of Electricity, Chemicals and Fuels	529
<i>Wenzhen Li, Ji Qi, David Chadderton, Yang Qiu, Neeva Benipal, Xiaotong Han, Le Xin</i>	
(621y) Structures, Dynamics & Catalytic Performance of Platinum Surface Oxides	530
<i>Donato Fantauzzi, Jonathan E. Mueller, Timo Jacob</i>	
(621es) Effect of Milling on Whole Biomass Slow Pyrolysis	531
<i>Matthew D. Kelley, Joseph J. Biernacki, Jessica D. Murillo</i>	
(621at) Ethanol Carbonylation over Rh Based Catalysts	532
<i>Sara Jacob, Beata A. Kilos, David J. Barton, Justin M. Notestein</i>	
(621be) Dehydration Reactions in Lewis Acidic Zeolites	533
<i>Ryan Patet, Paraskevi Panagiotopoulou, Stavros Caratzoulas, Dionisios G. Vlachos</i>	
(621di) Simulation Studies on Et(Flu)(Cp)ZrCl₂/MAO Catalyst System for the Synthesis of Syndiotactic Polypropylene	534
<i>Nikhil Prakash, Vineet Lundia</i>	
(621df) Pretreatment Studies with a Precipitated Iron Catalyst for Fischer-Tropsch Synthesis Under Different Reaction Conditions	535
<i>Joshua Gorimbo, David Glasser, Diane Hildebrandt, Yali Yao</i>	
(621do) Catalytic Pathways for Furfural Hydrogenation on Transition Metals in Aqueous Medium	536
<i>Junnan Shangguan, Ya-Huei (Cathy) Chin</i>	
(621n) Optimization of Production of Syn-Gas, Methane, and Ethylene in Solid Oxide Electrochemical Reactors	538
<i>Jeremy Hartvigsen, Joseph D. Smith</i>	
(621ad) A Study of M1/M2 Phase Cooperation in the MoV(Te, Sb)(Nb, Ta)O Catalysts for Propane Ammoxidation to Acrylonitrile	539
<i>Vadim V. Gulians, Jungwon Woo</i>	
(621dp) Kinetic Analysis of the Carbothermal Reduction of Magnesia in Vacuum	540
<i>Boris Chubukov, Aaron W. Palumbo, Illias Hischer, Richard Fisher, Scott Rowe, Arto J. Groehn, Alan W. Weimer</i>	
(621dr) Reducing Internal Mass-Transport Limitations of One-Dimensional Nanoporous Zeolites	541
<i>Rui Li, Jeffrey D. Rimer</i>	
(621ds) Tailoring the Physicochemical Properties of Zeolites through Organic-Free Synthesis Methods	542
<i>Matthew D. Oleksiak, Jeffrey D. Rimer</i>	

(621dg) Optimization of Pyrochlore Catalysts for Dry Reforming of Methane: A Computationally Guided Experimental Work	543
<i>Felipe Polo-Garzon, David A. Bruce</i>	
(621ct) Steady State Multiplicity Patterns for Multiple Autocatalytic Reactions	544
<i>Satish J. Parulekar</i>	
(621bu) A Modeling Approach for MOF-Encapsulated Metal Catalysts and Application to Butane Oxidation	545
<i>Diego A. Gomez Gualdrón, Sean T. Dix, Cassandra Whitford, Rachel Getman, Randall Q. Snurr</i>	
(621dt) High-Yield Conversion of Glucose to 5-Hydroxymethylfurfural (HMF) Under Mild Reaction Conditions	546
<i>Siamak Alipour, Rachel Beeson, Sasidhar Varanasi, Patricia Relue, Sridhar Viamajala</i>	
(621du) Machine Learning Approaches to Design Catalysts for C1 Chemistry	547
<i>Shane F. Carr, Zhuo Cheng, Eunmin Lee, Darrell L. Nelson, Tolutola Oyetunde, Cynthia S. Lo</i>	
(621bk) Nanostructure Engineering of Nickelate Oxide Electrocatalysts for Enhanced Oxygen Exchange and Reduction Kinetics	548
<i>Juliana S. A. Carneiro, Xiang-Kui Gu, Xianfeng Ma, Hongliang Xin, Kai Sun, Eranda Nikolla</i>	
(621ar) Transition Metal Phosphide Thin Films: Applications As Catalysts and Protecting Layers in Photoelectrochemical Water Splitting Devices	549
<i>Thomas R. Hellstern, Jesse D. Benck, Jakob Kibsgaard, Reuben J. Britto, Christopher J. Hahn, Thomas F. Jaramillo</i>	
(621dv) Reactor Simulation of Photocatalytic Carbon Dioxide Conversion By Saturated Steam over TiO₂	550
<i>Mohammad E. Raihan, Tracy J. Benson</i>	
(621dw) Transport Effects in Homogeneous-Heterogeneous Combustion	551
<i>Imran Alam, David H. West, Vemuri Balakotaiah</i>	
(621bp) Pd-Ag/SiO₂ Bimetallic Catalysts Prepared By Galvanic Displacement for Selective Hydrogenation of Acetylene in Excess Ethylene	556
<i>Yunya Zhang, Weijian Diao, John Monnier, Christopher T. Williams</i>	
(621dx) Fundamental Insights on the Electrochemical Reduction of Carbon Dioxide Using Solid Oxide Electrolysis Cells	560
<i>Juliana S. A. Carneiro, Xiang-Kui Gu, Roger Brocca, Vitor A. Da Silva, Eranda Nikolla</i>	
(621bs) Design of {100}-Terminated Bimetallic Electrocatalysts for CO₂ Reduction to C₂ Species	561
<i>Xianfeng Ma, Hongliang Xin</i>	
(621bv) Effects of Passivation on Synthesis, Structure and Composition of Molybdenum Carbide Supported Platinum Water-Gas Shift Catalysts	562
<i>Brian M. Wyrvatt, Jason R. Gaudet, Levi T. Thompson</i>	
(621af) Vapor-Grown Nanotube Analogues of Extended Polycrystalline Surfaces As Highly Active Electrocatalysts for Alkaline Oxygen Reduction	563
<i>Samuel St. John, Robert Atkinson, Ondrej Dyck, Raymond Unocic, Alexander Papandrew, Thomas A. Zawodzinski</i>	
(621ai) Synthesis of Pyridine Based Polybenzimidazole Stabilized Pt-Cu Bimetallic Electrocatalysts for PEM Fuel Cell Application	565
<i>Khondker Sultana, Dereje Worku, Vishwanath Deshmane, Shamsuddin Ilias</i>	
(621dy) Analysis of Transient and Steady-State Hysteresis Effects in Monolith Reactors	566
<i>Rama Krishna Dadi, Dan Luss, Vemuri Balakotaiah</i>	
(621dz) Oxidative Coupling of Methane on Na₂WO₄-Mn/SiO₂: Impact of Reactor Configuration	567
<i>Aseem Aseem, Michael P. Harold</i>	
(621bg) Dehydroaromatization of Methane to Benzene, Toluene and Naphthalene in a Fixed Bed Reactor: The Performance of Ultrasonic Modified Mo/ZSM-5 Catalysts	569
<i>Kaidi Sun, Ruijing Chen, Maohong Fan</i>	
(621az) Designing Active and Stable Gallium Indium Phosphide Photocathodes for Solar Hydrogen Production	570
<i>Reuben J. Britto, Jesse D. Benck, James L. Young, Thomas R. Hellstern, Todd G. Deutsch, Thomas F. Jaramillo</i>	
(621ea) Identifying the Mechanism of SSZ-13 Crystallization and Methods to Tailor Zeolite Properties	571
<i>Manjesh Kumar, Helen Luo, Yuriy Roman, Jeffrey D. Rimer</i>	
(621eb) Transition Metal Nitrides As Promising Electro-Catalysts for Either Reduction of Nitrogen to Ammonia or Hydrogen Evolution Reaction	572
<i>Younes Abghoui, Egill Skúlason</i>	
(621ec) Supercritical Water Treatment of Alkyl Aromatics: Observations Beyond Model Predictions	578
<i>Mengjie Liu, Adam G. Carr, Caleb A. Class, Lawrence Lai, Tamba Monroe, William H. Green</i>	
(621dq) Effects of Preparation and Pretreatment Conditions on the Performance of Fe-Mn Catalysts for FT Synthesis	579
<i>Weibo Gong</i>	
(621au) Optoelectronic Properties of Tantalum Nitride (Ta₃N₅) for Photoelectrochemical (PEC) Water Splitting: A Theoretical and Experimental Study	580
<i>Ieva Narkeviciute, Juliana Morbec, Giulia Galli, Thomas F. Jaramillo</i>	
(621by) Understanding Adsorption on the Anatase TiO₂ (101) Surface	581
<i>Christopher L. Muhich, Samantha L. Miller, Ryan Trottier, Alan W. Weimer, Charles B. Musgrave</i>	
(621bl) Effects of Composite Iron-Sodium Catalyst on Coal Pyrolysis and Gasification	582
<i>Qingxi Cao, Maohong Fan, Drayson Bratt, Xin Huang, Hui Liu</i>	
(621ee) Investigation of Sugar Transformation Mechanisms on Homogeneous Sn-Silicate Catalysts	583
<i>Tyler R. Josephson, Kramer Brand, Jay Labinger, Mark E. Davis, Dionisios G. Vlachos, Stavros Caratzoulas</i>	
(621ef) Selecting and Tuning Non-Noble Metal Catalysts to Convert Woody Biomass to Fuels and Valuable Chemicals	584
<i>Yang He, Siris Laursen</i>	

(621bh) Transition Metal Nitrides As Promising Electro-Catalysts for Hydrogen Evolution Reaction	585
<i>Younes Abghoui, Egill Skúlason</i>	
(621ed) Online Raman Spectroscopy Analysis Technique for Monitoring Biofuel Reaction Using Heterogeneous Layered Double Hydroxide Catalyst	586
<i>Obakore Agbroko, Keyvan Mollaeian, William Holmes, Tracy J. Benson</i>	
(621ao) Predictive Scaling Relations for Small Molecule Conversions Via Modified Graphene Electrocatalyst Supports	587
<i>Rees B. Rankin, Tamara Lozano</i>	
(621eh) Insights into Sulfuric Acid Catalyst Surface Using Microscopic Characterization Techniques	588
<i>Shreesh Kulkarni, Anuradha Nagaraj, Patrick L. Mills</i>	
(621ei) Spatially Resolved in Situ Study of Lean NOx Reduction in the NSR+SCR Sequential Configuration	592
<i>Mengmeng Li, Vencon Easterling, Michael P. Harold</i>	
(621cb) Rapid Computational Screening of Metal Oxides for Water Splitting: Kinetics of H₂ Production	597
<i>Ryan Trottier, Samantha L. Miller, Christopher L. Muhich, Charles B. Musgrave, Alan W. Weimer</i>	
(621j) Kinetics of Transesterification of Propylene Carbonate to Dimethyl Carbonate	598
<i>Ziwei Song</i>	
(621ca) Importance of the Materials Gap for the Rational Design of Pd Catalysts for Complete Methane Oxidation	599
<i>Hieu A. Doan, Munish Sharma, William Epling, Lars C. Grabow</i>	
(621eg) Next Generation Process Technologies for Reduction of Emissions from Sulfuric Acid Manufacturing Plants	600
<i>Anuradha Nagaraj, Patrick L. Mills</i>	
(621db) Invasive Species Biomass Conversion through Torrefaction and Pyrolysis for Energy and Biochar	604
<i>Andrea Salazar, Catherine E. Brewer</i>	
(621ek) Hydrotreating of Pyrolysis Oil Derived from Macroalgae for Bio-Hydrocarbon Fuels	605
<i>Jae Hyung Choi, Hee-Chul Woo</i>	
(621ej) Activity of Non-Precious Fuel Cell Catalysts Towards ORR	606
<i>Samiksha Poudyal, Siris Laursen</i>	
(621em) Kinetic Analysis of Decomposition of Ammonia over Nickel and Ruthenium Catalysts	607
<i>Atsushi Takahashi, Tadahiro Fujitani</i>	
(621cq) Kinetics of Ethoxylation of 2-Ethylhexanol, 1-Octanol and 2-Octanol	610
<i>Zeyang Chen, Yun Fang, Xueyi Hu</i>	
(621p) Hydrogen Production Via Glycerol Steam Reforming Reaction over Co-Ni-MgO-SBA-15 Catalysts	611
<i>Sara Alsalihi, Vishwanath Deshmane, William Dade, Richard Abrokwah, Debasish Kuila</i>	
(621el) Gas Mixing Behavior Studies in Upflow Moving Packed Bed Hydrotreating Reactor Using Developed Gas Tracer Technique for Multiphase Systems	612
<i>Yuan Zhou, Hamza Al-Bazzaz, Muthanna H. Aldahhan</i>	
(621al) Selective CO Methanation over Ceria-Supported Ni, Co, Fe Catalysts	613
<i>Dmitriy Potemkin, Pavel Snytnikov, Margarita Konishcheva, Vladimir Sobyenin</i>	
(621en) Development of New Dmc Synthesis Process Via Vapor Phase Oxidative Carbonylation	616
<i>Jong-Ho Moon, Young Cheol Park, Hyunuk Kim, Donghyuk Chun, Gyoung Tae Jin</i>	
(621eo) Synthesis and Characterization of NiMoW Sulphide Catalysts Supported on Ti-Modified HMS	617
<i>Eduardo Pérez-Ayala, Rafael Huirache-Acuña, Maritza E. Cervantes-Gaxiola, Gabriel Alonso-Núñez, Trino A. Zepeda-Partida, Eric Mauricio Rivera-Muñoz, Bárbara Teresa García-Pawelec</i>	
(621cf) Ethoxylation of Isotridecanol Catalyzed By Potassium Hydride	625
<i>Zeyang Chen, Yun Fang, Xueyi Hu</i>	
(621ep) Catalytic Performance of Supported Doped Nickel Catalysts Toward Direct Nonoxidative Conversion of Methane	627
<i>Ayad Nacy, Da Li, Stephanie L. Brock, Eranda Nikolla</i>	
(621er) Hydrochlorination of Acetylene Using Supported Phosphorus Doped Cu-Based Catalysts	628
<i>Hang Li</i>	
(621a) Mechanistic and Kinetic Study on Catalytic Conversion of Ethylene to Comonomers	629
<i>Siyang Tang, Boping Liu, Zhen Liu, Ruihua Cheng</i>	
(621eq) Theoretical Calculations of Electrochemical Reduction of CO₂ at Cu and Cu-Au Nanoparticles	630
<i>Javed Hussain, Egill Skúlason, Hannes Jónsson</i>	
(621r) Hydrothermal Stability of ZSM-5 Zeolite	632
<i>Michael T. Timko, Alex Maag</i>	
(621ch) Structure Regulation of Hollow Cylindrical EO Catalyst and Effective Diffusion Coefficient	634
<i>Tao Li</i>	
(621x) Hydrogenation of Phenol to Cyclohexanone Over Electrospun PD/PEI Catalyst	635
<i>Ahmed Abutaleb, G. G. Chase</i>	
(621b) Decarboxylation of Multi-fluorobenzoic Acids in NH₃-Enriched High Temperature Liquid Water	636
<i>Jie Fu, Jing Mo, Xiuyang Lu</i>	
(6cd) Photodegradation of Methylene Blue with CeO₂/Al₂O₃ Catalysts	637
<i>Vanessa Mortola, Tuanny Frantz, Evelyn Couto, Taís Ditadi, Verônica Guareze, Marcos Gelesky</i>	
(621ew) Morphology Effect of Zeolite Beta Supports for Ni₂P Catalysts in Hydrocracking of Polyaromatic Hydrocarbons Into BTX	638
<i>Yong-Su Kim, Yong-Kul Lee</i>	
(621ex) Nano-scaled MoS₂ Catalysts on the Slurry Phase Hydrocracking of Vacuum Residue	639
<i>Sung-Ho Kim, Ki-Duk Kim, Yong-Kul Lee</i>	

(621ey) Reaction Engineering Model for Underground Coal Gasification.....	640
<i>Vivek V. Ranade, Akshay Singan</i>	
(749a) Environmental and Agronomic Utilization of Solid Pyrolysis Co-Products: Roles of Aromatic Carbon and Ionizable Functional Groups.....	642
<i>Minoru Uchimiya</i>	
(749b) Attainment of the Theoretical Fixed-Carbon Yield of Biocoke from Avicel Cellulose.....	643
<i>Maider Legarra Arizaleta, Michael J. Antal, Charissa Higashi, Sam Van Wesenbeeck</i>	
(749h) Study on the Heat Transfer and Chemical Reactions During Pyrolysis of Cellulose, Xylan and Lignin.....	644
<i>Ken-Ichiro Tanoue, Yuuki Hamaoka, Tatsuo Nishimura, Yoshimitsu Uemura, Miki Taniguchi, Ken-Ichi Sasauchi</i>	
(749d) Characterizing the Pore Structure of Biochars Using Multiscale Models and Reactivity Data.....	645
<i>Ashton A. Gooding, Kyriacos Zygourakis, Pauline A. Markenscoff</i>	
(749e) Study of Acidic Intermediates from Xylose Decomposition in Sub- and Supercritical Water	648
<i>Nattacha Paksung, Yukihiko Matsumura</i>	
(749f) Tuning the Mechanisms of Cellulose Pyrolysis Via Novel Reactor Design.....	649
<i>Paul J. Dauenhauer</i>	
(749g) Entrained Flow Reactor to Minimize Vapor:Catalyst Contact Time for Biomass Pyrolysis	650
<i>David Robichaud, Braden Peterson, Jack Ziegler, Tabitha Evans, Mark W. Jarvis, Calvin Mukarakate, Robin Cywar, Mark R. Nimlos</i>	
Author Index	