

### FLUOROPOLYMER 2018 Workshop Technical Program

Embassy Suites Downtown, Denver, CO

#### Sunday - June 24

11:00 AM Registration Booth opens

#### SESSION A: SYNTHESIS, CHARACTERIZATION, AND PROPERTIES I

Session Chair: Scott Iacono, US Air Force Academy & Kenneth Wynne, Virginia Commonwealth University

- |         |     |   |
|---------|-----|---|
| 1:00 PM |     | <b>Welcome and Introductory Remarks by Workshop Chairs</b><br>Bruno Ameduri, CNRS & Scott Iacono, US Air Force Academy  |
| 1:15 PM | 1.  | <b>The Crucial Role of Fluorine in the Synthesis and Properties of Phosphazene High Polymers</b><br>Harry Allcock, The Pennsylvania State University                              |
| 1:45 PM | 2.  | <b>Swelling Behavior and Proton Conductivity of Fluoropolymers in Thin Films</b><br>Keiji Tanaka, Kyushu University, Japan  |
| 2:15 PM | 3.  | <b>Novel Azide Radical and Click Chemistry for the Synthesis of Complex Fluoropolymer Architectures</b><br>Alexandru Asandei, University of Connecticut                           |
| 2:45 PM | 4.  | <b>Recent Advances on Controlled Radical Polymerization of Fluoroalkenes and Architectures Therefrom</b><br>Bruno Ameduri, French National Center for Scientific Research, France |
| 3:15 PM | 5.  | <b>Detailed Investigations into the Iodine Transfer Polymerization of Vinylidene Fluoride</b><br>Sabine Beuermann, Clausthal University of Technology, Germany                    |
| 3:45 PM |     | Break   |
| 4:00 PM | 6.  | <b>Advancements and Applications of Telechelic Poly(hexafluoro-propylene oxide)</b><br>Chadron Friesen, Trinity Western University, Canada  |
| 4:30 PM | 7.  | <b>Synthesis of Amphiphilic Fluorocarbon/Hydrocarbon Nanoparticles</b><br>Coleen Pugh, University of Akron  |
| 5:00 PM | 8.  | <b>Perfluoropolyether Building Blocks for Photopolymerisation Processes</b><br>Roberta Bongiovanni, Polytechnic University of Turin, Italy  |
| 5:30 PM | 9.  | <b>Development of Tailorable Fluorocyclic Siloxane Containing Polymers of Varying Architectures</b><br>Abby Jennings, US Air Force Academy - Chemistry Research Center            |
| 6:00 PM | 10. | <b>A Modular Mechanistic Approach Toward Semi-Fluorinated Materials via Step-Growth Polymerization of Fluoroalkenes</b><br>Dennis Smith, Jr., Mississippi State University        |
| 6:30 PM | 11. | <b>Preparation and Characterization of Novel Perfluoroalkoxy Alkane (PFA) Resins with Bulky Perfluorinated Functional Groups</b><br>Joseph Thrasher, Clemson University           |
| 7:00 PM |     | Welcome Reception   |
|         |     | Dinner on your own  |



### Monday - June 25

#### SESSION B: SYNTHESIS, CHARACTERIZATION, AND PROPERTIES II

Session Chair: Alexandru Asandei, University of Connecticut

8:00 AM	12.	<b>A Platform for C-H Fluorination of Aromatic Polymers using Electrophilic Radicals</b> Frank Leibfarth, University of North Carolina, Chapel Hill
8:30 AM	13.	<b>Using Perfluoroaryl Substituents to Tailor Cyclopentadiene Reactivity for Use in Diels-Alder Polymerization</b> Paul Deck, Virginia Polytechnic Institute and State University (VA Tech)
9:00 AM	14.	<b>Advancements in Kynar® PVDF for Wire &amp; Cable and Fibers Applications</b> James Goldbach, Arkema
9:30 AM	15.	<b>Roll-to-Roll Deposition of Fluoropolymer Coatings onto Flexible Substrates</b> Malancha Gupta, University of Southern California
10:00 AM	16.	<b>Characterization of Fluoropolymers by Synchrotron X-ray Scattering/Diffraction</b> Atsushi Takahara, Kyushu University, Japan
10:30 AM		Break

#### SESSION C: ENERGY CONVERSION APPLICATIONS

Session Chair: Atsushi Takahara, Kyushu University, Japan

10:45 AM	17.	<b>Novel Free-Radical Coupling and Polymerization for the Synthesis of New Cation and Anion-Exchange Fluoropolymers</b> Yong Gao, Southern Illinois University
11:15 AM	18.	<b>Development of Perfluorinated Polymer Electrolyte Membranes for Fuel Cells at AGC</b> Atsushi Watakabe, Asahi Glass Company, Japan
11:45 AM	19.	<b>High-rate Proton Transmission through Single-layer Graphene Embedded in Fluoroionomer Proton Conductors</b> Stephen Creager, Clemson University
12:15 PM	20.	<b>Anomalous Appearance of a Distinct Glass Transition in the 3M Perfluoroimide Acid Ionomers</b> Robert B. Moore, Virginia Polytechnic Institute and State University (VA Tech)
12:45 PM		Lunch on your own

#### SESSION D: PHOTONIC, OPTICAL, AND ELECTRONIC APPLICATIONS

Session Chair: Dennis Smith, Jr., Mississippi State University

3:00 PM	21.	<b>Advances in Photo-Imageable Fluoropolymers for Microelectronics Applications</b> Xudong Chen, Chemours
3:30 PM	22.	<b>Can Relaxor Ferroelectric Behavior be Realized for P(VDF-CTFE) Copolymers by Inclusion of CTFE Units in PVDF Crystals?</b> Lei Zhu, Case Western Reserve University



---

4:00 PM	23.	<b>The Enduring Utility of Azobenzene as a Photocontrol Unit in Hybrid Macromolecular Systems</b> William Brittain, Texas State University
4:30 PM		Break
4:45 PM	24.	<b>Fluorinated Thermosetting Resins for Photonics and Functional Coatings</b> Christian Dreyer, Fraunhofer Institute for Applied Polymer Research, Germany
5:15 PM	25.	<b>Redox Active Fluoropolymers</b> Haoran Sun, University of South Dakota
5:45 PM		Poster Session & Networking Reception
		Dinner on your own

---

## Tuesday - June 26

---

### SESSION E: REACTIVE MATERIALS

Session Chair: James Goldbach, Arkema

---

8:00 AM	26.	<b>Balancing Surface Energy and Reactivity in Binary Polymer Blends</b> Jena McCollum, University of Colorado, Colorado Springs
8:30 AM	27.	<b>Activating Alumina Surface Reactions toward Enhanced Aluminum Particle Combustion</b> Michelle Pantoya, Texas Tech University
9:00 AM	28.	<b>Quantifying Morphology, Aging and Degradation in Fluoropolymer Elastomers</b> Jim Lewicki, LLNL
9:30 AM	29.	<b>The Need for Fluoropolymers for Explosive Binders</b> Mark Hoffman, LLNL
10:00 AM	30.	<b>Energetic Fluoropolymer Based Inks</b> Lori Groven, South Dakota State University
10:30 AM		Break

---

### SESSION F: SURFACES & INTERFACES I

Session Chair: Jena McCollum, University of Colorado, Colorado Springs

---

10:45 AM	31.	<b>Computational Modeling of VDF Composites</b> Brandon Runnels, University of Colorado, Colorado Springs
11:15 AM	32.	<b>Surface Science and Function of Novel Semi-Fluorinated Polymers</b> Kenneth J. Wynne, Virginia Commonwealth University
11:45 AM	33.	<b>Fluoroalkoxy Functionalization of Boron Nitride Nanomaterials</b> Jeffery Alston, North Carolina A&T Univeristy
12:15 PM	34.	<b>Gas Separation Membranes Based on Perfluorodioxolane Polymers: Effects of Polymer Chemical Structures on Gas Separation Properties</b> Yoshi Okamoto, NYU Tandon School of Engineering

---



---

12:45 PM Lunch on your own

---

### SESSION G: SURFACES & INTERFACES II

Session Chair: Chetan Jariwala, 3M

---

- |         |     |   |
|---------|-----|---|
| 3:00 PM | 35. | <b>Fluorinated Siloxane Materials and their Applications</b><br>Joseph Mabry, Air Force Research Laboratory   |
| 3:30 PM | 36. | <b>Preparation of Fluoroalkyl End-Capped Oligomer/Cyclodextrin Polymer Composites Possessing a Superoleophilic/Superhydrophobic Characteristic: Development of Fluorinated Composite Material Having a Higher Adsorption Ability toward Organic Molecules</b><br>Hideo Sawada, Hirosaki University, Japan |
| 4:00 PM | 37. | <b>BaTiO<sub>3</sub>/PVDF Nanocomposites from RAFT &amp; Click Chemistry</b><br>Mustapha Raihane, Cadi Ayyad University, Morocco  |
| 4:30 PM | 38. | <b>Superhydrophobic Coatings Based on Diatomaceous Earth Particles</b><br>Frank Blum, Oklahoma State University   |
| 5:00 PM |     | Break   |
| 5:15 PM | 39. | <b>Achroma's Range of Next Generation Fluorochemicals for Water &amp; Oil Repellent Coatings</b><br>Anja Pauly, Archroma Germany GmbH   |
| 5:45 PM | 40. | <b>Perfluoroethylthiostyrene Polymers and their Resultant Oleophobic Membranes</b><br>Frank Onyemauwa, Pall Life Sciences   |
| 6:15 PM | 41. | <b>Metamorphic Superomniphobic Surfaces</b><br>Arun Kota, Colorado State University   |
| 6:45 PM |     | Networking Reception (Off-Site)<br>Chetan Jariwala, 3M  |
|         |     | Dinner on your own  |
- 

## Wednesday - June 27

### SESSION H: SURFACES & INTERFACES III

Session Chair: Bruno Ameduri, CNRS

---

- |          |     |  |
|----------|-----|--|
| 8:00 AM  | 42. | <b>Exploring Thiol-ene Click Chemistry to Prepare Fluorinated Ionic Liquids</b><br>Levi Moore, Air Force Research Laboratory           |
| 8:30 AM  | 43. | <b>Synthesis of Cross-linkable Transparent Perfluoropolymers and their Applications</b><br>Masahiro Ohkura, Asahi Glass Company, Japan |
| 9:00 AM  | 44. | <b>Perfluoroelastomers - Their Properties and Crosslinking Chemistry</b><br>Ming Hung, DuPont, Transportation & Advanced Polymers      |
| 9:30 AM  | 45. | <b>Regioisomerism Defects in the Thermal Stability of Crystal Structure of PVDF</b><br>Armand Soldera, Sherbrooke University, Canada   |
| 10:00 AM |     | Break  |
- 



---

10:15 AM	46.	<b>Efficient Mineralization of PVDF-Related Fluoropolymers Using Subcritical Water in the Presence of Hydrogen Peroxide</b> Hisao Hori, Kanagawa University, Japan
10:45 AM	47.	<b>High Performance Urethane Based Icephobic Coatings</b> Andrew Nowak, HRL Laboratories, LLC
11:15 AM	48.	<b>Extreme Service PTFE Based Materials in Industrial Reciprocating Compressor Applications</b> Clint Lingel, Ariel Corporation
11:45 AM	49.	<b>Development of a New PTFE Product for High Pressure Tubing Applications</b> Adam Smith, Chemours
12:15 PM		Meeting Adjourns

---



### Poster Session

- 1. **Alkyl and Fluoroalkyl Manganese Pentacarbonyl Complexes as Models of OMRP Dormant Species**  
Bruno Ameduri, French National Center for Scientific Research, France

---
2. **Tensiometric Analysis of PVDF/PMMA Composites to Determine Surface Energy Values**  
Jeffrey Baston, University of Colorado, Colorado Springs

---
3. **3D Printing Multifunctional Fluorinated Nanocomposites**  
Jose Bencomo, University of Colorado, Colorado Springs

---
4. **Piezoelectric Energetics: Synthesis and Reactivity of PVDF /AlH+Al Energetic Composites**  
Sanjoy Bhattacharia, Texas Tech University

---
5. **PVDF: Controlled Emulsion Polymerization in Semi-batch Mode and Crystalline Phase Tuning by Core Shell Formation**  
Florian Brandl, Clausthal University of Technology, Germany

---
6. **Patterned Fluorinated Polymers for Tissue Engineering Applications**  
Vanessa Cardoso, University of Minho, Portugal

---
7. **Perfluoropyridine-Based Compounds for Advanced Polymer Applications**  
Cynthia Corley, United States Air Force Academy

---
8. **Silk Fibroin/Polyethyleneimine Hydrogel for High Performance Removal of Methyl Blue from water**  
Chirag Godiya, Southeast University, China

---
9. **Quantification of Boron Nitride Nanotube Purity and Applications towards Evaluating Fluoroalkoxy Functionalized Boron Nitride Nanomaterials**  
Haley Harrison, University of North Carolina at Greensboro

---
10. **Efficient Mineralization of Poly(vinylidene fluoride) in Low-temperature Subcritical Water in the Presence of Potassium Permanganate**  
Ryo Honma, Kanagawa University, Japan

---
11. **Highly Fluorinated Polymer-Inorganic Nanocomposite Materials Dispersed in Fluorous Solvent**  
Youngtae Kim, Inha University, Korea

---
12. **Manipulating Thermal History of Poly(vinylidene fluoride) to Tune Crystal Nucleation in Electroactive Binder Systems**  
Matthew Knott, University of Colorado, Colorado Springs

---
13. **Studies on Branched ETFE**  
Akinobu Kunimoto, Asahi Glass Co., Japan

---
14. **Facile Synthesis of Fluorine-substituted Polylactides and their Amphiphilic Block Copolymers**  
Chang-Uk Lee, University of Washington

---
15. **Degradation of Poly(semi-perfluoroalkyl methacrylate) Thin Films under Electron-Beam Lithography Conditions**  
Jin-Kyun Lee, Inha University, Korea

---
16. **Recent Advances on Fluorinated Elastomers**  
Gérald Lopez, University of Montpellier, France

---
17. **Perfluoroethylthiostyrene Polymers and their Resultant Oleophobic Membranes**  
Frank Onyemauwa, Pall Life Sciences

---



- 
18. **Functional Fluoropolymers for Membrane Applications**  
Inbal Ozeri, Israel Institute of Technology, Israel
- 
19. **Changes in Mechanical Properties of Polytetrafluoroethylene due to Thermal Aging and Gamma Irradiation**  
Christine Plavchak, LLNL
- 
20. **Fluorinated Hydrophobic Polymers as Novel Coating Materials for Slow Controlled Release Fertilizer**  
Mustapha Raihane, Cadi Ayyad University, Morocco
- 
21. **Tailoring Hydrophobicity of Poly(2,2,2-trifluoroethyl methacrylate) by Preparing Copolymers Based on N-vinylpyrrolidone**  
Mustapha Raihane, Cadi Ayyad University, Morocco
- 
22. **Effect of Clay on the Dielectric Properties of Novel Fluorinated Methacrylate Nanocomposites**  
Mustapha Raihane, Cadi Ayyad University, Morocco
- 
23. **Thermal Transport Phenomena in Aluminum-Poly(vinylidene fluoride) Composites Through Molecular Dynamics Simulations**  
Faraz Saleem, University of Colorado, Colorado Springs
- 
24. **Fluorinated Imaging Materials for Micro-patterned Organic Light Emitting diodes**  
Jongchan Son, Inha University, Korea
- 
25. **Synthesis of Novel Triazole-Based Fluoropolymers**  
Kevin Stewart, University of Colorado, Colorado Springs
- 
26. **Tuning Hydrophilicity and Hydrophobicity in PVDF Block Copolymers**  
Vignesh Vasu, University of Connecticut
- 
27. **Effect of High Pressure, Stretching, and Electric Poling on Ferroelectric Properties of PVDF-based Polymers**  
Lei Zhu, Case Western Reserve University
- 
28. **Explanation of Reaction Selectivity in the Synthesis of Difunctional Perfluoropyridine-Based Monomers for High Use Temperature Resins**  
Timothy J. Fuhrer, Radford University
- 
29. **Rapid, Field-Deployable, Low-Cost Device to Detect Fuel Quality**  
Sanli Movafaghi, Colorado State University
- 
30. **Superhydrophobic Coatings for Improved Performance of Electrical Insulators**  
Sravanthi Vallabhuneni, Colorado State University
- 

