SUNDAY MORNING

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
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


9:50 Intermission.

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


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


Section C

The Fate of Plastics in Water

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


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


10:00 . Low density expanded poly(lactide) with star polymers via subcritical CO₂ processing for biodegradable floral foams. **P.T. Dirlam**, M.A. Hillmyer

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


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


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


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**


9:40 Intermission.


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


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**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**

9:35 Intermission.

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


11:20. POZ™ – 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


9:40 Intermission.
10:00. Polymer prodrug nanocarriers for anticancer therapy. J. Nicolas


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


Antimicrobial & Cell-Penetrating Polymers

Sponsored by PMSE, Cosponsored by POLY‡

SUNDAY AFTERNOON

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

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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*


1:30. 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**


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

3:00 Intermission.


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

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


1:40. 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 CO2 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


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


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


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 polypeptides 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


Section F

Section G
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 multicomponent copolymers to promote drug solubility, bioavailability, and delivery. T.M. Reineke

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


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.


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

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


8:35 . 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


9:50 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


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**


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


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

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


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

10:10 Intermission.


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

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**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


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


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


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


10:35. 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

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**


9:55 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**


11:35. Effects of protonation and salt concentration on the structure of polylethlenimine (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, MMPG, 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**


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


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**

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**


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


**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.


1:40. 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.

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


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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**


2:35 Intermission.


4:35 Concluding Remarks.

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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 applications from gene delivery to engine oil additives. **R. Becer**


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**

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


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


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&E, MEDI, MPPG, NUCL, ORGN, PHYS, PMSE, POLY, PRES, WCC and YCC

Antimicrobial & Cell-Penetrating Polymers

Sponsored by PMSE, Cosponsored by POLY‡

Chemistry in Space: Future Directions
PolyEd: Incorporating Polymer Chemistry in Undergraduate & High School Curricula
Sponsored by CHED, Cosponsored by POLY

Undergraduate Research Posters
Polymer Chemistry
Sponsored by CHED, Cosponsored by PMSE, POLY and SOCED

MONDAY EVENING
Section A
Orange County Convention Center
West Hall C
Sci-Mix
A. Pritzlaff, Organizer

8:00 - 10:00


. 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. Vergaen, 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


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


. 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


. Application of core-modified phenoxazine photocatalysts 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. Konklewicz

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


. 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 throughput photomediated controlled/living radical polymerization (PET-RAFT): tailoring for bioconjugation. C. Boyer


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


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


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

. 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


. 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


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


. 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**


. 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**


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


. 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 polypeptide 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


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


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


Design and application of functionalized porous organic polymers in CO₂ 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**

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**


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


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**


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. Delaïttré**


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

9:30. Aqueous high throughput 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**


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**


8:40 . 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**


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 & metallocrropy polymerization gives conjugated polyenynes from multialkynes: How to design sequence-specific cascades for polymers. C. Kang, T. Choi


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


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


Section F

Rosen Centre Hotel
Salon 21

Undergraduate Research in Polymer Science

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

8:00 Introductory Remarks.


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


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


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


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**


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


9:40 Intermission.


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

Sponsored by MPPG, Cosponsored by COLL‡, INOR‡, PMSE‡ and POLY‡

Exploring the Frontiers of Chemistry through NASA Research

Getting There: Advanced Materials for Space Travel

Sponsored by COMSCI, Cosponsored by ANYL, BIOL, BIOT, CELL, COLL, ENFL, I&EC, INOR, NUCL, PHYS, PMSE and POLY
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

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


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

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


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


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
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 CO₂/N₂ 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 CO₂-philic polymers for high flux CO₂ separation. T. Hong, P. Cao, B. Li, S. Zhao, A.P. Sokolov, T. Saito


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 CO₂/N₂ separation properties. H. Lin


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

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


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


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


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


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

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


2:45 Intermission.


3:45 Panel Discussion.

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

Sponsored by MPPG, Cosponsored by COLL‡, INOR‡, PMSE‡ and POLY‡

**Exploring the Frontiers of Chemistry through NASA Research**

**Living There: Science for the Future of Manned Space Exploration**

Sponsored by COMSCI, Cosponsored by ANYL, BIOL‡, BIOT, CELL, COLL, ENFL‡, I&EC‡, INOR‡, NUCL‡, PHYS‡, PMSE‡ and POLY‡

**Exploring the Frontiers of Chemistry through NASA Research**

**Living There: Science for the Future of Manned Space Exploration**
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


. Phase behavior and structural determinants of multifunctional tripod 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**


. 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

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


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


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


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


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


. 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


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


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


. 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


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


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


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


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


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

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


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

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**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


. 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@SiO2, and hollow porous MIP. **R.R. Pupin**, M.T. Sotomayor

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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


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

. 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


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


. 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


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


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


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


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


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 sustained 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**

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.


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


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$_2$O and O$_2$ sorption and diffusion behavior in thermoset polymers with temperature. M.C. Celina, E. Linde, N. Giron


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


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


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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


8:45 . 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**


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

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


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


10:50 . 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. Bhattacharjee

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.


10:35. Polypropylene-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


Section G

Rosen Centre Hotel
Salon 22

**General Topics: New Synthesis & Characterization of Polymers**

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


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


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**


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


**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


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

1:40. 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**


2:50 Intermission.

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


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

2:30 Intermission.

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


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


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


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

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

3:10 Intermission.


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

Rosen Centre Hotel
Salon 21

Poly(2-oxazoline)s & Polypeptoids

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


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. Ceglowski, S. Smeets, R. Hoogenboom
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


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


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


THURSDAY MORNING

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

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


8:40 . 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.


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


Section C

Rosen Centre Hotel
Salon 19

Transport in Polymer Membranes

Molecular Transport & Fouling

Cosponsored by PMSE³
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


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


9:50 . 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


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


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


10:05 Intermission.

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


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.


10:40. 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

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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**


9:50 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


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**


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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*


1:20. 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.


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

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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**


2:30 Intermission.

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


3:50. Reactivity at the solid/liquid interface of a desalination model system. **C. Buechner**, S. Gericke, H. Bluhm


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**


1:50. 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**


3:50. Synthetic biology enables production of repetitive mussel foot proteins with enhanced underwater adhesion. **E. Kim**, F. Zhang


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


1:40. 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


2:40. 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**


3:40. 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**


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**General Topics: New Synthesis & Characterization of Polymers**

D. Garcia, **Organizer**

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Rosen Centre Hotel
Salon 10
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


1:40. 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


