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# PMSE

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

M. Becker, Q. Lin, A. Nelson, and C. Stafford, *Program Chairs*

### SUNDAY MORNING

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#### Section B: **Eastman Chemical Student Award in Applied Polymer Science**

Financially supported by Eastman Chemical Company  
J. Gilmer, *Organizer, Presiding*

Hilton San Francisco Union Square  
Golden Gate 4

**8:35** [7. Successive mechanochemical activation and small molecule release in an elastomeric material. M. B. Larsen, A. J. Boydston](#) <sup>3</sup>

**9:05** [8. Block copolymers for rational design of nitrogen-enriched nanocarbons suitable for sustainable energy applications. M. Zhong, E. Kim, H. Nulwala, A. Star, T. Kowalewski, K. Matyjaszewski](#) <sup>5</sup>

**9:35** [9. Scalable anti-fouling reverse osmosis membranes. B. T. McVerry, M. C. Wong, C. Marambio-Jones, K. L. Marsh, E. M. Hoek, R. B. Kaner](#) <sup>8</sup>

**10:20** [10. Polymer-derived electrospun turbostratic carbon nanofibers with controlled electrochemical activities for sensing and energy applications. X. Mao, G. C. Rutledge, T. Hatton](#) <sup>10</sup>

**10:50** [11. Cellulose nanocrystal reinforced bioactive poly\( \$\epsilon\$ -caprolactone\) nanocomposite for bone tissue engineering. J. Hong, M. Roman](#) <sup>33</sup>

**11:20** [12. Imidazole-containing ABA triblock copolymers containing a synergy of ether and imidazolium sites. C. Jangu, J. H. Wang, D. Wang, J. R. Heflin, R. H. Colby, T. E. Long](#) <sup>35</sup>

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#### Section F: **General Papers/New Concepts in Polymeric Materials** **Polymeric Biomaterials and Applications**

Q. Lin, *Organizer*  
A. Shastri, X. Jia, *Presiding*

Hilton San Francisco Union Square  
Continental Parlor 7/8

**10:30** [40. Chemo-mechanically modulated biomolecule catch and release with aptamer-functionalized adaptively reconfigurable polymeric systems. A. Shastri, X. He, O. Kuksenok, L. McGregor, Y. Vasquez, A. Balazs, J. Aizenberg](#) <sup>38</sup>

## SUNDAY AFTERNOON

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### Section B: Porous Polymers Microporous

Financially supported by Polymer Science Journal, Elsevier

D. Schiraldi, M. Hillmyer, M. Silverstein,  
*Organizers*  
N. McKeown, *Organizer, Presiding*  
P. Budd, *Presiding*

Hilton San Francisco Union Square  
Golden Gate 4

**2:55 54.** [Porous aromatic frameworks \(PAFs\) functionalized with metal-Schiff base complexes for catalytic oxidation. S. J. Garibay, O. K. Farha, J. T. Hupp, S. T. Nguyen](#)<sup>3</sup>:

## MONDAY MORNING

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### Section D: Self-Healing and Shape Memory Materials

K. Cavicchi, *Organizer*  
R. A. Weiss, *Organizer, Presiding*  
M. W. Urban, T. Xie, *Presiding*

Hilton San Francisco Union Square  
Continental Parlor 9

**8:30 111.** [Polymer networks capable of reversible shape-memory-effects. M. Behl, K. Kratz, U. Nöchel, T. Sauter, A. Lendlein](#)<sup>3</sup>;

**10:50 116.** [Shape memory polyimides based on two novel trifunctionalized phosphine-oxide crosslinking agents. D. H. Wang, L. Tan](#)<sup>42</sup>

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### Section F: Advanced Materials Synthesis and Assembly Toward Technology Challenges

Financially supported by IBM Almaden Research  
Center

Hilton San Francisco Union Square  
Continental Parlor 3

A. Nelson, D. Coady, J. Hedrick, *Organizers*  
C. Yan, *Presiding*

**10:45 130.** [Engineering polymer self-assembly via sidechain modification in phenylene vinylenes. K. N. Plunkett, X. Zhu, S. E. Ingle, D. A. Vanden Bout](#)<sup>44</sup>

## TUESDAY MORNING

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### Section A: Stimuli-Responsive Supramolecular, Macromolecular and Nanostructured Systems and Biopolymer-Driven Organization of Nanostructures

Financially supported by Army Research Office, Tulane University, University of Miami, and The Royal Society of Chemistry/Chemical Communications (ChemComm)

N. Gianneschi, J. Jayawickramarajah, A.  
Braunschweig, *Organizers*  
C. Guzman, *Presiding*

Hilton San Francisco Union Square  
Golden Gate 2

**9:05** [178. Stable and pH-responsive polymersomes decorated with folate-antennas for targeting tumor cells. B. Voit, M. Yassin, D. Appelhans, R. Wiedemuth, H. Temme](#) "45

**10:05** [181. Thermo-responsive diblock copolymer worm gels with tunable critical gelation temperature. V. J. Cunningham, L. P. Ratcliffe, A. Blanazs, N. J. Warren, O. O. Mykhaylyk, S. P. Armes](#) "46

**11:40** [185. Salt, shake, fuse: Giant hybrid polymer/lipid vesicles via mechanically-activated fusion. I. M. Henderson, W. F. Paxton](#) "48

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Section B: **Porous Polymers**  
**Microporous**

Financially supported by Polymer Science Journal, Elsevier  
D. Schiraldi, M. Silverstein, M. Hillmyer, N.  
McKeown, *Organizers*  
C. Daniel, Y. Lee, *Presiding*

Hilton San Francisco Union Square  
Golden Gate 4

**9:30** [188. Rational design and synthesis of porous polymers: Toward high surface area. W. Lu, H. Zhou](#) "49

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Section D: **Self-Healing and Shape Memory Materials**

K. Cavicchi, R. A. Weiss, *Organizers*  
J. J. Benkoski, P. Mather, *Presiding*

Hilton San Francisco Union Square  
Continental Parlor 9

**9:30** [202. Shape memory natural rubber \(SMNR\). D. Quitmann, R. Hoehner, F. Katzenberg, J. C. Tiller](#) "4:

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**TUESDAY AFTERNOON**

Section B: **Porous Polymers**  
**Macroporous**

Financially supported by Polymer Science Journal, Elsevier

D. Schiraldi, M. Hillmyer, N. McKeown, M.  
Silverstein, *Organizers*  
D. Grande, F. Du Prez, *Presiding*

Hilton San Francisco Union Square  
Golden Gate 4

**3:15** [231. Functional doubly porous materials based on polymer networks. D. Grande, B. Le Droumaguet, H. Ly, B. Carbonnier, V. Monchiet, T. Lemaire, S. Naili](#) "52

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Section E: **Functional Fluids: Synthesis, Structure and Properties**  
**Ionic Liquids and Complex Fluids Based Functional Fluids**

Financially supported by ExxonMobil Research & Engineering Company

A. Patil, *Organizer*  
S. Luo, *Organizer, Presiding*

Hilton San Francisco Union Square  
Golden Gate 5

[3:15 253. Interpolyelectrolyte complexes based on miktoarm stars. F. A. Plamper, A. P. Gelissen, D. V. Pergushov, O. V. Borisov, J. Timper, A. Wolf, A. B. Zezin, W. Richtering, H. Tenhu, U. Simon, J. Mayer](#) "54

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**TUESDAY EVENING**

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Section A: **Joint PMSE/POLY Poster Session**

Q. Lin, *Organizer, Presiding*

Moscone Center, West Bldg.  
Exhibit Hall

**6:00 - 8:00**

[274. Grafting of DMAEMA onto cotton gauze induced by gamma-rays for biomedical purposes. M. A. Luna-Straffon, G. Brackman, T. Tom Coenye, C. Alvarez-Lorenzo, A. Concheiro, E. Bucio](#) "56

[276. Synthesis of group VA polyethers from the reaction of organometallic group VA dihalides with isomannide \(D-mannitol\). C. E. Carraher, Jr., S. Siddiqui, M. R. Roner](#) "59

[277. Fragmentation MALDI TOF MS of polyesters formed from the reaction of the salts of chelidonic acid and thiodiglycolic acid with Group VA dihalides. C. E. Carraher, Jr., M. Ayoub, N. Pham, M. R. Roner](#) "62

[278. Synthesis of organotin polyesters from reaction of the salt of D-camphoric acid and organotin dihalides. C. E. Carraher, Jr., A. G. Campbell, M. R. Roner](#) "66

[279. Synthesis of organotin polyether esters from reaction of the salt of alpha-cyano-4-hydroxycinnamic acid and organotin dihalides. C. E. Carraher, Jr., V. Suresh, M. R. Roner](#) "69

[280. Synthesis of organotin polyethers derived from the anticoagulant dicumarol. C. E. Carraher, Jr., N. Sookedo, J. D. Johnson, M. R. Roner](#) "72

[281. Fragmentation MALDI TOF MS of polyesters formed from reaction of the salts of chelidonic acid and thiodiglycolic acid with group IVB metallocene dichlorides. C. E. Carraher, Jr., M. Ayoub, N. Pham, M. R. Roner](#) "75

[290. Ink-jet printing based high-throughput layer-by-layer assembly for biomedical applications. M. Choi, J. Hong](#) "7:

[303. Molecular structure parameters of sodium lignosulfonate single molecules. Y. Deng, Y. Guo, X. Qiu](#) "82

- [304. Overcoming CARPA while stopping internal bleeding with hemostatic nanoparticles. \*\*D. Hickman, A. Shoffstall, R. Groynom, E. Shoffstall, E. Lavik\*\*](#) "84
- [330. Synthesis of functional ladder-like polysilsesquioxanes. \*\*A. S. Lee, S. Song, K. Baek, S. Hwang\*\*](#) "85
- [331. Self-assembled dendron-cyclodextrin nanotubes as a biosensory platform. \*\*J. Lee, D. Min, J. Hwang, J. Sim, C. Park, C. Kim\*\*](#) "87
- [332. Glutathione-responsive mesoporous silica nanocarriers with surface cyclodextrin gatekeepers for drug delivery application. \*\*J. Lee, H. Kim, H. Kim, Y. Bae, H. Lee, H. Park, C. Kim\*\*](#) "89
- [333. Li batteries fabricated with inorganic-organic hybrid gel polymer electrolytes crosslinked with miniscule amounts of ladder-like structured polysilsesquioxanes. \*\*J. Lee, A. Lee, J. Lee, S. Hong, S. Hwang, C. Koo\*\*](#) "8;
- [356. New polythiophene-based main-chain polyoxometalate-containing conjugated polymers. \*\*R. Wang, L. Jin, T. Dutta, Y. Li, Z. Peng\*\*](#) "92
- [359. Selective CaCO<sub>3</sub> formation within hydrogels. \*\*N. Rauner, M. Meuris, S. Dech, J. Godde, J. C. Tiller\*\*](#) "94
- [380. Electrolyte equilibrium in ion exchange polymer. \*\*Z. Tang, T. Zawodzinski\*\*](#) "96
- [386. 1D, 2D, and 3D carbon nanostructures as additives in glassy and rubbery epoxy nanocomposites. \*\*P. I. Xidas, D. J. Giliopoulos, D. Gournis, D. N. Bikiaris, E. D. Manias, K. S. Triantafyllidis\*\*](#) "9:
- [388. Synthesis and characterization of a novel dielectric polymer with sulfonyl side groups. \*\*J. Wei, G. Zhang, X. Liu, L. Zhu\*\*](#) " : 2
- [418. Synthesis of well-defined polyethylene-polydimethylsiloxane-polyethylene triblock copolymers by diazene-based hydrogenation of polybutadiene blocks and their bulk self-assembly properties. \*\*N. Petzetakis, N. Balsara\*\*](#) " : 4
- [429. Tunable multiple-shape memory of lightly cross-linked polyethylene blends. \*\*R. Hoehner, F. Katzenberg, J. C. Tiller\*\*](#) " : 6
- [433. Azine-linked covalent organic framework. \*\*S. Dalapati, D. Jiang\*\*](#) " : 8
- [436. Design of novel antibacterial macroporous mats based on polylactide nanofibers and zinc oxide nanoparticles. \*\*H. Rodriguez, G. Morales, A. S. Ledezma Perez, D. Grande\*\*](#) " : 9
- [437. Design and synthesis of nanoporous polystyrene frameworks with “clickable” thiol-coated pore walls. \*\*D. Grande, B. Le Droumaguet\*\*](#) " ;
- [439. Developing 2D covalent organic frameworks for carbon dioxide adsorption. \*\*N. Huang, D. Jiang\*\*](#) " ; 3
- [453. Designing covalent organic frameworks as highly active asymmetric catalysts. \*\*H. Xu, D. Jiang\*\*](#) " ; 4
- [459. RAFT dispersion polymerization in non-polar solvents: Facile production of block copolymer spheres, vesicles, and thermo-responsive worms in \*n\*-alkanes. \*\*M. J. Derry, L. A. Fielding, J. A. Lane, S. P. Armes\*\*](#) " ; 5
- [469. Microfabrication of microfluidic devices via reaction-diffusion. \*\*M. Kleiman, K. Brubaker, D. Nguyen, A. P. Esser-Kahn\*\*](#) " ; 7

[475. pH-responsive diblock copolymer nano-objects based on non-ionic monomers: Ionization of carboxylic acid end-groups induces an order-order morphological transition. \*\*J. R. Lovett\*\*, L. P. Ratcliffe, N. J. Warren, S. P. Armes](#) "328

[478. pH-responsive framboidal vesicles prepared using polymerization-induced self-assembly via RAFT aqueous dispersion polymerization. \*\*C. J. Mable\*\*, S. P. Armes](#) "329

[485. Architectural effects on the stability of thermosensitive unimeric micelles. \*\*F. A. Plamper\*\*, A. Steinschulte, B. Schulte, S. Rütten, T. Eckert, J. Okuda, M. Möller, S. Schneider, O. Borisov](#) "322

[486. RAFT polymerization of hydroxy-functional methacrylic monomers under heterogeneous conditions: Effect of varying the core-forming block. \*\*L. P. Ratcliffe\*\*, A. Blanazs, C. N. Williams, S. L. Brown, S. P. Armes](#) "324

[490. Multi responsive macromolecular linear and H-shape architectures via cyclodextrin host/guest chemistry. \*\*B. V. Schmidt\*\*, M. Hetzer, H. Ritter, C. Barner-Kowollik](#) "326

[496. Testing vesicles to destruction: SAXS and mass spectrometry studies on block copolymer vesicles prepared via polymerization-induced self-assembly. \*\*N. J. Warren\*\*, O. O. Mykhaylyk, A. J. Ryan, T. Doussineau, P. Dugourd, R. Antoine, G. Portale, S. P. Armes](#) "328

## WEDNESDAY MORNING

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### Section B: **Porous Polymers**

#### **PolyHIPEs**

Financially supported by Polymer Science Journal, Elsevier

D. Schiraldi, M. Silverstein, M. Hillmyer, N.

McKeown, *Organizers*

A. Bismarck, P. Krajnc, *Presiding*

Hilton San Francisco Union Square

Golden Gate 4

**10:55 516. Nanoparticle stabilized HIPEs derived macroporous metaloxides. **S. Kovacic**, A. Anzlovar, G. Ferk, C. Slugovc** "32:

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### Section C: **Functional Supramolecular Polymers**

Financially supported by ACS Macro Letters, Macromolecules, and Biomacromolecules

S. Rowan, H. Cui, *Organizers, Presiding*

Hilton San Francisco Union Square

Continental Ballroom 5

**11:15 528. Thermogelling polymers and their biomedical applications. **X. Loh**** "32;

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Section E: **General Papers/New Concepts in Polymeric Materials**  
**Polymers for Electronics and Clean Energy**

Q. Lin, *Organizer*  
C. Yan, D. Devaux, *Presiding*

Hilton San Francisco Union Square  
Golden Gate 5

**11:10 543.** [Synthesis of conductive block copolymer binders for the silicon anode in lithium ion battery.](#) **Y. Chen, G. Ai, S. Park, V. S. Battaglia, G. Liu** "332

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**WEDNESDAY AFTERNOON**

Section A: **Stimuli-Responsive Supramolecular, Macromolecular and Nanostructured Systems and Biopolymer-Driven Organization of Nanostructures**

Financially supported by Army Research Office, Tulane University, University of Miami, and The Royal Society of Chemistry/Chemical Communications (ChemComm)

J. Jayawickramarajah, A. Braunschweig, N. Gianneschi, *Organizers*  
C. LeGuyader, *Presiding*

Hilton San Francisco Union Square  
Golden Gate 2

**2:35 557.** [How to prepare micellar nanoparticles with diverse morphologies via ROMP.](#) **S. A. Barnhill, N. C. Gianneschi** "333

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Section C: **Functional Supramolecular Polymers**

Financially supported by ACS Macro Letters, Macromolecules, and Biomacromolecules

S. Rowan, H. Cui, *Organizers, Presiding*  
M. Zhang, *Presiding*

Hilton San Francisco Union Square  
Continental Ballroom 5

**2:25 575.** [Branched hierarchical nanocrystals fabricated by in situ nanoparticlization of fully conjugated polythiophene diblock copolymers.](#) **I. Lee, P. Amaladass, K. Yoon, S. Shin, Y. Kim, I. Kim, E. Lee, T. Choi** "334

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**THURSDAY MORNING**

Section D: **General Papers/New Concepts in Polymeric Materials**  
**Novel Polymeric Materials**

Q. Lin, *Organizer*  
B. Donovan, M. Klapper, *Presiding*

Hilton San Francisco Union Square  
Continental Parlor 2

**8:50 634.** [Synthesis-driven approach to functional amphiphilic co-networks.](#) **C. Nardi Tironi** "335

**9:50 637.** [Redox solute doped polypyrrole for high-charge capacity polymer electrodes.](#) **M. R. Arcila-Velez, M. E. Roberts** "336

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

Q. Lin, *Organizer*

A. N. Bruce, S. Luo, *Presiding*

Hilton San Francisco Union Square

Continental Ballroom 6

**10:50** [648. Volume shrinkage characteristics for vinyl ester resin-montmorillonite nanocomposites. Y. Huang, I. Liu, Y. Yu, R. Rau, H. Oktavia, Y. Tassia](#) "338

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Section F: **General Papers/New Concepts in Polymeric Materials**  
**Physics, Processing and Properties of Polymeric Materials**

Q. Lin, *Organizer*

S. Im, *Presiding*

Hilton San Francisco Union Square

Continental Parlor 3

**8:50** [652. Non-bell distribution of crystal growth rates for poly\(ethylene naphthalate\). J. Wang, M. Chen](#) "343

**9:10** [653. Novel viscoelastic characteristics of a hybrid AuNP-PMMA composite. M. A. Morsy](#) "345

**10:10** [655. Method to incorporate Janus property onto arbitrary porous substrates. Y. Yoo, J. You, M. Oh, S. Im](#) "346

**11:10** [658. Reinforcement of epoxy polymers with micro/nanosized and mesostructured silicas. D. J. Giliopoulos, P. I. Xidas, D. N. Bikiaris, K. S. Triantafyllidis](#) "348