

**American Chemical Society
Division of Polymeric Materials:
Science and Engineering
Spring 2015**

**Preprints Submitted for Papers Presented at the 249th National
American Chemical Society Meeting**

PMSE Preprints Volume 112

**Denver, Colorado, USA
22-26 March 2015**

ISBN: 978-1-5108-0272-8

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© (2015) by PMSE Division of ACS
All rights reserved.

Printed by Curran Associates, Inc. (2015)

For permission requests, please contact PMSE Division of ACS
at the address below.

PMSE Division of ACS
5200 Bayway Drive
Baytown, Texas 77520

Phone: (281) 834-0222
Fax: (281) 834-2395

weiqing.weng@exxonmobil.com

Additional copies of this publication are available from:

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

PMSE

DIVISION OF POLYMERIC MATERIALS SCIENCE AND ENGINEERING – **PREPRINT PRESENTATIONS ONLY**

Andy Tsou, Qinghuang Lin, Christopher Stafford and Matthew Becker, *Program Chairs*

SUNDAY MORNING

Section D: Nanostructured Porous Polymers: Synthesis, Properties Applications Nanostructured Porous Polymers for Membrane Application

B. D. Freeman, *Organizer*

D. L. Gin, H. Lin, *Organizers, Presiding*

Sheraton Denver Downtown Hotel

Directors Row H

[9:30 20. Influence of nanoimprint lithography on the structure and permselectivity of ultrafiltration membranes. S. Maruf, M. Farr, E. Kujdzic, J. Yoshimura, Z. Ott, A.R. Greenberg, Y. Ding 1](#)

[10:30 21. CO₂-philic graphene oxide thin film composite membranes. H. Park, H. Kim, H. Yoon, B. Yoo, Y. Cho 2](#)

[11:00 22. Iptycene-containing polymeric membranes for efficient gas separation. R. Guo, J. Wiegand, S. Luo 3](#)

Section F: Graphene and Carbon Nanotubes: Synthesis, Devices and Applications Energy Harvesting and Storage

A. D. Taylor, *Organizer*

G. S. Tulevski, *Organizer, Presiding*

Sheraton Denver Downtown Hotel

Governor's Square 15

[10:40 36. Porous graphene from polymer templates and their use in energy storage applications. K. Liu, Y. Chen, Y. Zhu 5](#)

SUNDAY AFTERNOON

Section D: Nanostructured Porous Polymers: Synthesis, Properties Applications Nanostructured Porous Polymers for Membrane Application

D. L. Gin, H. Lin, *Organizers*

B. D. Freeman, *Organizer, Presiding*

R. Guo, *Presiding*

Sheraton Denver Downtown Hotel

Directors Row H

[4:00 61. Nanoparticle-embedded water filtration membranes. H.A. Weinstein, N.S. Rentz, L.F. Greenlee 6](#)

Section G: General Papers/New Concepts in Polymeric Materials
Polymer Nanotechnology

Q. Lin, *Organizer*
D. Zhang, S. Zhou, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 10

[2:50 84. ROMP-derived stimuli-responsive organoboron nanostructures. **G. Pawar**, J.B. Sheridan, F. Jaekle 7](#)

[4:10 87. Nanothermometer: Measuring temperature change in nanometer scale on photothermal Au nanoparticles. **H. Sakalak**, H. Cavusoglu, B. Buyukbekar, G. Demirel, M. Citir, M. Yavuz 8](#)

[4:30 88. Microfabrication of microfluidic devices via reaction-diffusion. **M. Kleiman**, K. Brubaker, D.T. Nguyen, A. Esser-Kahn 9](#)

MONDAY MORNING

Section B: Cooperative Research Award: Symposium in Honor of Andy Tsou and Benjamin Hsiao

Financially supported by ExxonMobil
B. T. Chu, D. Schulz, *Organizers, Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 16

[11:00 102. Cellulose nanofibers as a key component in separation membranes. **B.T. Chu**, B. Hsiao 10](#)

Section D: Nanostructured Porous Polymers: Synthesis, Properties Applications
Nanostructured Porous Polymers for Sorbents

H. Lin, *Organizer*
B. D. Freeman, D. L. Gin, *Organizers, Presiding*

Sheraton Denver Downtown Hotel
Directors Row H

[8:30 111. Porous organic polymers: synthesis and absorption/transport properties. **S.T. Nguyen** 11](#)

Section E: Stimulus-Responsive Assemblies and Materials
Tunable Particles and Surfaces

C. Bowman, A. P. Goodwin, *Organizers*
J. Cha, *Organizer, Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 17

[8:30 117. One-step preparation of thermo/photosensitive nanogels and their use as stabilizers of Pickering high internal phase emulsions. **F.M. Winnik**, X. Zhang 12](#)

[11:15 123. Reversible tuning of pore size and CO₂ adsorption in a series of azobenzene functionalized porous organic polymers \(POPs\). **Y. Zhu**, W. Zhang 14](#)

[11:35 124. Star polyelectrolytes based microcapsules with multiresponsiveness to ionic strength, pH, and temperature. W. Xu, P.A. Ledin, F. Plamper, C. Synatschke, A. Mueller, V.V. Tsukruk 15](#)

Section F: Graphene and Carbon Nanotubes: Synthesis, Devices and Applications
Low-D Carbon Devices and Materials

Sheraton Denver Downtown Hotel
Governor's Square 9

G. S. Tulevski, *Organizer*
A. D. Taylor, *Organizer, Presiding*

[10:10 128. Semiconducting SWCNT enrichment via conjugated polymer extraction. P.R. Malenfant, J. Ding, Z. Li, J. Lefebvre, F. Cheng, C. Homenick, J. Dunford, N. Du, G.P. Lopinski, R. James, C. Kingston, B. Simard, J. Humes, J. Kroeger 18](#)

[11:30 131. Novel route to fabricate graphene oxide quantum dots \(GOQDs\) and graphene quantum dots \(GQDs\). T. Fan, C. Yuan, W. Tang, S. Tong, S. Mo, C. Zhao, Y. Liu, Y. Min 19](#)

MONDAY AFTERNOON

Section A: Advances in X-ray and Neutron Scattering Techniques for Elucidating Polymer Morphology
Block Copolymers & Polymer Blends

Sheraton Denver Downtown Hotel
Directors Row J

A. I. Norman, *Organizer*
R. Jones, Y. Men, *Organizers, Presiding*

[4:15 145. SANS study on the phase behaviors of responsive star polyelectrolytes. W. Xu, I. Choi, F. Plamper, C. Synatschke, A. Mueller, Y. Melnichenko, V.V. Tsukruk 21](#)

Section B: Polymeric Biomaterials
Novel Polymeric Biomaterials: Synthesis, Modification and Fabrication

M. Grunlan, X. Jia, *Organizers, Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 16

Cosponsored by CELL

Financially supported by Genzyme; RSC 'Journal of Materials Chemistry B' and 'Biomaterials Science'; Genzyme; TA Instruments; Malvern Instruments; University of Delaware Materials Science & Engineering

[4:00 152. Improving network crosslinking of peptide-immobilized hydrogels formed by visible light-initiated thiol-acrylate photopolymerization. C. Lin, J. Bragg 23](#)

Section D: Nanostructured Porous Polymers: Synthesis, Properties Applications
New Approaches and Applications of Nanostructured Porous Polymeric Materials

D. L. Gin, *Organizer*

B. D. Freeman, H. Lin, *Organizers, Presiding*

Sheraton Denver Downtown Hotel

Directors Row H

[3:40 166. High surface area methylsilsesquioxane polymer gels made by fluoride catalyzed rearrangement. J. Furgal, H. Yamane, Y. Chujo, R.M. Laine 24](#)

Section E: Stimulus-Responsive Assemblies and Materials
Inspiration from Biology

C. Bowman, A. P. Goodwin, *Organizers*

J. Cha, *Organizer, Presiding*

Sheraton Denver Downtown Hotel

Governor's Square 17

[2:30 173. Molecular description of LCST behavior of elastin-like peptides poly\(VPGVG\) and poly\(VGPVG\). N.K. Li, Y.G. Yingling 25](#)

Section F: Graphene and Carbon Nanotubes: Synthesis, Devices and Applications
Composite Materials

G. S. Tulevski, *Organizer*

A. D. Taylor, *Organizer, Presiding*

Sheraton Denver Downtown Hotel

Governor's Square 9

[1:50 181. Efficient, low-cost, simple method to enhance the thermal efficiency of ceramic by spray deposition of silane-modified graphene. S. Tong, J. Wang, S. Mo, C. Yuan, Y. Liu, Y. Min 26](#)

[2:30 183. 3D graphene/58 S bioactive glass scaffolds as a biocompatible scaffold for retinal ganglion cells. Q. Yao, S. Yu, Y. Liu 28](#)

Section G: General Papers/New Concepts in Polymeric Materials
Polymer Synthesis

Q. Lin, *Organizer*

X. Guo, S. Zavada, *Presiding*

Sheraton Denver Downtown Hotel

Governor's Square 10

[2:10 187. Synthesis of silver oxide nanoparticles in spherical polyelectrolyte brushes. A. Ahmad, X. Liu, Y. Xu, X. Guo 29](#)

[2:30 188. Proton-transfer polymerization \(HTP\): Converting methacrylates into polyesters by an N-heterocyclic carbene. M. Hong, E.Y. Chen 31](#)

TUESDAY MORNING

Section E: Stimulus-Responsive Assemblies and Materials Biomedical Applications of Stimulus-Responsive Assemblies

C. Bowman, J. Cha, A. P. Goodwin, *Organizers*
D. Domaille, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 17

[9:10 224. Carrier-free, light-activated nanoparticle system for the simultaneous delivery of nucleic acids and cancer drugs. K. Zhang, B. Li, J.J. Zhao, X. Tan 32](#)

Section F: ACS Award in Polymer Chemistry: Symposium in Honor of Nikos Hadjichristidis Well-Defined Polymers: From Design to Applications

Y. Gnanou, *Organizer*
J. Frechet, *Organizer, Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 15

Financially supported by ExxonMobil

[11:30 235. Photoinduced ATRP and CuAAC click reactions and their combinations for macromolecular syntheses. S. Doran, E. Murtezi, S. Dadashi-Silab, M. Ciftci, G. Yilmaz, M. Tasdelen, Y. Yagci 33](#)

TUESDAY AFTERNOON

Section A: Advances in X-ray and Neutron Scattering Techniques for Elucidating Polymer Morphology High Strength Polymers and Composites

R. Jones, *Organizer*
Y. Men, A. I. Norman, *Organizers, Presiding*

Sheraton Denver Downtown Hotel
Directors Row J

[2:30 246. Switching Chirality of hybrid left-right crystalline helicoids built of achiral polymer chains: When right-to-left becomes left-to-right. M. Rosenthal, M. Burghammer, A.P. Melnikov, D.V. Anokhin, G. Bar, E.T. Samulsky, D. Ivanov 35](#)

[3:45 248. Neutron scattering characterization of amino-polymer/silica composite CO₂ adsorbents: Morphology, mobility, and consequences for performance. A. Holewinski, M. Sakwa-Novak, C.W. Jones 37](#)

Section B: Polymeric Biomaterials Drug Delivery and Controlled Release

M. Grunlan, X. Jia, *Organizers, Presiding*
Sheraton Denver Downtown Hotel

Governor's Square 16

Cosponsored by CELL

Financially supported by Genzyme; RSC 'Journal of Materials Chemistry B' and 'Biomaterials Science'; Genzyme; TA Instruments; Malvern Instruments; University of Delaware Materials Science & Engineering

[3:20 253. Designer antimicrobial materials. A. Shukla 38](#)

[3:50 254. Phenylboronic acid-installed polycarbonates: synthesis and use as drug carriers. Y. Aguirre-Chagala, J.L. Santos, M. Herrera-Alonso 40](#)

[4:20 255. Temporal control over multiple biological signals using photochemical reactions. M.A. Azagarsamy, K.S. Anseth 42](#)

Section C: Drug Delivery and Drug Device Combination Products Nanotechnology for Oncology

A. S. Kulshrestha, P. Timmins, *Organizers*
S. Sridharan, *Organizer, Presiding*
S. R. Raghavan, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 11

[1:55 258. Development and evaluation of CD44-targeted lipid-based nanoparticles in an orthotopic non-small cell lung cancer xenograft mouse model. S.R. Benhabbour, J.M. DeSimone, R. Mumper, A. Webster, C. Luft 44](#)

Section D: Nanoscale Spectroscopic and Microscopic Characterization Nanomechanical Characterization

A. H. Tsou, D. Yablon, *Organizers*
M. B. Raschke, *Presiding*

Sheraton Denver Downtown Hotel
Directors Row H

Financially supported by ExxonMobil Chemicals; Bruker; Nanosurf

[1:30 263. Nanomechanical characterization of polymers by atomic force microscopy: dynamic and quasi static approaches. C. Dietz, A. Voss, M. Schulze, R. Stark 46](#)

Section E: Stimulus-Responsive Assemblies and Materials
Biomedical Applications of Stimulus-Responsive Assemblies

C. Bowman, J. Cha, *Organizers*
A. P. Goodwin, *Organizer, Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 17

[3:45 276. Squeezable tubules from self-assembly of amphiphilic macrocycles. M. Lee 47](#)

Section F: ACS Award in Polymer Chemistry: Symposium in Honor of Nikos Hadjichristidis
Well-Defined Polymers: From Design to Applications

J. Frechet, Y. Gnanou, *Organizers*
M. Moller, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 15

Financially supported by ExxonMobil

[3:00 283. Ring opening metathesis polymerization for the synthesis of complex macromolecular architectures. M. Pitsikalis 48](#)

Section G: Polymer Modeling: Structure, Dynamics and Function
Self-Assembly and Structure Development

R. Locker, G. C. Rutledge, *Organizers*
V. K. Kuppala, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 10

Financially supported by ExxonMobil; Dow Chemical

[2:30 292. Usage of Poly\(NIPAm\) in the biofuel production. J.V. Ribeiro, R.C. Bernardi, K. Schulten 49](#)

TUESDAY EVENING

Section A: Joint PMSE/POLY Poster Session

Cosponsored by POLY[†]
Q. Lin, *Organizer*

Colorado Convention Center
Hall D

6:00 - 8:00

Graphene and Carbon Nanotubes: Synthesis, Devices and Applications.

[296. Synthesis, characterization of graphene incorporated polyamide resin. A. Musa, A. AlSheikh, T.A. Saleh 50](#)

[297. Graphene filler and graphenated nanogels. I. Yaghoubi Rad, J.W. Stansbury 52](#)

Polymeric Biomaterials.

299. Structure and properties of bisoxalamide-based segmented block-copolymers with controlled crystal thickness. **D. Anokhin**, M. Rosenthal, Y. Odarchenko, N. Sijbrandi, P. Dijkstra, J. Feijen, D. Ivanov 53

304. Solute stabilization via amphiphilic polymers possessing different architectures. **H. Luo**, J.L. Santos, M. Herrera-Alonso, B.A. Aguilar-Castillo 56

309. Impact of cross-linking on rate of release of pyridoxine from Zein fibers and films. **G.W. Selling**, E. Lafond, K.D. Utt 58

Stimulus-Responsive Assemblies and Materials.

314. Single-molecule resolution of polymer diffusion on a thermo-responsive polymer brush. **H. Chin**, D.K. Schwartz 59

Well-Defined Polymers: From Design to Applications -- ACS Award in Polymer Chemistry Symposium in Honor of Nikos Hadjichristidis.

324. Phosphazene-catalyzed ring-opening polymerization of ϵ -caprolactone and epoxide. **H. Alamri** 60

General Papers/New Concepts in Polymeric Materials.

344. Determining temperature change on photothermal Au nanorod and Au nanocage using smart polymers. **B. Buyukbekar**, H. Cavusoglu, H. Sakalak, M. Citir, G. Demirel, M. Yavuz 61

345. MALDI MS results for organotin polyamines from reaction of 3-amino-1,2,4-triazole and organotin dihalides. **C.E. Carraher, Jr.**, V. Suresh, R. Crichton, M.R. Roner 63

346. Synthesis of organotin polyamines from reaction of 3-amino-1,2,4-triazole and organotin dihalides. **C.E. Carraher, Jr.**, R. Crichton, M.R. Roner 66

347. Inhibition of cancer cell lines by organotin polyesters synthesized from reaction of the salt of D-camphoric acid and organotin dihalides. M.R. Roner, **C.E. Carraher, Jr.**, A. Moric-Johnson, L. Miller, A. Campbell 69

348. Initial study of the ability of organotin polyethers derived from the anticoagulant dicumarol to inhibit cancer cell lines. M.R. Roner, **C.E. Carraher, Jr.**, A. Moric-Johnson, L. Miller, N. Sookedo 73

349. Inhibition of cancer cell lines by the organotin polyether esters synthesized from reaction of the salt of alpha-cyano-4-hydroxycinnamic acid and organotin dihalides. **C.E. Carraher, Jr.**, M.R. Roner, A. Moric-Johnson, L. Miller, V. Suresh 76

350. Use of the dioctyltin polyether ester synthesized from reaction of alpha-cyano-4-hydroxycinnamic acid and dioctytin dichloride itself acting as the MALDI MS matrix. **C.E. Carraher, Jr.**, V. Suresh, M.R. Roner 79

353. Carbon nanotube polymer nanocomposites for potential solder application. **C. Chen**, S. Ganguli, A.K. Roy 81

354. Tuning of the glass transition temperature of epoxy polymer. **C. Chen**, S. Ganguli, A.K. Roy 83

359. Nonviral gene therapy applications of multifunctional fluorescent quantum dots. **J.M. Davis**, M. Ellis, N. Mundt, K. Fichter 85

361. Shape memory polyurethane aerogels. S. Donthula, F. Zheng, C. Sotiriou-Leventis, N. Leventis 86
362. Synthesis of Gd-doped quantum dots for theranostic applications with multiple imaging modalities. M.A. Ellis, N. Mundt, K. Fichter 87
366. Synthesis of poly(2-methacryloxy ethyltrimethyl ammonium chloride) brushes by ATRP on magnetic nanoparticles. L. Qin, H. Han, Y. Xu, L. Li, X. Guo 88
367. In situ preparation of Ag/Au nanoparticle bilayer via layer-by-layer assembly in spherical polyelectrolyte brushes. F. Zhao, J. Wang, Y. Tian, L. Li, X. Guo 91
368. Phase behavior of spherical polyelectrolyte brushes solution in supercritical carbon dioxide. L. Liu, Y. Wen, Y. Cang, J. Zhang, Z. Yu, X. Hou, R. Zhang, X. Guo 93
369. Influence of compressed gas on the solubility of inorganic salt in reverse micelle. J. Zhang, Y. Cang, Y. Wen, L. Liu, X. Hou, Z. Yu, R. Zhang, X. Guo 95
376. Investigation of effect of bulky and hydroxyl groups in the polyimide membrane for gas separation. S. Nam, D.J. Kim, H. Koh, S. Ha 97
377. Reversible transformation of planar sheets into nanocapsules by host-guest trigger. Y. Kim, M. Lee 98
383. Synthesis and characterization of robust terephthalaldehyde-phloroglucinol (TPOL) aerogels as precursors for nanoporous carbons. H. Majedifar, M.A. Saeed, S. Donthula, N. Leventis, C. Sotiriou-Leventis 99
385. Highly specific quantum dot bioconjugates for single molecule imaging. N. Mundt, M. Butts, K. Fichter 100
386. Comparison of ion transport property of the ion exchange membrane by molecular dynamic simulation. S. Nam, C. Park, D.J. Kim 101
389. Crystallization kinetics and interfacial behavior of multiwalled carbon nanotubes based polypropylene composites. S. Parija, A.R. Bhattacharyya 102
391. Thiol-ene/anhydride networks for tunably degradable neural substrates. R. Reit, V. Agrawal, B.R. Lund, W. Voit 104
392. Ferrocene-based polyamide aerogels: Graphitization, transmetalation, and use in heterogeneous catalysis. M.A. Saeed, C.A. Wisner, S. Donthula, A. Mumtaz, C. Sotiriou-Leventis, N. Leventis 105
395. In vivo evaluation of mithramycin analogue nanoformulations. D. Scott, P. Cao, J. Rohr, Y. Bae 106
396. Effect of different fillers on the durability and mechanical properties of LDPE and PVC composites. M.N. Siddiqui, H.H. Redhwi, M. Younas, S. Hussain 107
398. Synthesis and characterization of PTT using novel catalyst. G. Song, M. Huang, X. Li, W. Zhou, W. Yang 109
404. Controlled formation and dissolution of polymer suspension with visible light. Z. Wang, Y. Liao 110
406. pH-responsive polymeric microspheres for micronutrients fortification of salt. X. Xu, Y. Zeng, E. Rosenberg, R. Langer, A. Jaklenec 111

[411. Effects of substrate on the gradient structure and surface properties of fluorinated polyacrylates latex blends film. H. Yuanyuan, Z. Chaocan, C. Yanjun 112](#)

WEDNESDAY MORNING

Section B: Polymeric Biomaterials Sensors and Medical Devices

M. Grunlan, X. Jia, *Organizers, Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 16

Cosponsored by CELL

Financially supported by Genzyme; RSC 'Journal of Materials Chemistry B' and 'Biomaterials Science'; Genzyme; TA Instruments; Malvern Instruments; University of Delaware Materials Science & Engineering

[10:00 417. Noncovalent strengthening mechanisms in mussel adhesion and mussel mimetic polymers. D.G. Barrett, D.E. Fullenkamp, S. Manohar, P.B. Messersmith 114](#)

[11:20 420. Mixed-charge copolymers for complete and fast wound healing. J. Jhong, A. Venault, Y. Chang 115](#)

Section C: Drug Delivery and Drug Device Combination Products Drug Device Combination

A. S. Kulshrestha, *Organizer*

S. Sridharan, *Organizer, Presiding*

J. Lange, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 11

[9:25 422. PLGA microsphere/PVA hydrogel composite coatings to improve performance of implantable glucose biosensors. S. Vaddiraju, Z. Li, Y. Wang, D. Burgess, F. Papadimitrakopoulos 116](#)

[9:50 423. Design control process for drug delivery injection device - Symlin™ pen for parenteral diabetes treatment. L. Tsou, M. Barnett, L. Sheridan 117](#)

Section D: Nanoscale Spectroscopic and Microscopic Characterization X-ray and Electron Microscopy

D. Yablon, *Organizer*

A. H. Tsou, *Organizer, Presiding*

Sheraton Denver Downtown Hotel
Directors Row H

Financially supported by ExxonMobil Chemicals; Bruker; Nanosurf

[10:35 431. Spectroscopic characterization of \(hydrated\) polymers and polymer interfaces in the \(cryo\)-STEM. M. Libera 118](#)

[11:35 433. Increased polymer order at silica interfaces using single silanol functional groups. H. Varol, A. Sanchez, J. Baio, C. Malm, T. Weidner, M. Mermet-Guyennet, N. Martzel, D. Bonn, M. Bonn, E. Backus, S. Parekh 119](#)

Section E: General Papers/New Concepts in Polymeric Materials
Novel Polymeric Materials

Q. Lin, *Organizer*
C. O. Hayes, S. Tallury, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 17

[10:30 439. Thiol-maleimides for high glass transition thiol-click networks. S. Parker, R. Reit, B.R. Lund, W. Voit 120](#)

Section F: ACS Award in Polymer Chemistry: Symposium in Honor of Nikos Hadjichristidis
Well-Defined Polymers: From Design to Applications

J. Frechet, Y. Gnanou, *Organizers*
M. A. Hillmyer, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 15

Financially supported by ExxonMobil

[8:30 444. Micro- and macromolecular design of aliphatic polyesters. A. Albertsson 121](#)

[9:00 445. Functional and light-actuated microgels - from responsive hydrogels toward microscopic locomotor systems. M. Moeller, M. Ahmed, H. Zhang 122](#)

[10:30 447. Single site catalysts for olefin oligomerisation, polymerisation, polyolefins depolymerisation, and related reactions. J.M. Basset 123](#)

[11:30 449. Molecular engineering of substituted polyacetylenes by living anionic polymerization. J. He, Y. Zhang, J. Li, Y. Yu 124](#)

Section G: Polymer Modeling: Structure, Dynamics and Function
Structure-Function Relationships

R. Locker, G. C. Rutledge, *Organizers*
A. Jayaraman, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 10

Financially supported by ExxonMobil; Dow Chemical

[9:00 451. Morphological and rheological properties of aqueous micellar network of polyelectrolyte block copolymers. N.K. Li, W.H. Fuss, Y.G. Yingling 125](#)

[9:40 453. Supramolecular interaction between surface crystal and side chain crystal and its application. S. Yao, T. Okuma, A. Maeda, K. Hirakawa, Y. Hasebe, F. Yamasaki, R. Nakano, H. Sekiguchi 126](#)

[10:50 456. Molecular basis of deformation behavior of chemically crosslinked epoxy thermosets. S. Chattaraj, P. Pant, D. Pawaskar, H. Nanavati 128](#)

WEDNESDAY AFTERNOON

Section B: Polymeric Biomaterials Instructive Tissue Engineering Matrices

M. Grunlan, X. Jia, *Organizers, Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 16

Cosponsored by CELL

Financially supported by Genzyme; RSC 'Journal of Materials Chemistry B' and 'Biomaterials Science'; Genzyme; TA Instruments; Malvern Instruments; University of Delaware Materials Science & Engineering

[1:55 459. Inherent mechanical gradients influence cell behavior in electrospun Fiber mats. M.C. Calhoun, T.M. Nelson, J.J. Lannutti, J.O. Winter, R. Dupaix 130](#)

Section C: Drug Delivery and Drug Device Combination Products Controlled Release

S. Sridharan, *Organizer*

A. S. Kulshrestha, *Organizer, Presiding*

L. Tsou, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 11

[2:45 469. Noncovalent interaction-stabilized polymeric micelles for targeted delivery of anticancer drug. J.P. Tan, A. Attia, C. Yang, S. Gao, J.L. Hedrick, A. Nelson, Y. Yang 131](#)

Section D: Nanoscale Spectroscopic and Microscopic Characterization Spectroscopic Characterization

A. H. Tsou, D. Yablon, *Organizers*

H. W. Ade, *Presiding*

Sheraton Denver Downtown Hotel
Directors Row H

Financially supported by ExxonMobil Chemicals; Bruker; Nanosurf

[2:20 474. Chemical, morphological, and mechanical characterization of the interphase of polymer matrix composites. D. Nepal, A. Ecker, J. Moller, S. Barr, R.J. Berry, T. Breitzman 133](#)

[3:50 477. Dynamic mechanical relaxations in ultrahigh molecular weight polyethylene fibers probed by solid-state NMR. N.V. Patil, W. Hu 134](#)

Section E: General Papers/New Concepts in Polymeric Materials
Novel Polymeric Materials

Q. Lin, *Organizer*
M. Galizia, N. Guigo, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 9

[3:30 483. Predictive calculation of hydrogen and helium solubility in glassy and rubbery polymers. M. Galizia, Z.P. Smith, G.C. Sarti, B.D. Freeman, D.R. Paul 135](#)

[4:30 486. PEGMEMA-Titania hybrid particles from commercial dual functional organophosphonic acid linkers: a powerful approach to coating applications. E. Cao, E. Prouzet, V. Héroguez 136](#)

THURSDAY MORNING

Section A: General Papers/New Concepts in Polymeric Materials
Polymer Processing and Properties

Q. Lin, *Organizer*
M. W. Frey, M. Krecker, S. Tallury, *Presiding*

Sheraton Denver Downtown Hotel
Governor's Square 10

[8:50 500. Processing polyamides in superheated water. G.C. Evans, A.J. Lesser 139](#)

[9:50 503. Halogen-bonded mesogens direct polymer self-assemblies over millimeter length scale. N. Houbenov, R. Milani, M. Poutanen, J. Haataja, V. Dichiarante, J. Sainio, J. Ruokolainen, G.P. Resnati, P. Metrangolo, O.T. Ikkala 141](#)

[10:30 504. Effects of solvents on the morphology and conductivity of poly\(3,4ethylenedioxythiophene\):poly\(styrenesulfonate\) nanofibers. M.W. Frey, M. Pehlivaner Kara 142](#)

[10:50 505. Nonisothermal crystallization of biobased poly\(ethylene 2,5-furandicarboxylate\). N. Sbirrazzuoli, A. Codou, N. Guigo, J. van Berkel, E. Dejong 144](#)

[11:10 506. Dynamic strain hole burning of elastomers filled with nanoparticles. S. Li, G. Zhan, Y. Mi, X. Wang 145](#)

Section C: Drug Delivery and Drug Device Combination Products
Non-fouling Antimicrobial and Transdermal Therapies

A. S. Kulshrestha, S. Sridharan, *Organizers*,
Presiding

Sheraton Denver Downtown Hotel
Governor's Square 11

[10:15 517. Pentobra: A novel multifunctional antibiotic to fight bacterial resistance. S. Deshayes, N. Schmidt, G. Wong, A.M. Kasko 147](#)

Section D: General Papers/New Concepts in Polymeric Materials
Design of Functional Polymeric Materials

Q. Lin, *Organizer*

W. Braunecker, H. Gao, *Presiding*

Sheraton Denver Downtown Hotel

Directors Row H

[9:10 520. Rational design of a crown-ether-bearing copolymer by overcoming the compositional drift in *N*-\(2-hydroxypropyl\)methacrylamide copolymerization. J. Moraes, I. Simionca, H. Ketari, H.A. Klok 148](#)

[11:10 525. Design of multifunctional quantum dot conjugates for biomedical applications. J.M. Davis, B. Agana, N. Mundt, M. Ellis, D. Klaus, K. Fichter 150](#)

Section E: General Papers/New Concepts in Polymeric Materials
Stimulus-Responsive Materials

Q. Lin, *Organizer*

L. Peng, S. Tallury, *Presiding*

Sheraton Denver Downtown Hotel

Governor's Square 9

[9:10 529. Electrochemical redox responsive supramolecular hydrogels based on host-guest interaction between \$\beta\$ -cyclodextrin and ferrocene. L. Peng, A. Feng, J. Yuan 151](#)

Section F: General Papers/New Concepts in Polymeric Materials
New Concepts in Polymeric Materials

Q. Lin, *Organizer*

H. Dong, A. Shirke, *Presiding*

Sheraton Denver Downtown Hotel

Plaza Court 8

[9:50 540. Sustainable large-scale solvent driven actuation by self-healable polyelectrolyte multilayers. Y. Gu, X. Huang, N. Zacharia 155](#)

[10:30 541. Preparation of poly\(methyl methacrylate/butyl acrylate\) nanoparticles by miniemulsion polymerization in the presence of commercially available hydrophobized TiO₂ nanoparticles. E.S. Adurahim, M.A. Bahattab, A. Schoth, K. Landfester, R. Munoz-Espi 156](#)