

Green Chemistry Research Symposium



October 29 - 30, 2001
Conte Center for Polymer Research
University of Massachusetts Amherst



AGENDA

MONDAY, OCTOBER 29TH

Afternoon

12:00 **Lunch and Conference Registration**

1:00 **Welcome**

Frederick W. Byron, Vice Chancellor for Research, UMass Amherst
David Lutes, Director, Toxic Use Reduction Program, MA Executive Office of Environmental Affairs

1:15 **Introductory Remarks**

Chad Nelson, Director, National Environmental Technology Institute (NETI), UMass Amherst
Ken Geiser, Director, Toxic Use Reduction Institute (TURI), UMass Lowell
John Warner, Professor of Chemistry, UMass Boston
Paul Anastas, White House Office of Science and Technology Policy, Washington, D.C.

2:15 **Technical Session 1: Alternative Feedstocks**

Chair - Ken Geiser, TURI Director, UMass Lowell

2:15 • **Synthesis of Biodegradable Polyesters**

Steve Goodwin, Dept. of Microbiology, UMass Amherst

2:35 • **Structural Characterization of Biodegradable Poly(lactic acid)**

Shaw Ling Hsu, Dept. of Polymer Science and Engineering, UMass Amherst

2:55 • **Novel Processing-Blending Techniques with Biodegradable Polymers**

Stephen McCarthy, Dept. of Plastics Engineering, UMass Lowell

3:15 • **High-Performance Polymers and Blends from Cyclic Oligomers of Recycled Polyesters**

William MacKnight, Dept. of Polymer Science and Engineering, UMass Amherst

3:35 • **Use of Unmodified Carbohydrates for the Cyclotetramerization and Polymerization of Dicyanoalkenes and Arenes**

Daniel Sandman, Dept. of Chemistry, UMass Lowell

3:55 • **'Green' Dyes for the Textile Industry**

Sukalyan Sengupta, Dept. of Civil and Environmental Engineering, UMass Dartmouth

4:15 *Break*

4:30 **Technical Session 2: Alternative Reactions**

Chair - John Warner, Professor of Chemistry, UMass Boston

4:30 • **Models for Green Design: PCA Formation and Polymer Flammability**

Phillip Westmoreland, Dept. of Chemical Engineering, UMass Amherst

4:50 • **Green Approaches to Polymer and Surface Modification**

Thomas McCarthy, Dept. of Polymer Science and Engineering, UMass Amherst

5:10 • **Synthesis of Biodegradable Polymers Activated by Microwave Radiation**

B. Koroskenyi, Dept. of Plastics Engineering, UMass Lowell

5:30 • **Hydrogen Bond Mediated Photo-Dimerization in Synthetic Analogs of DNA: Environmentally Benign Photoresists**

Lisa Lloyd-Kindstrand, Dept. of Chemistry, UMass Boston

5:50 • **Catalytic Properties of Metal Oxides Under Ambient Conditions**

Michelle Foster, Dept. of Chemistry, UMass Boston

6:15 **Reception and Poster Session**

TUESDAY, OCTOBER 30TH

Morning

- 7:30 **Continental Breakfast**
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- 8:00 **Technical Session 3: Alternative Solvents**
Chair - Paul Richard, Office of Technical Assistance, MA EOE
- 8:00 • **Peptide Structure in Thin Films Grown at Interfaces**
Samuel Gido, Dept. of Polymer Science and Engineering, UMass Amherst
- 8:20 • **Engelhard TitanoSilicate-4 Membranes: Synthesis, Microstructure and Their Use in Pervaporation and Gas Separations Design**
Sankar Nair and Michael Tsapatsis, Dept. of Chemical Engineering, UMass Amherst
- 8:40 • **Designing 'Green' Monomers for Radiation Curing: Challenges, Recent Accomplishments, and Possible Futures**
Jacques Penelle, Dept. of Polymer Science and Engineering, UMass Amherst
- 9:00 • **Deposition of Metal Films from Compressed Carbon Dioxide: an Environmentally Benign Alternative to Metal Plating**
James Watkins, Dept. of Chemical Engineering, UMass Amherst
- 9:20 • **Processing of Fibers, Films, and Laminated Composites Using Super-Critical CO₂**
Alan Lesser, Dept. of Polymer Science and Engineering, UMass Amherst
- 9:40 • **A Ring Fluorination Toolbox Using Fluoro-organometallic Building Blocks**
Gerald Hammond, Dept. of Chemistry and Biochemistry, UMass Dartmouth
- 10:00 **Break**
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- 10:15 **Technical Session 4: Designing Less Toxic Materials**
Chair - Shaw Ling Hsu, Professor of Polymer Science and Engineering, UMass Amherst
- 10:15 • **QCM-Based Detection of Harmful Ions in Aqueous Process Streams**
David Hoagland, Dept. of Polymer Science and Engineering, UMass Amherst
- 10:35 • **Non-Covalent Derivatization: Pollution Prevention Using Molecular Recognition and Self-Assembly**
Amy Cannon, Dept. of Chemistry, UMass Boston
- 10:55 • **Reinforcement Properties of Biodegradable Polyesters in High Performance Polyurethanes**
Amy Heintz, Dept. of Polymer Science and Engineering, UMass Amherst
- 11:15 • **Enzymatic Polymerization of Amphyphilic Decyl Esters of d-Tyrosine for Use as Environmentally Benign Coatings in the Electronics Industry**
Anastasios Angelopoulos, Dept. of Chemistry, UMass Lowell
- 11:35 • **Understanding and Controlling the High-Temperature Exchange Chemistry of Cross-linked Rubbers - A Simple Method of Direct Recycling**
Richard Farris, Dept. of Polymer Science and Engineering, UMass Amherst
- 11:55 • **Diblock Polyelectrolytes: Rheology and Applications in Waterborne Coatings**
Surita Bhatia, Dept. of Chemical Engineering, UMass Amherst

Afternoon

- 12:15 **Lunch and Conference Keynote**
Introduction: Paul Anastas, White House Office of Science & Technology Policy, Washington, D.C.
Keynote Address: Sustainable Chemicals and Polymers - No Longer a Dream
Pat Gruber, Vice President and Chief Technology Officer, Cargill Dow, LLC
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1:30 **Technical Session 5: Emerging Issues in Green Chemistry**

Chair - Chad Nelson, NETI Director, UMass Amherst

1:30 •**Micro to Nanoscale Patterning Using Electric Fields**

Thomas Russell, Dept. of Polymer Science and Engineering UMass Amherst

1:50 •**Extraction, Preparation, and Formulation of Eco-Friendly Natural Dyes From Cranberry Fruits**

Bal Ram Singh, Dept. of Chemistry and Biochemistry, UMass Dartmouth

2:10 •**Green Chemistry Efforts to Reduce the Use and Emissions of Lead and Dioxins**

Paul Richard, Office of Technical Assistance, MA Executive Office of Environmental Affairs

2:30 •**Green Chemistry: Towards Sustainable Materials and Processes**

Ken Geiser, Dept. of Work Environment, UMass Lowell / TURI Director

2:50 •**Sustainability: Linking Education and Research Through Green Chemistry**

John Warner, Dept. of Chemistry, UMass Boston

3:15 *Break*

3:30 **Panel Discussion - A Green Chemistry Consortium in New England**

Green Chemistry - Current Status and Future Challenges

Paul Anastas, White House Office of Science and Technology Policy, Washington, D.C.

Panelists

Chad Nelson, Director, National Environmental Technology Institute, UMass Amherst

Paul Richard, Office of Technical Assistance, MA Executive Office of Environmental Affairs

John Warner, Dept. of Chemistry, UMass Boston

Ken Geiser, Director, Toxic Use Reduction Institute, UMass Lowell

Sam Huang, Dept. of Chemistry, University of Connecticut

Don Sundberg, Dept. of Chemical Engineering, University of New Hampshire

Scott Gordon, Dept. of Chemistry, University of Vermont

Michael Rozolsky, Rexam

Bradford Penney, HP Woods Institute / NETI Liaison (*panel facilitator*)

5:00 **Closing Remarks and Adjourn**
