

Materials Engineering and Sciences Division 2016

Core Programming Area at the 2016 AIChE Annual Meeting

San Francisco, California, USA
13 - 18 November 2016

Volume 1 of 2

ISBN: 978-1-5108-3440-8

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© (2016) by AIChE
All rights reserved.

Printed by Curran Associates, Inc. (2017)

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: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

VOLUME 1

(14ap) Composite Materials: Mechanical and Tribological Property Improvement	1
<i>Kenan Song, Khalid Askar, Roberta Polak, Michael F. Rubner, Robert E. Cohen</i>	
(14at) Nano-Engineered Functional Materials for Energy Storage and Biomimetic Applications.....	2
<i>Samanvaya Srivastava</i>	
(14au) Temporally Controlled Release of Platelet-Rich Plasma from Peg Microgels Having Tunable Biodegradation Rate and Size	4
<i>Era Jain, Saahil Sheth, Kristen Polito, Andrew Dunn, Scott A. Sell, Silviya P. Zusriak</i>	
(14aw) Towards the Next Generation of Magnetic Resonance Spectroscopy: Harnessing Light and Spin	6
<i>Jonathan King</i>	
(14ba) Towards a Greener and Scalable Synthesis of Sodium Titanate Nanorods and Its Application As Anode in Sodium Ion Batteries.....	7
<i>Chi-Ying Vanessa Li, Ching-Kit Ho, Kwong-Yu Chan</i>	
(14as) Molecule Separation and Energy Storage Using Novel Porous Material Platform.....	8
<i>Jian Liu</i>	
(14az) Designing Metal Oxide Materials for Reduction/Oxidation Reactions Based on a Fundamental Understanding of Their Behavior	9
<i>Christopher L. Muhich</i>	
(14bb) Multi-Scale Modeling of Bulk Solutions and Solid/Liquid Interfaces.....	10
<i>Nav Nidhi Rajput</i>	
(14b) "Click" Polymerizations: From Recycling Polymer to 3D Printing.....	11
<i>Chen Wang, Christopher Bowman</i>	
(14c) Designing Polymeric & Soft Material Systems Via Inverse Computational Methodologies.....	12
<i>Adam Hannon</i>	
(14d) Thin Films and Two-Dimensional Materials for Energy Applications	15
<i>Kurt Fredrickson</i>	
(14f) Layer-By-Layer Assembly for Water Desalination and Gas Separation.....	17
<i>Fangming Xiang</i>	
(14h) Programmable Assembly and Deformation of Soft Matter.....	20
<i>Jinhye Bae</i>	
(14bc) Biohybrid Materials for Applications in Human Healthcare and Sustainability -- Assistant Professor Candidate	21
<i>R. Helen Zha</i>	
(14a) Understanding and Tailoring Novel Hybrid Nano Materials & Interfaces	24
<i>Letian Dou</i>	
(14m) Functional Polymers for Energy Generation and Storage: Donor-Acceptor Block Copolymers for Photovoltaics and Functional Polyimides for Dielectric Materials.....	33
<i>Youngmin Lee</i>	
(14n) Microfluidic Design of Multi-Phase Emulsion Drops for Functional Materials Production	34
<i>Hyomin Lee</i>	
(14o) Engineering the Surfaces of Tomorrow	37
<i>Kevin Golovin, Anish Tuteja</i>	
(14r) Adventures in Liquid Crystals	40
<i>Moniroasadat Sadati</i>	
(14i) Nanostructured Based Lab-on-Chips for Detection of Single Biomolecules.....	41
<i>Sara Mahshid</i>	
(14j) Harnessing the Power of the Extracellular Matrix to Control Wound Healing and Tissue Regeneration	42
<i>Whitney L. Stoppel</i>	
(14k) Polymer Science As a Tool for Materials Design and Biological Discoveries	43
<i>Liheng Cai</i>	
(14ao) Towards an Understanding of Catalytic Synthesis and Application of Nanomaterials.....	45
<i>Piran Kidambi</i>	
(14s) Photovoltaic Processes	46
<i>Christopher P. Muzzillo</i>	
(14t) Polymeric Materials for Biomedicine and Nanotechnology	48
<i>Stephanie Christau</i>	
(14u) Design of Advanced Materials for Application in Clean Energy and Carbon Capture and Utilization	51
<i>Peter C. Psarras</i>	
(14v) Characterization of Polymer Particles in Biological Environments for Drug Delivery Applications.....	54
<i>Kathleen McEnnis</i>	
(14y) Highly Energy-Dense Rechargeable Alkaline MnO ₂ -Zn Batteries for Grid-Scale Applications	57
<i>Gautam G. Yadav</i>	
(14z) Harnessing Interfacial Phenomena to Design New Soft Materials.....	60
<i>Laura Bradley, Malancha Gupta, Daeyeon Lee, Kathleen J. Stebe</i>	

(14aa) Structure-Property of Polymer and Its Composites: Multiscale Experimental and Computational Studies	63
<i>Jay Hoon Park</i>	
(14ab) Integrating Catalysis and Separations for Energy-Efficient Conversion of Biomass-Derived Feedstocks	64
<i>Simon H. Pang</i>	
(14ac) 2D Materials Assembly for Stretchable Electronics and Smart Fabrics	65
<i>Po-Yen Chen</i>	
(14ad) Structure and Transport in Polymer Membranes for Energy-Efficient Separations	69
<i>Hee Jeung Oh</i>	
(14ae) Engineering Soft Materials with Tunable Structure and Functionalities	70
<i>Abu Zayed Md Badruddoza</i>	
(14ag) Polymer Based Hybrid Materials: From Molecular Design to Applications	71
<i>Nader Taheri Qazvini</i>	
(14ai) Design of Functional Polymeric Materials: From Ion Transport to Bio-Inspired Assembly	72
<i>Katherine P. Bartea</i>	
(14bd) Engineering Discrete Functional Building Blocks at Molecular Scale for Human-scale Applications	73
<i>Jimmy Lawrence</i>	
(14be) Flow and Jamming of Particulate Materials	76
<i>Somayeh Farhadi</i>	
(14bf) Controlling the Structure of Systems Ordered via Block Copolymer Phase Separation: Simulations and Experiments	77
<i>Andrew Peters</i>	
(14bg) Application of Zwitterionic Materials in Stem Cell Expansion and Immunosuppression	78
<i>Tao Bai</i>	
(14bh) From Reactive Nano-Particles to Self-Healing Materials: Chemical Research with a Green Twist	81
<i>Erica Pensini</i>	
(14bi) Energy Solutions Through Electrochemical Processing: Electronic Devices, Energy Storage Devices, and Extractive Metallurgy	84
<i>Takanari Ouchi</i>	
(14aj) Material Interactions and Synergies in Lithium-Air Batteries and Electrochemical Devices	87
<i>Forrest Gittleson</i>	
(14ak) Life at Interfaces: Understanding the Fluid Dynamics, Transport and Surface Translocation of Bacterial Biofilms	90
<i>Siddarth Srinivasan</i>	
(14am) Triggerable Tough Hydrogels for Gastrointestinal Biomedical Applications	93
<i>Jinyao Liu, Giovanni Traverso, Robert Langer</i>	
(19a) Human Stem Cell Derived Neutrophils As a Primary Neutrophil Model	94
<i>Laurel Hind, David Bennin, Anna Huttenlocher</i>	
(19b) Mechanistic Model of CD3ζ Immunoreceptor Tyrosine-Based Activation Motif (ITAM) Phosphorylation Sequence	95
<i>Jennifer A. Rohrs, Pin Wang, Nicholas Graham, Stacey D. Finley</i>	
(19c) Adoptive Transfer of CAR-Engineered T Cells with Surface-Conjugated Synthetic Nanoparticles Containing Small Molecule Inhibitors for Reversing Intratumoral T Cell Hypofunction	96
<i>Natnaree Sirivon, Yu-Jeong Kim, Elizabeth Siegler, Pin Wang</i>	
(19d) Sequencing the Evolving Functional Antibody Repertoire in Rheumatoid Arthritis	97
<i>Serra Elliott, Sarah Kongpachith, Lisa Blum, Julia Adamska, Nithya Lingampalli, William Robinson</i>	
(19e) Elucidating T-Cell Activation Threshold Using Precisely Defined Three-Dimensional Artificial Antigen Presentation	98
<i>Mason Smith, Fei Wen</i>	
(19g) Development of a Virus-like Particle Based HIV Vaccine Candidate	99
<i>Julie Fogarty, Peter Kim, James Swartz</i>	
(19h) Correlations of Antibody Response Phenotype and Genotype Revealed By Immunoglobulin Repertoire Sequencing	100
<i>Sai T. Reddy</i>	
(20a) Regulation of Intracellular Delivery Through Peptide-Based Nanocarrier Design (Invited Talk)	101
<i>Millicent O. Sullivan</i>	
(20b) Role of SNP Characteristics on the Endocytosis and Intracellular Trafficking of siRNA	102
<i>Daniel Vocelle, Olivia Chesniak, Mitch Smith, S. Patrick Walton, Christina Chan</i>	
(20c) Engineering Periodic shRNA Delivery Systems with High Silencing Efficacy	103
<i>Connie Wu, Kevin Shopsowitz, Paula T. Hammond</i>	
(20d) Polypeptide/Nucleic Acid Complexes As Delivery Vehicles	104
<i>Lorraine F. Leon, Cheng-Hsiang Kuo, Myung-Jin Oh, Eun Ji Chung, Yun Fang, Matthew V. Tirrell</i>	
(20e) Highly Potent mRNA Delivery In Vivo with Intravenously-Administered Ionizable Lipid Nanoparticles	105
<i>Kevin J. Kauffman, Owen S. Fenton, J. Robert Dorkin, Jung H. Yang, Daniel G. Anderson</i>	
(20f) Folate Receptor-Targeted Aminoglycoside-Derived Polymers for Transgene Expression in Cancer Cells	106
<i>Sudhakar Godeshala, Rajeshwar Nityanandan, Brian Thompson, Sheba Goklany, David R. Nielsen, Kaushal Rege</i>	
(20g) Sustained Transgene Expression Via Substrate-Mediated Gene Transfer Results from Multiple Transfection Events	107
<i>Norman Truong, Tatiana Segura</i>	
(21a) Injectable Hydrogel Beads for Delivery of High Concentration Mab Formulations	108
<i>P. Douglas Godfrin, Ramesh S. Kashi, Patrick S. Doyle</i>	

(21b) Development and Physicochemical Characterization of Tacrolimus-Loaded Nanocomposite Microparticles for the Treatment of Pulmonary Hypertension	109
Zimeng Wang, Julie Cuddigan, Samantha A. Meenach	
(21c) Nanoparticle-Mediated Inhibition of DNA Repair Sensitizes Brain Tumors to Radiotherapy	110
Forrest Kievit, Kui Wang, John Silber, Richard Ellenbogen, Miqin Zhang	
(21d) Theranostic Nanoparticles for Traumatic Brain Injury	111
Forrest Kievit, Peter Chiarelli, Patrick S. Stayton, Anthony J. Convertine, Pierre Mourad, Donghoon Lee	
(21e) Design, Synthesis, and Biological Evaluation of Novel Lipid Nanoparticle Materials for the In Vivo Delivery of Messenger RNA	112
Owen Fenton, Daniel G. Anderson	
(21g) Engineering Polymer Drug Conjugates to Synergistically Schedule Chemotherapeutics	113
Douglas R. Vogus, Michael A. Evans, Stefano Menegatti, Samir Mitragotri	
(21h) Hybrid Nanoparticles for Sequential and Controlled Delivery	114
Zilan Zhou, Carly Kennell, Joo-Youp Lee	
(38a) Coarse-Grained Modeling of Polymer Electrolyte Membranes	115
Wataru Shinoda, An-Tsung Kuo, Susumu Okazaki	
(38b) Precursor Effects on the Structure and Properties of Polymer Networks Synthesized Using Molecular Dynamics	116
Shimiao Zhang, Li Xi	
(38c) Multiscale CFD Simulation of Impregnation Die for Unidirectional Composites Production: Velocity Coupling Strategy Between Meso- and Macro- Scales	117
Son Ich Ngo, Young-Il Lim	
(38d) The Dynamics of Tight Knots on Tensioned, Single Polymer Chains	118
Vivek Narsimhan, C. Benjamin Renner, Patrick S. Doyle	
(38e) Controlled Self-Assembly of Polymer-Grafted Nanoparticles	119
Huikuan Chao, Robert A Riggleman	
(38f) Systematic and Simulation-Free Coarse Graining of Polymer Blends and Block Copolymers	120
Qiang Wang	
(38g) In-Silico Tailoring Properties of Polylactide	121
Alexandr Zubov, Gürkan Sin	
(38h) Molecular Modeling and Simulation Studies of the Dehydration and Rehydration of Polymeric Porous Media	122
Jee-Ching Wang, Athanasios I. Liapis	
(38j) Entropic Control over Nanoscale Colloidal Crystals	123
Nathan A. Mahynski, Sanat K. Kumar, Athanassios Z. Panagiotopoulos	
(40a) Engineering Macroscale Thermoelectric Transport By Chemical Modulation of Nanoscale Interfaces	124
Jeffrey Urban	
(40b) Doped Semiconducting Polymers As Solution-Processable Thermoelectric Materials	125
Shrayesh N. Patel, Anne M. Glaudell, Michael L. Chabinyc	
(40c) Thermal and Thermoelectric Transport Coefficients in Graphene	126
Enrique Munoz	
(40d) Carrier Scattering at Alloy NanoInterfaces Enhances Power Factor in PEDOT:PSS Hybrid Thermoelectrics	127
Edmond W. Zaia, Ayaskanta Sahu, Preston Zhou, Madeleine P. Gordon, Jason Forster, Shaul Aloni, Yi-Sheng Liu, Jinghua Guo, Jeffrey Urban	
(40e) Combining Density Functional Theory Calculations, Supercomputing, and Data-Driven Methods to Design New Thermoelectric Materials	128
Anubhav Jain, Umut Aydemir, Hong Zhu, Jan Pohls, Zachary Gibbs, Wei Chen, Saneyuki Ohno, Geoffroy Hautier, Gerbrand Ceder, Kristin Persson, Mary Anne White, G. Jeffrey Snyder	
(40f) Phase Diagram, Microstructure and Thermoelectric Properties	129
Sinn-wen Chen, Shi-Ting Lu, Hsin-jay Wu, Jui-shen Chang	
(40g) Shaping the Spectrum of Thermal Radiation Using Nanostructured Materials for Efficient Thermophotovoltaic Power Generation	130
Andrej Lenert	
(45a) Vaporization of Nanoparticles in Dusty Plasmas	131
Necip Uner, Elijah Thimsen	
(45b) Increasing Contact Area for Scaled up Processing of Solids Using Nonthermal Plasmas	132
Necip Uner, Elijah Thimsen	
(45c) Process Control for Atmospheric Pressure Plasma Systems	133
Brandon S. Curtis	
(45d) Topographically Selective Deposition of Dielectrics Using Ion Implantation	134
Dara Bobb-Semple, Fatemeh Hashemi, Yin Fan, Tobin Kaufman-Osborn, Stacey F. Bent	
(45e) Epitaxial Growth and Atomic Characterization of Fe-BTO(111) on SiC (0001) Using MgO Template Layer	135
Sue J. Celestin, Katherine S. Ziemer	
(45f) SiC Substrate Cleaning for Epitaxy Using a Thermally Generated Atomic Hydrogen Beam	136
Negar Hamedani Golshan, Katherine S. Ziemer	
(45g) Chiral Templating of Self-Assembling Nanostructures By Circularly Polarized Light	137
Jihyeon Yeom, Bongjun Yeom, Joong Hwan Bahng, Petr Král, Nicholas Kotov	
(45h) Anomalous ALD Growth Per Cycle Under Precursor-Limited Conditions	138
Andrew Poissant, Hossein Salami, Raymond A. Adomaitis	

(45i) Development of a Robust Computational Methodology for Value-Added Understanding of Selective Conducting Thin Film Deposition	139
<i>Andrew J. Adamczyk, Sergei V. Ivanov</i>	
(46a) Simple Polymerization Reactions for Overcoming Long-Standing Challenges: From Fully Recyclable, Melt-Reprocessable Rubber Tires Containing Dynamic Covalent Bonds to Development of Broad-Temperature-Range Vibration and Acoustic Damping Materials.....	140
<i>John M. Torkelson</i>	
(46b) Ring-Opening Polymerization for 100% Renewables-Based Polyethylene Furanoate (PEF) for the "Green Bottle"	141
<i>Jan-Georg Rosenboom, Giuseppe Storti, Massimo Morbidelli</i>	
(46c) General Route for the Preparation of Olefin Based Block-Copolymers.....	144
<i>Damien Guironnet, Dylan Walsh</i>	
(46d) A New Synthetic Approach to Epoxide Polymerization.....	145
<i>Robert C. Ferrier, Christina G. Rodriguez, Nathaniel A. Lynd</i>	
(46e) Organocatalyzed Atom Transfer Radical Polymerization Driven By Visible Light	146
<i>Charles B. Musgrave, Chern-Hooi Lim, Jordan Theriot, Garret Miyake, Harshen Yang, Matthew Ryan</i>	
(46f) A Full Exploitation of the Pulsed Laser Polymerization Technique to Assess All Important Rate Coefficients in Acrylate Radical Polymerization.....	147
<i>Yoshi W. Marien, Paul H.M. Van Steenberge, Katrin B. Kockler, Christopher Barner-Kowollik, Marie-Françoise Reyniers, Dagmar R. D'hooge, Guy B. Marin</i>	
(46h) High-Pressure Polymerization Process Technology: Modeling and Control of Polymeric Micro-Structure and Safety Considerations	150
<i>Markus Busch</i>	
(46i) Simulation of Thermoset Polymerization	151
<i>Galen Suppes</i>	
(63a) Development of a Coarse-Grained Model of Chitosan for Predicting Solution Behavior.....	152
<i>Carol K. Hall, Steven Benner</i>	
(63b) Bioinspired Materials Meet Microbiology: The Role of Ion-Containing Polymers and Structure-Property Relationships in Preventing Biofouling.....	153
<i>Jessica D. Schiffman</i>	
(63c) Conducting-Polymer Electrochromic Windows Powered by Transparent Single-Junction Organic Solar Cells	154
<i>Yueh-Lin Loo</i>	
(63d) Ion Sorption, Diffusion and Transport in Charged Polymer Membranes.....	155
<i>Benny D. Freeman</i>	
(68a) Instructing Cells with Programmable Peptide-DNA Hybrids	156
<i>Ronit Freeman, Nicholas Stephanopoulos, Samuel I. Stupp</i>	
(68b) Delivery Materials to Induce RNAi in Bone Marrow to Control Hematopoietic Stem Cell Trafficking	157
<i>Michael J. Mitchell, Robert Langer</i>	
(68c) Toll-like Receptor (TLR)-Functionalized Nanoparticle Adjuvant Carriers Toward Optimized Vaccine Formulations and Immune-Modulators	158
<i>Jeffery Noble, Anthony Zimmerman, Catherine A Fromen</i>	
(68d) Fabrication of Vaccines Based on Polymeric Microdisks to Enhance T Cell Immunity	159
<i>Peipei Zhang, Christopher Jewell</i>	
(68e) Temporally Controlled Release of Platelet-Rich Plasma from Peg Microgels with Tunable Biodegradation Rate and Size	160
<i>Era Jain, Saahil Sheth, Kristen Polito, Andrew Dunn, Scott A. Sell, Silviya P. Zusiak</i>	
(68f) Layer-By- Layer Encapsulation of Probiotics: Addressing the Challenges of Oral Delivery to Modulate the Microbiome	161
<i>Aaron C. Anselmo, Kevin McHugh, Robert Langer, Ana Jaklenec</i>	
(68g) VE-Cadherin Signals and Substrate Stiffness Regulate Force Transduction through Endothelial Monolayers	162
<i>Roberto Andresen Egiluz, Mohammed Munim, Deborah E. Leckband</i>	
(68h) Macroporous Polymer Scaffolds for the Transplantation of Embryonic Stem Cell Derived Beta-Cell Progenitors to a Clinically Translatable Site for the Treatment of Type I Diabetes	163
<i>Tadas Kasputis, Daniel Clough, Fallon Noto, Richard Youngblood, Briana Dye, Jason Spence, Lonnie Shea</i>	
(68i) Anisotropic, Acellular, Silk-ECM Patches for Treatment of Myocardial Infarction	164
<i>Whitney L. Stoppel, Kelly Sullivan, Jonathan M. Grasman, Monique N. Foster, David L. Kaplan, Lauren D. Black</i>	
(68j) Characterization of Polymer Nanoparticle Aggregation in Biologically Relevant Fluids.....	165
<i>Kathleen McMinnis, Connor LaPres, Joerg Lahann</i>	
(98a) Application of Metamaterials and Rectenna for Capture of Blackbody Radiation	166
<i>Evan Allison, Zach Thacker, Shendu Yang, Patrick J. Pinhero</i>	
(98b) Testing Materials and Devices for Electromagnetic Energy Capture and Conversion to Electricity	167
<i>Patrick J. Pinhero, Zach Thacker, Evan Allison, Shendu Yang</i>	
(98c) Incorporation of Photo-Responsive Membrane Protein Species into Nanostructured Silica for Light-Driven Ion Transport	168
<i>Matthew N. Idso, Niels Zussblatt, Daniela Lalli, Naomi Baxter, Guido Pintacuda, Songi Han, Bradley F. Chmelka</i>	
(98d) Suppression of Infrared Absorption in Nanostructured Metals By Controlling Faraday Inductance and Electron Path Length	169
<i>Sang Eon Han</i>	

(98e) Light Harvesting in Dye Sensitized Solar Cell Based on Consensitizer in Core-Shell Nanofiber Configuration Reducing Charge Recombination	.....	170
Wallace Woon-Fong Leung		
(99a) Nanocrystal Doping Stabilizes the Perovskite Phase of Cesium Lead Iodide	.....	171
Subham Dastidar, David A. Egger, Liang Z. Tan, Samuel B. Cromer, Andrew D. Dillon, Shi Liu, Leeor Kronik, Andrew M. Rappe, Aaron Fafarman		
(99b) Metal Oxide Electron-Selective Layers for Inverted Perovskite Solar Cells By Atomic Layer Deposition	.....	172
Axel Palmstrom, Kevin Bush, Michael McGehee, Stacey F. Bent		
(99c) Transparent Conductive Oxide Nanocrystals Coated with Insulators By Atomic Layer Deposition	.....	173
John Ephraim, Deanna Lanigan, Corey Staller, Delia J. Milliron, Elijah Thimsen		
(99d) Microstructure Development in Cu₂znsn(SxSe1-x)4 Thin Films during Annealing of Colloidal Nanocrystal Coatings	.....	174
Boris D. Chernomordik, Priyanka M. Ketkar, Anne K. Hunter, Amélie E. Béland, Lorraine F Francis, Eray S. Aydin		
(99e) Multiscale Study of the Self-Organized Vertical Concentration Profile of PEDOT:PSS for Work Function Optimization	.....	175
Min Huang		
(99f) Study of Charge Transfer Dynamics in Spray Deposited Cu₂ZnSnS₄ (CZTS) Photoelectrodes for Performance Improvement	.....	182
Animesh Mondal, James G. Radich		
(99g) Highly Efficient Solar Cells Made with Cu_{1-X}K_xInSe₂ Alloys: A Foundation for Engineering K in Cu(In,Ga)Se₂	.....	183
Christopher P. Muzzillo, Jian V. Li, Timothy J. Anderson		
(99h) Study of Electron Transport Mechanism in Dye-Sensitized Solar Cell with the Effect of Morphology, Crystalline Structure and Electron Mobility	.....	184
Yerkin Shabdjan, Blake Hanford, Amirkhan Temirbayev, Kadyrjan Dikhanbayev, Nurxat Nuraje		
(100a) Solventless Synthesis of Zeolitic-Imidazole Framework ZIF-8 Membranes Via Crystal-Specific Sintering Phenomenon	.....	185
Hyuk Taek Kwon, Hae-Kwon Jeong		
(100b) Microplasmas for Substrate-Independent Deposition of Nanostructured Metals and Oxides	.....	186
Michael Gordon, Andrew Pebbley, Katie Mackie		
(100c) Hierarchically-Structured Porous Carbon Films By Multiscale Templating and Interfacial Engineering	.....	187
Megha Sharma, Zheng Tian, Mark A. Snyder		
(257k) Effect of the Chain Length of Alkylamine on Film Formation from Alcohol-Soluble Copper Complex Ink	.....	188
Wen Xu		
(100e) Understanding of Diffusion Pathway of Cyclohexane through Nanoscale MFI Zeolite	.....	189
Xiaoduo Qi, Vivek Vattipalli, Wei Fan		
(100f) Neutron Reflectometry Investigation of Hydrogen in Plasma Treated Hydrogen Doped Nanoporous TiO₂ Thin Films for Water Splitting Photocatalysis	.....	190
Syed Z. Islam, Allen Reed, Suraj Nagpure, Namal Wanninayake, James Browning, Doo Young Kim, Stephen E. Rankin		
(100g) Synthesis of Tin(II) Monosulfide Nanoplates: A Potential 2D Material	.....	191
Nancy Trejo, Anne Hunter, Cody Wrasmann, Shreyashi Ganguly, John Dwyer, Eray S. Aydin		
(100h) MoS₂-Passivated Bilayer Phosphorene Phototransistors	.....	192
Youngwoo Son, Albert Tianxiang Liu, Volodymyr Kompan, Qing Hua Wang, Michael S. Strano		
(103a) Regenerative Engineering: The Convergence Approach	.....	193
Cato Laurencin		
(103b) Regulation of Growth Factor Signaling and Regeneration by Modifications of Heparan Sulfate Proteoglycans in the Extracellular Matrix	.....	194
David Gardiner		
(103c) Cell, Peptide and Protein Delivery Problems in Regenerative Engineering	.....	195
Nicholas Peppas		
(103d) Nano- and Microfabricated Hydrogels for Regenerative Engineering	.....	196
Ali Khademhosseini		
(105a) Development of Resorcinol Formaldehyde Aerogels with Enhanced Mechanical Properties Via Improved Particle Necking	.....	197
Mohammed Alshrah, Hani Naguib, Chul B. Park		
(105b) Adsorptive Precipitation from Supercritical Solutions in Aerogels: A Way Towards Stable Amorphous Drugs	.....	198
Pavel Gurikov, Irina Smirnova		
(105c) Protein Based Aerogels: Preparation, Applications and Potential for Food Engineering	.....	199
Irina Smirnova, Ilka Selmer, Ulrich Kulozik, Christian Kleemann		
(105d) Alginic Acid Foams with Hierarchical Porosity: Promising Materials for Dyes Adsorption	.....	200
Nathalie Tanchoux, Asja Pettignano, Luca Bernardi, Thierry Vincent, Eric Guibal, Françoise Quignard		
(105e) Thermoplastic Foaming Assisted By Microwave	.....	201
Elham Rezvanpanah, S. Reza Ghaffarian Anbaran, Ernesto Di Maio		
(105f) Polyurethane Foam Expansion, Polymerization and Bubble Pressurization	.....	207
Rekha R. Rao, Lisa A. Mondy, Christine Cardinal Roberts, Kevin N. Long, David R Noble, Mathew C. Celina, Victor Brunini		
(105g) The Role of Viscoelasticity in Bubble Breaking	.....	208
Daniele Tammaro, Rossana Pasquino, Massimiliano M. Villone, Gaetano D'Avino, Ernesto Di Maio, Massimiliano Fraldi, Antonio Langella, Nino Grizzuti, Pier Luca Maffettone		

(105h) The Use of the Viscoelasticity in Polymer Foaming to Obtain a Fully Opened Cell Structure	209
<i>Daniele Tammaro, Rossana Pasquino, Massimiliano M. Villone, Gaetano D'Avino, Ernesto Di Maio, Nino Grizzuti, Pier Luca Maffettone</i>	
(129a) Bead-Milling and Post-Milling Recrystallization: An Organic Template-Free Methodology for the Production of Nano-Zeolite Catalyst	210
<i>Toru Wakihara, Tatsuya Okubo</i>	
(129b) Control of Al Sites in the CON-Type Aluminosilicate Zeolite.....	211
<i>Masato Yoshioka, Toshiyuki Yokoi</i>	
(129c) Core-Shell Bulk BEA-Lamellar MFI Composite Prepared in One-Step: Integration of 3D and 2D Zeolites into Hierarchical Structures for Efficient Alkylation Reactions.....	212
<i>Dongxia Liu, Laleh Emadi</i>	
(129d) Effects of Zeolite Growth Modifiers on Different Stages of ZSM-5 Crystallization.....	213
<i>Wei Qin, Jeffrey D. Rimer</i>	
(129e) The Generation of Novel Nanomaterials from the MCM-22-P Precursor Crystal	214
<i>Christopher Cogswell, Yuanci Wang, Andrew Wolek, Sunho Choi</i>	
(129f) Mesoporous Metal Sulfides and Carbides	215
<i>Feng Jiao</i>	
(129g) Effect of Acid Gas Interactions on the Structure and Porosity of ZIF-8.....	216
<i>Souryaadeep Bhattacharyya, Simon H. Pang, Michael Dutzer, Christopher W. Jones, Ryan P. Lively, Krista S. Walton, David S. Sholl, Sankar Nair</i>	
(129h) High Yield Stoichiometric Synthesis of ZIF-8 Nanoparticles Using Novel Reactor	217
<i>Aamena Parulkar, Nicholas Brunelli</i>	
(133a) Modeling Framework for Predicting Phase Behavior and Transport in Oppositely Charged Polyelectrolyte Solutions	218
<i>Ronald G. Larson, Ali Salehi</i>	
(133b) Structure and Dynamics of Model Tapered Diblock Polymers.....	219
<i>Lisa M. Hall</i>	
(133c) Innovation in Emerging Areas in Polymers	220
<i>Narayan Ramesh</i>	
(133d) Open Questions in Soft Matter: Is There an Ideal Glass Transition? Are Colloids Good Models for Molecular Glasses?	221
<i>Gregory B. McKenna</i>	
(136a) On Demand Release of Bacterial Biofilms Via Shape Memory Activation.....	222
<i>Huan Gu, Sang Won Lee, Shelby Lois Buffington, James H. Henderson, Dacheng Ren</i>	
(136b) Self-Assembly of "Hairy" Biomacromolecular Membranes Using an Aqueous-Aqueous Interface	223
<i>R. Helen Zha, Yuri S. Velichko, Shantanu Sur, Ronit Bitton, Samuel I. Stupp</i>	
(136c) Biomimetic Surfaces for Drag Reduction in Turbulent Flow	224
<i>Kevin Golovin, James Gose, Marc Perlin, Steven L. Ceccio, Anish Tuteja</i>	
(136j) Self-Similar Dynamics of Extracellular Matrix Production during Bacterial Biofilm Colony Expansion	225
<i>Siddarth Srinivasan, L. Mahadevan, Shmuel Rubinstein</i>	
(136e) Rational Design for Therapeutic Peptide-Amphiphile-Based Intracellular Delivery	226
<i>Handan Acar, James L. LaBelle, Matthew V. Tirrell</i>	
(136f) Recapitulating Tissue Microenvironments with Biomaterials to Restore Immunity	227
<i>Nisarg J. Shah, David T. Scadden, David J. Mooney</i>	
(136g) Controlling Stem Cell Fate within Zwitterionic Hydrogels	228
<i>Tao Bai, Shaoyi Jiang</i>	
(136h) Nanolayer Multi-Therapy Scaled Delivery from Implant Surface	229
<i>Jouha Min, Richard Braatz, Myron Spector, Paula Hammond</i>	
(136i) The Role of ECM Biomechanics in Liver Progenitor Differentiation	230
<i>Andreas Kourouklis, Gregory Underhill, Kerim Kaylan</i>	
(167a) Nanorod-like CH₃NH₃PbI₃ for Planar Heterojunction Perovskite Solar Cell with Improved Performance.....	231
<i>Yan-Zhen Zheng, Erfei Zhao, Xia Tao</i>	
(167b) Lead-Free, Hybrid, Organic-Inorganic Halide for Light Harvesting	232
<i>Kanchan Mondal, Chung-Ying Tsai</i>	
(167c) Improving Electron Transport in Nanostructured TiO₂ Electrode.....	233
<i>Bin Liu</i>	
(167d) Symmetry-Breaking in Light-Trapping Nanostructures on Silicon for Solar Photovoltaics	234
<i>Sang Eon Han, Seok Jun Han, Swapnajip Ghosh, Tianhao Cai, Brittany R. Hoard, Sang M Han</i>	
(167e) Computational and Kinetic Considerations for Morphology Prediction of Donor-Acceptor Oligomers for Organic Photovoltaics	235
<i>Michael Henry, Eric Jankowski</i>	
(167f) Enhancing Dye Sensitized Solar Cell J-V Behavior By Integrating Nanoscale Polymer Films	236
<i>Yuriy Y. Smolin, Austin G. Kuba, Masoud Soroush, Kenneth K.S. Lau</i>	
(167g) Photocatalytic Photosystem I/PEDOT Composite Films Prepared By Vapor Phase Polymerization	237
<i>Maxwell Robinson, David Cliffel, G. Kane Jennings</i>	
(168a) Water-in-Water Emulsion Based Synthesis of Hydrogel Nanospheres with Tunable Release Properties	238
<i>Derya Aydin, Seda Kizilel, Pelin Erkoc</i>	
(168b) A Pharmacokinetic Model of a Tissue Implantable Insulin Sensor.....	239
<i>Gili Bisker, Nicole Iverson, Jiyoung Ahn, Michael Strano</i>	

(168c) Liposome-Encapsulated Synergistic Drug Combinations for Low Dose Chemotherapy	240
<i>Kathryn M. Camacho, Stefano Menegatti, Douglas R. Vogus, Anusha Pusuluri, Zoe Fuchs, Maria Jarvis, Michael Zakrewsky, Michael Evans, Renwei Chen, Samir Mitragotri</i>	
(168d) Photoexcited Quantum Dots Potentiate Antibiotic Activity in Multidrug-Resistant Bacteria	241
<i>Colleen Courtney, Samuel Goodman, Feifei Li, Nancy Madinger, Prashant Nagpal, Anushree Chatterjee</i>	
(168e) Evaluation of the Cancer-Preventive Effect of Resveratrol-Loaded Nanoparticles on the Formation of Tumor Spheroids	242
<i>Elisa A. Torrico-Guzmán, Samantha A. Meenach</i>	
(168f) Preparation, Characterization and in Vitro Validation of a Novel Paclitaxel Transport System to Target HER2-Positive Breast Cancer	243
<i>Celia Nieto Jiménez, Jesús Rodríguez-Rodríguez, Miguel A. Galán, Eva M. Martín del Valle</i>	
(168g) Adsorption, Stabilization and Recovery of Polyphenolic Flavonoids By TiO₂ Functionalized Mesoporous Silica Nanoparticles	244
<i>M. Arif Khan, William T. Wallace, Stephen E. Rankin, John M. Littleton, Barbara L. Knutson</i>	
(168h) Degradation Kinetics of PLGA and PLGA Conjugated with Alendronate Nanoparticles	245
<i>Ruth Lancheros, Rubén Godoy-Silva, Carlos Arturo Guerrero</i>	
(168i) Confinement Facilitated Protein-Protein Stacking: As Investigated By Neutron Scattering	246
<i>Justin Siefer, Margarita Krutyeva, Ralf Biehl, Marc-Olivier Coppens</i>	
(170a) Fast, Efficient and Gentle Transfection of Human Adherent Cells in Suspension	247
<i>Pranav Agrawal, Nilesh P. Ingle, William S. Boyle, Emily Ward, Jakub Tolar, Kevin D. Dorfman, Theresa M. Reineke</i>	
(170b) Poly(β-amino ester) Terpolymer Nanoparticles As Delivery Vehicles for mRNA and DNA	248
<i>James C. Kaczmarek, Daniel G. Anderson</i>	
(170c) Enhancement of Gene Therapy Via Inhibition of the Innate Immune Response	249
<i>Jacob Elmer, Christine Muzzello, Spivack Kyle, Butchy Adam, Christopher Neely</i>	
(170d) Engineering Megakaryocyte-Derived Microparticles for Gene Delivery	250
<i>Chen-Yuan Kao, Eleftherios T. Papoutsakis</i>	
(170e) Microfluidic Production of Ternary Polyplexes for Non-Viral Gene Delivery	251
<i>Daniel Pack, Jason Absher</i>	
(170f) Combinatorial Treatment Using Lipopolymer-Mediated TRAIL Gene Delivery and Kinase Inhibitors for Bladder Cancer	252
<i>Sheba Goklany, Sudhakar Godeshala, Matthew Christensen, Ping Lu, Elizabeth Elizabeth Garrett-Mayer, Christina Voelkel-johnson, Kaushal Rege</i>	
(170g) Localized and Sustained Delivery of siRNA from Hydrogels Expedites Fracture Healing	253
<i>Danielle Benoit, Yuchen Wang</i>	
(171a) Solution-Processed, Lead-Free Metal Iodide Thin Films for Photovoltaic Applications	254
<i>Umar H. Hamdeh, Rainie D. Nelson, Bradley J Ryan, Matthew G. Panthani</i>	
(171b) In-Situ X-Ray Diffraction Studies on the Self-Assembly of Metal Halide Perovskite Thin Films	255
<i>Alexander Chen, Benjamin Foley, Justin Girard, Jennifer Ma, Detlef-M. Smilgies, Joshua Choi</i>	
(171c) Layer-Controlled Colloidal Dispersions of Two-Dimensional Organometal Halide Perovskites for Efficient Blue Light-Emitting Diodes	256
<i>Jakub Jagielski, Sudhir Kumar, Chih-Jen Shih</i>	
(171d) Dopant Diffusion and Implications for Device Stability	257
<i>Adam J. Moulé, Jun Li, Daniella Holm, Shravya Guda, Correy Koschnick, Souleymane Omar Diallo, Stephan Friedrich</i>	
(171e) Linking Molecular Conformation to Charge Transport in Organic Materials	258
<i>Matthew Jones, Eric Jankowski</i>	
(171f) Solution Shearing of Conjugated Polymer with Highly Aligned Nanofibrillar Structures for Organic Field-Effect Transistors	259
<i>Ping-Hsun Chu, Nabil Kleinhenz, Nils Persson, Michael McBride, Jeff Hernandez, Jung Ok Park, Mohan Srinivasarao, Elsa Reichmanis</i>	
(171g) Automated Analysis of Orientational Order from Images of Fibrillar Thin Films	260
<i>Nils Persson, Michael McBride, Martha A. Grover, Elsa Reichmanis</i>	
(171h) Computational Investigations of Perylene and Perylo thiophene Packing	261
<i>Evan Miller, Eric Jankowski</i>	
(198a) Harnessing Niche Concepts in Biomaterial Design	262
<i>Brendan Harley</i>	
(198b) Engineering Hemostatic Nanoparticles to Stop Internal Bleeding	263
<i>Erin Lavik</i>	
(198c) Nanolayered Staged Delivery Approaches to Wound Healing and Bone Regeneration	264
<i>Paula Hammond</i>	
(200b) Understanding Relationships Between Molecular Structures and Thermomechanical Properties of Thermosetting Polymers with Novel Bio-Based Building Blocks	265
<i>Jung Ho Yang, Fengshuo Hu, Giuseppe R. Palmese, Cameron F. Abrams</i>	
(200c) Predicting the Binary Interaction Parameter Chi for Polymer Pairs from Oligomer Simulations	266
<i>Qile Chen, Timothy P. Lodge, J. Ilja Siepmann</i>	
(200d) Uniaxial, Biaxial, and Shear Deformation of Simulated Amorphous Cis-, Trans-1, 4-Polybutadiene Chains	267
<i>Suvrajyoti Kar, Michael L. Greenfield</i>	
(200e) Choline and Phosphoryl Contributions to Hydration Structure and Dynamics of Poly(2-methacryloyloxyethyl phosphorylcholine)	268
<i>Christoph Klein, William L. Roustell, Christopher R. Iacovella, Clare McCabe, Peter T. Cummings</i>	

(200f) Nonequilibrium Molecular Dynamics Simulations of Entangled Polymer Melts and Solutions Undergoing Planar Elongational Flows.....	269
<i>Mohammad Hadi Nafar Sefiddashti, Brian J. Edwards, Banin Khomami</i>	
(200g) Using Molecular Simulation to Develop a Physically-Based Materials Genome for Semicrystalline Polymer Nucleating Agents.....	270
<i>Alexander Bourque, Gregory C. Rutledge</i>	
(200h) Yield and Failure Behavior Investigated for Cross-Linked Phenolic Resins Using Molecular Dynamics.....	271
<i>Joshua D. Monk, Charles W. Bauschlicher, John W. Lawson</i>	
(200i) A Reactive Molecular Dynamics Simulation of the Thermal Decomposition in Graphene-Reinforced Polyethylene Oxide.....	272
<i>Farzin Rahmani, Sasan Nouranian, Mina Mahdavi</i>	
(203a) Bone Target N Acetylcysteine Loaded in PLGA-ALE Nanoparticle to Osteoporosis Treatment. an in Vitro Test.....	273
<i>Ruth Lancheros, Ruben Godoy-Silva, Carlos Arturo Guerrero</i>	
(203b) Inexpensive and Rapid Synthesis Unilammelar Liposomal Drugs for Targeted Delivery.....	274
<i>Steven Roberts, Ryan Blower, Nitin Agrawal</i>	
(203c) Fabrication and Characterization of Fluorescently Labeled Polymeric Nanoparticles for Biodistribution Studies of Drug Delivery.....	275
<i>Richey M. Davis, Ami Jo, Sanem Kayandan, Judy S. Riffle, Irving Allen, Dylan McDaniel</i>	
(203d) Polyelectrolyte Multilayer Films As Templates for Surface Modification to Design Liposomes Mediated Local and Sustained Therapeutic Delivery.....	276
<i>Stephen L. Hayward, David Francis, Matthew Sis, Srivatsan Kidambi</i>	
(203e) Recognitive Methacrylated Alginate Nanoparticles for Protein Therapeutics.....	277
<i>Nicholas A. Peppas, Julia Vela Ramirez</i>	
(203f) Gold Nanoconjugates for Spinal Cord Injury Treatment: Recovery and Biodistribution	278
<i>Fangchao Liu, Janelle Buttry, Zeljka Minic, Harry G. Goshgarian, Guangzhao Mao</i>	
(203g) Development of Drug Delivery Systems Based on a Fructose Polymer and 5-Fluorouracil	279
<i>Álvaro González-Garciniño, Antonio Taberner, Miguel Ángel Galán, Eva M. Martín del Valle</i>	
(207a) Characterization of Polyelectrolyte Membranes Loaded with in-Situ Grown Metal-Oxide Nanoparticles	280
<i>Jonathan Colon, Sagar Y. Patel, John Landers, Aleksey Vishnyakov, Alexander V. Neimark</i>	
(207b) Effect of Nanofillers on Thermal and Mechanical Properties of Oilfield Elastomers	281
<i>Rostyslav Dolog, Valery N. Khabashesku</i>	
(207c) Characterization of Compressive Mechanical Properties of Hydrogenated Nitrile Butadiene Elastomers Reinforced with Three Different Types of Carbon Filler	293
<i>Malavaray Sankarasubramanian, Sitaraman Krishnan, Zackary A. Putnam, John C. Moosbrugger, Ming Y. Huang</i>	
(207d) Nafion Nanocomposite Membranes for Use in Prospective Large-Scale Energy Storage Devices	294
<i>Eric M. Davis, Apoorv Balwani, Allison Jansto, Antonio Faraoone</i>	
(207e) Microstructural Characterization of Gfrp Reinforcing Bars in Severe Environment	295
<i>Hilal El-Hassan, Abdelrahman Al-Sallamin, Tamer El-Maaddawy</i>	
Characterization of 3-D Printed Parts	303
<i>Holly A. Stretz, Matthew Spreeman, Erik Skottegard</i>	
(207g) Effects of Pillaring Agents on Corrosion Resistance of Polybenzoxazine/Organoclay Nanocomposite Coatings with Intercalated Structure	304
<i>Changlu Zhou, Zhong Xin</i>	
(207h) Multiscale Characterization of Wear-Resistance in Epoxy/Nanoparticle Composites	305
<i>Kenan Song, Khalid A. Askar, Dayong Chen, Roberta Polak, Michael F. Rubner, Robert E. Cohen</i>	
(223a) Electrophoretic Deposition of Nanocrystals Under Flow to Synthesize Semiconducting Thin Films with High Atom Economy	306
<i>Andrew D. Dillon, Subham Dastidar, Shawn Mengel, Jason B. Baxter, Aaron T. Fafarman</i>	
(223b) Influence of Surface Reactions on the Infrared Localized Surface Plasmon Resonance of Indium Tin Oxide Nanocrystals	307
<i>Weize Hu, Michael A. Filler</i>	
(223c) Large-Scale Crack-Free Gold Nanoparticle Monolayers with Adjustable Electrical and Optical Properties	308
<i>Guang Yang, Daniel T. Hallinan</i>	
(223d) In Situ Characterization of the Effect of Plasma Treatment on Transition Metal Dichalcogenides	309
<i>Leslie Chan, Mahmut Tosun, Carlo Carraro, Ali Javey, Roya Maboudian</i>	
(223e) Observation of Switchable Photoreponse of a Monolayer WSe₂-MoS₂ Lateral Heterostructure Via Photocurrent Spectral Atomic Force Microscopic Imaging	310
<i>Youngwoo Son, Pingwei Liu, Ming-Yang Li, Chia-Chin Cheng, Kung-Hwa Wei, Qing Hua Wang, Lain-Jong Li, Michael S. Strano</i>	
(223f) Effect of Inorganic Nanoparticle Coating on the Optical Transmittance and the Surface Conductivity for Transparent Conductive Carbon Nanotube /Silver Nanowire Hybrid Film	311
<i>Young S. Lee, Kwan H. Yoon</i>	
(223g) Electrostatic Double Layer Flash Memory Based on Two-Dimensional Crystals	312
<i>Susan Fullerton, Ke Xu, Hao Lu, Weihua Wang, Hanchul Kim, Iljo Kwak, Kyeongjae Cho, Andrew Kummel, Alan Seabaugh</i>	
(223h) Multiscale Approaches for Modeling the Penetration of Field Effect in Two-Dimensional-Materials-Based Quantum Capacitors	313
<i>Tian Tian, Chih-Jen Shih</i>	
(223i) Current-Driven Nanowire Formation and Nanopatterning on Crystalline Conducting Substrate Surfaces	314
<i>Ashish Kumar, Dwaipayan Dasgupta, Dimitrios Maroudas</i>	

(224b) Computational Investigations of Drug Storage and Delivery in Bio-Compatible Nanoporous Materials	315
<i>Ilnur Erucar, Seda Keskin</i>	
(224c) Nanoharvesting of Polyphenolic Flavonoids from Solidago Nemoralis Hairy Root Cultures Using Functionalized Mesoporous Silica Nanoparticles	316
<i>M. Arif Khan, Stephen E. Rankin, John M. Littleton, Barbara L. Knutson</i>	
(224d) Modeling: A Tool for Experimentalists. Design, Synthesis and Evaluation of Self-Assembling Dendrons for Gene/Drug Delivery.....	317
<i>Erik Laurini, Paola Posocco, Domenico Marson, Maurizio Fermeglia, Sabrina Pricl</i>	
(224e) Investigation of CNT-Induced Bacteria Lysis and Protein Release	318
<i>Bob Beitle, Abdollah Mosleh</i>	
(224f) Using Fluoroalkylated Polyethylene Glycol-Stabilized Perfluorocarbon Nanodroplet As Oxygen Carriers to Reduce Oxygen Inhibition Effect for Microalgal Growth	319
<i>Yu-Hsiang Lee, Yu-Ling Yeh, Yun-Ting Ma</i>	
(239a) Cyclic Polyethylene Furanoate As a Monomer from Renewable Resources for Ring Opening Polymerization.....	320
<i>Peter Fleckenstein, Giuseppe Storti, Massimo Morbidelli</i>	
(239b) Polymeric Nano-Metal Composite Membranes for Water Remediation	321
<i>Sebastián Hernández, Lei Shi, Rong Wang, Lindell Ormsbee, Dibakar Bhattacharya</i>	
(239c) Thermodynamic and Economic Assessment of the Production of Ethylene and Propylene from Bioethanol	322
<i>Jorge Becerra, Manuel Figueiredo, Martha Cobo</i>	
(239d) Design and Economical Evaluation of Polygen Process to Co-Produce Synthetic Natural Gas (SNG), Methanol and Ethylene Glycol.....	325
<i>Bor-Yih Yu, I-Lung Chien</i>	
(239e) Preparation and Properties of Soybean Oil-Based Composites Containing Natural Fillers.....	326
<i>Jeffrey Csernica, Andrew Fox</i>	
(239f) Solvent Free Sucrose Esters Production in Reactive Systems Containing Emulsifiers	327
<i>Maria F. Gutierrez, Alvaro Orjuela, Jose L. Rivera, Andrea Suaza</i>	
(239g) Synthesis and Characterization of Biochar-Based Carbon Supported Metal Nanoparticles	329
<i>Sai Teja Neeli, Hema Ramsurn</i>	
(241a) Interactions and Complexation in Polyelectrolyte-Nanoparticle Systems (Invited Talk)	330
<i>Venkat Ganeshan, Victor Pryamitsyn, Gunja Pandav</i>	
(241b) Thermally-Driven Nanostructure Evolution of Phase-Change Elastomer Gels.....	331
<i>Kenneth Mineart, Byeongdu Lee, Richard Spontak</i>	
(241c) Biopolymer-Solvent Phase Behavior for the Lignin–Acetic Acid–Water System	332
<i>Adam S. Klett, Mark C. Thies</i>	
(241d) Large--Scale Structural Transitions in Supercoiled DNA Revealed By Coarse--Grained Simulation.....	333
<i>Brad A. Krajina, Andrew J. Spakowitz</i>	
(241f) Thermodynamics of Sorption and Swelling in Polyethylene at Gas-Phase Polymerization Conditions	334
<i>Martina Podivinská, Katerina Haskovcová, Josef Chmelar, Juraj Kosek</i>	
(241h) Preparation of Micro and Nanocellular PBT/Ptmg Diblock Copolymer Structure By Using Supercritical CO ₂ As the Blowing Agent – Effect of Microphase Morphology	335
<i>Ling Zhao, Rui Jiang</i>	
(241i) Relating Polymer Doping and Nanostructure Formation	336
<i>Adam J. Moule, Thomas Harrelson, Annabal Ramirez-Cuesta, Yongqiang Cheng, Jun Li, Tucker Murray, Roland Faller</i>	
(255bi) Multiresponsive Poly(N-isopropylacrylamide) Copolymer Toward Metal Ion Recognition and Adsorption Via a Thermally Induced Sol-Gel Transition	337
<i>Jin Jin Cheng, Guorong Shan, Yongzhong Bao, Pengju Pan</i>	
(255z) Modeling Controlled Release from Hollow Porous Nanospheres.....	338
<i>Aili Wang, Brian J. Edwards</i>	
(255aw) Atomistic Simulation Study on the Morphology of the Hydrated Perfluorosulfonic Acid Membrane	339
<i>An-Tsung Kuo, Wataru Shinoda, Susumu Okazaki</i>	
(255as) Parameterization of a Coarse Grained Model for Perfluorosulfonic Acid Polymer	340
<i>An-Tsung Kuo, Wataru Shinoda, Susumu Okazaki</i>	
(255aa) Behavior of Dendritic Polymers in Solutions: DLS and NMR Study	341
<i>Anna Brzozowska, Walther Burchard, Piotr Bernatowicz, Jacek Gregorowicz</i>	
(255x) Analyzing the Chemical and the Physical Characteristics of Crosslinked Zein Gel Films Cast from Acetic Acid Solutions	342
<i>Hazel Turasan, Emma Barber, Morgan Meiser, Józef Kokini</i>	
(255bo) Polyolefin Toughened Polypropylene: Mixing Thermodynamics	343
<i>Jun Xu, Frank S. Bates</i>	
(255ca) Development and Application of Newly Invented Polyimide Aerogel and Its Synthesizing Method.....	344
<i>Jinyoung Kim, Jinuk Kwon, Myeongsoo Kim, Daero Lee, Gunhwi Kim, Juheon Lee, Haksoo Han</i>	
(255bx) The Development of New Synthetic Approaches to Epoxide Polymerization	345
<i>Nathaniel A. Lynd</i>	
(255a) Fabrication of PBI Based Composite Membrane for Application in High Temperature Polymer Electrolyte Membrane Fuel Cells	346
<i>Sangrae Lee, Kwangwon Seo, Haksoo Han</i>	
(255cd) Influence of Sulfenamide Accelerators on Cure Kinetics and Properties of Natural Rubber Foam	347
<i>Pollwat Charoeythornkhajornchai, Chavakorn Samthong, Anongnat Somwangthanaroj</i>	
(255ax) Chain-By-Chain Monte Carlo Method for Non-Linear Polymerization.....	348
<i>Derya Demirel Ozcam, Fouad Teymour</i>	

(255ae) Improving Risk Assessment of Color Additives in Medical Device Polymers	349
Vaishnavi Chandrasekar, Dustin Janes, Christopher Forrey, David Saylor, Akhil Bajaj, Timothy Duncan, Jiwen Zheng, Kausar Riaz Ahmed, Ronald Brown, Brendan Casey	
(255al) Estimation of Kinetic Parameters for ATRP Polymerization from MWD Experimental Data Using the PGF Technique	350
Cecilia Fortunatti, Vivina Hanazumi, Cristian Vitale, Andres E. Ciolino, Mariano Asteasuain	
(255b) Pil-Derived Carbon	358
Rui Sun, Kelly M. Meek, Yossef A. Elabd	
(255am) Modeling of Reverse Atom Transfer Radical Polymerization in Miniemulsion Initiated By a Water-Soluble Radical Initiator	359
Ayelén Zurman, Mariano Asteasuain, Claudia Sarmoria, Adriana Brandolin	
(255v) Robust Anion Exchange Membranes for Alkaline Fuel Cell Applications	372
Gigi George, George Amobi Ozioko, Matthew Liberatore	
(255bk) Thermomechanical Properties of Polylactide/Oligomerized Castor Oil Blends	373
Amber R. Tupper, Bahareh Baheri, Sungyu Lee	
(255by) Kinetics of Prebiotic Depsipeptide Formation from the Ester-Amide Exchange Reaction	374
Sheng-Sheng Yu, Jay G. Forsythe, Ramanarayanan Krishnamurthy, Facunda M. Fernández, Nicholas Hud, F. Joseph Schork, Martha A. Grover	
(255c) Hybrid-Capacitors with Polyaniline/Carbon Electrodes Fabricated Via Simultaneous Electrospinning/Electrospraying	375
Tzu-Ling Chen, Yossef A. Elabd	
(255cp) Surface Coated Template Particles for Internally Functionalized Pores in Waterproof and Breathable Membranes	376
Mario Stucki, Wendelin J. Stark, Christoph R. Kellenberger	
(255ba) Pore Size Tuning of Poly(styrene-co-vinylbenzyl chloride-co-divinylbenzene) Hypercrosslinked Polymers: Insights from Molecular Simulations	377
Grit Kupgan, Thilanga Liyana-Arachchi, Coray M. Colina	
(255bd) Preparation and Timed Release Properties of Self-Rupturing Gels	378
Udaka K. de Silva, Yakov Lapitsky	
(255cm) Assessment of Wavelength Exponent Method for Monitoring Inverse Miniemulsion Polymerization of Acrylamide Using NIR Spectroscopy	379
Cristhiane Assenheimer, María Magdalena Espinola Colman, Reinaldo Giucidi	
(255ab) Complexation Driven Assembly of Block Copolyelectrolytes into Spherical Micelles, Flower-like Micelles and Macro-Networks	380
Samanvaya Srivastava, Marat Andreev, Adam Levi, David Goldfeld, Juan J. de Pablo, Matthew V. Tirrell	
(255ay) Modeling of Microgel Synthesis By Precipitation Polymerization	381
Franca A. L. Janssen, Michael Kather, Leif C. Kröger, Adel Mhamdi, Kai Leonhard, Andrij Pich, Alexander Mitsos	
(255ak) Molecular Design of Bio-Based Plasticizers for PVC	384
Hüsamettin D. Özären, Marcel Balçık, J Richard Elliott, M. Göktug Ahunbay	
(255bb) Responsive Hydrogen-Bonded Polymer Nanocomposites Containing Discrete Layers of Gold Nanoparticles Prepared By Spray-Assisted Layer-By-Layer Assembly	385
Josh O'Neal, Matthew Bolen, Yichen Dai, Jodie Lutkenhaus	
(255n) Charged Polysulfone Based Polymer Electrolytes for Lithium Ion Batteries	386
Kyle M. Diederichsen, Bryan D. McCloskey	
(255be) Dynamic Bonds for Mechanically-Triggered Crosslinking and Healing	387
Melissa B. Gordon, Norman Wagner, Christopher J. Kloxin	
(255bn) Thermodynamics of Sorption in Polyolefins in Liquid Media	388
Martina Podivinská, Lenka Krajkova, Klara Jindrová, Juraj Kosek	
(255bz) High Pressure Co-Polymerization of Ethene by ATRP	389
Maria I. Stimeier, Markus Busch, Carolina Toloza Porras, Jan N. E. Duchateau, Diego Castaneda, Peter Neuteboom, Fons Schreurs	
(255bf) Morphogenesis of Microstructured Polymer Foams Formed By Thermally Induced Phase Separation: Theoretical and Experimental Study	390
Andra Nistor, Adam Rygl, Michal Vonka, Malvina Voclova, Maria Minichova, Juraj Kosek	
(255az) The Task of Modeling Long Chain Branching in the LDPE Synthesis	391
Kristina M. Pflug, Markus Busch	
(255p) Anion Effects on the Structure and Ion Transfer Properties of Surface-Tethered Poly Ionic Liquids	392
Ian G. Njoroge, Brandon W. Bout, Xuanli Deng, G. Kane Jennings	
(255w) Study on Accelerated Aging of Biodegradable Poly(butylene adipate-co-terephthalate) Films for Mulch Applications	393
Qianqiu Xing, Linbo Wu, Wen-Jun Wang	
(255ce) Synthesis of Comb-Branched Polyolefinic Elastomers Using a Tandem System with FI-Ti and CGC-Ti Catalysts	394
Kailun Zhang, Wen-Jun Wang, Bo-Geng Li, Shiping Zhu	
(255t) Ferromagnetic Ink: Covalent Attachment of Charged Polymers on Magnetic Nanoparticles Enables Magnetic Deinking	395
Martin Zeltner, Robert N. Grass, Corinne Hofer, Wendelin J. Stark	
(255u) The Effect of Water on the Thermal Transition Observed in Poly(Allylamine Hydrochloride)-Poly(Acrylic Acid) Complexes	396
Yanpu Zhang, Ran Zhang, Fei Li, Luis D. Valenzuela, Maria Sammalkorpi, Jodie Lutkenhaus	

(255cc) Online Monitor and Control of the Real-Time Composition of Ternary Gas Mixture in Batch Reactor By Three Cascade Flow Meters during Propene Polymerization.....	397
Zheng Zheng, Bo-Geng Li	
(255e) Polymerized Ionic Liquid Triblock Terpolymers: Synthesis and Characterization	398
Patrick Lathrop, Yossef A. Elabd	
(255f) Donor-Acceptor Fully Conjugated Block Copolymers through Chain-Growth Polymerizations	399
Youngmin Lee, Qing Wang, Enrique D. Gomez	
(255cj) Single Polymerization Determination of Reactivity Ratios Via in Situ Spectroscopic Techniques and a Simple Nonterminal Model for Chain Copolymerization.....	400
Bryan S. Beckingham, Gabriel Sanoja, Nathaniel A. Lynd	
(255ac) Exploring the Effects and Interplay of Elastin-like Polypeptide (ELP) Charge and Hydrophobicity on McCherry-ELP Fusion Protein Self-Assembly	401
Carolyn Mills, Bradley D. Olsen	
(255ap) Improving Computational Cost of Monte Carlo Models in RAFT Polymerization Processes.....	402
Esteban Pintos, Adriana Brandolin, Claudia Sarmoria, Mariano Astesuain	
(255ad) Synthesis and Single Molecule Studies of DNA-PNIPAM Copolymers	408
Songsong Li, Charles M. Schroeder	
(255cf) Industrial Production of Styrene-Butadiene Rubber: Dynamic Modeling, Process Intensification, Sensitivity and Uncertainty Analysis.....	409
Alexandr Zubov, Juraj Kosek, Jiri Pokorny, Gürkan Sin	
(255bc) Metal Nanocrystals Embedded in Polymer Thin Films for the Reporting of Material State	410
Ian G. Njoroge, Cole D. Brubaker, Talitha M. Frecker, Sandra J. Rosenthal, Douglas E. Adams, G. Kane Jennings	
(255m) Ultrathin Gel Electrolyte Layers for Interfacial Control of Lithium Insertion Electrodes	411
Wyatt Tenhaeff	
(255g) Exploration of Nanofiber-Nanoparticle Electrodes Fabricated Via Simultaneous Electrospinning/Electrospraying for Ultra-Low Platinum Fuel Cells.....	412
Monica Hwang, Yossef A. Elabd	
(255ar) Atomistic Simulation of Dynamics of Individual Molecules in Entangled Polymers Undergoing Homogenous Shear Flow	413
Mohammad Hadi Nafar Sefiddashti, Brian J. Edwards, Bamin Khomami	
(255h) Surface Functionalization of SiO ₂ Nanoparticles in Nafion Nanocomposite Membranes for Use As Proton Exchange Membranes in Vanadium Redox Flow Batteries	414
Allison Jansto, Eric M. Davis	
(255ah) Zwitterion-Poly(Ethylene Glycol) Hydrogels Prevent Bacterial Adhesion.....	415
Kristopher W Kolewe, Todd Emrick, Jessica D. Schiffman	
(255af) Counteracting the Formation of β -Protein Fibrils By Natural Polysaccharides.....	416
Zeinab Veisi, Eva Lobbens, Leonid Breydo, Sadullah Cakolli, Vladimir Uversky, Ryan Toomey, Alcantar Norma	
(255bv) in-Plane Stress Measurement in Polymer Coatings As Induced By Vapor Sorption/Desorption Processes.....	417
Elisa Pavesi, Matteo Minelli, Ferruccio Doghieri	
(255j) Relaxation Dynamics and Water Transport in Nafion-SiO ₂ Nanocomposite Membranes	424
Apoory Balwani, Antonio Faraone, Eric M. Davis	
(255bq) The Kinetics of Organic Molecule Diffusion in Water Swollen Keratin Fibres Using GC-MS	425
Naima Ali, Daryl Williams	
(255ag) Self-Assembly of Di-Fmoc-L-Lysine Based Supramolecular Hydrogels	426
Seyed Meysam Hashemnejad, Santanu Kundu	
(255aj) 3 Use of Chaotic Flows for Microfabrication of Complex Tissue-like Structures and Bioinspired Catalytic Surfaces in Hydrogels.....	427
Grissel Trujillo-de Santiago, Mario M. Alvarez, Gyan Prakash, Mohamadmalhi Samandari, Gouri Chandrabhatla, Yu Shrike Zhang, Ali Khademhosseini	
(255co) Polyvinyl Alcohol (PVA) As Protective Colloid for Polystyrene Nanoparticles Synthesis Initiated By Oil-Soluble Initiator	428
Xiaojing Liu, Yangcheng Lu, Guangsheng Luo	
(255au) Molecular Simulations of Reverse Osmosis Aromatic Polyamide Membrane: Mechanical Properties, Desalination, Crosslinking Degree and Monomers' Isomer States	429
Md Symon Jahan Sajib, Tao Wei	
(255bw) Understanding the Influence of Different Interfacial Interactions on the Glass Transition Temperature and Self-Diffusion Coefficient in Unentangled Polymer Thin Films	430
Reika Katsumata, Austin Dulaney, Chae Bin Kim, Christopher J. Ellison	
(255av) Structural Evolution of a Polymeric Porous Medium Induced By Cross Flow or Tangential Flow of Solvent.....	431
Jee-Ching Wang	
(255bj) Organically Modified Clays As Rheology Modifiers and Dispersing Agents for Epoxy Packing of White LED	432
Shih-Huang Tung, Yu-Ting Tsai, Jiang-Jen Lin	
(255cp) Rapid End-Block Pullout in ABA Triblock Polymer Gels.....	433
Andrew Peters, Timothy P. Lodge	
(256h) Leveraging Computational Methods to Study the Properties of Star Di-Block Nanoparticles for Use in Targeted Drug Delivery	434
Lisa Felberg, Amber Carr, Teresa Head-Gordon, William Swope, Julia Rice	
(256k) Dextran Sodium Sulfate Exposure Affects Intestinal Mucus Integrity	435
Jaclyn Lock, Taylor Carlson, Albert Chen, Rebecca L. Carrier	

(256ae) Nanotopography Promotes Neuronal Differentiation of Human Induced Pluripotent Stem Cells	436
Liqing Song, Kai Wang, Yong Yang, Yan Li	
(256f) Interfacial Engineering of Biodegradable Polyelectrolyte Multilayer Thin Films for Sequential and Sustained DNA Delivery	437
Lingxiao Xie, Xiong Ding, Guangzhao Mao	
(256b) Gold Nanoconjugates: Targeted Drug Delivery, Drug Release, and Biodistribution	438
Fangchao Liu, Guangzhao Mao	
(256ah) A One-Step Method for Transferring Single Wall Carbon Nanotubes Onto a Hydrogel Substrate for Biomedical Applications	439
Mozhdeh Imaninezhad, Irma Kuljanishvili, Silviya P. Zustiak	
(256af) A Proliferation Switch of Fibroblasts in Alginate Microcapsules By in Situ Conjugation of RGD Peptides	440
Katsuhisa Kirita, Seiichi Ohta, Yasuyuki Sakai, Taichi Ito	
(256m) New Nanostructured Oxygen Sensors for Biological Applications	441
Jiapei Jiang, Xianshao Zou, Cheng Song, Ziyun Yang, Gang Li, Tingting Pan, Yanqing Tian	
(256v) Self-Assembled Di-Block Polymersomes As Artificial Immune Cells	442
Nicole Bassous	
(256ab) Spatiotemporal Modeling and Rapid Sealing of Ruptured Tissue with Plasmonic Nanocomposites	445
Russell Urie, Tanner Flake, Mitzi Thelakkaden, Madaline Mushaben, Chengchen Guo, Michael Jaffe, Jeff Yarger, Jeffrey J. Heys, Kaushal Rege	
(256d) Functionalized Ferri-Liposomes for Hyperthermia Induced Glioma Targeting and Brain Drug Delivery	446
Di Shi, Gujue Mi, Thomas Webster	
(256ai) High Efficient 3D Cell Preservation and Retrieval with Biocompatible Magnetic Hydrogel Particles	449
Lei Zhang, Jing Yang	
(256j) Self-Assembly of Semiconductor and Protein into Monodisperse Supraparticles	450
Gleiciani Silveira, Trung D. Nguyen, Joong Hwan Bahng, Sharon C. Glotzer, Nicholas A. Kotov	
(256k) Morphogen Presentation within Micro-Fiber/Collagen Composites for Ligament Tissue Engineering	451
Patrick Thayer, Linda A. Dahlgren, Aaron S. Goldstein	
(256a) Variations in Chitosan/Tripolyphosphate Micro- and Nanogel Yield and Their Two Key Effects on Protein Uptake	452
Yuhang Cai, Yakov Lapitsky	
(256g) Optimization of Cationic Nanogel Composition for Enhanced Co-Delivery of siRNA and Chemotherapeutics	453
David S. Spencer, David W. Beckman, Bryan C. Luu, Nicholas A. Peppas	
(256r) Investigations on the Mechanical Forces Required for Mechanochemical Synthesis of Hydroxyapatite	454
Ciara Griffin, Catherine Kelly, Denise Croker, Gavin Walker	
(256u) MIL-100(Fe) Synthesis and Characterization for Topical Treatment of Skin Diseases	457
Mehran Aliari Miavaghi, Cigdem Atalay-Oral, Ahmet Sirkecioglu	
(256c) Development of a Microdevice-Based Human Mesenchymal Stem Cell-Mediated Drug-Delivery System	458
Junfei Xia, Ang-Chen Tsai, Teng Ma, Jingjiao Guan	
(256ad) Preparation, Characterization and Comparison of Nano-Composite Scaffolds Based in Chitosan, Poly(lactic acid), Poly(Lactic Acid-Co-Glycolicacid), and Hydroxyapatite for Tissue Engineering Applications	459
Maria Verónica Carranza, Lucas Tomasovic, Reinaldo Giudici	
(256e) Silica-Polysaccharides Nanocomposite Nanoparticles As pH-Responsive Controlled Drug Release Carriers	460
Xin Fan, Allan E. David, Arthur Yang	
(256n) Production of Monodisperse Polyacrylamide & Poly (n-isopropyl acryl amide) (PNIPAM) Nanoparticles Using Chemtor Fiber Reactor with High Throughput	461
Sumit Jamkhindikar, Holly Stretz, John Massingill	
(256z) The Interdigitated Electrodes Stimulation of the Proliferation and Differentiation of Living Cells	462
Yong Min, Chen Zhao, Jia Liu, Tingting He	
(257m) Nanoporous Metal Films Formed with Aqueous Organic Templates	463
David B. Robinson, Patrick J. Cappillino, Christopher G. Jones, Gail F. Garcia, Benjamin W. Jacobs, Lucas R. Parent, Ilke Arslan	
(257s) Remotely Controllable Miniature Reactors: Magnetic Liquid Marbles	464
Erdem Alp, Ayse Gamze Colak, Nihal Aydogan	
(257l) Fabrication of Patterned Metal Oxide Thin Film By Using a Combination of Microreactor and PDMS Microchannels	465
Zhongwei Gao, Chih-hung Chang	
(257p) Synthesis Route to Sulfur Rich Porous Material for Thermal Insulation and Mercury Adsorption	466
Saeed Alhassan, Akhil Abraham, Omar Bashir Wani, Shairoz Khan	
(257j) Microwave-Assisted Fast Rout to Achieve 1T to 2H Phase Reversion of MoS ₂ in Solution: Processable Dispersions of 2H MoS ₂ Nanosheets and 2H-MoS ₂ /Pt Composite	467
Danyun Xu, Yuanzhi Zhu, Wenchoa Peng, Guoliang Zhang, Xiaobin Fan	
(257b) Metal-Organic Frameworks Coated Opto-Electronic Gas Sensor Incorporated with Copper Sulfide Nanostructured Thin Films	468
Yujing Zhang, Xinyuan Chong, Ki-Joong Kim, John P. Baltrus, Paul R. Ohodnicki, Alan Wang, Chih-hung Chang	
(257q) Crumpled P-Rich Metal Phosphide/Rgo Composite Powders for Advanced Li-Ion Batteries	469
Seung Ho Choi, Seung Bin Park, Jang Wook Choi	
(257i) Hydrothermal Synthesis of TiO ₂ Nanomaterials with Ethylenediamine	470
Taiga Kitora, Masanori Ochi, Tatsushi Matsuyama, Junichi Ida	
(257t) Development of a Sensing Device with an Integrated Plasmas Generation Unit	471
Fei-Hung Huang, Cheng-che Hsu	

(257f) Gas Separation Performance Enhancement of Zeolitic Imidazolate Framework ZIF-8 Membranes Via Post Synthetic Ligand Exchange.....	472
<i>Moon Joo Lee, Hyuk Taek Kwon, Hae-kwon Jeong</i>	
(257a) Compressive Mechanical Properties of Metal-Organic Framework (MOF) Aerogels Prepared By Supercritical Drying.....	473
<i>Zhang Liu, Wei Han, King Lun Yeung</i>	
(257d) Preparation of Graphene-MOFs Composite Aerogels.....	474
<i>Weiyang Chen, Zhang Liu, King Lun Yeung</i>	
(257u) Raman Spectroscopic Characterization of the C-S-H and C-a-S-H Structures and Investigation of Their Behavior in Atmospheric CO ₂	475
<i>Sinem Ortaboy, Jiaqi Li, Rupert J. Myers, Guoqing Geng, Paulo J. M. Monteiro, Roya Maboudian, Carlo Carraro</i>	
(257n) Micro-scale Cell Patterning Based on Tunable CO ₂ Laser System.....	476
<i>Wenjun Zheng, Sichao Hou, Ming Su</i>	
(257v) RB5 Dye Removal Using a Mexican Natural Zeolite (MNZ) in Solution.....	477
<i>Jose Domenzain-Gonzalez, Jose J. Castro-Arellano, Luis A. Galicia-Luna, Roberto T. Hernandez-Lopez, Martin Rodriguez-Cruz</i>	
(257r) Developing Highly Sensitive Chip Nanocalorimeters Based on the Thermoelectric Effect.....	478
<i>Jinhye Bae, Haitoa Zhang, Lu Wu, Joost J. Vlassak</i>	
(257w) Hull Cell Combinatorial Synthesis of Oxygen Evolution Catalysts	479
<i>Jonathan Koonce</i>	
(258f) Composite Metal Oxide/Nanocarbon Materials As High Performance Anodes for Next-Generation Automotive Li-Ion Batteries.....	480
<i>Alessandro Palmieri, Mengchen Liu, Ying Liu, Neil Spinner, William E. Mustain</i>	
(258a) Production of Monodisperse Lithium Carbonate NANO-Particles, to be USED As Sacrificial ANODE Template for Direct Acid FUEL CELLS	481
<i>Sashankha Tallapudi, Holly Streitz, John Massingill</i>	
(258g) Rapidly Exfoliation of Layered Covalent Triazine-Based Frameworks into Quantum Dots for Selective Detection of Cu ²⁺ Ions.....	482
<i>Yuanzhi Zhu, Danyun Xu, Wenchao Peng, Guoliang Zhang, Xiaobin Fan</i>	
(258c) Utilization of MEMS Techniques to Deterministically Engineer High Power Li-Ion Battery Electrodes	483
<i>Michael J. Synodis, Sue Ann Bidstrup-Allen, Mark G. Allen</i>	
(258k) Harnessing Disorder in a Novel Nanomaterial for Light Harvesting Applications	484
<i>Megan Webster, Marco Castaldi, Ilona Kretzschmar</i>	
(258h) Controlling the Absorption Spectra of Transition Metal Doped Nanostructures.....	485
<i>Pragathi Danapaneni, James Dorman</i>	
(258j) Semiconducting Perovskite Oxides (ABO ₃ : A = La; B = Cr, Mn, Fe) for Photocatalytic Reduction of CO ₂	486
<i>Debitanu Maiti, Huong T. Ngo, Divya Suresh, Babu Joseph, John Kuhn, Venkat R. Bhethanabotla</i>	
(258e) Controllable Preparation of Ni-Co Nanosheets Covered Nanocages Via Acid Etching with Enhanced Electrochemical Properties.....	487
<i>Zijian Lv, Qin Zhong, Yunfei Bu</i>	
(258b) Graphene/Conducting Polymer Composite Fibers for Wearable Energy Storage.....	490
<i>Chen Zhao, Yong Min</i>	
(259k) Crosslinker Length Affects the Modulus of Poly(acrylamide)-Silica Nanoparticle Hydrogel Composites.....	491
<i>Andrew Chang, Josergio Zaragoza, Prashanth Asuri</i>	
(259b) Synthesis and Characterization of Poly(Acrylic Acid) Coated Magnetite	492
<i>Masanori Ochi, Hikaru Sugihara, Satsuma Shimazaki, Junichi Ida, Tatsushi Matsuyama, Hideo Yamamoto</i>	
(259e) Nitrogen-Functionalized Graphene Oxide By Supercritical Ammonia for Carbon Dioxide Adsorption.....	493
<i>Fritzie Hannah Baldovino, Armando Quitain, Tetsuya Kida, Nathaniel Dugos, Susan Roce</i>	
(259g) Synthesis of Porous Aggregates Made of Nitrogen-Containing Polymer Nanoparticles Incorporating Noble Metals for Catalysis.....	494
<i>Anna Beltzung, Saravanan Janakiram, Claudio Colombo, Hua Wu, Giuseppe Storti, Massimo Morbidelli</i>	
(259o) Hydrothermal Synthesis of Composite Zeolite a and X Coatings	495
<i>Cigdem Atalay-Oral, Melkon Tatlier</i>	
(259p) Design of Corrosion Inhibitors in Concrete Pore Solution: Modelling and Experimentation	496
<i>Sai Prasanna Chinthalapudi, Donald P. Visco, Omar Rosas</i>	
(259c) Characterization and Synthesis of Polypropylene/Graphene Nanocomposite Materials	497
<i>Adarsh Bafana, Xingru Yan, Suying Wei, John Zhanhu Guo, Evan K. Wujcik</i>	
(259i) Surface Modifications of Superparamagnetic Iron Oxide Nanoparticles with Polylactic Acid-Polyethylene Glycol Diblock Copolymer and Graphene Oxide for a Protein Delivery Vehicle	498
<i>Linh Doan, Megha Karatela, Vu Phan, Sumit Arora, David L. Cocke, Srinivas Palanki, Evan K. Wujcik</i>	
(259q) Aligned HNT for Mechanical Reinforcement, Abrasion Resistance, and Transparency in Solar Cell Coatings	499
<i>Kenan Song, Roberta Polak, Khalid Askar, Michael F. Rubner, Robert E. Cohen</i>	
(259n) Impedance Analysis of Ion Transport through Supported Lipid Bilayers on Accessible Mesoporous Silica Thin Films	506
<i>Shanshan Zhou, Stephen E. Rankin, Barbara L. Knutson</i>	
(272b) Electrochemical Gating of Charge Transport in Radical Polymers for Colorless, Transparent, and Ambipolar Organic Transistors	507
<i>Seung Hyun Sung, Bryan W. Boudouris</i>	
(272c) Direct, Single-Step Alignment of Solution-Sheared Donor-Acceptor Polymer Thin Films and Factors Influencing Their Deposition.....	508
<i>Leo Shaw, Pascal Hayoz, Ying Diao, Julia A. Reinschach, John To, Michael Toney, R. Thomas Weitz, Zhenan Bao</i>	

(272d) Influence of Crystalline Anisotropy on Localized Surface Plasmon Resonance of Semiconductor Nanocrystals	509
<i>Ankit Agrawal, Jongwook Kim, Franziska Krieg, Amy Bergerud, Delia J. Milliron</i>	
(272e) Inorganic Chiroptical Nanomaterials: Design Strategies and Origin of Homochirality	510
<i>Jihyeon Yeom, Nicholas Kotov</i>	
(277a) Biomaterials for Human Pluripotent Stem Cell Derived Midbrain Dopaminergic Neuron Generation and Transplantation to Treat Parkinson's Disease	511
<i>Maroof M. Adil, Gonçalo M.C. Rodrigues, David V. Schaffer</i>	
(277b) Engineering an Electroactive Hydrogel for Tissue Engineering Applications	512
<i>Andrew Spencer</i>	
(277d) Modulation of Inflammatory Response for Accelerated Tissue Vascularization and Bone Regeneration	515
<i>Ehsan Jabbarzadeh, Katy Rutledge, Maria Yanez</i>	

VOLUME 2

(277e) The Impact of Decellularization Agents on Renal Tissue Extracellular Matrix	516
<i>Nafiseh Poornejad, Lara Schaumann, Travise Neuberger, Sarah Chamber, Beverly L. Roeder, Alonzo Cook</i>	
(277g) Electrospun Silk with Selenium Nanoparticles for Antibacterial Skin Applications	517
<i>Stanley Chung, Thomas J. Webster</i>	
(277h) Engineered Cellulose-Based Cell Culture Platforms to Improve Human Health	518
<i>Gulden Camci-Unal</i>	
(278a) Modulating Cell-Matrix Interactions Is an Effective Method to Control Cell-Cell Junctions and Thus Improve the Predictive Capability of the Caco-2 in Vitro Model of Drug Permeability	519
<i>Daniel R. Hunt, Ruby E. Dewi, Rebecca L. DiMarco, Sarah C. Heilshorn</i>	
(278b) Establishing Mechanically Active Synthetic Mucosal Interface in a Multi-Well Plate	520
<i>Abhinav Sharma, Neil S. Forbes, Jungwoo Lee</i>	
(278c) Recapitulating Liver Fibrosis in Vitro By Recreating the Fibrotic Milieu	521
<i>Vaishali Natarajan, Eric J. Berglund, Srivatsan Kidambi</i>	
(278d) Micropatterned Hydrogels to Promote Alignment in Co-Cultures Systems for an in Vitro Neuromuscular Model	522
<i>Jonathan Soucy, Nasim Annabi, Ryan Koppes</i>	
(278e) Multi-Zonal Three-Dimensional in Vitro Culture Model of Growth Plate Cartilage Using Alginate Hydrogel Scaffolds	523
<i>Taylor D. Laughlin, Alek G. Erickson, Andrew T. Dudley, Angela K. Pannier</i>	
(278f) High-Throughput Drug Screening Using 3D Micro Organotypic Liver Models	524
<i>Sophia Orbach, Padmavathy Rajagopalan</i>	
(278g) Wnt-YAP Interactions During Neural Tissue Patterning of Human Induced Pluripotent Stem Cells	525
<i>Julie Bejoy, Liqing Song, Yan Li</i>	
(278h) 3-D Spheroid Model of Human Adipose-Derived Stem Cells for Superior Adipogenic Differentiation	526
<i>Paul A. Turner, Bhuvaneswari Gurumurthy, Amol V. Janorkar</i>	
(291a) Exploring the Dispersity-Enhanced Stimulus Response and Bacterial Release in Polyelectrolyte Brushes	527
<i>Vivek Yadav, Megan L. Robertson, Jacinta C. Conrad</i>	
(291b) Water Transport in PS-B-PEO Copolymer Membranes	528
<i>Onyekachi Oparaji, Daniel Hallinan</i>	
(291c) Molecular Simulation of Flow-Enhanced Nucleation in Monodisperse and Bidisperse Alkane Melts	529
<i>David A. Nicholson, Gregory C. Rutledge</i>	
(291d) All-Conjugated Block Copolymer Additives for Organic Solar Cells	530
<i>Jorge Mok, Dylan Kipp, Luis Hasbun, Joseph Strzałka, Venkat Ganeshan, Rafael Verdúzco</i>	
(291e) Chemical Stability and Ion Transport in Polymerized Ionic Liquid Anion Exchange Membranes	531
<i>Kelly M. Meek, Jacob Nykaza, Rui Sun, Carl L. Willis, Yossef A. Elabd</i>	
(291f) A Stretchable Graphitic Carbon/Si Anode Enabled by Conformal Coating of a Self-Healing Elastic Polymer	532
<i>Jeffrey Lopez, Zheng Chen, Yongming Sun, Yi Cui, Zhenan Bao</i>	
(291g) Large Area Graphene Nanoribbons By Wetting Transparency-Assisted Block Copolymer Lithography	539
<i>Reika Katsumata, Maruthi N. Yogeesh, Helen Wong, Sunshine X. Zhou, Stephen Sirard, Richard D. Piner, Zilong Wu, Wei Li, Alvin L. Lee, Mattev Carlson, Michael J. Maher, Deji Akinwande, Christopher J. Ellison</i>	
(291h) Recyclable Cross-Linked Polymer Networks Via One-Step Controlled Radical Polymerization	540
<i>Kailong Jin, Lingqiao Li, John M. Torkelson</i>	
(291i) Single Polymer Dynamics of Linear and Circular Chains in Semi-Dilute Solutions	541
<i>Kai-Wen Hsiao, Charles M. Schroeder</i>	
(305a) Electromagnetic Wave Absorbing Polymer Nanocomposites	542
<i>Qingliang He, Jiang Guo, Alexandra Galaska, Hu Liu, Xingru Yan, Hailong Lyu, Jiurong Liu, Kunlun Hong, Zhanhu Guo</i>	
(305b) Bio-Inspired Sensitive and Reversible Mechanochromisms Via Surface Engineering	543
<i>Songshan Zeng, Dianyun Zhang, Wenhan Huang, Zhao Feng Wang, Stephan Freire, Xiaoyuan Yu, Andrew Smith, Emily Huang, Helen Nguon, Luyi Sun</i>	
(305c) Tuning the Dynamics of Moisture Responsive Wrinkles	544
<i>Songshan Zeng, Dianyun Zhang, Wenhan Huang, Andrew Smith, Stephan Freire, Vivian Garbellotto, Helen Nguon, Luyi Sun</i>	
(305d) Electrically Controllable Plasmonic Behavior of Gold Nanocube@Polyaniline Core/Shell Nanostructures	545
<i>Ju-Won Jeon, Petr A. Ledin, Jeffrey Geldmeier, James Ponder, Mahmoud A. Mahmoud, Mostafa El-Sayed, John Reynolds, Vladimir V. Tsukruk</i>	

(305e) Wearable Sensor Comprised of Nafion/Single-Walled Carbon Nanotubes/Metal Oxide Nanoparticles for the Detection of the Chemical Warfare Agent Simulant DMMP	546
<i>John M. Landers, Joel Baptist, Dmitry Ruckodanov, Kenneth Zong, Alexander V. Neimark</i>	
(305f) Study of Functional Polymeric Materials for Water Remediation.....	547
<i>Kaldibek Abdiyev, Nurxat Nuraje, Zhexenbek Toktarbay, Yerbol Dauletov, Mariamkul Zhursumbaeva</i>	
(305g) Nanocomposite Kirigami As Strain-Tunable Optical Gratings	548
<i>Lizhi Xu, Xinzhi Wang, Nicholas A. Kotov</i>	
(305h) Fast Growth of Single Crystal Graphene and Application of Graphene in Catalytic Reactions	549
<i>Zhengtang Luo</i>	
(306a) The Influence of Surface Functionalization on Nanoparticle-Cellular Interactions.....	550
<i>Amanda Abraham, Vipul Bansal, Ravi Shukla</i>	
(306b) Synthesis and Characterization of Pegylated Self-Assembled Rosette Nanotubes As Drug Delivery Vehicles	551
<i>Yiwen Fan, Arthur Gonzales, Hicham Fenniri</i>	
(306c) Photoexcited Quantum Dots for Killing Multidrug-Resistant Bacteria	552
<i>Colleen Courtney, Samuel Goodman, Anushree Chatterjee, Prashant Nagpal</i>	
(306d) Chitosan-Coated Selenium Nanoparticles and Their Affects on Bacterial Growth Kinetics	553
<i>Nicholas De La Torre, Michelle Stolzoff, Thomas J. Webster</i>	
(306e) Targeted Silver Nanoparticles for Selective Cytotoxicity of Tumorigenic Endothelial Cells.....	554
<i>Aaliyah B. Shodeinde, Christopher Anderson</i>	
(306f) Cell Membrane-Camouflaged Nanomotors for Biodetoxification and Drug Delivery	555
<i>Jinxing Li, Joseph Wang</i>	
(317a) Mesostructure and Pore Size Distribution of Mesoporous Silica / Anodic Alumina Hierarchical Membranes Tuned with Ethanol.....	556
<i>Silo Meoto, Marc-Olivier Coppens</i>	
(317b) Creation of Highly Textured Metal Oxide Films Using Wrinkled and Crumpled Graphene As Intercalation Templates	557
<i>Po-Yen Chen, Ian Wong, Robert Hurt</i>	
(317c) Pilot Scale Microwave-Assisted Conversion of Coal-Fly Ash to Zeolites	558
<i>Sohrab Rohani, Salman Bukhari</i>	
(317d) Colloidal Solution Combustion Synthesis of Crystalline Mesoporous CeO₂ Catalyst with Tunable Porosity.....	566
<i>Kwong-Yu Chan, Chi-Ying Vanessa Li, Albert A Voskanyan</i>	
(317e) Template-Mediated Control of Hierarchical Structure in Crystalline and Amorphous Porous Materials	567
<i>Daniel Gregory, Megha Sharma, Mark A. Snyder</i>	
(317f) Metal-Organic Framework Engineering: Directed Assembly from Molecules to Spherical Agglomerates	568
<i>Tu Lee, Hung Lin Lee, Yee Chen Tsai, Tsung Yan Lin, Yun Hsuan Chang</i>	
(317g) Self-Assembly of Designed Nanoscale Architectures from Assorted DNA-Framed Nanoparticles	569
<i>Oleg Gang, Wenyang Liu, Jonathan D. Halverson, Ye Tian, Alexei V. Tkachenko</i>	
(317h) Self-Assembly and Chiroptical Response of Homochiral Semiconductor Nanohelices	570
<i>Wenchun Feng, Ji-Young Kim, Xinzhi Wang, Calcaterra Heather, Nicholas Kotov</i>	
(334a) Transformable Liquid-Metal Nanomedicine.....	571
<i>Yue Lu, Quanyin Hu, Yiliang Lin, Frances Ligler, Michael D. Dickey, Zhen Gu</i>	
(334b) Maintenance of Neural Progenitor Cell "Stemness" in 3D Hydrogels Requires Matrix Remodeling	572
<i>Christopher M. Madl, Ruby E. Dewi, Cong Dinh, Kyle Lampe, Duong Nguyen, Annika Enejder, Sarah C. Heilshorn</i>	
(334c) Combining Simulation and Spectroscopy to Determine the Structure and Orientation of a Carbohydrate Binding Module (CBM)-Inspired Model Peptide on Cellulose	573
<i>Kayla Sprenger, Tobias Weidner, Jim Pfleiderer</i>	
(334d) Award Session: Plasmonic Collagen Nanocomposites for Rapid Tissue Sealing and Repair.....	574
<i>Russell Urié, Madaline Mushaben, Tanner Flake, Michael Jaffe, Jeffrey J. Heys, Kaushal Rege</i>	
(334e) Chitosan-Coated Selenium Nanoparticles for the Treatment of Skin Infections	575
<i>Michelle Stolzoff, Nicholas De La Torre, Thomas J. Webster</i>	
(334f) Ligand-Targeted Conjugate Systems for Delivery of siRNA to Tumors	576
<i>Hok Hei Tam, Omid Veiseh, Robert Langer, Daniel G. Anderson</i>	
(334g) Sustained Transgene Expression Via Substrate Mediated Gene Transfer Results from Multiple Transfection Events.....	577
<i>Norman Truong, Tatiana Segura</i>	
(334h) Zwitterionic Gel Encapsulation Promotes Protein Stability, Enhances Pharmacokinetics and Reduces Immunogenicity	578
<i>Peng Zhang, Fang Sun, Shaoyi Jiang</i>	
(340a) Janus-like Meso-Porous Hybrid Frameworks for Super-Efficient and Cost-Competitive Water Desalination By Membrane Evaporation	579
<i>Ludovic F. Dumée, Zhifeng Yi, Peter Hodgson, Lingxue Kong</i>	
(340b) Electrospun Nanocarbon Fibers for the Chromium Removal in Water.....	580
<i>Yang Lu, Guoqiang Yu, John Zhanhu Guo, Siying Wei, Evan K. Wujcik</i>	
(340c) Chemically Crosslinking Graphene Oxide and Chitosan for Scalable Water Treatment Membranes	581
<i>Jose Mattei-Sosa, Chris Griggs, Victor Medina</i>	
(340d) Metal-Organic Framework/β-Alumina Composite With novel Geometry for Enhanced Adsorptive Separation.....	582
<i>Chenghong Wang</i>	
(340e) Multifunctional Epoxy Nanocomposites.....	583
<i>Hongbo Gu, Zhanhu Guo</i>	

(340f) Graphene/Aramid Nanofibers Composite Electrodes for Structural Energy and Power.....	584
<i>Se Ra Kwon, Jodie Lutkenhaus</i>	
(340g) Composites Based on Biomimicry of the <i>Prunus</i> Spp. Seed Cyanide Defense System as Alternative to Pesticides.....	585
<i>Carlos A. Mora, Jonas G. Halter, Cornel Adler, Andreas Hund, Heidrun Anders, Kang Yu, Wendelin J. Stark</i>	
(340h) Preparation and Photocatalytic Properties of g-C3N4/TiO2/BiVO4.....	586
<i>Xinlin Shen, Youliang Wang, Kebin Li, Fengyun Wang</i>	
(346a) Diffusion of Ions in Charged and Uncharged Polymers (Invited Talk).....	588
<i>Benny D. Freeman</i>	
(346b) A Predictive Model for the Determination of Mixed Gas Transport and Solubility in Glassy Polymers	589
<i>Enrico Toni, Matteo Minelli, Giulio C. Sarti</i>	
(346c) In Situ Pressure-Contact Time-Resolved Fourier Transform Infrared Attenuated Total Reflectance Spectroscopy: A New Method to Measure Liquid Diffusion in Free-Standing Polymer Films	590
<i>Melissa Santos, Yossef A. Elabd</i>	
(346d) Penetrant and Ion Dynamics in Model Microphase Separated Copolymers.....	591
<i>Youngmi Seo, Jonathan R. Brown, Lisa M. Hall</i>	
(346e) The Kinetics of Diffusion in Keratin Fibres Using Mass Spectrometry	592
<i>Naima Ali</i>	
(346f) A Combined Experimental and Modeling Approach to Study the Sorption and Diffusion Phenomena in Materials.....	593
<i>Hom Sharma, Stephen Harley, Yunwei Sun, Elizabeth Glascoe</i>	
(346g) Triptycene-Containing Polybenzoxazole (PBO)-Based Membranes: New Synthesis and Gas Transport Properties	594
<i>Shuangjiang Luo, Ashish Kushwaha, Junyi Liu, Haiqing Lin, Ruilan Guo</i>	
(346h) Water Sorption and Diffusion in Nanofibrillated Cellulose Films and Composites	595
<i>Davide Venturi, Matteo Minelli, Marco Giacinti Baschetti</i>	
(346i) Diffusion in Pebax Block Copolymers: Effects of Diffusant Mass and Polymer Composition	596
<i>Dustin Janes, Vaishnavi Chandrasekar, Brendan Casey, Kyle Ludwig</i>	
(353b) Plasmon-Enhanced Photocatalytic CO₂ Reduction on Nanostructured Composite Electrodes	597
<i>Elizabeth Corson, Erin Creel, Youngsang Kim, Fen Qiu, Robert Kostecki, Jeffrey Urban, Bryan D. McCloskey</i>	
(353c) Photon, Electron, and Ion Management in Artificial Photosynthesis: Realizing Efficient Renewable Energy to Fuel Conversion.....	598
<i>Ke Sun, Xinghao Zhou, Fadl Saadi, Ivan Moreno-Hernandez, Yanjin Kuang, Erik Verlage, Jimmy John, Matthew Shaner, Shu Hu, Matthew McDowell, Chengxiang Xiang, Bruce S. Brunschwig, Charles Tu, Nathan S. Lewis</i>	
(353d) Tandem Core-Shell Si-Ta3N5 Photoanodes for Photoelectrochemical Water Oxidation.....	599
<i>Ieva Narkeviciute, Pongkarn Chakhranont, Christopher Hahn, A.J.M. Mackus, Stacey F. Bent, Thomas F. Jaramillo</i>	
(353e) Heterostructured c-Si/BiVO₄ Core-Shell Tandem Photoanode for Unassisted Photoelectrochemical Water Splitting.....	600
<i>Pongkarn Chakhranont, Thomas R. Hellstern, Joshua McEnaney, Thomas F. Jaramillo</i>	
(353f) The Fabrication of Cu2o/g-C3N4/WS2 Triple-Layered Photocathode for Photoelectrochemical Hydrogen Evolution.....	601
<i>Xintian Xu, Yuanzhi Zhu, Xiaobin Fan, Guoliang Zhang, Wenchao Peng</i>	
(361a) High Chi Block Copolymers and Photopatternable Interfaces for Controlling Thin Film Structure (Invited Talk).....	602
<i>Christopher J. Ellison</i>	
(361b) Role of Chain Semiflexibility and Density Fluctuations in Diblock Copolymer Phase Behavior.....	603
<i>Shifan Mao, Quinn MacPherson, Andrew J. Spakowitz</i>	
(361c) Polymer Nanocomposite Films with Extremely High Filler Fractions Via Capillary Rise Infiltration (CaRI)	604
<i>Daeyeon Lee, Jyo Lyn Hor, Yijie Jiang, Kevin Turner</i>	
(361d) Tuning Nanophase Separation Behavior in Segmented Polyhydroxyurethanes Via Judicious Choice of Soft Segment.....	605
<i>Goliath Beniah, Brice E. Uno, Tian Lan, William Heath, Karl A. Scheidt, John M. Torkelson</i>	
(361e) The Effect of Nanoparticle Loading on Morphology and Function of Nanoparticle-Loaded Micelles.....	607
<i>Gauri M. Nabar, Barbara E. Wyslouzil, Jessica O. Winter</i>	
(361f) Surface-Initiated Polymerization of Ionic Liquids	608
<i>Ian G. Njoroge, G. Kane Jennings, Maxwell W. Matson</i>	
(361g) Assembly of pH-Sensitive Gold Nanoparticles in Strong Polyelectrolyte Brushes.....	609
<i>Dikran Kesal, Stephanie Christau, Patrick Krause, Tim Möller, Regine von Klitzing</i>	
(361h) Interaction of PCL Based Nanopolymeric Micelles with Model Lipid Bilayers Via Explicit and Implicit Solvent Coarse-Grained Simulations	610
<i>Abhinav S. Raman, Joshua Pajak, Y.C Chiew</i>	
(361i) Novel Stimuli-Triggered Self-Healing and Strengthening Polymers	611
<i>Melissa B. Gordon, Norman Wagner, Christopher J. Kloxin</i>	
(365a) Tungsten Oxide Decorated Zinc Telluride for the Photoelectrochemical Water Splitting	612
<i>Chengeto Kazuva, Rekisha Pootoon, Jonathan Mbah</i>	
(365b) Molybdenum Silicide and Disulfide Protection Schemes for Silicon Photocathodes	613
<i>Laurie A King, Thomas R. Hellstern, Thomas F. Jaramillo</i>	
(365c) Utility of Dual-Layer Photoanode for Photoelectrochemical Biomass Conversion.....	614
<i>Ivy Wu, David Chadderton, Wenzhen Li, Matthew G. Panthani</i>	

(365d) Molybdenum Disulfide As a Protection Layer and Catalyst for Gallium Indium Phosphide Solar Water Splitting Photocathodes	615
<i>Reuben J. Britto, Jesse D. Benck, James L. Young, Todd G. Deutsch, Christopher Hahn, Thomas F. Jaramillo</i>	
(365e) Bioelectricity Generation from a Carbon Soot Electrode Using a Paper Based Microbial Fuel Cell	616
<i>Ramya Veerubhotla, Saikat Chakraborty, Debabrata Das</i>	
(365f) Sustainable Power Sources Based on High Efficiency Thermopower Wave Devices	617
<i>Albert Tianxiang Liu, Sayalee G. Mahajan, Anton Cottrell, Yuichiro Kunai, Stephen Gibbs, Michael Strano</i>	
(365g) Nanostructuring, Oxygen Anion Diffusion Study and Electrochemical Performance of Double Perovskite Electrode for SOFC	618
<i>M. Ali Haider, Uzma Anjum</i>	
(365h) Application of Photosystem I Multilayer Films for Photovoltage Enhancement in Aqueous Natural Dye Sensitized Solar Cells	619
<i>Maxwell Robinson, Marie Armbruster, David Cliffel, G. Kane Jennings</i>	
(365i) Compositions and Structures of High-N-Content Mesoporous Carbon Oxygen Reduction Electrocatalysts	620
<i>Niels Zussblatt, Nina Fechler, Markus Antonietti, Bradley F. Chmelka</i>	
(388a) High Throughput Analysis of Alloy Corrosion Across Composition Space: AlxFeyNi1-X-Y (x = 0 → 1, y = 0 → 1-x)	621
<i>Andrew J. Gellman, Matthew Payne, James B. Miller</i>	
(388b) A Novel Route to Phase Diagrams: Recovering 0 Kelvin Hamiltonian Parameters from High-Temperature Disordered Phases	622
<i>Elizabeth Decolvenaere, Michael Gordon, Anton Van der Ven</i>	
(388c) High-Throughput Prediction of Finite Temperature Free Energies of Solids	623
<i>Christopher J. Bartel, Ann M. Deml, Samantha L. Miller, Alan W. Weimer, Stephan Lany, Charles B. Musgrave, Vladan Stevanovic, Aaron Holder</i>	
(388d) First-Principles Based Design of Low Tolerance Factor Perovskites	624
<i>Sung Gu Kang, Craig J. Fennie</i>	
(388e) Descriptors and Approaches for Characterization and Screening of Inorganic Materials Databases	625
<i>Nils Zimmermann, Maciej Haranczyk</i>	
(388f) Towards More Complete Energy Landscapes of Zeolites: The Energetics of Zeolites with Comprehensive Ranges of Framework Topologies and Different Substituting Tetrahedral Atoms	626
<i>Watcharop Chaikittisilp, Koki Muraoka, Tatsuya Okubo</i>	
(388g) Compilation and Analysis of the Computation-Ready, Experimental Metal-Organic Frameworks: Core MOF Version 2.0	627
<i>Yongchul G. Chung, Benjamin Bucior, Emmanuel Haldoupis, Hongda Zhang, Sanliang Lin, Jiayi Chen, Marija Millisavljevic, Jeffrey S. Camp, Ben Slater, Maciej Haranczyk, David Sholl, J. Ilja Siepmann, Randall Q. Snurr</i>	
(388h) Synthesis of MOF-74(Ni) Using Segmented-Flow and Microwave-Assisted Methods with Chemical Modulation	628
<i>Gustavo Albuquerque, Gregory S. Herman</i>	
(395a) Injectible Hydrogels for Tandem Cell/Gene Transplantation	629
<i>Abbygail A. Foster, Lei Cai, Ruby E. Dewi, Sarah C. Heilshorn</i>	
(395b) Tailoring the Mechanical Properties of Multi-Functional Polyampholyte Hydrogels for Tissue Engineering Applications	630
<i>Matthew T Bernards, Marcos N. Barcellona, Siyu Cao</i>	
(395c) Cell Delivery Systems Via Complex Emulsion Templated Hydrogels	631
<i>Todd Thorson, Ali Mohraz, Elliot Botvinick</i>	
(395e) Non-Invasive Structural Investigation of Renal Scaffold By Magnetic Resonance Imaging (MRI)	632
<i>Nafiseh Poornejad, Jonathan J. Wisco, Beverly L. Roeder, Alonso Cook</i>	
(395f) Bi-Modal Porous Poly(ϵ-caprolactone) Scaffolds Fabricated Via Two-Step Depressurization Supercritical CO₂ Foaming	633
<i>Chuan-Xin Chen, Xin Xin, Yi-Xin Guan, Shan-Jing Yao</i>	
(395g) Controlled Released Antibacterial Ag/Poly (L-lactic acid)/Poly(vinyl alcohol) (Ag/PLLA/PVA) Core–Shell Nanofibers Prepared By Cold Atmospheric Plasma (CAP) Treatment and Electrospinning	634
<i>Mian Wang, Michael Keidar, Thomas Webster</i>	
(395h) Peptide-DNA Hybrid Nanomaterials for Biology and Regenerative Medicine	635
<i>Ronit Freeman, Nicholas Stephanopoulos, Samuel I. Stupp</i>	
(396a) Programmable Immunotherapeutic Biomaterials to Potentiate Chemotherapy	636
<i>Nisarg J. Shah, Angelo S. Mao, Ting-Yu Shih, David T. Scadden, David J. Mooney</i>	
(396b) Surface Presentation of Adjuvants on Protein Nanoparticle Vaccines	637
<i>Timothy Z Chang, Bao-Zhong Wang, Julie A. Champion</i>	
(396c) Acetalated Dextran Microparticulate Subunit Anthrax Vaccine Formulated Using Coaxial Electrospray Preserves Toxin Neutralization and Enhances Protection	638
<i>Matthew D. Gallovis, Kevin L. Schully, Matthew G. Bell, Margaret A. Elberson, John R. Palmer, Christian A. Darko, Eric M. Bachelder, Barbara E. Wyslouzil, Andrea M. Keane-Myers, Kristy M. Ainslie</i>	
(396d) Engineering Lymph-Node Targeting Vaccines for Type 1 Diabetes	639
<i>Haipeng Liu, Meng Li</i>	
(396e) Silk Microneedle Skin Patches for Tunable HIV Subunit Vaccine Delivery	640
<i>Archana V. Boopathi, Anasuya Mandal, Talar Tokatlian, Yuting Li, Wade Wang, Dan Kulp, William Schief, Paula Hammond, Darrell J. Irvine</i>	
(396f) Enhanced Cancer Immunotherapy By Microneedle Patch-Assisted delivery of Anti-PD1 Antibody	641
<i>Yanqi Ye, Chao Wang, Gabrielle Hochu, Hasan Sadeghifar, Zhen Gu</i>	

(396g) Targeting and Altering In Vivo macrophage Responses with Modified Polymer Properties	642
<i>Kaitlin M. Bratlie</i>	
(396h) Chemokine Releasing Polymer Implants to Direct Immune Cell Migration in the Setting of Colon Cancer	644
<i>Kendall Murphy, Yu Zhang, Marj Pena, Michael Gower</i>	
(397a) Nanostructured Membranes and Functional Materials Based on Polymerized Ionic Liquids (Invited Talk)	645
<i>Rachel Segalman</i>	
(397b) Dynamics in Weakly-Ordered Oppositely-Charged Polyelectrolyte Complex Solutions	646
<i>Anand Rahalkar, Guangmin Wei, Samanvaya Srivastava, Matthew V. Tirrell, Vivek M. Prabhu</i>	
(397c) Ion-Containing Block Copolymers for Efficient Capture of a Chemotherapy Drug	647
<i>Hee Jeung Oh, Xi Chelsea Chen, Jay Yu, Nikolaos Petzotakis, Anand Patel, Steven Hetts, Nitash Balsara</i>	
(397d) Oligonucleotide – Peptide Complexes: Phase Control By DNA Hybridization	648
<i>Jeffrey Vieregg, Michael Lueckheide, Lorraine Leon, Amanda B. Marcil, Matthew V. Tirrell</i>	
(397e) Magnetic and Biocompatible Polymerized Ionic Liquids	649
<i>Gabriel E. Sanoja, Rachel Segalman</i>	
(397f) Sequestering Small Molecules in Polyelectrolyte Complex Coacervates	650
<i>Nicole Zacharia</i>	
(397g) Sequence Effects in Coacervate-Driven Self-Assembly	651
<i>Charles Sing, Mithun Radhakrishna, Tyler Lytle</i>	
(397h) Effect of Charge Patterning and Polymer Architecture on Polypeptide-Based Coacervates	652
<i>Li-Wei Chang, Brandon Johnston, Mithun Radhakrishna, Cameron Johnston, Jon Vélez, Rachel Letteri, Todd Emrick, Charles Sing, Sarah L. Perry</i>	
(397i) Phase Behavior of Weak Polyelectrolyte Materials	653
<i>Benjamin J. Sikora, Jonathan K. Whitmer</i>	
(410a) 1T-WS2 on Graphite Foam As a Binder-Free Electrode for Enhanced Hydrogen Evolution	654
<i>Xiaomeng Guo, Yuanzhi Zhu, Junyi Ji, Xiaobin Fan, Guoliang Zhang, Fengbao Zhang, Wencho Peng</i>	
(410b) Flame Synthesis of Highly Transparent and Robust Nano-Layers for Enhanced Photo-Electrochemical Water Splitting	655
<i>Antonio Tricoli</i>	
(410c) Investigation of the Use of Metal-Organic Frameworks for Combined Water Purification and Catalytic H2 Production	656
<i>Elton M. Dias, Camille Petit</i>	
(410d) Ni(OH)2 As a Hole Mediator for Visible Light-Induced Urea Photo-Oxidation	657
<i>Rong Zhao, James G. Radich</i>	
(410e) Study of Photocatalytic Activity of Nano Organic Hybrid Materials (NOHMs) for Photoelectrochemical Reduction of CO2	658
<i>Jessica Akemi Cimada da Silva, Kevin Kimura, Tobias Hanrath</i>	
(410f) Nanostructured Silicon Photocathodes for Solar Water Splitting	659
<i>Thomas R. Hellstern, Pongkarn Chakhranont, Laurie A King, Ieva Narkeviciute, Reuben J. Britto, David W. Palm, Jakob Kibsgaard, Christopher Hahn, Thomas F. Jaramillo</i>	
(410g) Remarkable Enhancement of Photocatalytic Hydrogen Production in Sensitized and N2/Ar Plasma Treated, Nanoporous TiO2 Films	660
<i>Syed Islam, Namal Wanninayake, Doo Young Kim, Stephen E. Rankin</i>	
(410h) Bifunctional Porous Materials for Combined CO2 Capture and Catalytic Conversion	661
<i>Angus Crake, Camille Petit</i>	
(419a) Using Polymer-Grafted Nanoparticle Monolayers to Investigate Chain Conformations and Scaling (Invited Talk)	662
<i>Guang Yang, Daniel Hallinan</i>	
(419b) Investigation of the Effects of Crosslinking on the Properties of Poly(ethylene oxide) Based Solid Polymer Electrolytes	663
<i>David Mackanic, Dawei Feng, Minah Lee, Zhenan Bao</i>	
(419c) Nanoconfined Polymerization: Kinetics and Thermodynamics	664
<i>Sindee L. Simon</i>	
(419d) Complexation of Zwitterionic Polyelectrolyte and Inorganic Nanocluster Macroion into Mechanically Strong Supramolecular Coacervate and Hydrogel	665
<i>Benxin Jing, Yingxi Elaine Zhu</i>	
(419e) Hybrid Stealth Liposomes: Addition of Pendant-Cholesterol Block Copolymers to Phospholipid Vesicles	666
<i>Kenneth Mineart, Shrinivas Venkataraman, Yi Yan Yang, James Hedrick, Vivek M. Prabhu</i>	
(419f) Structurally pH Responsive Nanghel Star Polymers for Use in Drug Delivery Applications	667
<i>Lisa Felberg, Anjali Doshi, Gregory Hura, Victoria Piunova, Robert Miller, Julia Rice, William Swope, Teresa Head-Gordon</i>	
(419g) Tailoring the Thermo-Responsiveness of Elastin-like Polypeptides with Short Charged Sequences	668
<i>Chang-yu Lin, Julie C. Liu</i>	
(419h) Redox-Active Organometallic Polymers for Environmental and Energy Applications	669
<i>Xiao Su, Johannes Elbert, Kai-Jher Tan, Timothy Jamison, T. Alan Hatton</i>	
(419i) Dynamic Asymmetry within Interfacial Polymer Layers on Nanoparticles and Their Consequences on Macroscopic Mechanical Properties of Polymer Nanocomposites	670
<i>Siyang Yang, Erkan Senses, Pinar Akcora</i>	
(463a) Multiblock Ionomers for Membrane Applications	671
<i>Matthew D. Green, Yi Yang, HeeRan Hong, Felicia Romero</i>	

(463b) Realizing the Potential of Micro-Phase Separated Block Copolymer Electrolytes: Ion Domain Connectivity Plays a Prominent Role in Ion Conduction	672
<i>Christopher G. Arges, Yu Kambe, Moshe Dolejsi, Guangpeng Wu, Tamar Segal-Peretz, Jiaxing Ren, Paul F. Nealey</i>	
(463c) Structure/Property Relationships in Polymer Membranes for Water Purification and Energy Applications	675
<i>Geoffrey M. Geise</i>	
(463d) Fundamental Water and Salt Transport Properties in Zwitterionic Polymers and Their Use for Membrane Surface Modification to Enhance Antifouling Properties	676
<i>Nima Shahkaramipour, Shawreen Shah, Sankara Narayanan Ramanan, Chong Cheng, Haiqing Lin</i>	
(463e) Water and Salt Transport in Polymer Membranes Prepared By Solvent-Free Melt Processing	677
<i>Hee Jeung Oh, Benny D. Freeman, Donald Paul, James E. McGrath</i>	
(463f) Influence of Fixed Charge Group Concentration on Ion Sorption in Ion Exchange Membranes	678
<i>Jovan Kamcev, Benny D. Freeman, Donald R. Paul</i>	
(463g) Mixed Ion Sorption and Transport in a Cation Exchange Polymer Based on Sulfonated Polystyrene	679
<i>Michele Galizia, Donald R. Paul, Benny D. Freeman</i>	
(463h) Using Inkjet Printing Devices to Fabricate Charge Mosaics from Chemically Tailored Copolymer Membranes	680
<i>Siyi Qu, Aaron Hunter, Sherwood Benavides, William A. Phillip</i>	
(468a) Understanding and Engineering Heterogeneous Materials at the Molecular Level	681
<i>Bradley F. Chmelka</i>	
(468b) New Paradigms in Crystal Engineering: Tailoring the Physicochemical Properties of Materials for Chemical and Biomedical Applications	682
<i>Jeffrey Rimer</i>	
(468c) Nanocrystal Electrochromic Smart Windows	683
<i>Delia J. Milliron, Anna Llordes, Yang Wang, Jongwook Kim</i>	
(468d) Electrochemical Effects in Thermoelectric Polymers	684
<i>Rachel Segalman</i>	
(468e) Biomaterials in Regenerative Engineering: Immunoengineering and Translation	685
<i>Jennifer H. Elisseeff</i>	
(474a) Chiroptical Activity Enhanced Nanoparticles	686
<i>Jihyeon Yeom, Nicholas Kotov</i>	
(474b) Polymer Coated Nanoparticle As Additives for Interfacial Modification	687
<i>Luqing Qi, Chen Song, George J. Hirasaki, Rafael Verduzco</i>	
(474c) Multifunctional Magnetic Nanoparticles By Surface Initiated Atom Transfer Radical Polymerization	688
<i>Martin Zeltner, Robert N. Grass, Corinne Hofer, Elia Schneider, Wendelin J. Stark</i>	
(474d) Gas-Phase Synthesis of Functional Nanoparticles for Energy Applicationsin	690
<i>De-Hao Tsai</i>	
(474e) Monolayer Assembly of Monodisperse Nanoparticles for Magnetic and Catalytic Applications	691
<i>Liheng Wu, Shouheng Sun</i>	
(474f) Design, Synthesis, and Structure-Function Relationship of Amphiphilic Organic Ligands for Stable Nanoparticle Dispersions in Various Solvents	692
<i>Kodai Ishikawa, Naoya Maeta, Yohei Okada, Hidehiro Kamiya</i>	
(474g) Hierarchical Nickel Carbide “Dandelion” Nanostructure: Controlled Synthesis and Potential Applications	693
<i>Mark T. Swihart, Liang Qiao</i>	
(491a) Graphene Nanoribbons As Conductive Pathways in Directly Deposited Silicon Nanofiber Anodes for High Performance Lithium-Ion Batteries	694
<i>Ghazal Shoorideh, Zhong Li, Srinivasan Chakrapani, Bharat Patel, Yong L. Joo, Adam Berry, Byunghee Ko</i>	
(491b) Si-Based Nanofiber Anodes for Li-Ion Batteries Prepared Using Particle/Polymer Electrospinning	695
<i>Ethan C. Self, Emily C. McRen, Ryszard Wycisk, Jagjit Nanda, Gao Liu, Peter N. Pintauro</i>	
(491c) In Situ Activation of Nitrogen-Doped Graphene-Based Materials Anchored on Graphite Foam for High-Performance Energy Storage	696
<i>Junyi Ji, Xingbin Lv, Yanfang Zhu, Hairong Yue, Wei Jiang, Changjun Liu, Lili Zhang</i>	
(491d) Solution Combustion Synthesis for High Performance ZnCo₂O₄ Anode in Lithium-Ion Batteries	697
<i>Ryan A. Adams, Vilas G. Pol, Arvind Varma</i>	
(491e) A General and Mild Approach to Controllable Preparation of Manganese-Based Micro/Nanostructured Bars for High Performance Lithium-Ion Batteries	698
<i>Weixin Zhang, Zeheng Yang</i>	
(491f) Advanced Energy Materials Derived from Bijels	699
<i>Jessica A. Witt, Daniel R. Mumm, Ali Mohraz</i>	
(491g) Sulfur Self-Doped Micro/Mesoporous Carbon Derived from Lignin and Its Application on Supercapacitor and Oxygen Reduction Reaction	700
<i>Muslum Demir, Ram B. Gupta</i>	
(511a) Towards Ambient Armor: Can New Materials Change Longstanding Concepts of Projectile Protection?	701
<i>Pingwei Liu, Michael Strano</i>	
(511b) Corrosion Protection of Aluminum Alloy Via Graphene-Polymer Nanocomposite Coatings	702
<i>Souvik De, Jodie Lutkenhaus</i>	
(511c) Persistently Auxetic Materials (PAMs): Engineering the Poisson Ratio of 2D Self-Avoiding Membranes Under Conditions of Non-Zero Anisotropic Strain	703
<i>Zachary Ulissi, Ananth Govind Rajan, Michael S. Strano</i>	

(511d) A Highly Active and Selective β-Nucleating Agent for Isotactic Polypropylene and Crystallization Behavior of β-Nucleated Isotactic Polypropylene Under Rapid Cooling.....	704
Shicheng Zhao, Zhong Xin	
(511e) Layered and Scrolled Nanocomposites with Aligned Semi-Infinite Graphene Inclusions at the Platelet Limit.....	705
Pingwei Liu, Zhong Jin, Georgios Katsikis, Lee Drahushuk, Steven Shimizu, Chih-Jen Shih, Eric D. Weitzel, Joshua Taggart-Scarff, Bo Qing, Krystyn J. Van Vliet, Richard Li, Brian Wardle, Michael Strano	
(511f) PMMA/TiO₂ One-Dimensional Photonic Crystal Films with Structural Colors	706
Lin Wang, Wei Ma, Bingtao Tang, Shufen Zhang	
(511g) Facile Fabrication of Highly Omnipobic and Self-Cleaning Surface Based on Water Mediating Fluorinated Hybrid Nanocomposite	707
Xiaoli Zhan, Cungian Wei, Qinghua Zhang, Fengqiu Chen	
(521a) Conjugated Polymer and Block Copolymer Additives in Bulk Heterojunction Opvs (Invited Talk).....	708
Jorge Mok, Dylan Kipp, Venkat Ganesan, Rafael Verduzco, Luis Hasbun, Joseph Strzalka	
(521b) Coarse-Grained Model of Conformational Disorder Effects on the Intra-Chain Electronic Properties of Polythiophenes	709
Joel Bombile, Michael J. Janik, Scott T. Milner	
(521c) Photo-Responsive Monomer for Light Mediated ROMP.....	710
Ishan Fursule, Qunfei Zhou, Brad Berron, Matthew Beck	
(521d) Highly Controlled Synthesis of Poly(3-hexylthiophene) Using Droplet-Flow Microreactors.....	711
James Bannock, Wenmin Xu, Martin Heeney, John de Mello	
(521e) Approaches to Solution Processable n-Channel I^{F}-Conjugated Donor-Acceptor Co-Polymers and Device Applications.....	712
Zhibo Yuan, Boyi Fu, Elsa Reichmanis	
(521f) Enhancing Charge Transport Through Block Copolymer Architectures	713
Enrique D. Gomez, Thinh Le, Brandon Smith, Youngmin Lee	
(521g) Design of Nanostructured Polymer-Based Ordered Ferroelectric Diode Memory Elements.....	714
Seung Hyun Sung, Bryan W. Boudouris	
(521h) Role of Thermal Fluctuations on Local Lattice Disorder and Charge Transport in Conjugated Polymers	715
Wenlin Zhang, Scott T. Milner, Enrique D. Gomez	
(521i) Directing Multi-Scale Assembly and Alignment of Printed Conjugated Polymers	716
Ying Diao, Ge Qu, Erfan Mohammadi, Fengjiao Zhang	
(531a) Bio-Orthogonally Crosslinked, Engineered Protein Hydrogels with Tunable Mechanics and Biochemistry for Cell Encapsulation.....	717
Christopher M. Madl, Lily M. Katz, Sarah C. Heilshorn	
(531b) Synthesis and Characterization of Hyaluronic Acid and Heparin Thiol-Ene Hydrogels for the Spatial Sequestering of Bioactive Signals.....	718
Nicole J. Darling, Tatiana Segura	
(531c) Photo-Mediated Oxime Ligation As a Bioorthogonal Tool for Spatiotemporally-Controlled Hydrogel Formation and Modification	719
Payam E. Farahani, Steven M. Adelmund, Cole A. DeForest	
(531d) Fabrication of Tailored Hydrogel Particles By Controlled Oxygen Inhibited Photopolymerization	720
Daniel Debroy, Dongmei Li, John Oakey	
(531e) Injectable and Degradable Zwitterionic Polycarboxybetaine Hydrogels	721
Andrew Sinclair, Tao Bai, Shaoyi Jiang	
(531f) A Microfluidic-Based Cell Encapsulation Platform to Achieve High Long-Term Cell Viability in Photopolymerized Pegnb Hydrogel Microspheres	722
Zhongliang Jiang, Bingzhao Xia, John Oakey	
(531g) In Situ Deposition of Cellular Hydrogels for Treatment of Inflammatory Bowel Disease.....	723
Meryem Pehlivانer, Theodore Lutkus, Adam Ekenseair	
(531h) Microrheology As a Tool to Measure Cell-Material Interactions and Degradation of Covalently Adaptable Hydrogel Scaffolds.....	724
Francisco Escobar, Daniel McKinnon, Kristi S. Anseth, Kelly M. Schultz	
(541a) Synthesis of Hollow Co₃O₄ Nanoparticles on Nitrogen–Doped Porous Carbons for High-Performance Supercapacitors	725
Gi Mihn Kim, Jae Hyun Park, Jae W. Lee	
(541c) Lecithin-Derived N-Doped Carbons for Supercapacitor Electrode Material.....	726
Muslim Demir, Ram B. Gupta	
(541d) 3D Porous Graphene Nanostructure Fabricated with a Simple, Fast, Scalable Process for Applications in High Performance Flexible Gel-Type Supercapacitors.....	727
Shih-Yuan Lu, Chun-Chieh Wang, Ji-Yuan Liang	
(541e) Wet Spinning of Transition Metal Chalcogenide Fibers	728
John Landers, Parth Patel, Man Kwok, Alexander V. Neimark, Gordon G. Wallace, Tânia Benedetti, David Officer, Geoffrey M. Spinks	
(541f) Dehydrogenation Mechanisms in Nanocrystalline Magnesium Hydride.....	729
Sweta Shriniwasan, Apurva Gangrade, Nikhil Gor, Sankara Sarma Tatiparti	
(541g) Effects of Surface Modified Ferrofluids on Energy Induction in Oscillating Heat Pipes.....	730
Swati Kumari, J. Gabriel Monroe, Huiyu Wang, Rangana Wijayapala, Erick S. Vasquez, Matthew J. Berg, Scott M. Thompson, Keisha B. Walters	
(541h) Heat Transfer in Metal Organic Frameworks During Gas Adsorption.....	731
Hasan Babaei, Christopher E. Wilmer, Alan J. H. McGaughey	

(543a) Capillary-Driven Clustering of Semiconductor Nanorods into End-to-End Network and Vortex Structures.....	732
<i>Doh C. Lee, Whi Dong Kim, Dahir Kim</i>	
(543b) Three-Phase Self-Assembly of Gold Nanoparticle Monolayers – Overcoming Ligand Size Limitations.....	733
<i>Guang Yang, Daniel T. Hallinan</i>	
(543c) Self-Assembly of Directionally Interacting Spheres and Rods	734
<i>Nathan A. Mahynski, Wenyan Liu, Oleg Gang, Athanassios Z. Panagiotopoulos, Sanat Kumar</i>	
(543d) Recovering Dynamic Parameters of Nanoparticle Assembly from Disjointed Images of Nanoparticle-Polymer Composites.....	735
<i>Chaitanya Murthy, Bo Gao, Andrea Tao, Gaurav Arya</i>	
(543e) Generalized Mechanistic Model for the Chemical Vapor Deposition of 2D Transition Metal Dichalcogenide Monolayers.....	736
<i>Ananth Govind Rajan, Jamie H. Warner, Daniel Blankschtein, Michael S. Strano</i>	
(543f) Structure-Dependent Stability of Magic-Number Thiolated Metal Nanoparticles.....	737
<i>Michael G. Taylor, Giannis Mpourmpakis</i>	
(543g) Rapid Microwave Assisted Synthesis of Zinc Oxide Nano-Forest for Solar Cell Applications	738
<i>Surajit Ghosh, Jayanta Chakraborty</i>	
(543h) Iron OXIDE Nanoparticle-Graphene Patterned Interfaces	739
<i>Abhilasha Dehankar, Justin Young, Joshua Goldberger, Ezekiel Johnston-Halperin, Jessica O. Winter</i>	
(556a) Atomistic, Coarse-Grained, and Statistical Mechanical Modeling of Dynamic DNA Nanostructures	740
<i>Ze Shi, Gaurav Arya</i>	
(556b) Self-Assembled Collagen-Mimetic Triple Helices with Antimicrobial Peptide Amphiphiles As Novel Antibacterial Agents.....	741
<i>Kanny Chang, Linlin Sun, Thomas J. Webster</i>	
(556c) Design of 3-Helix Micelles with Tailorable Sizes and Shapes	743
<i>Dan Ma, Sinan Keten</i>	
(556d) Bioactive DNA-Peptide Nanotubes As Artificial Extracellular Matrices for Bone Tissue Engineering.....	744
<i>Gujie Mi, Di Shi, Thomas J. Webster</i>	
(556e) Colloidal Directed Assembly of Pi-Conjugated Oligopeptides for Supramolecular Electronics	747
<i>Bo Li, Songsong Li, Yuecheng Zhou, William Wilson, Charles M. Schroeder</i>	
(556f) A Self-Assembled pH-Responsive Multi-Component Platform for Oral Vaccination	748
<i>Lindsey A. Sharpe, Julia Vela-Ramirez, Nicholas A. Peppas</i>	
(556g) Filomicelles Self-Assembled from Degradable Di-Block Copolymers Deliver Retinoids and Chemotherapeutics in Durable Control of Carcinoma Cell Fate	749
<i>Praful R. Nair, Kyle Spiner, Mohammed Vakili, Afsaneh Lavasanifar, Dennis E. Discher</i>	
(569a) Helping the Corneal Stroma Stay in Shape (Invited Talk)	750
<i>Julia A. Kornfield</i>	
(569b) Self-Fluorescent Hyaluronic Acid-Based Gel for Dermal Applications	751
<i>Stefano Menegatti, Nino Ruocco, Sunny Kumar, Michael Zakrewsky, Joshua De Oliveira, Matthew E. Helgeson, Gary Leal, Samir Mitragotri</i>	
(569c) Dynamic Adhesion of <i>Staphylococcus Aureus</i> to Poly(ethylene glycol) Surfaces.....	752
<i>Kristopher W Kolewe, Surachate Kalasin, Maria M. Santore, Jessica D. Schiffman</i>	
(569d) pH-Sensitive Mechanical Properties of Elastin-like Polypeptides	753
<i>Sydney Hollingshead, Charng-yu Lin, Julie C. Liu</i>	
(569e) Rational Design of Charged Nanogels for Differential Protein Capture	754
<i>Heidi Culver, Marissa Wechsler, Ishna Sharma, Nicholas A. Peppas</i>	
(569f) Engineering Click-Protein Hydrogel for Tissue Engineering	755
<i>Gunhye Lee, Akhilesh K. Gaharwar, Zhilei Chen</i>	
(569g) Polyelectrolyte Complex Hydrogels: Self-Assembly, Structure and Rheology	756
<i>Samanvaya Srivastava, Adam Levi, David Goldfeld, Matthew V. Tirrell</i>	
(569h) Mussel-Inspired Injectable Gelatin-Methacryloyl Bioadhesive for Minimally Invasive Suregry.....	757
<i>Iman Noshadi, Arameh Masoumi, Iman Ashtiani Abdi, Mahboobeh Nabavinia, Ali Tamayol, Nasim Annabi, Ali Khademhosseini</i>	
(569i) Bio-Based Thiol-Ene Polymerized Gel-Polymers: Synthesis and Properties	758
<i>Joseph F. Stanzione, Elyse Baroncini</i>	
(586a) High Modulus Thermoresponsive Elastin-like Polypeptide Gels As New Injectable Biomaterials	759
<i>Bradley D. Olsen, Matthew J. Glassman, Reginald K. Avery, Ali Khademhosseini</i>	
(586b) Poly(ethylene glycol) and Elastin-like Protein Double-Network Hydrogels As Central Nervous System Extracellular Matrix Models.....	760
<i>Edi Meco, Kyle Lampe</i>	
(586c) Highly Elastic, Antimicrobial, and Sprayable Hydrogel for Wound Healing.....	761
<i>Devyesh Rana, Nasim Annabi</i>	
(586d) Characterization of Collagen Type I and II Blended Hydrogels for Articular Cartilage Tissue Engineering.....	764
<i>Claire Kilmer, Nelda Vazquez-Portalatin, Alyssa Panitch, Julie C. Liu</i>	
(586e) Development of Icarin-Loaded Scaffold for Cartilage Tissue Engineering By 3D Bioprinting.....	765
<i>Shi-Bin Wang, Feng-Jun Lu, Ai-Zheng Chen</i>	
(586f) Fiber-Reinforced Hydrogels: In Situ Fabrication from Coextruded Polymeric Composites.....	766
<i>Alex M. Jordan, Si Eun Kim, Jonathan Pokorski, LaShanda T.J. Korley</i>	
(599a) Porous Structure Based Electrocatalysts for High Performance Fuel Cells.....	767
<i>Jinwoo Lee</i>	
(599b) Design of Heterostructure Alloy Nanoparticles for Photocatalysis of CO₂ Reduction	768
<i>Doh C. Lee</i>	

(599c) Nanostructured Composite Intermediate-Temperature Solid Acid Fuel Cells Fabricated By Needleless Electrospinning.....	769
<i>Norbert Radacs, Fernando Campos, Calum R. Chisholm, Konstantinos P. Giapis</i>	
(599d) Optimization of Pt/C Particles Electrocatalytic Activity By the Control of Carbon Nanostructures Via a Hybrid Aerosol-Colloidal Process.....	770
<i>Aditya F. Arif, Ratna Balgis, Takashi Ogi, Kikuo Okuyama</i>	
(599e) Highly Active Robust F Doped Transition Metal Oxide Based Solid Solution Electro-Catalyst for Acidic Medium Oxygen Evolution Reaction in PEM Based Water Electrolysis.....	771
<i>Shrinath Ghadge, Prasad P. Patel, Moni Kanchan Datta, Oleg Velikokhatnyi, Prashanth Jampani, Prashant Kumta</i>	
(599f) Superwetting Nanoarray Electrodes for Gas-Involved Electrocatalysis.....	774
<i>Xiaoming Sun, Yingjie Li, Wenwen Xu, Zhiyi Lu</i>	
(599g) Nanocatalysts for Water Splitting.....	775
<i>Bing Joe Hwang, Amare Aregahegn Dubale, Men-Che Tsai</i>	
(599h) Hydrogen Generation from Hydrous Hydrazine over Nickel-Doped Ceria Catalysts Prepared By Solution Combustion Synthesis	776
<i>Wooram Kang, Derya Oncel Ozgur, Arvind Varma</i>	
(603a) Network Structure in Hybrid Solid Polymer Electrolytes (Invited Talk).....	777
<i>Christopher Li, Qiwei Pan</i>	
(603b) Design of High Transference Number Battery Electrolytes	778
<i>Hilda G. Buss, Bryan D. McCloskey</i>	
(603c) Effect of Transporting Enhancer in Fe₃O₄ Li-Ion Battery Anodes.....	779
<i>Yo Han Kwon, Krysten Minnici, Matthew M. Huie, Amy C. Marschilok, Kenneth J. Takeuchi, Esther S. Takeuchi, Elsa Reichmanis</i>	
(603d) Integration of Ultrathin Polyaniline Films into Carbide Derived Carbon Supercapacitors Via Oxidative Chemical Vapor Deposition.....	780
<i>Yuriy Y. Smolin, Katherine L. Van Aken, Muhammad Boota, Masoud Soroush, Yury Gogotsi, Kenneth K.S. Lau</i>	
(603e) Controlling the Li-Air (O₂) Discharge Process with a Gel Polymer Electrolyte	781
<i>Chibueze Amanchukwu, Paula Hammond</i>	
(603f) Water-Polymer Mobility and Distribution in Hydrated Aromatic Ionomer Thin Films.....	782
<i>Shudipto Konika Dishari, Christopher Rumble, Mark Maroncelli, Joseph Dura, Michael Hickner</i>	
(603g) Highly Proton-Conductive Polyelectrolyte Membranes with Supramolecularly Suppressed Water Swelling.....	783
<i>Joseph Aboki, Shuangjiang Luo, Ruilan Guo</i>	
(603h) Role of Oligomeric Additives on P3HT/PCBM Domain Interfaces and Photovoltaic Performance	784
<i>S. Michael Kilbey II, Zach Seibers, Enrique D. Gomez, Thinh Le</i>	
(603i) Elucidating the Charge Transfer Mechanism in Conjugated Radical Polymers	785
<i>Fei Li, Jodie Lutkenhaus</i>	
(604a) Preparation and Enhanced Properties of Surface Treated Silicon Carbide Powders Reinforced Polypropylene Thin Films.....	786
<i>Xingru Yan, Jiang Guo, Qingliang He, Luyi Sun, Suying Wei, Zhanhu Guo</i>	
(604b) Magneto-Responsive Bionanocomposite Hydrogels As Injectable Scaffolds for Osteochondral Tissue Regeneration	787
<i>Adedokun Adedoyin, Adam Ekenseair</i>	
(604c) New Aligned Coaxial Nanofibers for Neural Tissue Engineering	788
<i>Rachel Martin, Michael Mullins, Feng Zhao, Zichen Qian</i>	
(604d) Silk-Gold Nanorod Nanocomposite Films for Rapid Tissue Repair.....	789
<i>Russell Urie, Mitzi Thelakkaden, Chengchen Guo, Michael Jaffe, Jeff Yarger, Kaushal Rege</i>	
(604e) Continous Extrusion of Microtextured Composite Films	790
<i>Ozgun Ozdemir, Amod Ogale</i>	
(604f) Effective and Industrially Relevant Compounding of Natural Fiber-Reinforced Thermoplastic Composites Via Solid-State Shear Pulverization	791
<i>Katsuyuki Wakabayashi, Aart W. Van Vuure, Frederik Desplentere</i>	
(604g) Assembling Freestanding Conductive Polymer Tube Arrays at Liquid/Liquid Interface	792
<i>Tuo Ji, Long Chen, Jiahua Zhu</i>	
(604h) The Development of Ceramic Metal Oxide Membranes By Means of Reactive Electrospinning	793
<i>Brianna Vail Cook, Matthew Galazzo, Joshua Yamaguchi, Luke Gibson, Keith M. Forward</i>	
(607b) The Design of Micelles for Molecular Diagnostics.....	794
<i>Sang Pil Yoo, Matthew V. Tirrell, Eun Ji Chung</i>	
(607c) Controlled, Self-Directed Assembly of Novel in-Situ Forming Biodegradable Nanostructures for the Delivery of Ocular Therapeutics.....	795
<i>Mark E. Byrne, Mindy George-Weinstein, Laura L. Osorno</i>	
(607d) Molecular Gel Formation As a First Order Phase Transition	796
<i>Nikola Dudukovic, Charles F. Zukoski</i>	
(607e) DNA-Programmable Assembly of Enzyme Superlattices	797
<i>Mary Wang, Jeffrey D. Brodin, Chad A. Mirkin, Byeongdu Lee, Jaime Millan, Monica Olvera de la Cruz</i>	
(607f) Microreactors As a Tool for Producing Polymer Nanoparticles By a Self-Assembled Process	798
<i>Antonio Tabernero, Álvaro González-Garcinúñez, Miguel A. Galán, Eva M. Martín del Valle</i>	
(607g) Polymer-Induced Liposome Aggregation: Toward the Application of Naked-Eye Bio-Detection	799
<i>Yan Xia, Hyun-Sook Jang, Zhiqiang Shen, Chenlu Yu, Naomi Tennakoon, Ying Li, Mu-Ping Nieh</i>	
(607h) Information-Directed Assembly of Dynamic Covalent Molecular Ladders	800
<i>Timothy F. Scott, Megan Dunn, Joseph Furgal, Jae Hwan Jung, Tao Wei</i>	

(608a) Halide Perovskite Nanoplatelets	801
<i>William A. Tisdale</i>	
(608b) Ultrafast Photoexcited Carrier Dynamics in Ligand-Exchanged PbSe Nanocrystal Films: Lifetime, Mobility, Diffusion, and Interfacial Charge Transfer	802
<i>Siming Li, Benjamin T. Diroll, Yaoting Wu, Glenn W. Guglietta, E. Ashley Gaulding, Julia L. Fordham, Natalie Gogotsi, Christopher B. Murray, Jason B. Baxter</i>	
(608c) Band Edge Engineering of Hydroxide Nanoparticles for Semiconductor and Electrochemical Applications.....	803
<i>Matthias J. Young, Nicholas M. Bedford, Tatjana Kiryutina, Taylor J. Woehl</i>	
(608d) Synthesis and Characterization of Cu₃SbS₄ Nanoparticles for Solution-Based Thin Film Solar Cells.....	804
<i>Gustavo Albuquerque, Ki-Joong Kim, Chih-hung Chang, Gregory S. Herman</i>	
(608e) Mesoscale Modeling of Stress-Directed Compositional Patterning in Semiconductor Alloys	805
<i>Daniel Kaiser, Sang M Han, Talid Sinno</i>	
(608f) Substitutional Doping in Nanocrystal Superlattice	806
<i>Matteo Cargnello, Aaron Johnston-Peck, Benjamin T. Diroll, Eric Wong, Bianca Datta, Divij Damodar, Vicky Doan-Nguyen, Andrew A. Herzing, Cherie R. Kagan, Christopher B. Murray</i>	
(608h) Temperature-Dependent Modeling of Formation and Growth of II-VI Semiconductor Nanocrystals	807
<i>Stefano Lazzari, Milad Abolhasani, Klavs F. Jensen</i>	
(608i) Single Enzyme Biomineralization of Size Controlled, Water Soluble Quantum Dots	808
<i>Robert Dunleavy, Leah Spangler, Zhou Yang, Li Lu, Christopher J Kiely, Bryan W. Berger, Steven McIntosh</i>	
(622a) Self-Assembly of Antibody-Polymer Conjugates into Novel Sensing Materials.....	809
<i>Bradley D. Olsen, Xuehui Dong, Allie Obermeyer</i>	
(622c) Structural Studies to Determine the Mechanisms of Biobased Nanoparticle Synthesis	810
<i>Amar Thaker, Karthik Pushpavnam, Kaushal Rege, Brent L. Nannenga</i>	
(622d) Biopolymers from a Thermophile: Production, Characterization, and Application.....	811
<i>Jia Wang, Rajesh K. Sani, David R. Salem</i>	
(622f) Genetically Encodable Acoustomagnetic Reporters for Background-Free Molecular and Cellular MRI	812
<i>George J. Lu, Arash Farhadi, Jerzy Szablowski, Samuel Barnes, Anupama Lakshmanan, Raymond W. Bourdeau, Mikhail G. Shapiro</i>	
(622g) How Bolt Threads Is Using Chemical and Process Engineering to Grow Its Business of Engineering Silk (Featured Presentation)	813
<i>Daniel Widmaier</i>	
(623a) Efficacy of 5-Aminolevulinic Acid (5-ALA)-Mediated Photodynamic Therapy (PDT) Using Cold Atmospheric Plasma (CAP) As a Light Source for Anti-Tumor Applications.....	814
<i>Mian Wang, Benjamin M. Geilich, Michael Keidar, Thomas Webster</i>	
(623b) Repeatable and Adjustable on-Demand Local Anesthesia By Phototriggerable Liposomes	815
<i>Alina Rwei, Robert Langer, Daniel S. Kohane</i>	
(623c) Engineering Polymeric Nanostructures in Silicone Hydrogel Contact Lens Biomaterials for Controlled Release to Treat Glaucoma.....	816
<i>Liana Wuchte, Kacie Carlin, Robert Mosley, Freha Tahir, Mark E. Byrne</i>	
(623d) Core Shell Chitosan Microcapsules for Programmed Sequentialdrug Release	817
<i>Xiao-Jie Ju, Xiu-Lan Yang, Xiao-Ting Mu, Wei Wang, Rui Xie, Zhuang Liu, Liang-Yin Chu</i>	
(623e) Engineering of Virus-like Particles Functionalized with CD47 Extracellular Domain to Improve Targeted Delivery By Avoiding Macrophages	818
<i>Maya Nagasawa, James Swartz</i>	
(623f) Zwitterionic Gel Encapsulation Promotes Protein Stability, Enhances Pharmacokinetics Andreduces Immunogenicity	819
<i>Peng Zhang, Fang Sun, Shaoyi Jiang</i>	
(623g) Drug-Bearing Supramolecular Filament Hydrogels for Local Treatment of Diseases.....	820
<i>Rami Chakroun, Ran Lin, Hao Su, Honggang Cui</i>	
(623h) Drug Release Study of a Tripartite Gold Nanoconjugate for Spinal Cord Injury Treatment	821
<i>Fangchao Liu, Janelle Buttry, Zeljka Minic, Harry G. Goshgarian, Guangzhao Mao</i>	
(624a) Controlling Structure within Hydrogel-Based Synthetic Extracellular Matrices through Self-Assembly and Light-Mediated Reactions (Invited Talk)	822
<i>April M. Kloxin</i>	
(624b) An Antibacterial and Photocurable Hyaluronic Acid/Elastin like Polypeptide Hybrid Hydrogel for Cartilage Repair	823
<i>Ehsan Shirzaei Sani, Nasim Annabi</i>	
(624c) Biomaterial Scaffolds for Destruction of Disseminated Cancer Cells through Non-Invasive Local Hyperthermia.....	826
<i>Francisco Pelaez, Navid Manuchehrabadi, John C. Bischof, Samira M. Azarin</i>	
(624d) Reversible Crosslinking of Engineered Hyaluronic Acid Hydrogels.....	827
<i>Adrienne M. Rosales, Jason A. Burdick, Kristi S. Anseth</i>	
(624e) Covalently Adaptable Elastin-like Protein – Hyaluronic Acid (ELP – HA) Hydrogels with Secondary Thermo-Responsive Crosslinking for Mesenchymal Stem Cell Delivery.....	828
<i>Huiyuan Wang, Danqing Zhu, Alexandra Paul, Lei Cai, Annika Enejder, Fan Yang, Sarah C. Heilshorn</i>	
(624f) Plasmonic Collagen Nanocomposites for Rapid Tissue Sealing and Repair	829
<i>Russell Urie, Madaline Mushaben, Tanner Flake, Michael Jaffe, Jeffrey J. Heys, Kaushal Rege</i>	
(624g) Novel Bio-Ionic Liquid Functionalized Conductive Hydrogel for Cardiac Tissue Regeneration	830
<i>Iman Noshadi, Brian Walker, Roberto Portillo Lara, Nayara Gomes, Ehsan Shirzaei, Mohammad Reza Azizian, Nasim Annabi</i>	

(640a) Covalent Surface Modification of Carbon Coated Nanomagnets Allow Stable Dispersions in Aqueous Solutions and Specific Post-Modification.....	831
<i>Corinne Hofer, Elia Schneider, Robert N. Grass, Martin Zeltner, Wendelin J. Stark</i>	
(640b) Scalable Manufacturing of Nanostructured Particles By Gas-Phase Deposition Techniques.....	832
<i>J. Ruud van Ommen</i>	
(640c) Manipulating Ligand-Nanoparticle Interactions and Catalytic Activity through Organic-Aqueous Tunable Solvents Recovery.....	833
<i>Shane Reynolds, Kasey Markland, Josh Rood, Edith Leonard, Steven R. Saunders</i>	
(640d) Protein Amyloid Fibrils As Template for the Synthesis of Silica Nanofibers.....	834
<i>Marco Lattuada, Simonetta Rima</i>	
(640e) Conformal Layer-By-Layer Coatings on Spiky Hedgehog Particles	835
<i>Douglas G. Montjoy, Joong Hwan Bahng, Nicholas A. Kotov</i>	
(640f) Non-Covalent Functionalization of Single Wall Carbon Nanotubes with Engineered Proteins for Targeted Subcellular Delivery.....	836
<i>Kris Noel Dahl, Mohammad F. Islam</i>	
(640g) Effect of PMMA Particle Size on Coating Behavior in Combined Gliding Arc Discharge and Spouted Bed with Solid Precursor.....	837
<i>Warit Uaamnuaychai, Satoshi Kodama, Hidetoshi Sekiguchi</i>	
(645a) Long Life Cycle Lithium–Oxygen Battery Using Molybdenum Disulfide Nanoflakes.....	838
<i>Mohammad Asadi, Baharak Sayahpour, Amin Salehi-Khojin</i>	
(645b) The Next Generation High Power, LiFePO₄ Cathode Material	839
<i>Maha Hammoud, Charlie Xu, Judy Laforest, Lucy Lee, Derek Johnson</i>	
(645c) Solid State Thermal Reaction of NaOH and Mn₃O₄ Drives the Formation of Sodium-Manganese Oxide Birnessite for Aqueous Electrochemical Energy Storage	840
<i>Xiaoqiang Shan, Xiaowei Teng</i>	
(645d) Capacitive Behavior of Natural Biomaterials in High-Performance Renewable Supercapacitor	841
<i>Zhe Zhang, Arie Mulyadi, Yulin Deng</i>	
(645e) Bipolar Plates for Redox Flow Batteries: Relating Conductivity to Morphology of Carbon-Based Polymer Composites	842
<i>Jiri Vrana, Martin Kroupa, Petr Mazur, Jan Dundalek, Jaromi-r Pocedic, Juraj Kosek</i>	
(645f) Fabricating of High-Performance Functional Graphene Fibers for Micro-Capacitive Energy Storage	843
<i>Tianju Fan, Chunyan Zhao, Zhuangqing Xiao, Fangjin Guo, Yidong Liu, Hong Meng, Yong Min</i>	
(645h) Solid Dispersion Flow Battery Material Synthesis and Battery Characterization.....	844
<i>Gary M. Koenig</i>	
(645i) Highly Cyclable and Energy Dense Manganese Dioxide Cathodes for Advanced Alkaline Batteries	845
<i>Gautam G. Yadav, Joshua Gallaway, Michael Nyce, Sanjoy Banerjee</i>	
(651a) Field Alignment and Localized Field Screening in Block Copolymer Films Using Sub-1T Magnetic Fields (Invited Talk)	846
<i>Chinedum Osuji, Manesh Gopinadhan, Youngwoo Choo, Rajeswari Kasi, Lalit Mahajan</i>	
(651b) The Effect of Trivalent Counterions to the Structure of Highly Dense Polystyrene Sulfonate Brushes	847
<i>Jing Yu, Jun Mao, Wei Chen, Matthew V. Tirrell</i>	
(651c) Dopant Induced Solubility Control Patterning of Conjugated Polymers.....	848
<i>Adam J. Moule, Ian Jacobs, Jun Li, Faustine Wang</i>	
(651d) Controlling Ordering and Orientation in Nanostructured Thin Films through Combined Thermal and Solvent Annealing.....	849
<i>Thomas H. Epps III</i>	
(651e) Polyelectrolyte Brush Conformations in Multivalent Ion-Driven Brush Collapse.....	850
<i>Blair Kathryn Brettmann, P. Pincus, Matthew V. Tirrell</i>	
(651f) Release Kinetics of Nisin from Chitosan-Alginate Complex Films.....	851
<i>Vaishnavi Chandrasekar, John Coupland, Ramaswamy Anantheswaran</i>	
(651g) Analysis of Deformation Wear in Polymer Coatings.....	852
<i>Suresh Ahuja</i>	
(651i) Optimized and Tested Zein Film for Utilization As an Effective SERS Sensor	853
<i>Emma Barber, Hazal Turasan, Jozef Kokini, Debby Devina</i>	
(657a) Printability, Pinch-Off Dynamics and Extensional Rheology of Complex Fluids (Invited Talk).....	854
<i>Jelena Dinic, Leidy N. Jimenez, Madeleine Biagioli, Alejandro Estrada, Vivek Sharma</i>	
(657c) In-Line Near-Infrared Spectroscopy for Optimization of Radical Modification Reactions of Polyolefins	855
<i>Ana Luisa Vaz, Jan N. E. Duchateau, Fons Schreurs</i>	
(657d) Rheological Properties of Hdpe/CO₂ and Ldpe/CO₂ Solution Under High Pressure.....	856
<i>Chen Wan, Tao Liu</i>	
(657e) Rheological Investigation of High Performance Polymer-Surfactant Systems for EOR Applications in Carbonate Reservoirs.....	857
<i>Muhammad Shahzad Kamal, SM Hussain, Abdullah S. Sultan</i>	
(657f) Structure and Nonlinear Rheology in Large Amplitude Oscillatory Shear of Polypropylene-Layered Silicate Nanocomposites	858
<i>Christopher J. Hershey, Krishnamurthy Jayaraman</i>	
(657h) Novel Viscoelastic Material Consisted of Polymeric Ligin	859
<i>Zhenglun Li</i>	
(657i) Enhanced Polymer Transport in a Crowdier Nanoslit Micropost Array	860
<i>Yeng-Long Chen, Fan-Tso Chien, Po-Keng Lin, Wei Chien</i>	

(670a) Novel Method for Protein Stability and Delivery through the Formation of Complex Coacervates	861
<i>Whitney C. Blocher, Yalin Liu, Patrick Harney, Sarah L. Perry</i>	
(670b) Silica Based pH-Responsive Nanocomposite Nanoparticles As Controlled Drug Release Carriers	862
<i>Xin Fan, Allan E. David, Arthur Yang</i>	
(670c) Porous Organic Cages for Drug Delivery	863
<i>Sophie Miller, Shan Jiang, Andrew I. Cooper, David Fairen-Jimenez</i>	
(670d) Contact Lenses Prepared By Using the Layer-By-Layer Method for Sustained Drug Delivery	864
<i>Nihan Ercioglu, Nihal Aydogan</i>	
(670e) Chitosan-Coated Selenium Nanoparticles for Anti-Acne Applications	865
<i>Michelle Stolzoff, Nicholas De La Torre, Thomas J. Webster</i>	
(670f) Regulating the Timing and Sequence of Pro- and Anti-Inflammatory Cytokine Deliveries from Magnetically Responsive Biomaterials for Use in Wound Healing Applications	866
<i>Anita E-Tolouei, Nihal Dulger, Stephen Kennedy</i>	
(670g) Evaluation of Poly(curcumin) Microparticle Degradation and Activity in the Presence of Free Radical Generating Systems	867
<i>Carolyn T. Jordan, J. Zach Hilt, Thomas D. Dziubla</i>	
(670h) Simulating Intestinal Molecular Transport Using Tissue Engineered in Vitro Models	868
<i>Jun-Goo Kwak, Abhinav Sharma, Jungwoo Lee</i>	
(671a) Silk-Extracellular Matrix Hydrogels for Cardiac Tissue Engineering	869
<i>Whitney L. Stoppel, Ross C. Bretherton, Benjamin P. Partlow, Lauren D. Black, David L. Kaplan</i>	
(671b) Polymer Nanoparticle Synthesis and Characterization for the Delivery of Osteoinductive Molecules	870
<i>Marissa E. Wechsler, Heidi R. Culver, Nicholas A. Peppas</i>	
(671c) Transitional Liver Models for the Investigation of Chemical and Mechanical Cues on the Progression of Fibrosis	871
<i>Sophia Orbach, Scott-Eugene Saverot, Padmavathy Rajagopalan</i>	
(671d) Additive Manufacturing of Multicomponent Biomaterials	872
<i>Mark W. Tibbitt, Héloïse Ragelle, Robert Langer</i>	
(671i) Enhancing Cell Migration Through Dual Biomolecule Delivery From Electrospun Fibrous Scaffolds	873
<i>Julianne L. Holloway, Feini Qu, Robert Mauck, Jason A. Burdick</i>	
(671f) Design of Self-Assembled Vaccines to Program Activation of Multiple Adjuvant Pathways	874
<i>Yu-Chieh Chiu, Peipei Zhang, Christopher Jewell</i>	
(671g) Gold Nanorods for ANTI-Tumor Applications	875
<i>Junyan Zhang, Mian Wang, Thomas J. Webster</i>	
(671h) Posh Inhibitor Peptide Amphiphile Micelles As a Novel Leukemia Therapeutic Modality	876
<i>Josiah Smith, Leah Cardwell, Erin Newcomer, Logan Morton, Rui Zhang, Fabio Gallazzi, Mark Daniels, Bret Ulery</i>	
(672a) Zwitterionic-Containing Triblock Peptide Amphiphiles Self-Assemble into Unique Higher-Order Micellar Structures	877
<i>Rui Zhang, Logan Morton, Josiah Smith, Fabio Gallazzi, Tommi White, Bret Ulery</i>	
(672b) Investigating Biomembrane-Nanoparticle Interactions with Giant Vesicles Fabricated from Inverted-Headgroup Lipids	878
<i>Lu Wang, Noah Malmstadt</i>	
(672c) Enhancing Epoxy Network Toughness and Recoverability with Mussel-Inspired Catechol-Iron Crosslinks	879
<i>Thomas R. Cristiani, Emmanouela Filippidi, J. N. Israelachvili, J. Herbert Waite, Megan T. Valentine, B. Kollbe Ahn</i>	
(672d) Maintenance of Neural Progenitor Cell Stemness in 3D Hydrogels Requires Matrix Remodeling	880
<i>Christopher M. Madl, Ruby E. Dewi, Cong Dinh, Kyle Lampe, Duong Nguyen, Annika Enejder, Sarah C. Heilshorn</i>	
(672e) Formation of Biomimetic Hybrid Materials Using Macromolecular Templates	881
<i>Marina Tsianou, Gopichand Mallam, Pi Jeng Khor, Benjamin Mozz, Christine Moore</i>	
(672f) Probing Phase Transitions in Dynamic Biopolymer Complexation	882
<i>Amanda B. Marciel, Matthew V. Tirrell</i>	
(672g) Molecularly Imprinted Polymer-Peptide Hybrid Materials for Engineered Protein Recognition	883
<i>John R. Clegg, Afshan Irani, Matthew Harger, Justin Zhong, Caroline Kung, Pengyu Ren, Nicholas A. Peppas</i>	
(672h) Novel Tethering Approaches for Supported Biomembranes with Composition and Orientation Control for Biomaterial Ligand Displays and Membrane Protein Assays	884
<i>William Houlihan, Yueming Li, Lane Gilchrist</i>	
(683a) Development of Injectable Microgels for Galns Enzyme Replacement Therapy	885
<i>Era Jain, Yasaman Chehreghanianzabi, Shiragi Patel, Michael Flanagan, Qi Gan, Adriana M. Montaño, Scott A. Sell, Silviya P. Zustik</i>	
(683b) Computationally-Driven Design of a Heterobivalent and Gate to Improve Targeting Agent Selectivity	886
<i>Sadie M. Johnson, Akash Deshpande, Benjamin J. Hackel</i>	
(683c) Supramolecular Pegylation of Biopharmaceuticals	887
<i>Matthew Webber</i>	
(683d) Non-Invasive Screening of Diseases Using an Orally Available Near-Infrared Imaging Agent	888
<i>Sumit Bhatnagar, Greg Thurber</i>	
(683e) Investigation of the Cellular Uptake and Cytotoxicity of Cell-Penetrating Peptides in Candida Fungal Pathogens	889
<i>Zijian Gong, Mackenzie T. Walls, Amy J. Karlsson</i>	
(683f) Catalase-Laden Microdevices for Cell-Mediated Enzyme Delivery	890
<i>Junfei Xia, Zhibin Wang, Yuanwei Yan, Zhijian Cheng, Li Sun, Yan Li, Yi Ren, Jingjiao Guan</i>	
(683g) Ragweed Pollen-Based Oral Vaccine Delivery	891
<i>Md Jasim Uddin, Harvinder Gill</i>	

(683h) the Roles of Competing Dissolution, Diffusion and Transient Marangoni Convection Fluxes in Surfactant-Enhanced Spreading of Aerosols for Pulmonary Delivery <i>Todd M. Przybycien, Robert D. Tilton, Stephen Garoff, Ramankur Sharma, Steven Iasella, Timothy Corcoran</i>	892
(693a) Li-Rich Anti-Perovskite Superionic Conductor Films for All-Solid-State Li-Ion Batteries <i>Xujie Lu, Hongwu Xu, Quanxi Jia</i>	893
(693b) Carbon Foams from Poly(hydrogenated) Reduced Graphene Oxide Composites and Their Performance As Electrodes in Supercapacitor Devices <i>Robert T. Woodward, Foivos Markoulidis, Derrick Fam, Tom O. McDonald, Francois De Luca, Milo S. P. Shaffer, Alexander Bismarck</i>	894
(693c) Designing Electrolytes for Beyond Li-Ion Batteries Using Coupled High Throughput Ab Initio Calculations and MD Simulations <i>Nav Nidhi Rajput, Xiaohui Qu, Vijayakumar Murugesan, Kiran Mathew, Kee Sung Han, Karl Mueller, Kristin Persson</i>	895
(693d) The Influence of Tetrabutylammonium (TBA) Salts on the Discharge and Charge Behavior of Li-O₂ Batteries <i>Chibueze Amanchukwu, Yang Shao-Horn, Paula Hammond</i>	896
(693e) Freestanding V₂O₅-PEDOT Thin Film Electrode for Rechargeable Aqueous K-Ion Energy Storage <i>Daniel S. Charles, Xiaowei Teng</i>	897
(693f) Theoretical Consideration of Nanostructured Magnetite As an Electrode Material for Li-Ion Energy Storage <i>Christianna N. Lininger, Mark S. Hybertsen, Alan C. West</i>	898
(693g) Highly Flexible Self-Assembled V₂O₅ Cathodes Enabled By Conducting Diblock Copolymers <i>Hyosung An, Jared Mike, Kendall Smith, Lisa Swank, Yen-Hao Lin, Stacy Pesek, Rafael Verduzco, Jodie Lutkenhaus</i>	901
(693h) Combined Experimental and Theoretical Study of Oxygen Mobility in Hydrated Alpha-MnO₂ <i>Zhenzhen Yang, Denise C. Ford, Joong Sun Park, Yang Ren, Hacksung Kim, Michael M. Thackeray, Maria K. Y. Chan</i>	902
(694a) Quantifying Gel Network Properties Via Poroelasticity (Invited Talk) <i>Edwin P. Chan, Nichole K. Nadermann, Kathleen M. Feldman, Eric M. Davis</i>	903
(694b) Elastobuoyant Heavy Spheres in a Soft Gel : Understanding Large Deformations in Soft Elastic Polymeric Gels <i>Aditi Chakrabarti, Manoj K. Chaudhury, Serge Mora, Yves Pomeau</i>	904
(694c) Quantifying the Effects of Aging on the Viscoelastic Behavior of Flexible Polyurethane Foams <i>Nicholas B. Wyatt, Matthias Celina, Matthew Neidigk</i>	905
(694d) Effect of Layer Density on Irreversible Thermal Expansion and Interlayer Strength in Additively Manufactured Acrylonitrile Butadiene Styrene <i>Amy M. Peterson, Anthony D'Amico, Analise Debaie</i>	906
(694e) Polyolefin Toughened Polypropylene: Phase Behavior and Mechanical Properties <i>Jun Xu, Frank S. Bates</i>	907
(694f) Micromolding of UV Curable Coatings <i>Yuyang Du, Alon McCormick, Lorraine F Francis</i>	908
(694g) CO₂ Induced Plasticization in Glassy Polymeric Membranes for Gas Separation <i>Matteo Minelli, Maurizio Fiorini, Giulio C. Sarti</i>	909
(694i) Predicting Mechanical Properties of Organic Semiconductors from Molecular Dynamics Simulations <i>Samuel Root, Darren Lipomi, Gaurav Arya</i>	910
(699a) Adaptive, Point-to-Point Assembly of DNA Nanotubes Between Molecular Landmarks <i>Rebecca Schulman, Abdul M. Mohammed, John Zenk, Petr Sulc</i>	911
(699b) Photo-Triggered Self-Assembly and Actuation of DNA Nanostructures and Machines Using Photocaged Nucleotides <i>Nicholas Stephanopoulos</i>	912
(699c) Biological Self-Recognition and Self-Assembly for the Next Generation of Hybrid Wires <i>Xiao Hu, Chenbo Dong, Rigu Su, Quan Xu, Cerasela Zoica Dinu</i>	913
(699d) pH Sensing Through Silicon Nanoribbon/Carbon Nanotube Porin Hybrid Sensor <i>Huanan Zhang, Ramya Tunuguntla, Scott Dhuey, Aleksandr Noy</i>	914
(699f) Design of Membrane-Embedded Amphiphilic Nanoparticles from Atomistic Molecular Dynamics Simulations <i>Reid Van Lehn, Alfredo Alexander-Katz</i>	915
(699g) Photo-Electrochemical Characterizations of Photosystem I (PS I) Assembly Under Bio-Mimetic Membrane Confinement <i>Hanieh Niroomand, Dibyendu Mukherjee, Bamin Khomami</i>	916
(699h) Modeling Protein Folding/Aggregation on Nanoparticle Based Biosensors in Complex Solvent Environments By a Coarse Grained Simulation System <i>Shuai Wei, Charles L. Brooks III</i>	917
(699i) Aggregation-Induced Emission of Hydrophobically-Modified Metal Clusters in Lipid Nanodiscs <i>Armin Tahmasbi Rad, Justin Letendre, Elena Dormidontova, Flavio Maran, T. J. Mountziaris, Mu-Ping Nieh</i>	918
(699j) Delta- and Proteorhodopsin-Based Bionanoelectronic Devices for Light-Controlled Conversion of Protonic to Electronic Currents <i>Jessica Soto-Rodríguez, Zahra Hemmatian, Erik E. Josberger, Marco Rolandi, François Baneyx</i>	919
(699k) Self-Assembly of Protein Nano-Shapes Using Synthetic Coiled Coils <i>Won Min Park, Mostafa Bedewy, Karl K. Berggren, Amy E. Keating</i>	920
(704a) Mechanical Properties of Ionically and Covalently Crosslinked Alginate Hydrogels (Invited Talk) <i>Santanu Kundu</i>	921

(704b) Structural Rearrangements During Stress Relaxation of a Tough, Physically Crosslinked Hydrogel	922
<i>Bryan D. Vogt, Clinton Wiener, Chao Wang, Yun Liu, Robert Weiss</i>	
(704c) Strong Polymer Gels with Tunable Crystalline Domains	923
<i>Xuechen Yin, David Hewitt, Robert B. Grubbs, Surita Bhatia</i>	
(704d) Quantifying Topology and Elasticity of Polymer Networks	924
<i>Rui Wang, Alfredo Alexander-Katz, Jeremiah A. Johnson, Bradley D. Olsen</i>	
(704e) Ultra-Soft, Dry Polydimethylsiloxane Elastomers from Architecture-Driven Entanglement Free Design	925
<i>Liheng Cai, Thomas Kodger, Rodrigo Guerra, Adrian Pogoraro, Michael Rubinstein, David A. Weitz</i>	
(704f) Nanovoid Formation and Mechanics: A Simulation Study of Poly(dicyclopentadiene) and Epoxy Cross-Linked Networks	926
<i>Robert M. Elder, Daniel B. Knorr, Joseph L. Lenhart, Jan W. Andzelm, Timothy W. Sirk</i>	
(704g) Simultaneous Scission and Gelation Reactions in Photocrosslinkable Polymers	927
<i>Dustin Janes, Michael J. Maher, Gregory Carroll, Christopher J. Ellison</i>	
(704h) Multi-Component Flory-Rehner Theory: Swelling of Copolymer Networks and Swelling of Networks in Solvent Mixtures	928
<i>Rutvik Godbole, Fardin Khabaz, Rajesh Khare, Ronald C. Heden</i>	
(705a) Unraveling Chemical Transformation of Reactively-Modified Interfacial Thin Films Using Neutron Reflectometry (Invited Talk)	929
<i>S. Michael Kilbey II, Bethany Aden, John F. Ankner</i>	
(705b) Thin Film Crystallization and Morphology of Poly(ϵ-caprolactone)	930
<i>Julie Albert, Giovanni Kelly, Tyler Staggs</i>	
(705c) Development of New Chemistries for Molecular Layer Deposition	931
<i>Mie Lillethorup, Richard G. Closser, David S. Bergsman, Stacey F. Bent</i>	
(705d) Designing Non-Charging Surfaces from Non-Conductive Materials	932
<i>Sjowling Soh</i>	
(705e) A Novel Crosslinker for Polyolefinic Thin Surface Coatings By Surface Initiated Ring Opening Metathesis Polymerization	933
<i>Ishan Fursule, Charles Watkins, Brad Berron</i>	
(705f) Crossover in Topologically Driven Surface Segregation of Cyclic/Linear Polymer Blends	934
<i>Mark Foster, David T. Wu, Qiming He, Shih-fan Wang, Renfeng Hu, Bulent Akgun, Caleb Tormey, Somesh Peri</i>	
(705g) Morphological Control By Localized Blending in Phase Separated Block Copolymer Thin Films	935
<i>Garrett R. Chado, Christopher M. Phenicie, Chunlin He, Joel L. Kaar, Mark P. Stoykovich</i>	
(705h) Effect of Backbone Flexibility on the Structure and Orientation of Polyurea Chains Grown By Molecular Layer Deposition	936
<i>David S. Bergsman, Richard G. Closser, Christopher J. Tassone, Bruce M. Clemens, Dennis Nordlund, Stacey F. Bent</i>	
(705i) Hydrophobic Coating Based on Fluorinated Acrylate Monomer Using UV-LED Polymerization	937
<i>Jamarosliza Jamaluddin, Nadia Adrus, Siti Khairunnisah Ghazali</i>	
(721a) Protein-Based Catechol Conjugates As Aqueous Adhesives and Networks	938
<i>Danielle L. Heichel, Kelly A. Burke</i>	
(721b) Novel Zwitterionic Macro-Crosslinker Enhancing Durability of Non-Fouling Coating	939
<i>Zhiqiang Cao</i>	
(721c) Single Molecule Study of the Role of Aptamer Secondary Structure in the Dynamics of Aptamer-Ligand Binding Interactions	940
<i>Katherine M. Macri, Jon H Monserud, Daniel K. Schwartz</i>	
(721d) Mixed Poly(ethylene glycol) and Poly(sulfobetaine) Brushes to Control Protein Adsorption and Denaturation on Biomaterial Surfaces	941
<i>David Faulón Marruecos, Daniel Schwartz, Joel L. Kaar</i>	
(721e) Development of Antithrombotic Nanoconjugate Targeting Collagen	942
<i>Lin Zhang, Yan Sun</i>	
(721f) Modelling and Controlling Degradation and Protein Release Profile from Degradable Polymer-Polymer Hydrogel Depot	943
<i>Ghodsiehsadat Jahannir, Mohammad Jafar Abdekhoodae, Ying Chau</i>	
(721g) Viral Gene Vector-Releasing Biodegradable Polyelectrolyte Fiber-Sutures	944
<i>Byung Gee Im, Minjae Do, Haeshin Lee, Jae-Hyung Jang</i>	
(732a) Alginate/Chitosan Microparticles for Gastric Passage and Intestinal Release of Therapeutic Protein Nanoparticles	945
<i>Kevin Ling, Julie A. Champion</i>	
(732b) Photodynamic Enhancement of Drug Delivery to Tumors	946
<i>Huang-Chiao Huang, Imran Rizvi, Joyce Liu, Ashish Kalra, Helen Lee, Jayeon Kim, Jonathan Fitzgerald, Tayyaba Hasan</i>	
(732g) Highly Efficient Encapsulation of Small-Molecule N-Acetylcysteine within PLGA Nanoparticles to Restore Redox Balance in Oxidant-Stressed Environments	947
<i>Nick P. Murphy, Kyle Lampe</i>	
(732d) Fabrication and Characterization of PLGA Nanoparticle-Bacteria Conjugate Nanobeads for Increased Tumor Penetration	948
<i>Richey M. Davis, SeungBeum Suh, Ami Jo, Bahareh Behkam</i>	
(732e) Interstitial Release of Cisplatin from Triggerable Liposomes Enhances Efficacy Against Triple Negative Breast Cancer Solid Tumor Analogues	949
<i>Sally Stras, Tim Holleran, Alaina Howe, Stavroula Sofou</i>	
(732f) Bioresponsive Polymer Coating on Targeted Drug Nanorods	950
<i>Tunyaboon Laemthong, Caitlin Brocker, Dipak Barua, Daniel Forciniti, Sutapa Barua</i>	

(732c) Internalization of Nanoparticles Functionalized with Low Molecular Weight Protamine into Erythrocytes	951
Rangika Hikkaduwa Koralege, Kaustuv Sahoo, Nicholas Flynn, Steven Hartson, Jing Pope, Ashish Ranjan, Carey Pope, Joshua Ramsey	
(732h) Enzyme Replacement Therapy Extended to the Brain Through Nano-Polymersomes	952
Jessica Kelly, Doug Martin, Mark Byrne	
(738a) Computational Tools for Studying Peptide Based Templating of Novel Materials (Invited Talk)	953
Jim Pfaendtner	
(738b) Simulation of Biological and Nanostructured Interfaces to Discover New Materials	954
Hendrik Heinz	
(738c) Dissipative Particle Dynamics Studies of pH-Sensitive Tri-Block Copolymer Containing Zwitterionic Sulfobetaine As A Novel Anti-Cancer Drug Carrier	955
Jian Zhou	
(738d) Investigation of DNA Conjugated Hydrogel Networks Using Discontinuous Molecular Dynamics Simulations	956
Kye Won Wang, Steven Benner, Zachary Goddard, Carol K. Hall, Tania Betancourt	
(738e) Understanding Titanium Dioxide Surface Chemistry for Biomolecule Adsorption: Experiments and Molecular Dynamics Simulations	957
Liangliang Huang	
(738f) Combining Simulation and Spectroscopy to Determine the Structure and Orientation of a Carbohydrate Binding Module (CBM) Inspired Model Peptide on Cellulose	958
Kayla Sprenger, Tobias Weidner, Jim Pfaendtner	
(738g) Computational Screening of Photoactive Cyclic Peptides for Self Assembly and Disassembly	959
Nathan Duff, Ria Corder, Stefano Menegatti, Erik E. Santiso	
(738h) A Conformational Analysis of an Engineered Laminin-Mimetic, Elastin-like Fusion Protein Using Molecular Dynamics Simulations	960
James Tang, Charles McAnany, Cameron Mura, Kyle Lampe	
(739a) Tuning Physical Properties of Block Copolymers Containing Fatty Acid-Derived Long-Chain Polyacrylates (Invited Talk)	961
Megan L. Robertson, Shu Wang, Sameer Vajjala Kesava, Renxuan Xie, Enrique D. Gomez, Eric W. Cochran	
(739b) Enhanced Yield Strength in Polyethylene-Glassy Block Copolymers	962
William D. Mulhearn, Richard A. Register	
(739c) Structure Direction Via Sequence Control in Block Copolymers	963
Katherine P. Barreau, Ulrich Wiesner, Lara A. Estroff	
(739d) A Facile Approach for Simulating Complex Phases in Block Polymers Via Self-Consistent Field Theory	964
Akash Arora, Frank S. Bates, Kevin D. Dorfman	
(739e) Photoswitchable Nanomaterials Via Ordered Self-Assembly of Monodisperse Oligodimethylsiloxanes	965
R. Helen Zha, Bas de Waal, Ronald Gosens, José Berrocal, E.W. Meijer	
(739f) Molecular Alignment of Phase-Separated, Segmented Polyurethanes in Thin Films Using Intrinsic Fluorescence	966
Elizabeth Dhulst, John M. Torkelson	
(739g) Complex Coacervate Core Micelles for the Dispersion and Stabilization of Organophosphate Hydrolase in Organic Solvents	967
Carolyn Mills, Allie Obermeyer, Xuehui Dong, Bradley D. Olsen	
(739h) Biosensor Coatings from Protein-Polymer Complex Coacervates	968
Allie Obermeyer, Romeo Flores, Hursh Sureka, Bradley D. Olsen	
(739i) Microscopic Structures in Ion Exchange Fuel Cell Membranes	969
Jie Lu, Shifan Mao, Andrew J. Spakowitz, Curtis W. Frank, Michael Toney	
(747a) Adsorption, Structural and Dynamic Properties of Ethanol-Water Mixtures in Graphene and Hexagonal Boron Nitride Slit Pores	970
Anitha Kommu, Jayant K Singh	
(747b) Quantitative Monitoring of Microphase Separation Behaviors in Cationic Liposomes Using Multiple Fluorescent Probes	971
Keishi Suga, Kei Akizaki, Yukihiro Okamoto, Hiroshi Umakoshi	
(747c) A Multi-Fluid Model of Phase-Inversion Membrane Formation	972
Douglas R. Tree, Glenn H. Fredrickson	
(747d) Charged Nanochannels By Random Copolymer Micelle Assembly	973
Ilin Sadeghi, Ayse Asatekin, Jacob Kronenberg	
(747e) Development of Polybenzimidazole Nanofiltration Membranes with Biomimetic Surfaces	974
Isabel Escobar, Priyesh Wagh	
(747f) Bijel Derived, Fouling Resistant and Catalytic Ultra-/Micro- Filtration Membranes for Advanced Water Treatment Applications	975
Martin F. Haase, Kathleen J. Stebe, Daeyeon Lee	
(747g) Boosting the Performance of Random Zwitterionic Copolymers Using Ionic Liquids during Membrane Formation	976
Prity Bengani-Lutz, Ayse Asatekin	
(750a) Ultra-Stretchable Iono-Elastomers with Mechano-Electrical Response (Invited Talk)	977
Carlos R. López-Barrón, Ru Chen, Norman Wagner	
(750b) High Performance Electrospun Polyethylene Fibers By Gel-Electrospinning	978
Jay Hoon Park, Gregory C. Rutledge	

(255at) Diffusion NMR (DOSY) for Fast Absolute Molecular Weight Analysis of Polyethylene Furanoate (PEF)	979
<i>Jan-Georg Rosenboom, Giuseppe Storti, Massimo Morbidelli</i>	
(750e) Precise Control of Mesoscale Morphology in Photoreactive Polymer Blends Using Visible Light Beams.....	980
<i>Ian Hosein, Saeid Biria, Kirsten Judge</i>	
(750f) Influence of Carbonate Molecular Structures on the Morphology and Properties of Non-Isocyanate, Segmented Polyhydroxyurethane Copolymers	981
<i>Goliath Beniah, Brice E. Uno, William Heath, Karl A. Scheidt, John M. Torkelson</i>	
(750h) Aging of Thermal Insulation Properties of Polyurethane Foams	983
<i>Martina Podivinská, Pavel Ferkl, Andra Nistor, Juraj Kosek, Michal Vonka</i>	
(750i) Biorenewable Tough Blends of Polylactide and Acrylated Epoxidized Soybean Oil Compatibilized By a Polylactide Star Polymer	984
<i>Sheli C. Mauck, Shu Wang, Wenyue Ding, Brian J. Rohde, C. Karen Fortune, Guozhen Yang, Suk-Kyun Ahn, Megan L. Robertson</i>	
(755a) Sustainable Anticorrosive Self-Healing Smart Coatings for Metal Protection	985
<i>Yang Lu, Chuanxing Zhan, Luyan Wang, Evan K. Wujcik, Suying Wei</i>	
(755b) Nanostructured Shape Memory Polymers Triggered By Unconventional Stimuli.....	986
<i>Peng Jiang</i>	
(755c) Stimuli-Induced Color Variations of Polymer Brush/Gold Nanoparticle Composites	987
<i>Stephanie Christau, Tim Möller, Felix Brose, Olaf Soltwedel, Jan Genzer, Regine von Klitzing</i>	
(755d) Unprecedented Improvement in Mechanical Property Achieved through Layer-By-Layer Assembly of Polymer and Oxidation-Free Graphene.....	988
<i>Fangming Xiang, Jaime C. Grunlan</i>	
(755e) Orthogonally Spin-Coated Bilayer Films for Photochemical Immobilization and Patterning of Polymer Monolayers	989
<i>Dustin Janes, Chae Bin Kim, Michael J. Maher, Christopher J. Ellison</i>	
(755f) Assembly of Bioreducible Layer-By-Layer Films for Sequential and Dual Stage DNA Delivery.....	990
<i>Lingxiao Xie, Yi Zou, Guangzhao Mao</i>	
(755g) Surface Characterization of Polymethacrylate Coated Biochips with Water-in-Air Contact Angle Analysis	991
<i>Samira Hosseini, Ivan Djordjevic, Leo Koole, Victor H. Perez-Gonzalez, Roberto C. Gallo-Villanueva, Sergio Martinez-Chapa</i>	
(755h) Designing Durable Icephobic Surfaces.....	996
<i>Kevin Golovin, Anish Tuteja</i>	
(755i) Surface Morphology, Chemistry, and Modulus of Novel Polyorganosiloxane-Based Coatings and Their Effect on Ice Adhesion	997
<i>Alicia R. Pape, Vince Baranauskas, Stephen M. Martin</i>	
(775a) Adaptable Elastin-like Protein – Hyaluronic Acid (ELP – HA) Hybrid Hydrogels with Tunable Stress Relaxation Rates for Cell-Matrix Interaction Studies.....	998
<i>Huiyuan Wang, Sarah C. Heilshorn</i>	
(775b) Targeting Cancer Cells Via Tumor-Homing Peptide Creka Conjugated Peg Hydrogel Nanoparticles	999
<i>Pelin Erkoc, Seda Kizilel, Aysu Ceren Okur</i>	
(775c) Directing Vascular Regeneration in-Situ	1023
<i>Randall Smith, Stelios Andreadis, Daniel D Swartz</i>	
(775d) Heterogeneity in Valvular Interstitial Cell Phenotype Is a Predictor of Cell Activation and Acquisition of Degenerative Properties	1024
<i>Mir Ali, Xinmei Wang, Carla M. R. Lacerda</i>	
(775e) A Novel Integrated Intestine-Liver-Brain Model to Investigate Ethanol Metabolism	1025
<i>Rebekah Less, Anjaney Kothari, Padmavathy Rajagopalan</i>	
(775f) Alginate Capsule Composition Influences the Pancreatic Differentiation of Human Embryonic Stem Cells.....	1026
<i>Thomas Richardson, Joseph E. Candiello, Prashant N. Kumta, Ipsita Banerjee</i>	
(775g) Smart Biomaterials to Study, Mimic, and Exploit Cellular Mechanobiology	1027
<i>Sanjay Kumar</i>	
(786a) The Role of the Immune System in Modulating Tumor Cell Migration Following Radiation-Induced Changes in the Tissue Microenvironment	1028
<i>Marjan Rafat, Marta Vilalta, Todd A. Aguilera, Amato J. Giaccia, Edward E. Graves</i>	
(786b) Hemica-Hydrogel Encapsylated Micro-Channel Array in Cancer Metastasis	1029
<i>Alexandros Afshinos, Runchen Zhao, Adam Suppes, Pavlos Pachidis, Konstantinos Konstantopoulos</i>	
(786c) Tissue Origami: Directed Folding of Tissues By Programmed Cell Contractility Networks	1030
<i>Alex J. Hughes, Max Coyle, Jesse Zhang, Zev Gartner</i>	
(786d) Engineering the Gut-Liver-Brain Axis to Investigate Chemical Toxicity	1031
<i>Anjaney Kothari, Rebekah Less, Padmavathy Rajagopalan</i>	
(786e) Modulation of Lipid Composition As a Therapy in Alcohol Injured Liver Cells.....	1032
<i>Ardic O. Arikal, Amranul Haque, Gulnaz Stybayeva, Alexander Revzin, David E. Block</i>	
(786f) Signal Transduction of the Physical Environment in the Neural Differentiation of Stem Cells	1033
<i>Christina Chan, Ryan Thompson</i>	
(786g) NANOG Restores the Impaired Contractile Function of Senescent Mesenchymal Stem Cells.....	1034
<i>Aref Shahini, Panagiotis Mistriotis, Mohammadnabi Asmani, Ruogang Zhao, Stelios Andreadis</i>	
(786h) Supported Biomembrane Microenvironments of Controlled Composition for Gamma-Secretase Substrate Cleavage Assays.....	1035
<i>Lane Gilchrist, William Houlihan, Yueming Li</i>	
Author Index	