POLY

DIVISION OF POLYMER CHEMISTRY

B. Helms, T. Epps and H. Brown, *Program Chairs*

SUNDAY MORNING

Section A

Rosen Centre Hotel
Signature 2

ACS Award in Polymer Chemistry in Honor of Tim Swager

M. Jeffries-El, S. A. Sydlik, *Organizers, Presiding*

8:10 Introductory Remarks.

8:15 . Using light to grow materials. J.R. Lamb, K. Qin, **J.A. Johnson**

8:45 . Programming macromolecules to encode functions. **V. Percec**

9:15 . Photocontrolling dynamic covalent chemistry in polymer networks. **J.A. Kalow**

9:45 Intermission.

10:00 . Instructed-assembly to form supramolecular polymers for controlling cell fates. H. Wang, Z. Feng, H. He, J. Wang, **B. Xu**

10:30 . Amplifying fluorescent sensors based on molecular systems with extended electronic delocalization. **E.E. Nesterov**

11:00 . Polymer films created by reactive vapor deposition and their application in wearable electronics. **T.L. Andrew**

11:30 . Metal-free purely organic phosphors: Molecular design and applications. **J. Kim**

Section B

Rosen Centre Hotel
Salon 12

Synthesis & Properties of Densely Grafted Polymers

J. B. Matson, G. Stein, R. Verduzco, *Organizers*
J. G. Kennemur, *Organizer, Presiding*

8:00 Introductory Remarks.

8:05 . Densely grafted polymers by ATRP. **K. Matyjaszewski**

8:50 . Chain growth polycondensation via substituent effects for the synthesis of functional rigid rod polymer brushes. **S.G. Boyes**, F.C. Prehn, C. Reese, S. Vyas, A. Kennedy

9:10 . Macromolecules with programmable shape, size, and chemistry. **D. Guironnet**, D. Walsh, C.E. Sing, S. Rogers, M. Wade, S. Dutta

9:30 . Simple grafting-to, radical coupling strategy yields post-synthesis tuning of grafting density in bottlebrush polymers: Synthesis and characterization of bulk and confined properties. L. Li, K. Jin, X. Chen, **J.M. Torkelson**

9:50 Intermission.

10:20 . Molecular polymer brush templating for compartmentalized hybrid materials and soft matter. **M. Muellner**

10:50 . Thermodynamics of bottlebrush systems from low-strain cycloolefins. W.J. Neary, T. Isais, B.A. Fultz, **J.G. Kennemur**

11:10 . Amphiphilic double-brushes as stabilizers of hydrophobic solutes. **M. Herrera-Alonso**

11:30 . Ultrasound-induced chain scission of the dendronized polymers: The effect of side chains on the mechanochemical degradation. **K. Bang**, G.I. Peterson, T. Choi

Section C

Rosen Centre Hotel
Salon 19

The Fate of Plastics in Water

R. T. Mathers, S. A. Miller, *Organizers, Presiding*

A. P. Dove, U. Natarajan, M. A. Pasquinelli, *Presiding*

8:20 . Quantification of polypropylene degradation as a function of depth in recovered ocean plastics. **S.V. Orski**, K. Beers, V. Rodriguez C.

9:00 . Degradable materials by the radical polymerization of cyclic ketene acetals. **Y. Guillaneuf**

9:20 . Weak link strategies for polymer degradation. **S.A. Miller**, S. Shen, G. Short, J. Smith, J. Torgunrud

10:00 . Low density expanded poly(lactide) with star polymers via subcritical CO_2 processing for biodegradable floral foams. **P.T. Dirlam**, M.A. Hillmyer

10:20 Intermission.

10:35 . Extraction, synthesis, and characterization of biopolymers from plant waste. **S. Shen**, J.A. Thomas, S.A. Miller

10:55 . Natural biomass-based sustainable polymers: lignin as a crosslinker in shape memory polymers. **H. Chung**, H. Liu

11:25 . Degradable epoxy resins containing multifunctional biobased components. **M. Shen**, G. Yang, R. Almallahi, Z. Rizvi, E. Gonzalez, T. Hendrix- Doucette, M.L. Robertson

Section D

Rosen Centre Hotel
Salon 23

General Topics: New Synthesis & Characterization of Polymers

D. Garcia, *Organizer*
A. Bristol, M. R. Elshaer, *Presiding*

8:00 . Characterizing the molecular weight of conjugated polymers using gel permeation chromatography and static light scattering. **R. Fair**, R. Xie, R.H. Colby, E. Gomez

8:20 . nano-FTIR based identification & characterization of polymers at 10nm resolution. **A. Huber**, T. Gokus, S. Mastel

8:40 . BODIPY based ultra-low band gap D-A polymer with NIR absorption and emission. **G. Tarafdar**, U. Pandey, P. Ramamurthy

9:00 . Characterization of PEEK filaments for extrusion-based additive manufacturing processes. **M. Garcia**, C. Basgül,, B. Streifel, R.L. Middleton, S. Kurtz

9:20 . Spectroscopic characterization of modified polyethyleneimine. **J.D. Mizvesky**, R. Wodzinski, **M.R. Elshaer**

9:40 . Amphidynamic behavior in covalent organic frameworks probed via powder X-ray diffraction and ^{13}C CP-MAS T_1 relaxation experiments. **D.A. Vazquez-Molina**, F.J. Uribe-Romo

10:00 . Structure and dopant engineering in PEDOT thin films: Dramatic conductivity enhancement and application to 100% polymeric transparent film heaters. **J. Simonato**, A. Carella, M. Gueye, R. Demadrille, J. Faure-Vincent

10:20 . High lithium–ion transference number electrolytes based on poly(lithium bis(alkenylmalonato)borate) solutions. **B.L. Dewing**, N.G. Bible, C.J. Ellison, M.K. Mahanthappa

10:40 . Magneto-optics in semiconducting conjugated polymers. **P. Wang**, T.M. Swager

11:00 . Advanced gas separation membranes from ionic-group-mediated polyimides of intrinsic microporosity: Ionic-PIM-PIs. **I. Kammakakam**, J.E. Bara

11:20 . High dielectric constant semiconducting poly(3-alkylthiophene)s from side-chain modification with polar sulfinyl and sulfonyl groups. **C. Wang**, Z. Zhang, S. Pejic, R. Li, M. Fukuto, L. Zhu, G. Sauve

Section E

Rosen Centre Hotel
Salon 20

New Frontiers in Aerospace Polymers: Advances & Challenges in Experiments & Simulations

Advances in Thermoset Polymers & Composites

Cosponsored by PMSE
Financially supported by Air Force Research Laboratory; Bruker Instruments; Anasys Instruments; Boeing
M. A. Meador, D. Nepal, *Organizers*
J. S. Wiggins, *Organizer, Presiding*
C. Reynolds, *Presiding*

8:00 . Multi-aromatic epoxy-amine thermosets with high performance properties. **R.J. Varley**, L.C. Henderson, L. Reyes

8:30 . Novel furan-based thermosetting polymer systems. **G.R. Palmese**

9:00 . Determining amine reactivities effect on epoxy network formation: Influence of chemical structure and processing conditions on local properties. **J. Bates**, J.S. Wiggins, D. Nepal, C. Estridge, H. Koerner, S.J. Tucker, V. Varshney

9:20 . Development of a fundamental understanding of the curing kinetics of benzoxazine/epoxy blends *via in situ* Fourier transform infrared spectroscopy. **S. Hawkins**, A. Maffe, E. Barjasteh, D. Nepal

9:40 Intermission.

10:00 . Directly spun, aligned carbon nanotubes and carbon fibre epoxy-based hybrid composites for the potential applications in aerospace engineering. **S. Rahatekar**, J. Chen, K. Hazra, A. Lekawa, K. Koziol

10:20 . Phenylphosphine oxide functional benzoxazine as low earth orbit stable composite matrix polymers. **W.K. Fuchs**, J.S. Wiggins

10:40 . Moisture adsorption of the benzoxazine-based thermoset matrix for advanced composite applications. **J. Bannuelos**, E. Barjasteh

11:00 . Radical-anion complexes on plasma-treated thermoplastic composite surfaces. **T. Oldham**, D.R. Ferriell, M.A. Belcher, A. Rubin, E. Thimsen

Section F

Rosen Centre Hotel
Salon 21

Poly(2-oxazoline)s & Polypeptoids

R. Hoogenboom, H. Schlaad, R. N. Zuckermann, *Organizers*
M. Hruby, R. Luxenhofer, *Presiding*

8:00 Introductory Remarks.

8:05 . Poly(2-oxazoline)s with 2,2'- imino diacetate end groups for conjugation with proteins. **J.C. Tiller**, M. Hijazi, P. Spiekermann, C. Krumm

8:35 . Biomedical potentials for biomimetic peptoids. **K. Kirshenbaum**

9:05 . Structure-property relationships and therapeutic efficacy of ultra-high drug loaded poly(2-oxazoline)/poly(2-oxazine) micelles. **R. Luxenhofer**, M. Lübtow, H. Malik, Z. He, X. Wan, R. Jordan, A. Kabanov

9:35 Intermission.

9:50 . Amplification of protein detection signal using poly(2-methyl-2-oxazoline) based mixed brushes with switchable properties. **Y. Wang**

10:20 . Polysaccharide-*graft*-poly(2-alkyl-2-oxazoline) hybrid copolymers: Versatile materials for bioapplications. **M. Hruby**, L. Loukotova, M. Rabyk

10:50 . Functional bioinspired polypeptoide-based polymers. **J. Sun**, Y. Ni, z. shi

11:20 . POZ^{TM} – poly(2-oxazoline) update on next generation in polymer therapeutics. **R. Moreadith**

Section G

Rosen Centre Hotel
Salon 22

Polymer-Based Gene & Drug Delivery Systems

Polymers for DDS

X. M. Liu, Y. Ohya, Y. Wang, *Organizers*
T. Fujiwara, *Organizer, Presiding*
L. Zhu, *Presiding*

8:00 Introductory Remarks.

8:05 . Macromolecular therapeutics and combination therapies. **J. Hedrick**, N. Park, Y. Yang

8:40 . Disulfiram copper nanoparticles prepared with a Stabilized Metal Ion Ligand Complex (SMILE) method for cancers treatment. **F. LI**, W. Chen, w. yang, P. Chen, Y. Huang

9:00 . Block-copolymer-based polyion complexes for utilization of proteins and inorganic nanoparticles. **A. Kishimura**, Y. Liu, B. KC, T. Egashira, T. Mori, Y. Katayama

9:20 . Hydrogel microparticles for drug delivery: Effects of shape and peptide conjugation. **E.P. Kharlampieva**

9:40 Intermission.

10:00 . Polymer prodrug nanocarriers for anticancer therapy. **J. Nicolas**

10:20 . Triggerable self-immolative nanoparticles for drug delivery. **E.R. Gillies**, B. Fan

10:40 . Biodegradable irreversible thermo-gelling polymer systems for drug delivery and other medical applications. **Y. Ohya**, Y. Yoshizaki, T. Nagata, Y. Yoshida, K. Takata, A. Kuzuya

11:00 . Post-modifications of recombinant polypeptides for the design of solvent-free self-assembled drug nanocarriers. **E.B. Garanger**, M. Bravo Anaya, S. Lecommandoux

11:20 . Polymer zwitterion-temozolomide conjugates for glioblastoma treatment. **S. Ward**, M. Skinner, B. Saha, T. Emrick

Antimicrobial & Cell-Penetrating Polymers

Sponsored by PMSE, Cosponsored by POLY‡

SUNDAY AFTERNOON

Section A

Rosen Centre Hotel
Signature 2

ACS Award in Polymer Chemistry in Honor of Tim Swager

M. Jeffries-El, S. A. Sydlik, *Organizers, Presiding*

1:00 . Dehydration polymerization for poly(hetero)arene conjugated polymers. **D. Schipper**

1:30 . New advances in polymer electrolytes. **G.W. Coates**

2:00 . Design and synthesis of conjugated polymers based on benzo[1,2-*b*:4,5-*b*′] and Naphtho[2,1-b:6,5-b′]chalcogenophenes. **M. Jeffries-El**, C. Gott, E. Muller, A. Brown

2:30 Intermission.

2:45 . Matchmaking in catalyst-transfer polymerization. **A.J. McNeil**

3:15 . Using ROMP to prepare polymers with controlled structures. **R.H. Grubbs**

3:45 . 3D printing stem cell instructive Functional Graphenic Materials (FGM) for bone regeneration scaffolds. **S.A. Sydlik**, B. Holt, A. Arnold

4:15 . Award Address (ACS Award in Polymer Chemistry sponsored by the ExxonMobil Chemical Company). Polymers with unconventional structure and function. **T.M. Swager**

Section B

Rosen Centre Hotel
Salon 12

Synthesis & Properties of Densely Grafted Polymers

J. G. Kennemur, J. B. Matson, G. Stein, R. Verduzco, *Organizers*
K. Beers, *Presiding*

1:00 . Striving for perfection: "Defect"-free brush polymer networks for improved metrology. J.M. Sarapas, T.T. Duncan, E. Rettner, E. Chan, **K. Beers**

1:30 . Film surface fluctuation dynamics and surface segregation in the limit of dense branching. **M.D. Foster**

2:00 . Graft copolymers and bottlebrushes at surfaces for tuning physicochemical and tribological properties of materials. G. Morgese, W. Yan, N. Spencer, M. Zenobi-Wong, **E. Benetti**

2:20 . Enthalpy and entropy-driven segregation of mixed bottlebrush polymers in linear polymer matrices. **H. Mei**, T. Laws, J. Li, A. Mah, G. Stein, R. Verduzco

2:40 . Interfacial engineering in metal-organic framework-based mixed matrix membranes using covalently grafted polyimide brushes. **T. Li**, H. Wang

3:00 Intermission.

3:30 . Structure and properties of liquid crystalline bottlebrush block copolymers. **C.O. Osuji**, M. Gopinadhan, Y. Choo, D. Ndaya, R. Bosire, Y. Rokhlenko, K. Kawamoto, R. Kasi, J.A. Johnson

4:00 . Crystallizable α-olefin molecular bottlebrushes: Microstructure evolution during extensional deformation. **C.R. Lopez-Barron**

4:30 . Toughness and physical aging in sustainable graft block polymers. **I. Haugan**, B. Lee, M.J. Maher, H.J. Schibur, A. Zografos, S. Jones, M.A. Hillmyer, F.S. Bates

Section C

Rosen Centre Hotel
Salon 19

The Fate of Plastics in Water

R. T. Mathers, S. A. Miller, *Organizers, Presiding*
A. P. Dove, U. Natarajan, M. A. Pasquinelli, *Presiding*

1:15 . Fate of microplastics in inland waterways. C. Wisinger, L. Maynard, J. Czuba, **J.R. Barone**

1:55 . Increasing the water-degradability of PLA. **G. Short**, J. Smith, S.A. Miller

2:15 . Elucidating a hydrophobicity trend for oxygen containing functional groups in polymers. **R.T. Mathers**

2:45 . Corrosion behavior of biopolyamides derived from itaconic acid. **T. Kaneko**, M. Ali

3:25 Intermission.

3:40 Panel Discussion.

Section D

Rosen Centre Hotel
Salon 23

General Topics: New Synthesis & Characterization of Polymers

D. Garcia, *Organizer*
F. Horkay, R. Shankar, *Presiding*

1:00 . Supramolecular polymer-based nanomaterials as a universal combination drug delivery strategy. **J.C. Barnes**

1:20 . Oxidative stability of polypropylene for biomedical applications. **R. Wade**, J.W. Kiel, M.T. Reitman

1:40 . Chemo-enzymatic synthesis and free radical polymerization of renewable acrylate monomers from cellulose-based lactones. **F. Diot-Néant**, E. Rastoder, S.A. Miller, F. Allais

2:00 . Insight into cartilage supramolecular structure and biological function. **F. Horkay**, P.J. Basser

2:20 . Design and application of functionalized porous organic polymers in CO_2 adsorption and conversion. **Z. Yang**, I. Popovs, S. Dai

2:40 . Synthesis of morphology-tunable functional porous polymers from diblock copolymers hyper-cross-linking self-assembly strategy. **X. Yang**, K. Huang

3:00 . Synthesis and photophysical properties of novel fluorescent fluorene-containing conjugated polymers and their application for the detection of common bisphenols. **D.R. Jones**, R. Vallee, M. Levine

3:20 . Chemical recyclability of polar vinyl polymers derived from renewable methylene butyrolactones. **R.A. Gilsdorf**, E.Y. Chen

3:40 . Synthesis of thermo-responsive polymer grafted cellulose nanocrystal and its application for polymer electrolyte. **R. Kato**, S. Patel, S.J. Rowan

4:00 . Side-chain flexibility competes with hydrogen bonding on properties of supramolecularly crosslinked polyesters. **Q. Liu**, C. Wang, Y. Guo, A. Joy

4:20 . Synthesis and application of innovative multifunctional polyol-siloxane surfactants. **T. Daenzer**, H. Frey

4:40 . Thiocarbonyl platform for degradable radical polymerization. **R.A. Smith**, O. McAteer, G. Fu, M. Xu, W. Gutekunst

Section E

Rosen Centre Hotel
Salon 20

New Frontiers in Aerospace Polymers: Advances & Challenges in Experiments & Simulations

Additive Manufacturing for Aerospace Application

Cosponsored by PMSE
Financially supported by Air Force Research Laboratory; Bruker Instruments; Anasys Instruments; Boeing
M. A. Meador, D. Nepal, J. S. Wiggins, *Organizers*
S. E. Morgan, V. Varshney, *Presiding*

1:00 . Additive manufacturing for air force applications: Design and characterization of advanced inks and filament feedstock. **H. Koerner**

1:30 . Polymer viscosities from molecular simulation: Application to polymers for 3D printing. T. Roman, J. Rogers, N. Lee, J. Kim, J. Reid, I.M. Khan, G. Sapateh, R.J. Berry, **D. Bernhardt**

2:00 . Additive manufacturing of thermosetting polymers using frontal polymerization. **J.E. Aw**, N.A. Parikh, X. Zhang, J.S. Moore, P.H. Geubelle, N.R. Sottos

Section F

Rosen Centre Hotel
Salon 21

Poly(2-oxazoline)s & Polypeptoids

R. Hoogenboom, H. Schlaad, R. N. Zuckermann, *Organizers*
G. Delaittre, K. Kempe, *Presiding*

1:20 . Synergy of experiment and theory toward well-defined poly(2-oxazoline) synthesis. P. Van Steenberge, R. Hoogenboom, **D.R. D'hooge**

1:50 . Polypept(o)ides: Combining poylpeptides and polypeptoids in polymers. **M. Barz**

2:20 . New stimuli-responsive materials via the Spontaneous Zwitterionic Copolymerisation (SZWIP) of 2-oxazolines. **K. Kempe**

2:50 Intermission.

3:05 . Straightforward route to new poly(2-oxazoline)s *via* acylation of well-defined polyethyleneimine. **O. Sedlacek**, R. Hoogenboom

3:25 . When α-amino acid NTAs meet nucleophiles. **J. Ling**

3:55 . End-functional poly(2-ethyl-2-oxazoline)s for surface grafting and nanoparticle stabilization. G. Gil Alvaradejo, D. Le, M. Glassner, H. Nguyen, J.A. Johnson, R. Hoogenboom, **G. Delaittre**

4:25 . Development of a two-dye-system based on PMMA-*graft*-OEtOx graft copolymers. **I. Muljajew**, C. Weber, U.S. Schubert

Section G

Rosen Centre Hotel
Salon 22

Polymer-Based Gene & Drug Delivery Systems

Polymers for DDS

X. M. Liu, Y. Ohya, Y. Wang, *Organizers*
T. Fujiwara, *Organizer, Presiding*
F. LI, *Presiding*

1:00 . Synthetic and compositional control of multicompontent copolymers to promote drug solubility, bioavailability, and delivery. **T.M. Reineke**

1:35 . MMP2-sensitive tumor-targeted drug delivery and sensitization. **L. Zhu**

1:55 . Organic-inorganic nanohybrid as magnetically navigated nanocarrier for biologicals. **Y. Sasaki**, R. Kawasaki, R. Mizuta, N. Kinoshita, K. Akiyoshi

2:15 . PAMAM-polylactide, "Janus-type" hybrids as next-generation biomaterials. **D.L. Watkins**

2:35 . Polyanhydrides from radical-mediated thiol-ene polymerizations: From synthesis to drug delivery. **D.A. Shipp**

2:55 Intermission.

3:15 . Using grafted functional polyesters for drug delivery systems. **J. Kressler**, K. Maeder

3:35 . Next-generation opioid antidotes: Covalent nanoparticles for the delivery of Mu opioid antagonists. A. Kassick, M. Feasel, B. Kolber, N. Tomycz, **S. Averick**

3:55 . Enhancement of cancer vaccine by modification of antigenicity for cancer cells. **S. Mochizuki**, A. Moritaka, K. Sakurai

4:15 . Poly(2-alkyl-2-oxazoline) conjugates of doxorubicin bound via pH-sensitive hydrazone linker: Synthesis, *in vitro*, and *in vivo* evaluation. **O. Sedlacek**, A. Van Driessche, M. Hruby, B. De Geest, R. Hoogenboom

4:35 . Quantifying drug cargo partitioning in pluronic block copolymer micelles. **X. Li**, T. Cooksey, M.L. Robertson, L.A. Madsen

Antimicrobial & Cell-Penetrating Polymers

Sponsored by PMSE, Cosponsored by POLY‡

MONDAY MORNING

Section A

Rosen Centre Hotel
Signature 2

ACS Award in the Chemistry of Materials in honor of Krzysztof Matyjaszewski

J. Pyun, *Organizer*
J. Lutz, N. V. Tsarevsky, *Presiding*

8:10 . Photo-induced structural transitions in block copolymers. **T.P. Lodge**, C. Hall, C. Rivera, C. Seitzinger, Y. Hirose

8:35 . Precision synthesis of polyrotaxanes using artificial molecular machines. **J.F. Stoddart**

9:00 . Advances and applications of surface-initiated atom transfer radical polymerization for functional material design. **M.R. Bockstaller**

9:25 . Polymer-enhanced biomacromolecular systems. **A.J. Russell**, K. Matyjaszewski

9:50 Intermission.

10:05 . Encoding mechanics of ultra-soft tissues in silicone. **S. Sheiko**

10:30 . DFT studies of structural basis of activity of Cu-based ATRP catalysts. **T. Kowalewski**

10:55 . Exploring new catalysts and monomers in catalyst-transfer polycondensation. **K.J. Noonan**

11:20 . ATRP-inspired carbon-halogen activation in organic synthesis. **M. Coote**, B. Noble, P. Norcott, K. Fung, I. Russell

Section B

Rosen Centre Hotel
Salon 12

ACS Award for Affordable Green Chemistry in Honor of Richard Gross

M. A. Hillmyer, *Organizer*
H. N. Cheng, *Presiding*

8:30 Introductory Remarks.

8:35 . Development of new methods for the synthesis of benign polymeric materials. **G.W. Coates**

9:10 . Designing infinitely recyclable 'green' polymers with tailored properties built upon a 'gene' for full chemical recyclability. **E.Y. Chen**

9:45 . Biopolymer blends as a versatile product platform for green polymer chemistry. **H.N. Cheng**

10:20 . Bioconjugates by ATRP. **K. Matyjaszewski**

10:55 . Award Address (ACS Award for Affordable Green Chemistry sponsored by The Dow Chemical Company and endowed by Rohm and Haas Company). Biocatalytic routes to tunable building blocks, surfactants and polymers. **R.A. Gross**

Section C

Rosen Centre Hotel
Salon 19

Transport in Polymer Membranes

Morphology, Solid State & Physical Properties of Membranes

Cosponsored by PMSE‡
C. M. Stafford, *Organizer*
M. D. Dadmun, T. Saito, *Organizers, Presiding*

8:00 . Ion transport in polyelectrolyte multilayers through the glass transition. **S. Abou Shaheen**, M. Yang, J.B. Schlenoff

8:20 . Comparative study of electrical conductivity behavior correlated to hydrogen bonding organization between bis-MPA based hyperbranched polymer and dendrimer. **B. Chen**, J.A. Giesen, M.K. Hassan, S.M. Grayson, S. Nazarenko

8:40 . Molecular-level control over ion transport in membranes comprised of polymers of intrinsic microporosity. **B. Helms**, M. Baran, S. Sahu, M. Carrington, S. Meckler, M. Braten, A. Baskin, D. Prendergast

9:00 . Ion transport in precise polymers with layered and disordered aggregates. **K.I. Winey**

9:30 . High-temperature metathesis polycondensation chemistry. **K.B. Wagener**, J. Pribyl, T.W. Gaines, M.H. Bell, G. Hester, N. Gallman

9:50 . Solvent penetration into structured ionomer membranes. M. Senanayake, D. Perahia, D. Aryal, **G.S. Grest**

10:10 Intermission.

10:40 . Cation conduction in solvent-free ionomers for rechargeable batteries. J. Liu, B. Park, **J.L. Schaefer**

11:10 . Stretchable solid polymer electrolytes based on poly(acrylic acid) crosslinking with silica nanoparticles. **Y. Song**, U. Choi

11:30 . Elastic single-ion conducting polymer electrolyte. **P. Cao**, B. Li, G. Yang, J. Nanda, A.P. Sokolov, T. Saito

11:50 . Superionic conductive polymer electrolyte for solid lithium-metal batteries with long cycle life. **Y. Zhu**

Section D

Rosen Centre Hotel
Salon 23

Excellence in Graduate Polymer Research

Biobased, Degradable & Chain-Exchange Polymers

Cosponsored by PRES, PROF‡, SOCED‡ and YCC‡
Financially supported by Industrial Advisory Board; TOSOH; Wiley
H. Cheng, *Organizer*
C. Coltrain, C. J. Ellison, *Presiding*

8:25 Introductory Remarks.

8:30 . Amino acid-based poly(ester urea)s for soft–tissue repair applications. **N. Dreger**

8:55 . Covalently crosslinked coacervate: Immobilization and stabilization of proteins with enhanced enzymatic activity. **M. Zhao**, S. Cho, N. Zacharia

9:20 . Efficient synthesis of novel glycosaminoglycan analogs. **C. Gao**, K.J. Edgar

9:45 . Improving mechanical properties of fatty acid-derived thermoplastic elastomers by incorporating a transient network. **W. Ding**, M.L. Robertson

10:10 Intermission.

10:25 . Harnessing imine reactivity for dynamic topological and functional transformations. **M.B. Sims**, K.Y. Patel, M. Bhatta, S. Mukherjee, J.J. Lessard, L. Bai, B.S. Sumerlin

10:50 . Reprocessable polymer networks based on dynamic chemistry with concurrent dissociative and associative mechanisms: Judicious design leading to excellent reprocessability. **L. Li**, X. Chen, J.M. Torkelson

11:15 Remarks by **B. Charpentier, 2019 ACS President**.

11:30 . Kinetic control of block polymer micelles: Cavitation induced exchange and templates for nanomaterials. **K.A. Lantz**, A. Sarkar, K.C. Littrell, T. Li, K. Hong, W. van den Bergh, N.B. Clamp, M. Stefik

Section E

Rosen Centre Hotel
Salon 20

Industrial Innovations in Polymer Science

Cosponsored by I&EC
M. O. Hunt, *Organizer*
H. A. Brown, B. Rodier, *Organizers, Presiding*

8:00 Introductory Remarks.

8:05 . Theoretical studies on ring-opening polymerizations by alkoxides and (thio)ureas. **G.O. Jones**, B. Lin, X. Zhang, J. Hedrick, R.M. Waymouth

8:35 . Computational mini-plant: Industrial applications of quantum mechanical calculations. **I. Konstantinov**, S. Ewart, A. Krasovskiy, H.A. Brown, S. Munjal

9:05 . Data-based decision-making in industrial polymer problem solving. **J. Rancourt**, B. Caba

9:35 Intermission.

10:05 . From lab to market: Polyimide aerogels. **D.J. Irvin**, G.D. Poe

10:35 . Injectable microgel for soft tissue repair. **S. Poleon**

11:05 . Contact lenses: More than meets the eye. **M.R. Clark**

11:35 Concluding Remarks.

Section F

Rosen Centre Hotel
Salon 21

Poly(2-oxazoline)s & Polypeptoids

R. Hoogenboom, R. N. Zuckermann, *Organizers*
H. Schlaad, *Organizer, Presiding*
F. Wiesbrock, *Presiding*

8:10 . Bio-sourced chelating poly(2-oxazoline)s. **H. Schlaad**, N. Lüdecke

8:40 . Green light photoswitchable poly(2-isopropenyl-2-oxazoline) supramolecular hydrogels. **X. Xu**, V. Jerca, R. Hoogenboom

9:00 . Gradient copolymers from aliphatic and aromatic 2-oxazolines for drug delivery. S. Datta, N. Petrenčíková, P. Šrámková, Z. Kroneková, A. Jutková, D. Jancura, **J. Kronek**

9:30 Intermission.

9:45 . Upscaling poly(2-oxazoline) synthesis in continuous flow mode: Beyond microwave synthesizers. **V. R de la Rosa**, E. Baeten, R. Hoogenboom, T. Junkers

10:15 . Synthesis and self-assembly of carbohydrate-conjugated poly(2-oxazoline)s: Polymer vesicles with molecular permeability towards therapeutic nanofactories. **T. Nishimura**, N. Sumi, Y. Koda, Y. Sasaki, K. Akiyoshi

10:35 . Messenger RNA loaded polyplex micelles having hydrophobic core protective layer composed of thermo-switchable poly(oxazoline) for promoted gene expression. **S. Osawa**, K. Osada, K. Kataoka

10:55 . Thermoresponsive, biodegradable polyesters: Tunable properties and efficient protein encapsulation. **M. Cruz**, M. Kundu, T. Leeper, A. Joy

11:15 . Merging dielectric stability and ubiquitous adhesion: Poly(2-oxazoline)s in microelectronics and high-voltage engineering. **F. Wiesbrock**, A. Eibel, P. Marx, R. Hofmann

Section G

Rosen Centre Hotel
Salon 22

Polymer-Based Gene & Drug Delivery Systems

New Therapeutics & Gene Delivery

T. Fujiwara, X. M. Liu, Y. Wang, *Organizers*
Y. Ohya, *Organizer, Presiding*
C. Scholz, *Presiding*

8:00 . Self-assembling nanodrugs for novel antioxidant therapeutics. **Y. Nagasaki**

8:35 . Transdermal delivery of polymer nanoparticles via faint electricity. **K. Kogure**, Y. Nagasaki

8:55 . Redox-responsive PEGylated macrophotosensitizer nanoparticles for enhanced near-infrared imaging-guided photodynamic therapy. **L. Yan**

9:15 . Metabolism-controlled boron delivery systems composed of biocompatible polymers and boronophenylalanine for neutron capture therapy. **T. Nomoto**, Y. Inoue, Y. Yao, M. Suzuki, K. Kanamori, H. Takemoto, M. Matsui, K. Tomoda, N. Nishiyama

9:35 . Enzyme-Directed Assembly of Particle Immunotherapeutics (EDAPI): A strategy for engineering tumor microenvironments for cancer therapy. **C. Battistella**, M.P. Thompson, T. Hayashi, C.E. Callmann, D.A. Carson, N.C. Gianneschi

9:55 Intermission.

10:15 . Nanostructured DNA for the *in vivo* delivery of biomolecules and cells. **M. Nishikawa**

10:35 . Modular non-viral gene delivery vectors as probes to study the evolution of DNA-polymer complexes within mammalian cells. t. suk-in, C. Marks, S. Ross, r. bellin, **S. Granados Focil**

10:55 . Targeted three-layered micelles and injectable hydrogels for systemic and local gene delivery systems. **T. Fujiwara**, O.M. Merkel

11:15 . Well-defined poly(ethylene glycol)-*b*-poly(ε-caprolactone) based diblock polymeric biomaterials for drug and gene delivery. **A. Jafari**, G. Zhang, L. Yan, M. Mohamed, Y. Wu, B.A. Pfeifer, C. Cheng

11:35 . Effects of protonation and salt concentration on the structure of polylethylenimine (PEI) in water. **C. Gallops**, J. Ziebarth, Y. Wang

Antimicrobial & Cell-Penetrating Polymers

Sponsored by PMSE, Cosponsored by POLY‡

LGBTQ+ Graduate Student & Postdoctoral Scholar Research Symposium

Sponsored by PROF, Cosponsored by AGFD, ANYL, BIOL, BIOT, CARB, CELL, CHED, CMA, COLL, COMP, ENVR, GEOC, I&EC, MEDI, MPPG, NUCL, ORGN, PHYS, PMSE, POLY, PRES, WCC and YCC

PolyEd: Incorporating Polymer Chemistry in Undergraduate & High School Curricula

Sponsored by CHED, Cosponsored by POLY

MONDAY AFTERNOON

Section A

Rosen Centre Hotel
Signature 2

ACS Award in the Chemistry of Materials in honor of Krzysztof Matyjaszewski

J. Pyun, *Organizer*
K. Beers, B. S. Sumerlin, *Presiding*

1:00 . Utilizing functional monomers with self-accelerating reactions to explore polymers with new structures and functions. **H. Gao**

1:20 . Rational design of multicomponent bottlebrush block copolymers for nanotemplating. **M. Zhong**, A. Le, R. liang, X. Fu

1:40 . Studying kinetics to design and tailor dynamically crosslinked polymer materials. **D. Konkolewicz**, P. Chakma, B. Zhang, Z. Digby, J. Ke, J. Sparks

2:00 . Metallo-polyelectrolytes: Chemistry, materials, and unknown. **C. Tang**

2:20 . Hypervalent iodine reagents with (pseudo)halide, carboxylate, or tetrazolate ligands in the synthesis of functional polymers. **N.V. Tsarevsky**

2:40 Intermission.

2:55 . Selective deuteration of polyethylene via polyhomologation. W. Farrell, S.V. Orski, A.K. anthony.kotula@nist.gov, **K. Beers**

3:20 . Dynamic-covalent chemistry for functional diversification, vitrimers, and other self-healing materials. J.J. Lessard, M.B. Sims, L.F. Garcia, C.P. Easterling, K.C. Bentz, S. Arencibia, D.A. Savin, **B.S. Sumerlin**

3:45 . Design of high-precision polymers by multistep synthesis. **J. Lutz**

4:10 . Artificial enzymes via ATRP from [2Fe-2S] metallopolymers for H_2 production via water splitting. **J. Pyun**, M. Karayilan, K. Clary, D.L. Lichtenberger, R.S. Glass

4:35 . Award Address (ACS Award in the Chemistry of Materials sponsored by DuPont). Functional materials by ATRP: From precise synthesis to new applications. **K. Matyjaszewski**

Section B

Rosen Centre Hotel
Salon 12

Synthesis & Properties of Densely Grafted Polymers

J. G. Kennemur, G. Stein, R. Verduzco, *Organizers*
J. B. Matson, *Organizer, Presiding*

1:00 . Precise control over structure and properties in brush polymers. **R.H. Grubbs**

1:45 . Coarse-grained simulation of the dilute solution structure of bottlebrush polymers. S. Dutta, M. Wade, D. Walsh, D. Guironnet, S. Rogers, **C.E. Sing**

2:15 . Alkyl wedge-type polymer architectures and their applications as photonic crystals. **B. Boyle**, G. Miyake

2:35 . Aqueous self-assembly of amphiphilic cylindrical and cone-shaped (tapered) bottlebrush polymers prepared by sequential-addition of macromonomers ring-opening metathesis polymerization (SAM-ROMP). **J.B. Matson**

2:55 . Worm-to-globule shape transition of thermosensitive binary heterografted molecular bottlebrushes in water. **B. Zhao**

3:15 . Grafting linear and linear-hyperbranched block copolymers by continuous flow chemistry polymerizations. **R.C. Advincula**

Section C

Rosen Centre Hotel
Salon 19

Transport in Polymer Membranes

Block Copolymers, Morphology Control & Poly(ionic Liquids)

Cosponsored by PMSE‡
M. D. Dadmun, T. Saito, C. M. Stafford, *Organizers*
P. Cao, M. A. Hickner, *Presiding*

1:00 . Manipulating monomer segment distributions to tune self-assembly and macromolecular properties in ion-conducting block copolymer systems. **T.H. Epps**, M.A. Morris, C.K. Shelton, P. Ketkar

1:30 . Morphology and ion dynamics in oligomeric ethylene oxide functionalized block copolymer electrolytes. **D.A. Waldow**, J. Harrison, R. Giridharagopal, D.S. Ginger

1:50 . Exploring ionic conduction mechanism in the nanoscale by self- assembled block copolymer electrolytes films. **D. Sharon**, P. Bennington, S. Patel, P.F. Nealey

2:10 . Architecture and polarity control of precise network polymerized ionic liquids to understand aggregation and ionic conductivity. **C. Evans**, Q. Zhao, C. Shen

2:30 Intermission.

3:00 . Improving single-ion conductivity of polymer electrolyte by softening backbone. **S. Zhao**, P. Cao, T. Saito, A.P. Sokolov

3:20 . Effect of relative humidity on the ionic conductivity of poly(ionic liquid) networks containing variable counteranions. **K.M. Miller**, R.D. Johnson, N.C. Bontrager, S.A. Radomski

3:40 . Developing a new approach to describe ion sorption and transport in Nafion membranes. **R. Sujanani**, J. Kamcev, E. Jang, D.R. Paul, B.D. Freeman

4:00 . Biomimetic neurons using polyelectrolytes: Experimental implications on current models. **S. Kozawa**, L. Kreider, G. Tierney, A. Venkataswamy, A.Y. Walker, G.E. Wnek

4:20 . Platinum-acetylide polymers: An investigation of ultrafast photoinduced charge transfer. **R. He**, S. Valandro, K.S. Schanze

Section D

Rosen Centre Hotel
Salon 23

Excellence in Graduate Polymer Research

New Structures & Applications

Cosponsored by PRES, PROF, SOCED and YCC
Financially supported by Industrial Advisory Board; TOSOH; Wiley
H. Cheng, *Organizer, Presiding*
C. J. Ellison, *Presiding*

1:00 Introductory Remarks.

1:15 . Assembling graphene oxide at fluid-fluid interface: A new way to architect hybrid structures for advanced application. **P. Wei**, E. Pentzer

1:40 . Polymer metal-organic cage gels for water purification. **J. Zhao**, J.A. Johnson

2:05 . Tuning mechanical properties of polymer brush surfaces to dictate wrinkle morphologies. **C. Reese**, W. Guo, B. Thompson, C.M. Stafford, D.L. Patton

2:30 . Facile synthesis of carbon flower particles from a novel polyacrylonitrile system. **S. Chen**, Z. Bao

2:55 Intermission.

3:10 . Photopolymer design for additive manufacturing of elastomers. **P. Scott**, V. Meenakshisundaram, M. Hegde, J.M. Sirrine, N.A. Chartrain, C. Kasprzak, K. Feller, C.B. Williams, T.E. Long

3:35 . Controlled phase separation and thermo-mechanical properties in hybrid radical/cationic systems using photopolymerization. **E. Hasa**, A. Guymon, J.W. Stansbury, J.L. Jessop

4:00 . Chalcogenide Hybrid Inorganic/organic Polymers (CHIPs): A unique class of optical polymers for IR imaging and photonics. **T. Kleine**, R.S. Glass, R.A. Norwood, J. Pyun

Section E

Rosen Centre Hotel
Salon 20

Industrial Innovations in Polymer Science

Cosponsored by I&EC
M. O. Hunt, *Organizer*
H. A. Brown, B. Rodier, *Organizers, Presiding*

1:00 Introductory Remarks.

1:05 . Increased performance in liquid sound damper formulations through controlled interaction between polymer dispersions and inorganic surfaces. **J. Bohling**, J. Gimbal, J. Gallagher, S. Whitehouse, J. Reffner

1:35 . Hydrophobic polymers for improved barrier properties in industrial coatings. **D.N. Haase**

2:05 . Effectiveness of demulsifying agents in breaking water-in-crude oil emulsions. **R.M. Jenkins**, T. Kuo, D. Miller, K. Whitaker, A. Schmitt, M. Tulchinsky, H. Wiles, T. Kalantar

2:35 Intermission.

3:05 . Polymeric substrates with attached controlled radical initiators. **J.K. Rasmussen**, S.B. Roscoe, G.W. Griesgraber, D.J. O/Neal, E.P. Narveson

3:35 . Sustainable plastics: Using polymer stabilizers to yield recyclable polyolefins. **K.M. Knauer**, R.E. King

4:05 . Tailored EPDM architecture for automotive extruded profiles. **J. Tuberquia**, C. Li Pi Shan, S. Wu, G. Li, L. Nguyen

4:35 Concluding Remarks.

Section F

Rosen Centre Hotel
Salon 21

Poly(2-oxazoline)s & Polypeptoids

R. Hoogenboom, H. Schlaad, R. N. Zuckermann, *Organizers*
R. Becer, E. Benetti, *Presiding*

1:20 . Poly(2-oxazoline) derivatives: Their applciations from gene delivery to engine oil additives. **R. Becer**

1:50 . Smart polymers based on N-isopropylacrylamide and 2-oxazolines. **J. Rueda**, S. Zschoche, D. Schmaljohann, M. Binner, A. Janke, K. Arndt, S. Lehmann, B. Voit

2:20 . Sequence-selective dynamic covalent assembly of information-bearing oligopeptoids. **T.F. Scott**, S.C. Leguizamon

2:50 Intermission.

3:05 . Designing amphiphilic peptoids for bio-inspired synthesis of hybrid materials. **C. Chen**

3:35 . Poly(2-oxazoline)s on surfaces: Chemical and topological design, properties, and applications. G. Morgese, **E. Benetti**

4:05 . Antifouling peptoid brushes: From polysarcosine to zwitterionic sequences. D.L. Cheung, **K. Lau**

4:25 . Modification of poly(2-oxazoline)s with pendant ester groups: a kinetic investigation. **J. Van Guyse**, R. Hoogenboom

Section G

Rosen Centre Hotel
Salon 22

Polymer-Based Gene & Drug Delivery Systems

Gene Delivery

T. Fujiwara, X. M. Liu, Y. Ohya, *Organizers*
Y. Wang, *Organizer, Presiding*
E. P. Kharlampieva, *Presiding*

1:00 . Beta-glucans/DNA complexes for immunocyte targeting delivery of therapeutic oligonucleotides. **K. Sakurai**

1:35 . Guanylurea-functionalized conjugated polymers for efficient gene knockdown in normal human bronchial epithelium cells. M. Ahmed, R. Dutta, P. Manandhar, H. Unwalla, **J. Moon**

1:55 . Poly(amino acid)-based gene delivery systems: The story starts after the synthesis. **C. Scholz**, D. Ulkoski

2:15 . Gene expression of aspect ratio-controlled polyplexes based on the effect of multi-arm poly(ethylene glycol). **A. Harada**, E. Yuba

2:35 Intermission.

2:55 . Enzymatic synthesis of aptamer-targeted polynucleotide drugs for cancer therapy. L. Tang, S. Deshpande, Y. Yang, R. Gu, A. Chilkoti, **S. Zauscher**

3:15 . RAFT polymerization for the synthesis of tertiary amine-based diblock copolymer nucleic acid delivery vehicles. **A.E. Smith**, T.A. Brooks, A.K. McClellan, T. Hao

3:35 . Cationic star-shaped glycopolymer brushes for targeted gene delivery. **R. Liu**, A. Blakney, Y. Gokhan, P. McKay, R. Shattock, R. Becer

3:55 . Polyplex interaction strength impacts potency during cancer immunotherapy. **S.J. Tsai**, J. Andorko, X. Zeng, J. Gammon, C. Jewell

4:15 . Encapsulation and ultrasound-triggered release of G-quadruplex DNA in hydrogel microcapsules. **A. Alford**, N. Gupta, V.A. Kozlovskaya, D.E. Graves, E.P. Kharlampieva

LGBTQ+ Graduate Student & Postdoctoral Scholar Research Symposium

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Antimicrobial & Cell-Penetrating Polymers

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Chemistry in Space: Future Directions

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PolyEd: Incorporating Polymer Chemistry in Undergraduate & High School Curricula

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Undergraduate Research Posters

Polymer Chemistry

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MONDAY EVENING

Section A

Orange County Convention Center
West Hall C

Sci-Mix

A. Pritzlaff, *Organizer*

8:00 - 10:00

. Bicyclic guanidine organocatalysts: A comparison of three structural analogs. **A. Chesness**, M.D. Scholten

. Mussel-inspired polyesters with aliphatic pendant groups demonstrate the importance of hydrophobicity in wet adhesion. A. Narayanan, S. Kaur, A.N. Dhinojwala, **A. Joy**

. Aramid nanofiber composite separators for high performance lithium-sulfur batteries. **A.E. Emre**, A. Gerber, N. Kotov

. Poly(2-oxazoline)s as matrix excipient for sustained release formulations. **A. Tigrine**, A. Samaro, V. Van Hoorne, V. R de la Rosa, M. Vergaelen, M. Purino, B. Monnery, C. Vervaet, R. Hoogenboom

. Interplay of electrostatic interactions, nanoparticle dispersion, and ion transport in ionomer nanocomposites for vanadium redox flow batteries. **A.B. Jansto**, A. Balwani, T. Martin, R.L. Jones, E.M. Davis

. Generation of solution-stable galectin-3 polymer conjugates. **A. Pritzlaff**, D. Rucco, L. Lin, H.A. Lower, D.A. Savin

. Regulating the phase behaviour of block copolymers via polydispersity. **A. Shi**

. Theory of multi-ion transport in solvent-filled membranes. **A.R. Crothers**, C.J. Radke, A.Z. Weber

. High-throughput bioconjugate synthesis and screening for biocatalytic applications. **A. Simakova**, G. Lewis, A.K. Fisher, M. Link, K. Matyjaszewski, A.J. Russell

. Practical synthesis of complex glycopolymers using water-soluble amino-oxy functional scaffolds. **A. Laezza**, S. Richards, M.I. Gibson

. Uncovering how the nanoparticle–polymer interface affects segmental dynamics and water transport in ionomer nanocomposites. **A. Balwani**, A.B. Jansto, A. Faraone, E.M. Davis

. High lithium–ion transference number electrolytes based on poly(lithium bis(alkenylmalonato)borate) solutions. **B.L. Dewing**, N.G. Bible, C.J. Ellison, M.K. Mahanthappa

. Molecular sieving on the surface of nano-armored protein. **B. Kaupbayeva**, H. Murata, A. Lucas, K. Matyjaszewski, J.S. Minden, A.J. Russell

. Application of core-modified phenoxazine photoredox catalysts in organocatalyzed atom-transfer radical polymerization. **B. McCarthy**, G. Miyake

. Probing the mechanism of thermally driven thiol-Michael dynamic covalent chemistry. **B. Zhang**, P. Chakma, M.P. Shulman, J. Ke, Z. Digby, D. Konkolewicz

. Synthesis and assembly of Vinyl Sulfonamide Click Nucleic Acids (VS-CNAs). **B.P. Sutherland**, D.J. Bischoff, C.J. Kloxin

. Biocombinatorially selected peptide-polymer conjugates as polypropylene binders. **C. Juds**, T. Conrad, M. Weller, H. Börner

. Efficient synthesis of novel glycosaminoglycan analogs. **C. Gao**, K.J. Edgar

. Furan and maleimide-containing polyimides for reversibly assembling feedstocks. **C. Wohl**, S. Applin, C. Morales-Cruz, M. Swift, B. Horvath, H.C. Schniepp

. Aqueous high througput photomediated controlled/living radical polymerization (PET-RAFT): tailoring for bioconjugation. **C. Boyer**

. Bio-inspired peptide-polymer hybrid mucin analogues: Applications in osteoarthritis and kidney stone disease. **D. French**, L. Navarro, S. Zauscher

. Exploring ionic conduction mechanism in the nanoscale by self- assembled block copolymer electrolytes films. **D. Sharon**, P. Bennington, S. Patel, P.F. Nealey

. Flow-enabled control over macromolecule architecture. **D. Walsh**, D. Guironnet

. Vapor-phase infiltration of metal oxides into microporous polymers for solvent stable nanofiltration membranes. **F. Zhang**, E. McGuinness, Y. Ma, M. Losego, R.P. Lively

. Sub-7 nm patterning platforms through directed self-assembly of metal conjugated biopolymers. **G. Pathiraja**, K. Davis, H.P. Rathnayake, D. Herr

. Photoinduced reversible-deactivation radical polymerization (photoRDRP): Shedding light on structure and function of protein-like polymers. **H. Sun**, W. Choi, N.C. Gianneschi

. Additive manufacturing for air force applications: Design and characterization of advanced inks and filament feedstock. **H. Koerner**

. Designing liquid crystal elastomers as substrates for 3D electronics. **H. Kim**, J. Maeng, J. Gibson, Y. Shafiq, R. Rihani, B. Black, S. Georgakopoulos, T. Ware

. Alternative to commercial plastics: Extraction and polymerization of a biorenewable monomer. **J. Thomas**, S. Shen, S.A. Miller

. poly(*N*-Acetylguanidine)s as reactive handle or reactive intermediate for post-polymerization modification of pendant ester groups. **J. Van Guyse**, X. Xu, R. Hoogenboom

. Metal-free, highly soluble, fully aromatic fluorinated ladder polymer. **J.R. Molina**

. Synthesis and assembly of zwitterionic PMPC-based block copolymers. **J.D. Mitchell**, J. Ting, A.E. Marras, A. Herzog-Arbeitman, M.V. Tirrell

. Polymer metal-organic cage gels for water purification. **J. Zhao**, J.A. Johnson

. Organocatalyzed atom transfer radical polymerization of methacrylates at low PPM levels of catalyst. **J. COLE**, C. Federico, G. Miyake

. Bio-inspired cell cryopreservation using synthetic analogues. **K. Murray**, C. Stubbs, T. Bailey, M.I. Gibson

. Local internal morphologies in diblock copolymer thin films revealed by combined nanoscale infrared microscopy and mechanical mapping. **K. Ho**, S.S. Kim, L. Gilburd, S. de Beer, G.C. Walker

. Biomimetic moisture responsive fabrics. **L. Lao**, Y. Wu, J. Fan

. Reprocessable polymer networks based on dynamic chemistry with concurrent dissociative and associative mechanisms: Judicious design leading to excellent reprocessability. **L. Li**, X. Chen, J.M. Torkelson

. Sustainable polymers in society: Demos of renewable polymers manufacture in the lab for HS students from a chemical/environmental engineering summer camp. **L.A. Lucia**, R.A. Venditti, H. Jameel, M. Byrd, L. Pal, J. Piercy, J. Pawlak, S. McAlexander

. Thermoresponsive, biodegradable polyesters: Tunable properties and efficient protein encapsulation. **M. Cruz**, M. Kundu, T. Leeper, A. Joy

. Macromolecular engineering of electrocatalytic metallopolymers via ATRP: Artificial enzymes for water splitting. **M. Karayilan**, W.P. Brezinski, K. Clary, K.C. McCleary-Petersen, D.L. Lichtenberger, R.S. Glass, J. Pyun

. Light-switchable silicon-based polymers with high thermal stability and surface areas. **N. Hu**, T. May, J.C. Furgal

. Advancements in softgels as a drug-delivery system. **N. Elkarim**

. Combining thiol-ene and acetal chemistries to synthesize degradable, environmentally friendly networks. B.M. Alameda, **N. Pierini**, D.L. Patton

. Atomic-scale imaging of polypeptoid crystals. X. Jiang, D.R. Greer, D. Prendergast, R.N. Zuckermann, **N.P. Balsara**

. Light-driven synthesis of bottlebrush polymers using organocatalyzed atom transfer radical polymerization. **O.N. Manahan**, B. Buss, G. Miyake

. Photopolymer design for additive manufacturing of elastomers. **P. Scott**, V. Meenakshisundaram, M. Hegde, J.M. Sirrine, N.A. Chartrain, C. Kasprzak, K. Feller, C.B. Williams, T.E. Long

. Chemical recyclability of polar vinyl polymers derived from renewable methylene butyrolactones. **R.A. Gilsdorf**, E.Y. Chen

. Oxygen tolerant polymerisation for the design of biomaterials. **R. Chapman**

. Understanding the interface of wavelength selective resins for multi-material printing. **R.C. Chavez**, N. Dolinski, C.J. Hawker

. Decomposition mechanisms of novel electrolytes within Li-air batteries for NASA electric aircraft. **R.P. Viggiano**, D. Dornbusch, W.R. Bennett, K. Knudsen, P. Arrechea, J. LAWSON

. Immunomodulatory polymeric NLRP3 activators as vaccine adjuvants. **S. Manna**, S. Maiti, W. Du, Z. Guan, A. Esser-Kahn

. External control in atom transfer radical polymerization. **S. Dadashi Silab**, K. Matyjaszewski

. Design and synthesis of functional sugar poly(orthoester) nanomaterials with ultra-low immunogenicity. **S. Maiti**, S. Manna, A. Esser-Kahn, W. Du

. Beyond classical hydrophilic-hydrophobic amphiphiles: Triblock poly(2-oxazoline)s with a fluorinated block as a new platform for advanced self-assembly. **S. Filippov**, L.K. kaberovleonid@gmail.com, B. Verbraeken, A. Riabtseva, R. Hoogenboom

. Improving single-ion conductivity of polymer electrolyte by softening backbone. **S. Zhao**, P. Cao, T. Saito, A.P. Sokolov

. Messenger RNA loaded polyplex micelles having hydrophobic core protective layer composed of thermo-switchable poly(oxazoline) for promoted gene expression. **S. Osawa**, K. Osada, K. Kataoka

. Development of a cheap, efficient and stable “click” platform to access complex polymer architectures. **S. Bailey**, J. Read de Alaniz, E. Discekici

. Tailor-made thermoplastic elastomers via modulation of molecular weight distributions. **S.I. Rosenbloom**, D.T. Gentekos, B.P. Fors

. Biotemplated polymer synthesis: Controlling polymer structures for biomedical applications. **T. Weil**

. Polymer conjugation to enhance cellulase activity and preserve stability. **T. Wright**, M. Lucius, B. Schmitz, K. Makaroff, J. Stewart, H. Fischesser, J. Shepherd, J. Berberich, D. Konkolewicz, R.C. Page

. Predicting 3D printability of functional polymers: balancing rheology with reactivity. **T.E. Long**, G. Adikari Appuhamillage, J.M. Sirrine, M. Hegde, J. Herzberger, D.A. Rau, X. Chen, C.B. Arrington, M.F. Cashman, P. Scott, E. Wilts, V. Meenakshisundaram, N.A. Chartrain, C.B. Williams

. Non-viral genome editing based on polymer-derived CRISPR conjugates. **W. Ejaz**, M. Canakci, F. Anson, B. Laliberte, J.A. Hardy, B. Osborn, S. Thayumanavan

. Accelerated CuAAC coupling reaction fulfilled the synthesis of ultrahigh densely grafted polymers by grafting-onto strategy. **W. Gan**, Y. Shi, B. Jing, X. Cao, H. Gao

. Redox controlled unidirectional molecular transport. **Y. Qiu**, J.F. Stoddart

. Adipose-derived stem cell delivery system using temperature-responsive biodegradable injectable hydrogel. **Y. Yoshizaki**, H. Takai, S. Fujiwara, M. Ii, H. Uchida, S. Nemoto, A. Kuzuya, Y. Ohya

. Design and application of functionalized porous organic polymers in CO_2 adsorption and conversion. **Z. Yang**, I. Popovs, S. Dai

Revamping Practical Chemistry Teaching for the New Frontier

Sponsored by CHED, Cosponsored by PMSE, POLY and RUBB

TUESDAY MORNING

Section A

Rosen Centre Hotel
Signature 2

Carl S. Marvel Award for Creative Polymer Chemistry Award in Honor of Matt Becker

Biomaterials Take Form

Cosponsored by PMSE
A. P. Dove, *Organizer, Presiding*

8:00 . Novel biomaterials from sustainable sources. **A.P. Dove**

8:25 . Applications of redox-switchable catalysts for the synthesis of advanced polymeric materials. **J.A. Byers**, M. Qi, K.R. Delle Chiaie, J. Kehl, M. Thompson, S. Gonsales

8:50 . Collages of arts and science. **G.R. Newkome**

9:15 . C–H functionalization of polyolefins. **F.A. Leibfarth**, J. Williamson, C. Na, E.J. Alexanian

9:40 . Compression-activated fluorescence in polymeric networks. C. Kabb, C. O'Bryan, C. Morley, T.E. Angelini, **B.S. Sumerlin**

10:05 Intermission.

10:30 . Enzyme-responsive peptide-polymer progelators for minimally invasive delivery to the heart post-myocardial infarction. **N.C. Gianneschi**, A. Carlini, K. Christman

10:55 . Brush-like polymers and computationally driven design of soft materials. **A.V. Dobrynin**

11:20 . Exploring the power of PISA. **R.K. OReilly**

11:45 . Predicting 3D printability of functional polymers: balancing rheology with reactivity. **T.E. Long**, G. Adikari Appuhamillage, J.M. Sirrine, M. Hegde, J. Herzberger, D.A. Rau, X. Chen, C.B. Arrington, M.F. Cashman, P. Scott, E. Wilts, V. Meenakshisundaram, N.A. Chartrain, C.B. Williams

Section B

Rosen Centre Hotel
Salon 12

Polymer Bioconjugates for a Changing World

Cosponsored by BIOT
D. Konkolewicz, R. C. Page, J. K. Pokorski, *Organizers*
J. Kaar, *Organizer, Presiding*
C. Boyer, *Presiding*

8:00 . Semi-discrete protein-RAFT polymer conjugates and single-enzyme nanogels. A. Beloqui, G. Gil Alvaradejo, E. Miceli, J. Morgenstern, J. Hubbuch, **G. Delaittre**

8:20 . Practical synthesis of complex glycopolymers using water-soluble amino-oxy functional scaffolds. **A. Laezza**, S. Richards, M.I. Gibson

8:40 . Photoinduced reversible-deactivation radical polymerization (photoRDRP): Shedding light on structure and function of protein-like polymers. **H. Sun**, W. Choi, N.C. Gianneschi

9:00 . Covalently linking natural products and synthetic polymers by ATRP. **K. Matyjaszewski**

9:30 . Aqueous high througput photomediated controlled/living radical polymerization (PET-RAFT): tailoring for bioconjugation. **C. Boyer**

10:00 Intermission.

10:30 . Synthesis and biological applications of hydrophilic glycodendrimers. **K.D. McReynolds**

10:50 . Bioconjugation strategies to combine polymers with proteins and living cells. M. Hasan, L. Wilkins, R. Tomás, A. Fayter, B. Martyn, **M.I. Gibson**

11:20 . Automated engineering of well-defined and protein-like biofunctional polymers. **A.J. Gormley**, R. Chapman

Section C

Rosen Centre Hotel
Salon 19

Transport in Polymer Membranes

Flow Batteries & Alkaline Fuel Cells

Cosponsored by PMSE‡
M. D. Dadmun, T. Saito, C. M. Stafford, *Organizers*
B. Helms, J. L. Schaefer, *Presiding*

8:00 . Role of the electrolyte on the structure/transport relationships of PFSA membranes for redox flow batteries. **D.I. Kushner**, A. Kusoglu, A.Z. Weber

8:20 . Interplay of electrostatic interactions, nanoparticle dispersion, and ion transport in ionomer nanocomposites for vanadium redox flow batteries. **A.B. Jansto**, A. Balwani, T. Martin, R.L. Jones, E.M. Davis

8:40 . Sulfonated poly(biphenyl alkylene)s as ion exchange membranes for alkaline redox flow batteries. **S. Granados Focil**, v. Gutierrez-venegas

9:00 . New ion transport membranes for large-scale energy storage. **M.A. Hickner**

9:30 . Uncovering how the nanoparticle–polymer interface affects segmental dynamics and water transport in ionomer nanocomposites. **A. Balwani**, A.B. Jansto, A. Faraone, E.M. Davis

9:50 . Fluorocarbon-based ionomers with single- and multi-acid side chains at nanothin interfaces: What matters. S. Farzin, T. Johnson, C. Nguyen, J. Turner, **S.K. Dishari**

10:10 Intermission.

10:40 . Ion transport in anion exchange membranes for alkaline fuel cells. **Y.A. Elabd**

11:10 . Highly conductive, chemically stable, hydroxide conducting membranes based on poly(norbornene). G. Huang, M. Mandal, **P. Kohl**

11:30 . Effect of phosphonated triazine monomer additive in disulfonated poly(arylene ether sulfone) composite membranes for proton exchange membrane fuel cells. **T.N. Thompson**

11:50 . Structure-transport relationships of perfluorosulfonic acid membranes in dry-hot conditions: The impact of side-chain chemistry. **X. Luo**, A. Kusoglu

Section D

Rosen Centre Hotel
Salon 23

Excellence in Graduate Polymer Research

Approaches to Polymer Synthesis

Cosponsored by PRES, PROF, SOCED and YCC
Financially supported by Industrial Advisory Board; TOSOH; Wiley
H. Cheng, *Organizer, Presiding*
T. E. Long, *Presiding*

8:30 . Real-time measurement of analyte partitioning and polymer brush conformation change. **K.A. Serrano**, S. Wetzler, L. Kisley, A. Stanton, N.W. Reed, R.C. Bailey, P.V. Braun

8:55 . Living metathesis & metallotropy polymerization gives conjugated polyenynes from multialkynes: How to design sequence-specific cascades for polymers. **C. Kang**, T. Choi

9:20 . Leveraging low ring strain: The path towards precision polypentenamers. **W. Neary**, B.A. Fultz, J.G. Kennemur

9:45 . Macromolecular engineering through metal-free ring-opening metathesis polymerization. **P. Lu**, A.J. Boydston

10:10 Intermission.

10:25 . Flow-enabled control over macromolecule architecture. **D. Walsh**, D. Guironnet

10:50 . Postpolymerization modification strategy to solid state block polyelectrolytes. **D.J. Goldfeld**, E. Silver, M.R. Radlauer, M.A. Hillmyer

11:15 . Development of strongly reducing phenoxazine organic photoredox catalysts and their application in organocatalyzed atom transfer radical polymerization. **B. McCarthy**

Section E

Rosen Centre Hotel
Salon 20

New Frontiers in Aerospace Polymers: Advances & Challenges in Experiments & Simulations

Bioinspired Materials for Aerospace Composite

Cosponsored by PMSE
Financially supported by Air Force Research Laboratory; Bruker Instruments; Anasys Instruments; Boeing
M. A. Meador, J. S. Wiggins, *Organizers*
D. Nepal, *Organizer, Presiding*
S. Rahatekar, *Presiding*

10:30 . Cellulose nanocrystals: A versatile macromolecule for aerospace applications. **V.A. Davis**

11:00 . Substitution of formaldehyde in phenolic networks for ablative composites. **S. Caillol**

11:20 . Synthesis of biorenewable polyphenols from cardanol: Precursors to high-performance materials. **J. Muldoon**, m. garrison, B.G. Harvey

Section F

Rosen Centre Hotel
Salon 21

Undergraduate Research in Polymer Science

S. E. Morgan, *Organizer*
S. Nazarenko, *Presiding*

8:00 Introductory Remarks.

8:15 . Sustainable polymers in society: Demos of renewable polymers manufacture in the lab for HS students from a chemical/environmental engineering summer camp. **L.A. Lucia**, R.A. Venditti, H. Jameel, M. Byrd, L. Pal, J. Piercy, J. Pawlak, S. McAlexander

8:30 . Combining thiol-ene and acetal chemistries to synthesize degradable, environmentally friendly networks. B.M. Alameda, **N. Pierini**, D.L. Patton

8:45 . Crosslinked biodegradable thermoset polymer films based on sodium alginate. **K.D. Barz**, T. Filipova

9:00 . Synthesis and assembly of zwitterionic PMPC-based block copolymers. **J.D. Mitchell**, J. Ting, A.E. Marras, A. Herzog-Arbeitman, M.V. Tirrell

9:15 . Water content in polyelectrolyte complex coacervates. **K. Wilcox**, N. Zacharia

9:30 Intermission.

10:00 . Tuning the pKa of poly(lysine): Enhancing stimuli-responsiveness of peptide block copolymers. **A.K. Nason**, B.E. Barnes, D.A. Savin

10:15 . Assessing warping issues with 3D printed ceramic models using SLA 3D printers. **L. Rodriguez**, N. Ruzycki

10:30 . Development of a powder melt extrusion 3D printer. **T. Mensch**, B. Boyle, G. Miyake

10:45 . Print parameter effects on porcelain ceramic print shrinkage in stereolithography printers. **D. Alvarez**, N. Ruzycki

11:00 . Tailoring buckling instabilities in ultrathin polymer brush surfaces. **B.J. Thompson**, C.M. Reese, D.L. Patton

11:15 . Mechanical actuation in polymeric bilayers. **C. Wisinger**, L. Maynard, J.R. Barone

11:30 . Toward an understanding of dielectric breakdown through incorporating defects into polyetherimides. **J. Lockwood**

Section G

Rosen Centre Hotel
Salon 22

Polymer-Based Gene & Drug Delivery Systems

Processing & Formulation for DDS

T. Fujiwara, Y. Ohya, Y. Wang, *Organizers*
X. M. Liu, *Organizer, Presiding*
D. L. Watkins, *Presiding*

8:00 . Oral multiparticulates as a platform approach for pediatric drug development. **M. Santangelo**, J.A. Bartlett

8:20 . Advancements in softgels as a drug-delivery system. **N. Elkarim**

8:40 . Progress in the development of high-solids, quick-set pharmaceutical tablet coatings. **T.H. Kalantar**, M. Ladika, H. Shao, S. Dean, K. Harris, P. Sheskey, K. Coppens, K. Balwinski, D. Holbrook

9:00 . Intracellular delivery of biomolecules via freeze concentration using polyampholyte nanocarriers. **K. Matsumura**, S. Ahmed

9:20 . Blood-brain barrier crossing nanoparticle for the delivery of antiretrovirals for targeting HIV-infected brain reservoirs. **N. Kolishetti**, M. Kamran, A. Shah, B. Surnar, M. Nair, S. Dhar

9:40 Intermission.

10:00 . Development of a novel 3D printed, drug-eluting, biodegradable ring for treatment of eosinophilic esophagitis. **A. Prasher**, R. Shrivastava, D. Dahl, P. Sharma, S.R. Benhabbour

10:20 . High-capacity matrix excipients for controlled drug release: surpassing the state-of-the-art. **V. R de la Rosa**, A. Samaro, V. Van Hoorne, A. Tigrine, M. Purino, M. Vergaelen, B. Monnery, C. Vervaet, R. Hoogenboom

10:40 . Microfluidic synthesis of drug-loaded PLGA microparticles: A greener approach. **M.J. Owen**, J.H. Yik, D.R. Haudenschild, G. Liu

11:00 . Effect of dexamethasone on ambient temperature 3D printing, rheology, and degradation of a low modulus polyester. **T. Jain**, D. Saylor, C. Piard, Q. Liu, J. Fisher, I. Isayeva, A. Joy

11:20 . Active loading and triggered release of charged molecules with porous nanocapsules. **W. Zhang**, S. Shmakov

Applied Materials for New Frontiers: Ten Years of ACS Applied Materials & Interfaces

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Exploring the Frontiers of Chemistry through NASA Research

Getting There: Advanced Materials for Space Travel

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GSSPC: Artificial Molecular Machines & the Next Generation of Molecular Control

Sponsored by CHED, Cosponsored by COLL, I&EC, ORGN‡, PHYS, POLY and PRES

TUESDAY AFTERNOON

Section A

Rosen Centre Hotel
Signature 2

Carl S. Marvel Award for Creative Polymer Chemistry Award in Honor of Matt Becker

Biomaterials' Take on Function

Cosponsored by PMSE
A. P. Dove, *Organizer*
K. L. Wooley, *Presiding*

1:00 . Highly branched polymers prepared via ring-opening metathesis polymerization of macromonomers: Syntheses and applications as prodrugs and biological imaging agents. **J.A. Johnson**

1:25 . Block copolymers of polysaccharides and conventional polymers as compatibilizers in blends of bio-derived polymers. **J.B. Matson**, K. Arrington, A. Volokhova

1:50 . Polymers at surfaces: Growth and detachment. **H.A. Klok**

2:15 . Controlled polymer assemblies promote drug delivery and cellular genome editing. **T.M. Reineke**

2:40 Intermission.

3:05 . Next-generation click chemistry for block copolymer synthesis. **C.J. Hawker**

3:30 . Striving for perfection: Model materials for short chain branched polyolefins. S.V. Orski, W. Farrell, **K. Beers**

3:55 . Modeling the rheological behavior of sulfonated polystyrene ionomers. **R.A. Weiss**, C. Huang

4:20 . Celebration of the accomplishments of Matthew L. Becker: From peptide-polymer conjugates and peptide-functionalized shell crosslinked knedel-like nanoparticles (SCKs) as a Ph.D. student to a diverse range of biologically-active functional polymer materials. **K.L. Wooley**

4:45 . New resorbable materials and inks are needed if additive manufacturing will really change medicine. **M. Becker**

Section B

Rosen Centre Hotel
Salon 12

Polymer Bioconjugates for a Changing World

Cosponsored by BIOT
J. Kaar, D. Konkolewicz, R. C. Page, J. K. Pokorski, *Organizers*
R. Chapman, A. Simakova, *Presiding*

1:00 . Grafting through method for implanting of lysozyme enzyme in molecular brush for improved biocatalytic activity and thermal stability. **X. Wang**, N.S. Yadavalli, A.M. Laradji, S. Minko

1:20 . Using orthogonal grafting-from strategies to access well-defined 2-polymer, 1-protein bioconjugates. **K. Burridge**, M.M. Kearns, T. Wright, D. Konkolewicz, R.C. Page

1:40 . Molecular sieving on the surface of nano-armored protein. **B. Kaupbayeva**, H. Murata, A. Lucas, K. Matyjaszewski, J.S. Minden, A.J. Russell

2:00 . Ideal protein materials with genetic code expansion. **R.A. Mehl**, R.M. Bednar

2:30 . Oxygen tolerant polymerisation for the design of biomaterials. **R. Chapman**

3:00 Intermission.

3:30 . New conjugation approach to covalently crosslink and bond silk proteins on polymers for optical materials. **L. Bast**, N. Bruns

3:50 . Cell surface conjugation of polymer nano- and microparticles. **H.A. Klok**

4:20 . Polypept(o)ide-based cylindrical polymerbrushes as multifunctional nanocarriers. **C. Seidl**, M. Schinnerer, M. Barz

4:40 . Exploiting the benefits of homogeneous and heterogeneous biocatalysis: Tuning the molecular interaction of enzymes with solvents via polymer modification. **J. Kaar**

Rosen Centre Hotel
Salon 19

Transport in Polymer Membranes

Gas Separation

Cosponsored by PMSE‡
M. D. Dadmun, C. M. Stafford, *Organizers*
T. Saito, *Organizer, Presiding*
Z. P. Smith, *Presiding*

1:00 . Enhancing CO_2/N_2 selectivity of addition-type polynorbornenes. **B.K. Long**, C. Maroon, J. Townsend, K.R. Gmernicki, D.J. Harrigan, B.J. Sundell, J.A. Lawrence, S.M. Mahurin, K.D. Vogiatzis

1:20 . Tailored CO_2-philic polymers for high flux CO_2 separation. T. Hong, P. Cao, B. Li, S. Zhao, A.P. Sokolov, **T. Saito**

1:40 . Multiscale modeling of time-dependent CO_2 and N_2 permeation through a glassy polymer at steady and non-steady state. **M. Soniat**, M. Tesfaye, D. Brooks, N.D. Humphrey, L. Weng, B. Merinov, W.A. Goddard, A.Z. Weber, F.A. Houle

2:00 . Characterization of high-performance membrane polymers for gas separation using broadband dielectric spectroscopy. **M. Boehning**, H. Yin, A. Schönhals

2:20 Intermission.

2:50 . Toward role of two-dimensional nanomaterials for polymeric membrane materials. **H. Park**

3:20 . Polymers with ether-oxygen-rich branches with superior membrane CO_2/N_2 separation properties. **H. Lin**

3:40 . Photocurable polyethylene glycol containing thiol-ene membranes for efficient separation of CO2 from light gases. **S. Nazarenko**, V. Vasagar, J.M. Schekman, M. Khraisheh, M.A. AlMa'adeed, M.K. Hassan

4:00 . Synthesis and characterization of polyimides containing bulky ethyl substituents for propylene/propane separation. **S. Yoo**, H. Park

4:20 . Anti-plasticization of polyimide membrane for olefin/paraffin separation using 2D nanofillers. **J. Lee**, F. Moghadam

Section D

Rosen Centre Hotel
Salon 23

Excellence in Graduate Polymer Research

Conjugated & Electroactive Polymers

Cosponsored by PRES, PROF, SOCED and YCC
Financially supported by Industrial Advisory Board; TOSOH; Wiley
H. Cheng, *Organizer*
C. Coltrain, T. E. Long, *Presiding*

1:00 . Structural and optoelectronic landscape of semiconductor:ferroelectric blends. **A. Khirbat**, I. Bargigia, A. Levitski, M. Losego, C. Silva, G.L. Frey, L.J. Richter, N. Stingelin

1:25 . Synthesis and strategic design of solution-processable diketopyrrolopyrrole copolymer semiconductors for enhanced performance in n-channel organic field effect transistors. **C. Buckley**, E. Reichmanis

1:50 . Ester-functionalized, wide band-gap conducting polythiophene for organic field effect transistors. **R. Gunawardhana**, C. Bulumulla, P.L. Gamage, M.C. Biewer, M.C. Stefan

2:15 . Organic conductive polymers as printed electronics on fabrics for wearable electronics. **S. Sinha**, Z. Li, Y. Noh, K. Chon, Y. Cao, G. Sotzing

2:40 Intermission.

2:55 . Design of nanostructured, self-doped block polymer electrolytes for lithium-ion battery electrolytes. **M.A. Morris**, T.H. Epps

3:20 . Combined computational and experimental study on the effects of side-chain architecture of polythiophene derivatives on structure and ionic conduction. **J. Onorato**, B. Dong, C. Nowak, J. Strzalka, F. Escobedo, C.K. Luscombe, P.F. Nealey, S. Patel

3:45 . Aramid nanofiber composite separators for high performance lithium-sulfur batteries. **A.E. Emre**, A. Gerber, N. Kotov

Section E

Rosen Centre Hotel
Salon 20

New Frontiers in Aerospace Polymers: Advances & Challenges in Experiments & Simulations

Multifunctional Composite for Aerospace

Cosponsored by PMSE
Financially supported by Air Force Research Laboratory; Bruker Instruments; Anasys Instruments; Boeing
M. A. Meador, D. Nepal, *Organizers*
J. S. Wiggins, *Organizer, Presiding*
H. Koerner, *Presiding*

1:30 . Flexible polyimide aerogels with aliphatic links in the backbone structure for conformal antenna application. **H. Guo**, M. Meador, D. Tresp, B. Dosa, L. McCorkle

1:50 . Multifunctional polymers and composites for aerospace applications. **T. Williams**

2:20 . Boron nitride nanotube polymer composites for aerospace applications. **M. Jakubinek**, Y. Martinez-Rubi, B. Ashrafi, J. Guan, M. Rahmat, K. Kim, C. Kingston, B. Simard

2:40 . Polymer aerogel nanocomposites via functionalized nanoparticles. **J.R. Alston**, H. Harrison, F. Kabir, A. Kelkar

Section F

Rosen Centre Hotel
Salon 21

Undergraduate Research in Polymer Science

Cosponsored by PMSE
S. E. Morgan, *Organizer*
H. Broadhead, *Presiding*

1:00 . Synthesis of cyclobutane-containing building blocks from sorbic acid using photoenergy. **M. Mabin**, Z. Wang, Q.R. Chu

1:15 . Effects of functionalized carbon nanostructures on material properties of nylon 6 and CNT dispersion. **J. Robinson**, M. Roth, M.K. Shukla, G. Subramanian

1:30 . One-dimensional photonic crystals from ultra-high refractive index chalcogenide hybrid inorganic/organic polymers (CHIPs). **K. Konopka**, T. Kleine, R.A. Norwood, J. Pyun

1:45 . Synthesis and characterization of novel Polyhedral Oligomeric Silsesquioxane (POSS) benzoxazine reactive diluents. **V.C. Torres**, W.K. Fuchs, J.S. Wiggins

2:00 . Manipulation of isotropic-nematic phase transitions in aqueous liquid crystals. **J. Stelzel**, G. Parkinson, P.S. Russo

2:15 . Gold catalyzed polymerization reactions of unsaturated substrates. **S. Stanciu**, E.R. King, J. Tropp, N. Eedugurala, L.E. Gonce, J.D. Azoulay

2:30 . Synthesis of di- and trisalicylide monomers for ring-opening polymerization. **M. Maday**, M.D. Scholten

2:45 Intermission.

3:15 . Copper ion encapsulation via micelles of diblock copolymers. **A.E. Ringuette**, C. Chen, L.L. Cai, N.J. Lee, C. Ho, J.J. Lee, S.L. Goh, C. Goh

3:30 . Unraveling the kinetic growth mechanism of single-chain nanoparticles with Diels-Alder chemistry. **S.E. Gosting**, E. Wilborn, C.G. Gregory, T. Page, W. Ramos, M. Hunter, P.J. Costanzo

3:45 Panel Discussion.

Applied Materials for New Frontiers: Ten Years of ACS Applied Materials & Interfaces

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Exploring the Frontiers of Chemistry through NASA Research

Living There: Science for the Future of Manned Space Exploration

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LGBTQ+ Graduate Student & Postdoctoral Scholar Research Symposium

Sponsored by PROF, Cosponsored by ENVR, GEOC, I&EC, MEDI, MPPG, NUCL, ORGN, PHYS, PMSE, POLY, WCC and YCC

GSSPC: Artificial Molecular Machines & the Next Generation of Molecular Control

Sponsored by CHED, Cosponsored by COLL, I&EC, ORGN‡, PHYS, POLY and PRES

TUESDAY EVENING

Section A

Orange County Convention Center
West Hall C

Dispersity in Block Copolymers: Synthesis, Characterization, Modeling & the Effects on Self-Assembly

Posters

Cosponsored by PMSE
W. Gao, P. D. Hustad, M. K. Mahanthappa, M. L. Robertson, *Organizers*

5:00 - 7:00

. Thermo-responsive block copolymers in stabilizing and controlling catalytic efficiency of gold nanoparticles. **S. Bera**, D. Dhara

. Synthesis of triple-responsive, amphiphilic block copolymers for potential drug-delivery applications. **P. PODDAR**, S. Maiti, D. Dhara

. Study on self-assembly structure of nanorod surfactant between block copolymer and aqueous solution using interfacial energy and polymer stretching energy. **C. Nam**, K. Ku, J. Ryu, W. Lee

. Tailor-made thermoplastic elastomers via modulation of molecular weight distributions. **S.I. Rosenbloom**, D.T. Gentekos, B.P. Fors

. Synthesis and characterize of the dual-thermo- responsive diblock copolymer. **D. Zhao**, R. Rajan, K. Matsumura

. Phase behavior and structural determinants of multifuntional tripedal mesogens prepared via the Passerini three-component reaction. **S. Song**, D. Sahoo, M. Kumar, D.A. Barkley, P.A. Heiney, J.G. Rudick

. Computational investigation on carbon nanotube-composite interactions using the ReaxFF reactive force field. **B. Damirchi**, A.C. van Duin

. Oriented block copolymer domains in fibers. **Z. Zhou**

. Effect of MFC size-concentration in the structure of PVA hydrogels. **W.E. Magalhães**, G.G. Goetten de Lima, B. Ferreira, M. de Matos, C. Jordão, F. Claro

. One-pot synthesis and properties of high molecular weight multiblock copolymer via RAFT emulsion polymerization. **F. Jinwei**

. Local internal morphologies in diblock copolymer thin films revealed by combined nanoscale infrared microscopy and mechanical mapping. **K. Ho**, S.S. Kim, L. Gilburd, S. de Beer, G.C. Walker

Section A

Orange County Convention Center
West Hall C

Excellence in Graduate Polymer Research

Excellence in Graduate Polymer Research Posters

H. Cheng, *Organizer*

5:00 - 7:00

. External control in atom transfer radical polymerization. **S. Dadashi Silab**, K. Matyjaszewski

. Accelerated CuAAC coupling reaction fulfilled the synthesis of ultrahigh densely grafted polymers by grafting-onto strategy. **W. Gan**, Y. Shi, B. Jing, X. Cao, H. Gao

. Inverse vulcanization of sulfur and charged monomers to enhance solubility and create inexpensive metal binding materials. **M. Eder**, C. Jenkins

. Light-switchable silicon-based polymers with high thermal stability and surface areas. **N. Hu**, T. May, J.C. Furgal

. Bouligand nanocomposites: Self-assembly of cellulose nanocrystals with thermoresponsive polymer. **H. Vu**, B. Natarajan, J. Woodcock, J. Obrzut, S. Seethamraju, J. Gilman, E. Coughlin

. pDVB old polymer new tricks: Coupling of organic and inorganic chemistry for nanoparticle synthesis and noninvasive optogenetics applications. **E. Zhang**, A.A. Dickey, M. Burdette, M. Rich, K. Cannon, I. Bandera, M. Bolding, J. Ballato, J.W. Kolis, S.H. Foulger

. Elucidating the relationship between the states of water and transport properties of ions in swollen polymer networks. **T. Tran**, C. Lin, H. Lin

. Vapor-phase infiltration of metal oxides into microporous polymers for solvent stable nanofiltration membranes. **F. Zhang**, E. McGuinness, Y. Ma, M. Losego, R.P. Lively

. Design and synthesis of functional sugar poly(orthoester) nanomaterials with ultra-low immunogenicity. **S. Maiti**, S. Manna, A. Esser-Kahn, W. Du

. Bioadvantaged hydrophobic nylon-6,6 copolymers. **S. Abdolmohammadi**, N. Hernandez, J. Tessonnier, E.W. Cochran

. Computational study on the peroxide crosslinking of polyethylene using ReaxFF reactive force field. **D. Akbarian**, W. Woodward, A.C. van Duin

Section A

Orange County Convention Center
West Hall C

General Topics: New Synthesis & Characterization of Polymers

Posters

D. Garcia, *Organizer*

5:00 - 7:00

. Measurement and control of odor contributors in waterborne architectural coatings. **J. Bohling**, M. Gallagher, P. Doll, J. Xu, D. Lin, J. Zou

. Polycarbonate/polypeptide hybrid copolymers for soft tissue adhesives. **J. Wilson**, A. Heise

. Pyrrole-based donor-acceptor conjugated molecules for organic electronics. **P.L. Gamage**, A.K. Fiedler, M.C. Stefan, M.C. Biewer

. Interpenetrating polymer networks consisting of poly vinyl pyridine and poly phenylene oxide for use in organic electronics. T. Hussain, B. Parody, **G.D. Phelan**

. Developing a platform to evaluate photoswitches and their mechanical work. **F. Stricker**, J. Read de Alaniz

. Multifunctional sulfonamide-based polymers for water purification. **B. Hall**, E. Shelton, M.D. Schulz

. Synthesis and characterization of polysulfone-based polymers for water remediation applications. **C. Morales Guzman**, E. Nicolau

. Preparation and characterization of PEEK polymer electrolyte membranes with imidazolium group for anion exchange fuel cell. **S. Nam**

. Ion exchange hybrid membranes with improved ion exchange capacity using ion exchange particles. **S. Nam**

. Novel triazole-based semifluorinated sulfonated polyimides: Investigation of proton exchange membrane properties. **A. Singh**, S. Banerjee

. Towards fine-tuning the hydrophilicity and hydrophobicity of PVDF block copolymers. V. Vasu, **A. dutta**, A.D. Asandei

. Metal-free, highly soluble, fully aromatic fluorinated ladder polymer. **J.R. Molina**

. Cross-linked polymerization of carbodiimides to explore liquid crystalline behavior. **C.U. Jayarathna**, B.M. Novak

. Synthesis of bottlebrush (co)polymers via direct "click" polymerization of macromolecules. **Y. Wang**, Y. Fu

. Performing Ring Opening Metathesis Polymerization (ROMP) reactions under flow conditions. **S. Subnaik**, C.E. Hobbs

. Biobased cyclobutane-containing building blocks: Synthesis of cyclobutane diacid for novel polyesters. **R.K. Shahni**, Z. Wang, Q.R. Chu

. Development of an initiator with post-polymerization photo-cleavage capabilities. **M.S. Baker**, C. Ludwig

. Synthesis of acid-degradable star polymers by chain-growth CuAAC polymerization of AB monomers from active core. **W. Gan**, X. Cao, H. Gao

. Rediscovery of s-tetrazines: UV absorbing additive, chemical blowing agent, and crosslinker. **W. Sun**, R. Bagge, R. Nanayakkara, D.A. Loy

. Simple toolbox for building dendritic and polyisoprene based multidentate phosphine ligand structures and their Pd(0) complexes. **J.C. von Irmer**, M. Rehahn

. Utilizing dynamic sulfur bonds to modify polysulfide. **P.M. Walker**, C. Jenkins

. Probing the mechanism of thermally driven thiol-Michael dynamic covalent chemistry. **B. Zhang**, P. Chakma, M.P. Shulman, J. Ke, Z. Digby, D. Konkolewicz

. Synthesizing laccol polymer and its copolymers using lacquer sap *Toxidendron succedanea* for radiation hard applications via cationic polymerization and characterizing the materials. **I.H. Marasinghe Arachchilage**, M. Patel, j. harmon

. Development of a cheap, efficient and stable "click" platform to access complex polymer architectures. **S. Bailey**, J. Read de Alaniz, E. Discekici

. Hydrothermal polymerization of composition- and morphology-tunable polyimide microparticles. **T. Kim**, K. Lee, S. Kwak, B. Kim

. Synthesizing macromonomers for brush polymers via anionic polymerization strategies. **R.M. Pearson**, G. Miyake

. Bio-based benzoxazine monomers derived from di-furan-amine, vanillin, and phenol. **M. YU**, G.R. Palmese, J. La Scala

. Analysis of various synthetic procedures to generate poly(S-r-DVB) by inverse vulcanization. **A. Fistrovich**, C. Jenkins

. Effect on dispersity of end-capping in ATRP-grown surface-initiated brushes. **N.H. Vy**, D.H. Adamson

. Butadiene ATRP with group 8 transition metal catalysts. V. Vasu, M. Johnson, W. Bannerman, **A. dutta**, A.D. Asandei

Section A

Orange County Convention Center
West Hall C

New Frontiers in Aerospace Polymers: Advances & Challenges in Experiments & Simulations

Posters

Cosponsored by PMSE
Financially supported by Anasys Instruments; Bruker Instruments; Boeing; Air Force Research Laboratory
M. A. Meador, D. Nepal, J. S. Wiggins, *Organizers*

5:00 - 7:00

. Rheological and processability improvements in polyethersulfone-POSS nanocomposites. **R. Shankar**, M. Woellner, A.F. Lopez, L. Kemp, S.E. Morgan

. High-temperature polybenzoaxazine resins for aerospace applications. **C.L. Crickmore**, D.A. Rider

. Boron-containing hybrid organic-inorganic polymers: synthesis and characterization. **J. Heckler**, T. Pruyn

Section A

Orange County Convention Center
West Hall C

Poly(2-oxazoline)s & Polypeptoids

Posters

Cosponsored by PMSE
R. Hoogenboom, H. Schlaad, R. N. Zuckermann, *Organizers*

5:00 - 7:00

. New methylene blue removal agents based on N,N-dimethylacrylamide and 2-oxazoline macromonomer. **F. Santillan**, J. Rueda

. Removal of phenolic compounds from water solutions using porous poly(2-oxazoline)s obtained using high internal phase emulsion (HIPE) polymerization. **M. Cegłowski**, R. Hoogenboom

. What is the shoulder? Understanding the appearance of the higher molecular weight fraction in the size exclusion chromatography from the synthesis of poly(2-alkyl-2-oxazoline)s. **d. bera**, R. Hoogenboom

. Synthesis and characterization of thiol and aldehyde functionalized poly(2-oxazoline)s. **M. Purino**, A. Tigrine, V. R de la Rosa, R. Hoogenboom

. Well-defined star-shaped poly(2-oxazolines). **X. Xu**, V. Jerca, R. Hoogenboom

. Block copolymers of poly(-2-oxazoline)s and polyesteramides. **I. Muljajew**, M. Dirauf, C. Weber, U.S. Schubert

Section A

Orange County Convention Center
West Hall C

Polymer-Based Gene & Drug Delivery Systems

Posters

T. Fujiwara, X. M. Liu, Y. Ohya, Y. Wang, *Organizers*

5:00 - 7:00

. Synthesis and optimisation of lipid-hybrid nanoparticles loaded with a mixture of two antiretroviral drugs for the treatment of HIV: Application in nanomedicine. **H.H. Elkateb**, T. McDonald

. Investigation of the tumor penetration capability of PVCL/OEGA/GMA nanogels using a multicellular tumor spheroid model. **C. Zhang**, E. Gau, W. Sun, A. Pich, X. Shi

. pH-Triggered amphiphilic polycarbodiimides as nanocarriers. **E.H. De Silva**, B.M. Novak, M.C. Stefan, A.T. Brown, K.J. Balkus

. pH-Dependent dissolution of enteric polymers: A misconception? Implications for pH-dependent drug delivery. **J. Al-Gousous**, H. Ruan, J. Blechar, K. Sun, N. Salehi, P. Langguth, N. Job, R. Loebenberg, E. Lipka, M. Bermejo, G.E. Amidon, G.L. Amidon

. Design and development of dual-headed nanosystems: Drug delivery applications. **G. Kaur**, N. Majeti

. Adipose-derived stem cell delivery system using temperature-responsive biodegradable injectable hydrogel. **Y. Yoshizaki**, H. Takai, S. Fujiwara, M. Ii, H. Uchida, S. Nemoto, A. Kuzuya, Y. Ohya

. Multilayer hydrogel capsules for encapsulation of small molecules. **V.A. Kozlovskaya**, E.P. Kharlampieva

. Multilayer microcapsules from MRI-compatible poly(N-vinylcaprolactam)-co-ruthenium copolymer with ultralow magnetic susceptibility. **N. Mitchell**, A. Alford, V.A. Kozlovskaya, E.P. Kharlampieva

. Porous polymeric microparticles for delivery of agents to control myopia progression. **M. Mohammadiroudbari**, V.A. Kozlovskaya, E.P. Kharlampieva

. Efficient pro-oxidant cancer therapy using ROS-responsive thioether-based polymeric nanoparticles. Y. Kim, S. Kim, **M. Shim**

. Magnetic molecularly imprinted polymer nanovectors as targeted delivery systems for breast cancer treatment. **M. Nerantzaki**, c. wilhelm, J. Fresnais, C. Ménager, N. Griffete

. Well-defined pH-responsive PEG-*b*-PHEMA-*b*-PBA based micelles for targeted delivery of doxorubicin. **M. Mohamed**, A. Singh, A. El-Sokkary, M. Akl, P.N. Prasad, C. Cheng

. Supramolecular hydrogels based on poly (ethylene glycol)-poly (lactic acid) block copolymer micelles and α-cyclodextrin for potential injectable drug delivery system. **A. Poudel**

. Non-viral genome editing based on polymer-derived CRISPR conjugates. **W. Ejaz**, M. Canakci, F. Anson, B. Laliberte, J.A. Hardy, B. Osborn, S. Thayumanavan

Section A

Orange County Convention Center
West Hall C

Polymer Bioconjugates for a Changing World

Posters

Cosponsored by BIOT
J. Kaar, D. Konkolewicz, R. C. Page, J. K. Pokorski, *Organizers*

5:00 - 7:00

. Synthesis of laccase polymer hybrids. **M. Kovaliov**, S. Averick

. Sub-7 nm patterning platforms through directed self-assembly of metal conjugated biopolymers. **G. Pathiraja**, K. Davis, H.P. Rathnayake, D. Herr

. Generation of solution-stable galectin-3 polymer conjugates. **A. Pritzlaff**, D. Rucco, L. Lin, H.A. Lower, D.A. Savin

. Investigation of site-specific polymerization techniques *via* genetic incorporation of bioconjugate handles for studies with self-assembling and stimuli-responsive protein-polymer materials. **D. Rucco**, A. Pritzlaff, S. Betters, D.A. Savin

. Preparation and characterization of modified chitosan nanoparticles for the adsorption of lead from drinking water. **M.A. Nunez Herrera**, K. Milligan, V.N. Fondong

Section A

Orange County Convention Center
West Hall C

Polymers & Biomimicry

Posters

A. N. Dhinojwala, T. Williams, *Organizers*

5:00 - 7:00

. Tuning enzyme diffusion and reaction on temporal hydrogel stiffening. **H. Liu**, C. Lin

. Charge density and swelling behavior of pH-sensitive polymers with mixed functional groups. **S. Yang**, J. Shyue

. Characterizing the structure and dynamics of styrene-maleic acid copolymer-lipid nanoparticles (SMALPS) as a membrane mimetic. **K. Burridge**, I. Sahu, B. Harding, A.P. Bali, G. Dixit, M.T. Dolan, R. Edelmann, C. Dabney-Smith, D. Konkolewicz, G. Lorigan

. On-demand softening of hydrogels through SrtA-mediated transpeptidation. D. Moore, **M. Arkenberg**, C. Lin

. Robust and transparent superhydrophobic surfaces with high thermal resistance. Y. Park, **H. Lim**

. Tetracycline Molecularly Imprinted Polymers (MIP): Synthesis, characterization, and comparison between conventional MIP, MIP@SiO_2, and hollow porous MIP. **R.R. Pupin**, M.T. Sotomayor

Section A

Orange County Convention Center
West Hall C

Synthesis & Properties of Densely Grafted Polymers

Posters

J. G. Kennemur, J. B. Matson, G. Stein, R. Verduzco, *Organizers*

5:00 - 7:00

. Aromatic polyamide brushes: Next-generation surface coatings. **C.J. Reese**, E. Graham, A. Kennedy, T.A. Crowe, S.G. Boyes

Section A

Orange County Convention Center
West Hall C

Transport in Polymer Membranes

Posters

M. D. Dadmun, T. Saito, C. M. Stafford, *Organizers*

5:00 - 7:00

. Fundamental study of interaction between minor gases and a polymeric membrane for carbon dioxide transport. **T. Park**, E. Chung

. Molecular diffusion of carbon dioxide through hyperbranched polyethylenimine. **G. Lee**, S. Jang

. Stability of polyamide nanofiltration membranes with peracetic acid/hydrogen peroxide disinfection. **M. Ghafari**, N. Dai

. Going against entropy: conversion of immiscible polyimide blends to miscible blends for gas separation applications. **C. Karunaweera**, S. Haghiri, S. Panangala, I.H. Musselman, K.J. Balkus, J.P. Ferraris

. Leveraging conductivity-enhancing pathways in homopolymer-blended block polymer electrolytes. **M.A. Morris**, R. Nieuwendaal, J. Dura, T.H. Epps

. Fuel transport properties of functionalized nanoclay/urethane composites. **J. Sloan**, D. Flanagan, D. Deschepper, H. Feuer

. Decomposition mechanisms of novel electrolytes within Li-air batteries for NASA electric aircraft. **R.P. Viggiano**, D. Dornbusch, W.R. Bennett, K. Knudsen, P. Arrechea, J. LAWSON

Section A

Orange County Convention Center
West Hall C

Undergraduate Research in Polymer Science

Posters

Cosponsored by PMSE
S. E. Morgan, *Organizer*

5:00 - 7:00

. Impact resistant polymers: Investigating polyamides via *cis*/*trans* isomerization. **K. Kelsall**, J. Garraway, E.S. Sterner

. Bicyclic guanidine organocatalysts: A comparison of three structural analogs. **A. Chesness**, M.D. Scholten

. Design and synthesis of bio-based click-able polymeric sensors. **D.A. Kure**, C.A. Corley, S.T. Iacono, A.R. Jennings

. Improving the recyclability of PET-PE mixed waste streams. **A.F. Bratton**, C.J. Ellison, K.M. Miller

. Development and characterization of perfluorocyclopentene-polyhedral oligomeric silsesquioxane polymers of varying side chain length. **E.L. Alvino**, E.C. Lochmaier, S.T. Iacono, A.R. Jennings

. Isodimorphic co-crystallization in succinate polyester polyols: Comparison of butanediol and hexanediol copolymer; and blend crystallization structure, kinetics, and compatibility. T. Hunt, M. Stitt, C. Finley, **J. Dvorak**, **S. Cabrera**, A. Schrock

. Preparation of perfluoropolyether-modified nanoparticles for improved fluoropolymer filament compatiblization for 3D-printed structural energetics. **B. Martin**, J. Mates, J. McCollum, S.T. Iacono

. Preparation and characterization of metallized electrospun microfiber fluoropolymer composites for energetic applications. **E. Gazmin**, J. McCollum, J. Mates, S.T. Iacono

. Polysilazane preceramic polymer formulations of differing crosslink densities. **N.L. Williams**, T. Pruyn, A.R. Jennings

. Asymmetric catalysis with helical supramolecular benzene 1-monourea-3,5-bisamide polymers. **k. bone**, M. RAYNAL

. Synthesis and characterization of a novel polymer by Sonogashira coupling between cyclopentadithiophenes and difurodiketopyrrolopyrroles for use in organic hybrid solar cells. **H.P. Masching**, J.L. Duffy-Matzner

. Investigating the photoswitching properties of donor-acceptor Stenhouse adducts in pursuit of light-responsive systems to perform mechanical work. **K. Lindsey**, **K. Clark**, **J. Read de Alaniz**

. Investigating optimal reaction conditions for the synthesis of Polylactic Acid (PLA). **E. Garza**, **R. Bui**, J. Tormos

. Development of a 3D-printed microfluidic device for biological applications using LEGO® PDMS molds. **C. Gething**, H.J. Fletcher

. Poly(4-vinylpyridine-N-oxide) as an oxygen atom transfer reagent. **G. Fata**, **C. Hutchison**, C.R. Turlington

. Novel chiral organic catalysts for methacrylate polymerizations. **K.G. Oberle**, **J.C. Lowe**, C.R. Turlington

. Investigation of reducing highly cross-linked polysulfides to polythiols. **K. Laws**, C. Jenkins

. Synthesis and characterization of networked fatty acid based polymers. **M. Maw**, R.W. Kopitzke

. Understanding the interface of wavelength selective resins for multi-material printing. **R.C. Chavez**, N. Dolinski, C.J. Hawker

. Phosphonium-containing poly(ionic liquid) networks prepared from thiol-ene ‘click’ photopolymerization. **S. Sims**, R. Whittaker, K.M. Miller

. Alternative to commercial plastics: Extraction and polymerization of a biorenewable monomer. **J. Thomas**, S. Shen, S.A. Miller

. Thermal carbon analysis as a novel tool for examination of transparent polyimide aerogel properties. **T. Berg**, B. Nespor, A. Kubatova, S.L. Vivod

. Synthesis and characterization of copolymers for the fabrication of novel polymer-MOF crystals. **A.N. Radzanowski**, J.M. Schekman, Y.C. Simon

. Synthesis of thermosensitive copolymers for the modification of polysaccharides. **C. Barrios**, C. Jenkins, R. Auzely-Velty

. Multiblock copolymers from diallylammonium monomers. **A. Biery**, D.M. Knauss

. Synthesis and characterization of silicone "hybrid" polymers prepared by platinum catalyzed hydrosilylation reactions. **A. Drumm**, J.W. Krumpfer

. Synthesis of poly(quinoline)s and their derivatives via [4+2]-cycloadditions. K.M. Ryan, **J.W. Krumpfer**

. Pseudo-polyrotaxane and polyrotaxanes of poly(ethylene glycol) for biomedical applications. **A.M. Alamoudi**, A.M. Abdulrahman, I.M. Khan

. Biofilm prevention via covalently anchored bacteriophages on polymeric surfaces. **C. Perritt**, G. Sahukhal, H. Broadhead

. Preparation and characterization of modified chitosan nanoparticle for substained release of bovine serum albumen under physiological conditions. **E.e. Uche**, K. Milligan, V.N. Fondong

. Effect of hydrogenation on conductivity and glass transition temperature in novel oxanorbornene dicarboximide based polymers. **A. Riedl**, D.A. Waldow

. Manipulation of molecular topology and composition using Diels-Alder chemistry. **M. Hunter**, M.S. Meyersohn, S.E. Gosting, N. Skinner, P.J. Costanzo

. Degradable imine-containing core-crosslinked star polymers. M.B. Sims, **J. Rapp**, S. Goodrich, M. Li, B.S. Sumerlin

. Bismuth (III) subsalicylate as a greener polymerization catalyst in teaching lab experiments. **H. Kolsky**

WEDNESDAY MORNING

Section A

Rosen Centre Hotel
Signature 2

Dispersity in Block Copolymers: Synthesis, Characterization, Modeling & the Effects on Self-Assembly

Disperse Block Polymer Self-Assembly

Cosponsored by PMSE
P. D. Hustad, M. K. Mahanthappa, *Organizers*
W. Gao, M. L. Robertson, *Organizers, Presiding*

8:30 . Influence of polymer molecular weight distribution skew on properties. **B.P. Fors**

9:00 . Tuning the effective interaction parameters or dispersity from the short mid-block in PS-b-PMMA based block copolymers. **J. Bang**, J. Huh

9:30 . Importance of polydispersity in quantitative predictions for block copolymer melts. **M.W. Matsen**

10:10 Intermission.

10:30 . Shear alignment of sphere-forming ABA triblock copolymers with a polydisperse midblock. W. Ding, C.R. Lopez-Barron, W.R. Burghardt, **M.L. Robertson**

11:00 . Morphology and ionic conductivity in lithium salt-doped broad dispersity triblock polymers. **M.K. Mahanthappa**, H. Xu

Section B

Rosen Centre Hotel
Salon 12

Polymer Bioconjugates for a Changing World

Cosponsored by BIOT
J. Kaar, D. Konkolewicz, R. C. Page, J. K. Pokorski, *Organizers*
P. Besenius, K. Burridge, *Presiding*

8:00 . Telechelic peptide-polymer conjugates as a toolbox for viromimetic assemblies and thermoresponsive hydrogels. R. Otter, C. Berac, **P. Besenius**

8:30 . Polypeptide and protein-based bioconjugates as innovative functional biomaterials. **S. Lecommandoux**, E. garanger, B. Garbay, M. Bravo Anaya

9:00 . Deploying light-mediated chemistries for the formation and modulation of biomaterial properties. **A.M. Kloxin**

9:30 . Biotemplated polymer synthesis: Controlling polymer structures for biomedical applications. **T. Weil**

10:00 Intermission.

10:30 . Tuning properties of microstructured polymer-polypeptide hydrogels. C. Garcia, **K.L. Kiick**

11:00 . Zwitterionic versions of poloxamers: Functional nanostructures and bioconjugates. **T. Emrick**

11:30 . High-throughput bioconjugate synthesis and screening for biocatalytic applications. **A. Simakova**, G. Lewis, A.K. Fisher, M. Link, K. Matyjaszewski, A.J. Russell

Section C

Rosen Centre Hotel
Salon 19

Transport in Polymer Membranes

Gas Separation

Cosponsored by PMSE‡
M. D. Dadmun, T. Saito, C. M. Stafford, *Organizers*
H. Lin, B. K. Long, *Presiding*

8:00 . Fundamental study of gas and vapor sorption and transport mechanism in triptycene-based polymers. V. Loianno, Y. Li, S. Luo, Q. Zhang, R. Guo, **M. Galizia**

8:20 . High-temperature gas separation properties of sub-micron polybenzimidazole membranes. **M.M. Merrick**, B.D. Freeman

8:40 . H_2O and O_2 sorption and diffusion behavior in thermoset polymers with temperature. **M.C. Celina**, E. Linde, N. Giron

9:00 . Membrane-based gas separations with a new class of ultrapermeable porous polymers. Y. He, F. Benedetti, S. Lin, C. Liu, Y. Zhao, H. Ye, T.A. Van Voorhis, M. De Angelis, T.M. Swager, **Z.P. Smith**

9:30 . Probing the glass transition temperature of polymers of intrinsic microporosity (PIMs) by fast scanning calorimeter. **H. Yin**, Y. Chua, B. Yang, C. Schick, P. Szymoniak, M. Boehning, A. Schönhals

9:50 . Engineering microporosity in polymeric membranes for fast and selective gas transport. T. Corrado, **R. Guo**

10:10 Intermission.

10:40 . Advancing toward lower energy-intensity gas separations using polymer-derived membranes. **W.J. Koros**

11:10 . Water sorption, dilation, and transport in polybenzimidazoles for gas separation membranes. **J.D. Moon**, M. Galizia, H. Borjigin, R. Liu, J.S. Riffle, B.D. Freeman, D.R. Paul

11:30 . Thiol-ene networks containing tethered perfluoroalkyl chains: Synthesis and investigation of gas permeation, free volume, and surface properties. **S. Nazarenko**, R. Ramakrishnan, S.W. Wand, V. Vasagar, J. Goetz, B.M. Ameduri, J.W. Rawlins

11:50 . Development of novel PDMS membranes for C_{3+} hydrocarbon recovery from natural gas. **J. Yang**, D.J. Harrigan, M.M. Vaidya, M.L. Ostraat, A.A. Bahamdan

Section D

Rosen Centre Hotel
Salon 7

Polymers & Biomimicry

Concepts in Biomimicry

A. N. Dhinojwala, *Organizer*
T. Williams, *Organizer, Presiding*

8:00 . Biomimetic information displays. **V. Kan**, n. machover, E. Vargo

8:30 . Biomimetic moisture responsive fabrics. **L. Lao**, Y. Wu, J. Fan

8:45 . Designing liquid crystal elastomers as substrates for 3D electronics. **H. Kim**, J. Maeng, J. Gibson, Y. Shafiq, R. Rihani, B. Black, S. Georgakopoulos, T. Ware

9:00 . Redox controlled unidirectional molecular transport. **Y. Qiu**, J.F. Stoddart

9:15 . Sequence-defined redox-responsive polymers as artificial molecular muscles. **J.C. Barnes**

9:35 . Smart nucleopolypeptide polymers. **C. Bonduelle**

9:50 Intermission.

10:00 . Self-healing commodity copolymers. D. Davidovich, **M.W. Urban**

10:30 . Soft lifters via layered liquid-crystal elastomers. **T. Guin**, T.J. White

10:45 . Stimuli-responsive hydrogel/elastomer composites via fabric interphases. **A.M. Hubbard**, W. Cui, Y. Huang, R. Takahashi, M.D. Dickey, J. Genzer, D. King, J.P. Gong

11:00 . Bioinspired toughening mechanism of elastomers. **K. Ahn**

11:25 . Biomimetic polymer-based polymersomes as functional biomaterials. **S. Lecommandoux**

11:40 . Elucidation of the design rules for polymer mimics antifreeze(glyco) proteins. **M.I. Gibson**, B. Graham, C. Stubbs, M. Hasan, A. Fayter, L. Wilkins

Section E

Rosen Centre Hotel
Salon 20

New Frontiers in Aerospace Polymers: Advances & Challenges in Experiments & Simulations

Thermoplastics & New Generation of Polymers for Aerospace Applications

Cosponsored by PMSE
Financially supported by Air Force Research Laboratory; Bruker Instruments; Anasys Instruments; Boeing
M. A. Meador, D. Nepal, J. S. Wiggins, *Organizers*
E. Barjasteh, S. Hawkins, *Presiding*

10:00 . Sustainable, environmentally green polyurethanes as erosion-resistant coatings for aerospace applications. **P. Zarras**, B.G. Harvey, A.M. Hughes, J.D. Stenger-Smith, A. Chafin, A. Baca, R. Quintana, L. Cambrea, L. Baldwin, T. Dames, G.S. Ostrom, J. Letcher, M.J. Watrous, J. Amato

10:20 . Rheology, melt processing, and crystallization modification of high performance polymers for thermoplastic composite applications. **S.E. Morgan**, K.M. Knauer, R. Shankar, M. Woellner, L. Kemp

10:50 . *In situ* polymerisation on the carbon fiber surface for enhanced interfacial adhesion. **L.C. Henderson**, C.L. Arnold

11:20 . Fastener free assembly of high performance composite structures. **M. van Tooren**

Section F

Rosen Centre Hotel
Salon 21

Poly(2-oxazoline)s & Polypeptoids

R. Hoogenboom, H. Schlaad, *Organizers*
R. N. Zuckermann, *Organizer, Presiding*
D. Zhang, *Presiding*

8:30 . Universality of peptoid polymer chain conformation. S. Xuan, N. Luo, **R.N. Zuckermann**

9:00 . 3D structure of achiral and chiral polypeptoids by means of molecular dynamics simulations and density functional theory calculations of spectroscopic data. **F. Jolibois**, L. Perrin, N. Bhattacharjee1

9:20 . Beyond classical hydrophilic-hydrophobic amphiphiles: Triblock poly(2-oxazoline)s with a fluorinated block as a new platform for advanced self-assembly. **S. Filippov**, L.K. kaberovleonid@gmail.com, B. Verbraeken, A. Riabtseva, R. Hoogenboom

9:50 Intermission.

10:05 . Investigating the effect of charge-charge interaction on the solution self-assembly of sequence-defined ionic peptoid block copolymers. G.L. Sternhagen, S. Gupta, P. Du, Y. Zhang, V.T. John, G.J. Schneider, R. Kumar, S.W. Rick, **D. Zhang**

10:35 . Polypropylen-based blends and compounds with antimicrobial activity. **M.S. Windberger**, A. Kelly, I. Mühlbacher, F. Wiesbrock

10:55 . Poly(2-oxazoline)s as matrix excipient for sustained release formulations. **A. Tigrine**, A. Samaro, V. Van Hoorne, V. R de la Rosa, M. Vergaelen, M. Purino, B. Monnery, C. Vervaet, R. Hoogenboom

11:15 . Poly(2-oxazolines) in the design of mucus-penetrating and mucoadhesive dosage forms for drug delivery. **V.V. Khutoryanskiy**, A.S. Victorova, R.I. Moustafine, G.K. Abilova, D.B. Kaldybekov, G.S. Irmukhametova, T.M. Ways, W. Lau, E.D. Mansfield, L. Ruiz-Rubio

Section G

Rosen Centre Hotel
Salon 22

General Topics: New Synthesis & Characterization of Polymers

D. Garcia, *Organizer*
J. COLE, J. Imbrogno, *Presiding*

8:00 . Step-growth polymerization of fluoroalkenes toward polyaromatic hydrocarbon enchained semi-fluorinated polymers. **K. Shelar**, B. Farajidizaji, G. Narayanan, K. Mukeba, A. Sygula, C.U. Pittman, D.W. Smith

8:20 . Synthesis of (meth)acrylate copolymers from poly[phenyl (meth)acrylate] by transesterification using zinc art complex. **M. Oshimura**, T. Hirata, T. Hirano, K. Ute

8:40 . Radical polymerization of vinylcyclopropanes through electron or energy transfer photocatalysis. **D. Chen**, G. Miyake

9:00 . Organocatalyzed atom transfer radical polymerization of methacrylates at low PPM levels of catalyst. **J. COLE**, C. Federico, G. Miyake

9:20 . Design and synthesis of functional polyethers using the N-Al adduct catalysts. **J. Imbrogno**, N.A. Lynd

9:40 . Facile synthesis of medium- and long-chain aliphatic polyethers using organocatalysts. **A. Basterrechea**, E. Gabirondo, O.R. Coulembier, H. Sardon

10:00 . Application of core-modified phenoxazine photoredox catalysts in organocatalyzed atom-transfer radical polymerization. **B. McCarthy**, G. Miyake

10:20 . ADMET polymerization via microwave irradiation. T.W. Gaines, K.R. Williams, K.B. Wagener, **G. Rojas**

10:40 . Organocatalyzed atom transfer radical polymerization of acrylonitrile using phenoxazine and dihydrophenazine-based photoredox catalysts. **D. Corbin**, B. McCarthy, G. Miyake

11:00 . Radical ring-opening copolymerization of cyclic ketene acetals with vinyl monomers. **C. LEFAY**

11:20 . Chemically extended radical photopolymerization beyond temporal irradiation limitations: Radical dark curing photoinitiator. **K. Kim**, J. Sinha, K. Childress, C. Musgrave, J.W. Stansbury

11:40 . Gold catalyzed polymerization reactions of unsaturated substrates: Toward new macromolecular chemistries. **E.R. King**, J. Tropp, N. Eedugurala, L.E. Gonce, S. Stanciu, J.D. Azoulay

WEDNESDAY AFTERNOON

Section A

Rosen Centre Hotel
Signature 2

Dispersity in Block Copolymers: Synthesis, Characterization, Modeling & the Effects on Self-Assembly

Dispersity in Block Polymer Amphiphiles

Cosponsored by PMSE
W. Gao, M. K. Mahanthappa, *Organizers*
P. D. Hustad, M. L. Robertson, *Organizers, Presiding*

1:00 . Quantification of homopolymers and tri-block copolymers in polyoxyalkylene di-block copolymers. **W. Gao**, P. Yang, T. Zhang, J. Defelippis, L. Bai, E. Wasserman, E. Daugs, S. Klamo

1:30 . PEO-PPO-PEO pluronic block copolymers: Non-micellizable impurity effects on micellar packing and solution phase behavior in water. **C.Y. Ryu**

2:00 . HPLC characterization of block copolymers. **T. Chang**

2:40 Intermission.

3:00 . Molecular exchange kinetics of near-monodisperse polymeric micelles with crystalline cores. N. Koenig, L. Willner, **R. Lund**

3:30 . Tailored cationic PISA-latexes for strong adhesion to anionic surfaces: Importance of purity and chain-extension as shown by adsorption. **J. Engstrom**, T. Benselfelt, L. Wagberg, F. D'Agosto, M. Lansalot, A. Carlmark, E.E. Malmstrom

Section B

Rosen Centre Hotel
Salon 12

Polymer Bioconjugates for a Changing World

Cosponsored by BIOT
J. Kaar, R. C. Page, J. K. Pokorski, *Organizers*
D. Konkolewicz, *Organizer, Presiding*
J. J. Gassensmith, *Presiding*

1:00 . Poly(2-oxazoline) conjugates with antibiotics. A. Romanovska, M. Schmidt, C. Krumm, **J.C. Tiller**

1:20 . Immunomodulatory polymeric NLRP3 activators as vaccine adjuvants. **S. Manna**, S. Maiti, W. Du, Z. Guan, A. Esser-Kahn

1:40 . Intracellular delivery via noncharged sequence-defined cell-penetrating polymer conjugates. **N.N. Phan**, C.A. Alabi

2:00 . Slow-release and extended shelf-life of coordination polymer encapsulated vaccines. **J.J. Gassensmith**

2:30 . Zwitterion-modified dendrimer-entrapped gold nanoparticles loaded with gadolinium for enhanced CT/MR imaging of lung cancer metastasis. J. Liu, Z. Xiong, J. Zhang, C. Peng, M. Shen, **X. Shi**

2:50 Intermission.

3:20 . Cyclic peptide / polymer conjugates for therapeutic applications. **S. Perrier**

3:50 . Bio-conjugate approaches to mAb manufacturing. A. Palapuravan, Y. Gong, H. Soleymani, Y. Zhao, A. Greschner, T.R. Congdon, H.W. de Haan, N. Cottenye, A. Niederquell, M. Kuentz, J. Leroux, **M. Gauthier**

4:20 . Increasing the stability of oxytocin by exploiting different polymer architectures and conjugation approaches. **D.M. Haddleton**

Section C

Rosen Centre Hotel
Salon 19

Transport in Polymer Membranes

Experiments & Simulations

M. D. Dadmun, T. Saito, C. M. Stafford, *Organizers*
A. Asatekin, Y. Ding, *Presiding*

1:00 . Salt permeation mechanisms through charge-patterned mosaic membranes. **W.A. Phillip**

1:30 . Influence of relative permittivity properties on ion transport in hydrated polymer membranes. **G.M. Geise**

1:50 . Incorporating membrane deformation into the boundary layer equation to model water and reverse salt flux in engineered osmosis. **J.A. Idarraga-Mora**, M. Fulton, D. Ladner, S.M. Husson

2:10 . Preparation of fabrics with directional water-transport property. **L. Lao**, D. Shou, Y. Wu, J. Fan

2:30 Intermission.

3:00 . Molecular transport in amorphous polymeric materials: An *in silico* view. **C.M. Colina**

3:30 . Theory of multi-ion transport in solvent-filled membranes. **A.R. Crothers**, C.J. Radke, A.Z. Weber

3:50 . How membrane chemistry influences transport mechanisms in various separation processes. **A. Roy**, M. Brayden, M. Martinez, J. Liu, M. Paul, S. Rosenberg, M. Peery

4:10 . Electron tomography reveals details of the internal microstructure of desalination membranes. T. Culp, Y. Shen, M. Paul, A. Roy, M. Kumar, **E. Gomez**

4:30 . Molecular structure of commercial reverse osmosis polyamide barrier layers. **B. Ocko**, Q. Fu, N. Verma, R. Li, M. Fukuto, C.M. Stafford, B.S. Hsiao

Section D

Rosen Centre Hotel
Salon 7

Polymers & Biomimicry

Concepts in Biomimicry

T. Williams, *Organizer*
A. N. Dhinojwala, *Organizer, Presiding*

1:00 . Biomimetic mineralization of collagen: Effects of polymer process-directing agent on matrix mineralization and osteoclast-mediated bone resorption. **A.M. Compaan**, Y. Zhang, J. Elias, L. Holliday, L. Gower

1:30 . Bio-inspired cell cryopreservation using synthetic analogues. **K. Murray**, C. Stubbs, T. Bailey, M.I. Gibson

1:45 . Bio-inspired peptide-polymer hybrid mucin analogues: Applications in osteoarthritis and kidney stone disease. **D. French**, L. Navarro, S. Zauscher

2:00 . Fast synthesis of biodegradable elastomers with tunable mechanical and surface properties via thiol-ene click chemistry for skeletal muscle regeneration. **M. Mohamed**, A. Shahini, J. Caserto, A. El-Sokkary, M. Akl, S. Andreadis, C. Cheng

2:15 . Development of a polymer-based delivery system for the treatment of *Clostridium difficile* using a Galili-antigen analogue. **B. Hall**, C. Malley, M.D. Schulz

2:30 . Biomimetic graft-copolymers for restoring the lubrication properties of damaged cartilage. G. Morgese, L. Trachsel, M. Zenobi-Wong, **E. Benetti**

2:50 Intermission.

3:00 . Synthesis and assembly of Vinyl Sulfonamide Click Nucleic Acids (VS-CNAs). **B.P. Sutherland**, D.J. Bischoff, C.J. Kloxin

3:20 . Complex DNA nanostructure assembly via hybridization chain reaction. **L. Lanier**, H. Bermudez

3:35 . Biomimetic glycopolymer models for determination of interaction modes with amyloid β peptides. **A.N. Bristol**, P.K. Das, S.E. Morgan

3:50 . Macromolecular engineering of electrocatalytic metallopolymers via ATRP: Artificial enzymes for water splitting. **M. Karayilan**, W.P. Brezinski, K. Clary, K.C. McCleary-Petersen, D.L. Lichtenberger, R.S. Glass, J. Pyun

4:05 . Sequence-controlled glycopolymers by RAFT polymerization: Synthesis of prototypes of glycosaminoglycan mimics. **M. Minoda**

4:20 . Synthesis of modular brush polymer–protein hybrids using diazotransfer and copper click chemistry. **L. Navarro**, D. French, S. Zauscher

Section E

Rosen Centre Hotel
Salon 20

New Frontiers in Aerospace Polymers: Advances & Challenges in Experiments & Simulations

Stimuli-Responsive Composites

Cosponsored by PMSE
Financially supported by Air Force Research Laboratory; Bruker Instruments; Anasys Instruments; Boeing
M. A. Meador, D. Nepal, J. S. Wiggins, *Organizers*
V. A. Davis, L. C. Henderson, *Presiding*

1:30 . Recent development of stimuli-responsive polymers for adaptive applications at Air Force Research Laboratory: Polyimide-based origami, photomobility and hygromorphicity. **L. Tan**

2:00 . Furan and maleimide-containing polyimides for reversibly assembling feedstocks. **C. Wohl**, S. Applin, C. Morales-Cruz, M. Swift, B. Horvath, H.C. Schniepp

2:30 . New approaches to scaling the production of liquid crystal elastomers. **T. Guin**, L. Kearney, H. Humphrey, E. Burgeson, N.A. Nguyen, C. Bowland, A.K. Naskar

2:50 . Tuning the viscoelastic properties and creep-recovery behavior of smart polymers using ionic liquids. **S. Ravula**, S. Sterling, I.M. Warner

3:10 Intermission.

3:30 . High-performance polymers: Function follows form. **T.J. Dingemans**

4:00 . Intrinsically self-healing isocyanurate-oxazolidone polymers with high service temperatures. **L. Zhang**, H. Sodano

Section F

Rosen Centre Hotel
Salon 21

Poly(2-oxazoline)s & Polypeptoids

R. Hoogenboom, H. Schlaad, R. N. Zuckermann, *Organizers*
T. Dargaville, W. Jang, *Presiding*

1:20 . Conjugation and release of drugs from poly(2-oxazoline) hydrogels. **T. Dargaville**, J. Park, N. Bock, M. de Laat, R. Hoogenboom

1:50 . Anionic ring-opening polymerization of activated aziridines to produce linear polyethylenimine. **P. Rupar**, L. Reisman, C.P. Mbarushimana, E.A. Rowe

2:20 . Mimicking nucleopore by track-etched polycarbonate membranes modified by poly(2-alkyloxazoline). **P. Guegan**, D. Benaoudia, P. Kolbeck, S. Li, V. Bennevault, J. Mathé, F. Montel, J. Lacroix

2:50 Intermission.

3:05 . Polyoxazoline-based polymers as multifunctional platform. **W. Jang**, J. Joe, J. Lee

3:35 . From polymer to application: solvent electrospinning of poly(2-oxazoline)s. E. Schoolaert, R. Hoogenboom, **K. De Clerck**

4:05 . Synthesis and application of molecularly imprinted poly(2-oxazoline)s based on cross-linking by direct amidation. **M. Cegłowski**, S. Smeets, R. Hoogenboom

4:25 . Synthesis of linear poly(trimethylenimine) by living anionic ring-opening polymerization. **L. Reisman**, E.A. Rowe, P. Rupar

Section G

Rosen Centre Hotel
Salon 22

General Topics: New Synthesis & Characterization of Polymers

D. Garcia, *Organizer*
D. Love, H. J. Schanz, *Presiding*

1:00 . Design, synthesis, and application of highly reducing organic photocatalysts. **R.M. Pearson**, G. Miyake

1:20 . poly(*N*-Acetylguanidine)s as reactive handle or reactive intermediate for post-polymerization modification of pendant ester groups. **J. Van Guyse**, X. Xu, R. Hoogenboom

1:40 . Alkyne-enabled methods for metathesis polymer synthesis. **W. Gutekunst**

2:00 . Synthesis and thermal properties of linear poly-dicyclopentadiene and linear polybrominated polydicyclopentadiene. M.A. Bleam, N.D. Steese, D. Barvaliya, X. Poole, **H.J. Schanz**

2:20 . Highly tailorable polymers via the aza-Michael polymerization of hydrazides. **D. Love**, D. Domaille, B. Fairbanks, K. Kim, O. Williams, C. Bowman

2:40 . Ring-opening reactions to functional polyamides and polyurethanes. **K. Odelius**

3:00 . Polycyclic aromatic core—enchained perfluorocyclobutyl (PFCB) aryl ether polymers derived from phenanthrenequinone. **B. Farajidizaji**, G. Narayanan, K. Shelar, K. Mukeba, A. Sygula, C.U. Pittman, D.W. Smith

3:20 . Melt-processable telechelic poly(ether imide)s end-capped with zinc sulfonate salts. **K. Cao**, Z. Zhou, G. Liu

3:40 . Living anionic polymerization of aziridines tolerates water and gives fast access to amphiphilic multi-block copolymers. **T. Gleede**, T. Kuckhoff, E. Rieger, M. Wagner, F. Wurm

4:00 . Halide rebound polymerization of twisted amides. **M. Xu**, L. Fu, A.M. Nicely, J. Yu, W. Gutekunst

4:20 . Relay conjugation and chain-end functionalization of ROMP. **L. Fu**, T. ZHANG, W. Gutekunst

4:40 . New isosorbide derived monomers for chain growth polymerizations. **R.J. Kieber**, C. Ozkardes, J.G. Kennemur

THURSDAY MORNING

Section A

Rosen Centre Hotel
Signature 2

Dispersity in Block Copolymers: Synthesis, Characterization, Modeling & the Effects on Self-Assembly

Discrete vs. Broad Block Polymer Dispersity

Cosponsored by PMSE
W. Gao, M. L. Robertson, *Organizers*
P. D. Hustad, M. K. Mahanthappa, *Organizers, Presiding*

8:30 . Regulating the phase behaviour of block copolymers via polydispersity. **A. Shi**

9:00 . Effects of polydispersity on microphase separation in thin films of diblock copolymers: Theories, simulations, and experiments. **R. Kumar**

9:30 . Amplifying (im)perfection: Consequences of dispersity on the assembly of block co-oligomers. **E.W. Meijer**

10:10 Intermission.

10:30 . Influence of laminar flow on dispersity in continuous-flow polymer synthesis. **F.A. Leibfarth**, M.H. Reis

11:00 . Unexpected morphologies in discrete end-functionalized oligomers. **B. Lamers**, A. Palmans, E.W. Meijer

Section B

Rosen Centre Hotel
Salon 12

Polymer Bioconjugates for a Changing World

Cosponsored by BIOT
J. Kaar, D. Konkolewicz, R. C. Page, J. K. Pokorski, *Organizers*
S. Averick, D. A. Savin, *Presiding*

8:00 . Functional enzyme-microgel bioconjugates. **A. Pich**, E. Gau

8:20 . Polymer conjugation to enhance cellulase activity and preserve stability. **T. Wright**, M. Lucius, B. Schmitz, K. Makaroff, J. Stewart, H. Fischesser, J. Shepherd, J. Berberich, D. Konkolewicz, R.C. Page

8:40 . Biocombinatorially selected peptide-polymer conjugates as polypropylene binders. **C. Juds**, T. Conrad, M. Weller, H. Börner

9:00 . Site-specific polymerization techniques *via* genetic incorporation of synthetic handles. D. Rucco, A. Pritzlaff, **D.A. Savin**

9:30 . Site-selective antibody drug conjugates enabled by cysteine arylation and native conjugation. **B.L. Pentelute**

10:00 Intermission.

10:30 . Repurposing enzymes: Investigating the mechanism of horseradish peroxidase as a RAFT-initiase. **D. Konkolewicz**, R.C. Page, J. Berberich, A. Danielson, C. Kozuszek, D. Bailey Van Kuren, J. Bornstein

11:00 . Lipase-polymer biohybrids. M. Kovaliov, **S. Averick**

11:30 . Controlling biocatalysis by transiently switchable polymersome nanoreactors. **N. Bruns**, O. Rifaie-Graham, S. Ulrich, N.F. Galensowske, S. Balog, M. Chami, D. Rentsch, J.R. Hemmer, J. Read De Alaniz, L. Boesel

Section C

Rosen Centre Hotel
Salon 19

Transport in Polymer Membranes

Molecular Transport & Fouling

Cosponsored by PMSE‡
M. D. Dadmun, T. Saito, C. M. Stafford, *Organizers*

D. Hallinan, W. A. Phillip, *Presiding*

8:00 . Facile fluorination of UF membranes by direct coating of perfluoropolymers to enhance antifouling properties for water purification. **T. Tran**, Y. Tu, S. Hall-Laureano, C. Lin, M. Kawy, H. Lin

8:20 . Robust underwater anti-oil fouling coatings from spray assemblies of polyelectrolyte grafted silica nanochains. **Z. Liao**, G. Wu, S. Yang, D. Lee

8:40 . Fouling mechanisms in constant flux crossflow ultrafiltration. **Y. Cheng**, A.Y. Kirschner, D.R. Paul, R.W. Field, B.D. Freeman

9:00 . Exploring and modifying ionic lyotropic liquid crystal-based nanoporous polymer membranes for different water purification applications. **D.L. Gin**, S. Dischinger, J. Rosenblum, K. Linden, R.D. Noble

9:30 . Concentration-dependent mechanical properties of polyurethane and polyurethane-based composites during chemical permeation. **D. Boyne**, M. Varady, T. Pearl, B.A. Mantooth

9:50 . Highly selective organic solvent nanofiltration membranes based on polyepoxies to separate fatty acids and more. **N.B. Bowden**, C.M. Gilmer

10:10 Intermission.

10:40 . Membranes for charge- and aromaticity-based separation of small molecules. I. Sadeghi, **A. Asatekin**

11:10 . Equilibrium water uptake and transport in thin polymer films measured via Polarization-Modulated Infrared Reflection Absorption Spectroscopy (PM-IRRAS). A. Balwani, H. Ro, E.M. Davis, d.d. bendejacq, **C.M. Stafford**

11:30 . Transport properties of water and salt ions in confined geometries of block copolymers. **D. Aryal**, R. Samanta, V. Ganesan

11:50 . Fundamental investigation of the transport of water in epoxy/amine crosslinked polymers. **J. Vergara**, S.K. Yadav, J. La Scala, G.R. Palmese

Section D

Rosen Centre Hotel
Salon 7

Polymers & Biomimicry

Concepts in Biomimicry

A. N. Dhinojwala, *Organizer*
T. Williams, *Organizer, Presiding*

8:15 . Biologically-inspired supramolecular systems: architecture and mechanics. **L. Korley**, C.B. Thompson

8:45 . Snaking/twisting fibers formation of cyanobacterial supra-polysaccharides in drying process. **K. Budpud**, K. Okeyoshi, M. Okajima, T. Kaneko

9:05 . From bio-inspired functional film to reactive nano-patterned honeycomb as a clickable platform. **L. Billon**, P. Marcasuzaa, S. Pearson

9:25 . Thin films and nanoparticles with nanoscale reactive patches. D. Varadharajan, H. Turgut, H. Yabu, **G. Delaittre**

9:45 . Synthetic melanin nanoparticles in 2D and 3D cell culture models: Mimicking human melanosomes. **N. Collins-McCallum**, Z. Wang, X. Zhou, B. Perez-White, N.C. Gianneschi

10:05 Intermission.

10:15 . Sustainable packaging inspired by cellulose and chitin. **J.C. Meredith**

10:45 . Self-assembled benzene tri-carboxamide hydrogels for tissue engineering. **M.B. Baker**

11:05 . Super-oriented hydrogels of cyanobacterial mega-saccharide, sacran, and its biological functions. **M. Okajima**, S. Sornkamnerd, K. Amornwachirabodee, T. Kaneko

11:25 . Bio-based amino acid polymers and their self-assembly phenomenon. **T. Kongprathet**, K. Takada, T. Kaneko

Section E

Rosen Centre Hotel
Salon 9

New Frontiers in Aerospace Polymers: Advances & Challenges in Experiments & Simulations

Multiscale Modeling of Aerospace Composite

Cosponsored by PMSE
Financially supported by Anasys Instruments; Bruker Instruments; Boeing; Air Force Research Laboratory
M. A. Meador, D. Nepal, *Organizers*

J. S. Wiggins, *Organizer, Presiding*
D. Bernhardt, *Presiding*

8:00 . Multiscale computational modeling of polymer materials and composites. M.S. Radue, W. Pisani, H. Al Mahmud, **G. Odegard**

8:30 . Property predictions and analysis for aerospace polymers using molecular simulation. **A. Browning**, J. Sanders, M. Halls, J. Gavartin, C. Krauter

9:00 . Quantifying the impact of process pathway on the development of thermoset resin properties and morphology during cure: From experiment to simulation. **C. Estridge**

9:30 . Hierarchical multiscale simulations approach for modeling failure in polymer matrix composites. X. Wu, A. Aramoon, **J.A. El-Awady**

10:00 Intermission.

10:20 . Molecular dynamics simulations of MoS_2-dispersed epoxy nanocomposites. **R.J. Berry**, I. Barrett, G.S. Kedziora, J. Moller, T. Nguyen-Beck, N. Pestian, J. Ryan, D. Nepal

10:40 . Coupling modeling with experimentation for aerospace materials development. **E. Siochi**

11:10 . Modeling the role of bulk and surface characteristics of carbon fiber on thermal conductance across the carbon-fiber/matrix interface. **V. Varshney**, A. Roy, J. Baur

Section F

Rosen Centre Hotel
Salon 10

Poly(2-oxazoline)s & Polypeptoids

H. Schlaad, R. N. Zuckermann, *Organizers*
R. Hoogenboom, *Organizer, Presiding*
C. Weber, *Presiding*

8:30 . Poly(cyclic imino ether)s beyond 2-oxazolines. **R. Hoogenboom**

9:00 . Self-assembled multiresponsive polymer nanogels as contrast agents for ^{19}F magnetic resonance imaging. **K. Kolouchová**, O. Sedlacek, D. Jirak, D. Babuka, J. Kotek, M. Vit, J. Trousil, R. Konefal, O. Janouskova, B. Podhorska, M. Slouf, M. Hruby

9:20 . Atomic-scale imaging of polypeptoid crystals. X. Jiang, D.R. Greer, D. Prendergast, R.N. Zuckermann, **N.P. Balsara**

9:50 Intermission.

10:05 . End-functional poly(2-ethyl-2-oxazoline)s as versatile building blocks to combine CROP and RAFT. **C. Weber**, A. Trützschler, M. Sahn, U.S. Schubert

10:35 . Fluorine containing poly-2-oxazolines as contrast agents for 19F MRI: Quest for the structure. **L. Kaberov**, Z. Sadakbayeva, A. Murmiliuk, E. Pavlova, J. Brus, R. Hoogenboom, S. Filippov

10:55 . Antimicrobial telechelic partially hydrolyzed poly(2-oxazoline)s with two modes of action. **L. Benski**, M. Hijazi, F. Arfeen, C. Krumm, J.C. Tiller

11:15 . Assembly of poly(2-alkyl-2-oxazoline)-block-poly(lactides) in water. **F.M. Winnik**, F. Pooch, H. Tenhu

11:45 Concluding Remarks.

THURSDAY AFTERNOON

Section A

Rosen Centre Hotel
Signature 2

Dispersity in Block Copolymers: Synthesis, Characterization, Modeling & the Effects on Self-Assembly

Architectural Dispersity in Block Polymers

Cosponsored by PMSE
P. D. Hustad, M. L. Robertson, *Organizers*
W. Gao, M. K. Mahanthappa, *Organizers, Presiding*

1:00 . Multiblock copolymers and their self-assembly properties. **S. Perrier**

1:30 . Crystallizable comb block polyolefins with broad polydispersity in molecular weight and composition. **P. Brant**

2:00 . Partitioning of molecules in olefin block copolymer (OBC) morphologies: Effect on the size of ordered domains and the phase diagrams of disordered OBC/random copolymer blends. **J. Weinhold**, P.D. Hustad

2:40 Intermission.

3:00 . Blockiness and sequence polydispersity effects on the self-assembly and interfacial properties of gradient copolymers. **V. Ganesan**

3:30 . Facile synthesis and self-assembly of semi-dispersed miktoarm star polymers. **A.E. Levi**, J. Lequieu, J. Horne, C.M. Bates, G.H. Fredrickson

Section B

Rosen Centre Hotel
Salon 12

Polymer Bioconjugates for a Changing World

Cosponsored by BIOT
J. Kaar, D. Konkolewicz, J. K. Pokorski, *Organizers*
R. C. Page, *Organizer, Presiding*
J. L. Price, *Presiding*

1:00 . Structure-function-dynamics relationships in next generation protein-polymer conjugates. **S. Baker**, A. Munasinghe, H. Murata, K. Matyjaszewski, P. Lin, C.M. Colina, A.J. Russell

1:20 . Polymer bioconjugates: An *in silico* perspective. **C.M. Colina**

1:50 . Mimicking protein structure and function with peptide-polymer conjugates. **A. Knight**

2:20 . Modeling of nanoparticles nanomedicines and molecular sliders on biopolymers. **P. Kral**

2:40 . Molecular sieving through dendronization of enzymes. **A. Adronov**, S. McNelles

3:00 Intermission.

3:30 . Biophysical assays for rapid assessment of protein-polymer bioconjugate stability. **R.C. Page**, D. Konkolewicz, T.A. Wright

4:00 . PEG-based increases to protein conformational and proteolytic stability. **J.L. Price**

4:30 . Manipulating hierarchy, mechanics, and function in polyurea-peptide hybrids. **L. Korley**, L.E. Matolyak, D. Jang, S. Chatterjee

Section C

Rosen Centre Hotel
Salon 6

Transport in Polymer Membranes

Nanocomposites & Characterization

M. D. Dadmun, T. Saito, *Organizers*
C. M. Stafford, *Organizer, Presiding*
E. Gomez, *Presiding*

1:00 . Self-assembly of polymer-grafted nanoparticles for membrane separations. **D. Hallinan**

1:30 . Understanding water and ion transport properties through MOF/polymer nanocomposite membranes. **T. LEE**, J. Oh, H. Park

1:50 . Graphene oxide embedded polyamide thin films for water desalination. M. Abbaszadeh, D. Krizak, **S. Kundu**

2:10 . High flux nanocellulose-embedded mixed matrix membranes. **J. Zheng**, N. Li, P. Hadi Myavagh, B.S. Hsiao

2:30 Intermission.

3:00 . Membranes with spatially varying permeability. A. Blevins, L. Cox, J. Killgore, **Y. Ding**

3:30 . Molecular structure of aromatic reverse osmosis polyamide barrier layers prepared at the oil/water interface. **Q. Fu**, N. Verma, H. Ma, F. Medellin-Rodriguez, R. Li, M. Fukuto, B.S. Hsiao, B. Ocko

3:50 . Reactivity at the solid/liquid interface of a desalination model system. **C. Buechner**, S. Gericke, H. Bluhm

4:10 . Overcoming the permeability-rejection trade-off of RO membranes via activation with a novel organic solvent. **M. Shin**, J. Lee

4:30 . Extrinsic water content in polyelectrolyte multilayers. **R.L. Abbett**, J.B. Schlenoff

Section D

Rosen Centre Hotel
Salon 7

Polymers & Biomimicry

Concepts in Biomimicry

T. Williams, *Organizer*
A. N. Dhinojwala, *Organizer, Presiding*

1:00 . Controlled functionalization of carbon nanomaterials for multifunctional applications. **L. Dai**

1:30 . Micro-nanofibrillar polycaprolactone scaffolds as translatable osteoconductive grafts: An exploration of osteoblast viability, osteogenic phenotype, and innate antibacterial efficacy. **J.W. Moxley**, P. Ghannadian, T. Webster

1:50 . Laser pulse heating of nanocomposites to create self-cleaning superhydrophobic surfaces. **S.F. Bartolucci**, J.A. Maurer

2:10 . Plant-based polyphenol coatings for preparing highly active protein surfaces. A.M. Sousa, T. Li, S. Varghese, P.J. Halling, **K. Lau**

2:30 Intermission.

2:40 . Mussel-inspired polyesters with aliphatic pendant groups demonstrate the importance of hydrophobicity in wet adhesion. A. Narayanan, S. Kaur, A.N. Dhinojwala, **A. Joy**

3:10 . Synthesis of bioinspired polymeric adhesives for precise control of properties via well-defined crosslinking chemistry. **H. Chung**, I. Pramudya, C. Kim

3:30 . Fully degradable polycarbonate/polypeptide hybrid copolymer bioadhesives for soft tissue repair. **J. Wilson**, A. Heise

3:50 . Synthetic biology enables production of repetitive mussel foot proteins with enhanced underwater adhesion. **E. Kim**, F. Zhang

4:10 . Understanding the bioadhesion of chitosan-catechol polymers. **A. Narkar**, K. Ahn

Section E

Rosen Centre Hotel
Salon 9

General Topics: New Synthesis & Characterization of Polymers

D. Garcia, *Organizer*
M. Carter, B. S. Lokitz, *Presiding*

1:00 . Closing the gap between metal binding and polymer architecture. **W.R. Archer**, S. Winn, M. Sawyer, M.D. Schulz

1:20 . Synthesis and viscoelastic properties of physically crosslinked linear and branched copolymer hydrogels. **D. Debnath**, C.R. Pugh

1:40 . Poly(ether imide)s oligomers with tailored yellowness. **K. Cao**, M. Zhang, G. Liu

2:00 . Nanoscale resolution of electric-field induced motion in ionic copolymer films. **B.S. Lokitz**, J. Dugger, J.F. Browning

2:20 . Design and fabrication of hybrid poly(olefin)-acrylic latex particles. **M. Carter**, P. Luo, L. Chen, R. Moglia, T. Ratani, S. Brown, M. Janco, J. Gu, W. Gao, J. Ngunjiri, J. Kohn, R. Even

2:40 . Template synthesis of polyelectrolyte multilayer nanocapsules via layer-by-layer deposition on crystallized miniemulsion nanodroplets. **A. Jafari**, H. Sun, B. Sun, H. Cui, C. Cheng

3:00 . Insight into the effect of gamma radiation on graft polymerization of graphene oxide using simultaneous radiation grafting methodology. **A. Khurshid**

3:20 . Opportunities for electrochemistry in Reversible Addition-Fragmentation chain-Transfer (RAFT) polymerization systems. **F. Lorandi**, M. Fantin, S. Shanmugam, Y. Wang, K. Matyjaszewski

3:40 . Acyloxyimide derivatives as peroxides alternatives for the melt grafting of maleic anhydride onto polyethylene. **Y. Guillaneuf**

4:00 . Dynamic sulfur bonds initiate polymer modification. C. Westerman, **C. Jenkins**

4:20 . Synthesis and architectural control of isosorbide-based polyethers via ring-opening polymerization. **D. Saxon**, M. Nasiri, M. Mandal, S. Maduskar, C.J. Cramer, P.J. Dauenhauer, A. LaPointe, T.M. Reineke

4:40 . New macromonomer synthetic strategies for the modular synthesis of brush polymers. **M.D. Ryan**, G. Miyake

Section F

Rosen Centre Hotel
Salon 10

General Topics: New Synthesis & Characterization of Polymers

D. Garcia, *Organizer*

C. M. Bates, L. Leal, *Presiding*

1:00 . Synthesis, characterization, and cure chemistry of a bis(allylidene) functionalized multicyclic cage compound derived from norbornadiene. **K.E. Rosenkoetter**, M. Garrison, R. Quintana, B.G. Harvey

1:20 . Enyne functionalization of metathesis initiators. **T. ZHANG**, L. Fu, W. Gutekunst

1:40 . Taming the domino reaction for controlled radical polymerization. **J. Niu**, H. Huang

2:00 . Self-assembly, symmetry breaking, and block polymer architecture. **C.M. Bates**

2:20 . Fluorination of polyisoprene with fluorine-containing hypervalent iodine reagents. **Y. Cao**, N.V. Tsarevsky

2:40 . Determination of the chemical heterogeneity of ternary copolymers. **D. Lohmann**, T. Hofe, W. Radke

3:00 . Light-driven synthesis of bottlebrush polymers using organocatalyzed atom transfer radical polymerization. **O.N. Manahan**, B. Buss, G. Miyake

3:20 . High-mechanical-strength telechelic poly(ether imide)s end-capped with ureidopyrimidione. **K. Cao**, G. Liu

3:40 . Effect of quench depth on crystallization in semicrystalline block copolymer/salt mixture studied by depolarized light scattering. X. Li, w.S. Loo, X. Jiang, X. Wang, M.D. Galluzzo, **K. Mongcopa**, **A. Wang**, N.P. Balsara, B.A. Garetz

4:00 . Multi-functional and robust liquid crystalline brush-like copolymers: Synthesis, structure, and property analysis. **D. Ndaya**, R. Bosire, R. Kasi

4:20 . Bioresorbable and biocompatible block copolymers: *In vitro* studies for targeted biomedical applications. **N.M. Mulchandani**, K. Masutani, S. Kumar, S. Sakurai, Y. Kimura, V. Katiyar