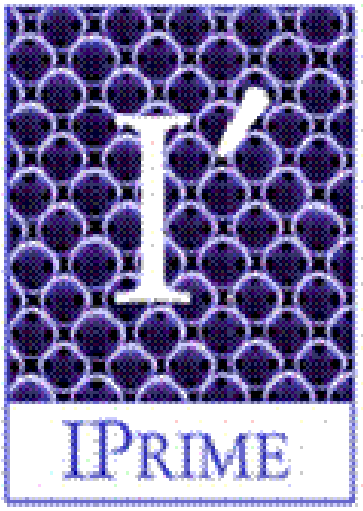


INDUSTRIAL PARTNERSHIP
FOR RESEARCH IN
INTERFACIAL AND MATERIALS ENGINEERING

2009 Annual Meeting

May 26 – May 28

University of Minnesota

Schedule
Programs
Poster Titles

Welcome!

I would like to thank you for attending the IPRIME 2009 Annual Meeting at the University of Minnesota.

IPRIME is the Industrial Partnership for Research in Interfacial and Materials Engineering, and is the largest industrial consortium in the University. It connects industrial companies to selected research programs in the Institute of Technology, to the NSF-supported Materials Research Science and Engineering Center (MRSEC), the College of Food, Agriculture and Natural Resource Sciences, and The Academic Health Center. IPRIME currently includes about 54 faculty and associate graduate students from 10 departments working in 8 research programs, with support from over 40 member companies. We are happy to introduce our newest program, Renewable Energy Materials, at the 2009 Annual Meeting.

The IPrime Annual Meeting is an ideal opportunity to network with other member companies, to learn about latest research results, and to meet with more than 170 dedicated young engineers and scientists. This year, IPrime researchers will be sharing exciting new discoveries in areas such as biocatalysis and biosynthesis, biomaterials and pharmaceutical materials, magnetic heterostructures, organic semiconductors, polymers, coatings, and renewable energy materials.

Enclosed is the schedule for our 2009 Annual Meeting and maps of meeting room locations. Complete information, including abstracts, is available on our website, www.iprime.umn.edu. Following the Annual Meeting, the presentations and posters presented here will be available (with your password) at this site.

Again, thank you for participating in the 2009 IPRIME Annual Meeting.

Sincerely,

Chris Macosko
Director, IPRIME

Industrial Partnership for Research in Interfacial and Materials Engineering

An entry for industrial connections to University of Minnesota research through 54 faculty.

IPRIME research is pre-competitive, non-proprietary and focuses on two-way knowledge transfer within Eight Research Programs:

- Biocatalysis and Biosynthesis
- Biomaterials and Pharmaceutical Materials
- Coating Process Fundamentals
- Magnetic Heterostructures
- Microstructured Polymers
- Nanostructural Materials & Processes
- Organic Optoelectronic Interfaces
- Renewable Energy Materials

Reasons to participate in IPRIME:

Partnership

Scientific Exchange with the Academic sector
Influence Research Directions
Leverage Government Funding
Industrial Fellows Program
Industry Source of Research Topics

Future Employees

Early Access to Students and their Research

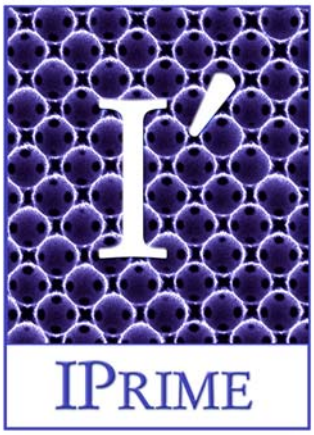
Facilities

Characterization Facility
Imaging Center
Polymer Synthesis Lab
Polymer Characterization—Rheology
Coating Process and Visualization Lab
Tissue Mechanics Lab

Technology Transfer

Annual Meeting
Workshops throughout the Year
Short Courses
Industrial Fellows Program

www.iprime.umn.edu



Industrial Partnership for Research in Interfacial and Materials Engineering

Member Companies

- 3M
- Agilent Technologies
- Arkema
- Ashland Chemical
- Avicenna Technology, Inc.
- Bedford Industries
- Bergquist
- Boston Scientific
- Coloplast
- Dai Nippon Printing
- Donaldson Company
- Eastman Chemical
- Ecolab
- ExxonMobil
- General Mills
- General Motors
- H.B.Fuller
- Hearing Components
- Henkel
- Huntsman Chemical
- Hysitron
- Imation Corporation
- Infineum
- Lintec
- Medtronic
- Mitsubishi Chemical Co.
- Nitto Denko
- NIST
- RTP Company
- Sandia Livermore
- Segetis
- Sekisui Chemical
- SKC
- Sony
- St. Jude Medical
- Sumitomo Chemical
- SurModics Inc.
- SVT Associates
- TA Instruments

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Schedule of Events by Date

Tuesday, May 26

Coating Characterization: Methods & Challenges Workshop Session I (CPF)	1:25 pm - 5:00 pm EE/CSci 3-180
Sustainable Polymers Workshop Session I (MP)	1:25 pm - 5:20 pm EE/CSci 3-210

Wednesday, May 27

Materials for Convergent Biomedical Products Workshop (BPM)	8:00 am - 11:40 am EE/CSci 3-125
Coating Characterization: Methods & Challenges Workshop Session II (CPF)	8:30 am - 11:30 am EE/CSci 3-180
Magnetic Heterostructures Program Review (MH)	8:40 am - 11:00 am EE/CSci 3-111
Sustainable Polymers Workshop Session II (MP)	8:00 am - 11:30 am EE/CSci 3-210
Flexible Organic Electronics Workshop (OEI)	8:20 am - 11:35 am EE/CSci 3-115
Plenary Session & Luncheon Ticket required: Industry Members, Invited Guests & IPRIME Faculty	Johnson Great Hall, McNamara Alumni Center 11:45 am - 1:05 pm
Biomaterials and Pharmaceutical Materials Program Review (BPM)	1:15 pm - 5:00 pm EE/CSci 3-125
Coating Process Fundamentals Program Review Session I (CPF)	1:20 pm - 4:40 pm EE/CSci 3-180
Microstructured Polymers Program Review Session I (MP)	1:15 pm - 5:00 pm EE/CSci 3-210
Nanostructural Materials and Processes Program Review Session I (NMP)	1:15 pm - 5:20 pm EE/CSCi 3-230
Organic Optoelectronic Interfaces Program Review (OEI)	1:15 pm - 5:00 pm EE/CSCi 3-115

Schedule of Events by Date

Wednesday, May 27 (continued):

Poster Session and Reception	5:30 pm - 7:45 pm Memorial Hall McNamara Alumni Center
IT Characterization Lab Demos	7:00 pm, Depart from CharFac Table at Poster Session

Thursday, May 28

Planning & Policy Board Breakfast Meeting	7:00 am - 8:00 am Radisson, President's Room
Biocatalysis & Biosynthesis Program Review (BB)	8:15 am - 11:20 am EE/CSci 3-125
Coating Process Fundamentals Program Review Session II (CPF)	8:40 am - 11:20 am EE/CSci 3-180
Microstructured Polymers Program Review Session II (MP)	8:15 am - 11:40 am EE/CSci 3-210
Nanostructural Materials and Processes Program Review Session II (NMP)	8:15 am - 11:20 am EE/CSCi 3-230
Renewable Energy Materials Program Review (REM)	8:00 am - 11:40 am EE/CSCi 3-111
Biomaterials and Pharmaceutical Materials TAC Session / Luncheon	12:00 pm - 1:45 pm Campus Club Room 411
Coating Process Fundamentals TAC Session / Luncheon	12:00 pm - 1:45 pm Campus Club Dale Shephard Room
Microstructured Polymers TAC Session / Luncheon	12:00 pm - 1:45 pm Campus Club Rooms B & C

Thursday, May 28 (continued):

Nanostructural Materials TAC Session / Luncheon	12:00 pm - 1:45 pm Campus Club, Room A
Planning & Policy Board Meeting	2:00 pm - 3:30 pm Coffman Memorial Union President's Room, 3rd floor

Schedule of Events by Category

Event	Dates and Times	Location
Workshops		
Coating Characterization: Methods & Challenges (CPF), Session I	Tuesday, May 26 1:25 PM to 5:00 PM	EE/CSci 3-180
Coating Characterization: Methods & Challenges (CPF), Session II	Wednesday, May 27 8:30 AM to 11:30 AM	EE/CSci 3-180
Sustainable Polymers (MP), Session I	Tuesday, May 26 1:25 PM to 5:20 PM	EE/CSci 3-210
Sustainable Polymers (MP), Session II	Wednesday, May 27 8:00 AM to 11:30 AM	EE/CSci 3-210
Materials for Convergent Biomedical Products (BPM)	Wednesday, May 27 8:00 AM to 11:40 AM	EE/CSci 3-125
Flexible Organic Electronics (OEI)	Wednesday, May 27 8:20 AM to 11:35 AM	EE/CSci 3-115
Plenary Session		
Plenary Session & Luncheon (Ticket required: Industrial Representatives, IPRIME Faculty & Invited Guests)	Wednesday, May 27 11:45 AM to 1:05 PM	Johnson Great Hall, McNamara Alumni Center
Poster Session		
Poster Session & Reception	Wednesday, May 27 5:30 PM to 7:45 PM	Memorial Hall, McNamara Alumni Center
Special		
Characterization Facility Lab Demos	Wednesday, May 27 7:00 PM to 9:00 PM	Depart from CharFac Table at Poster Session

Schedule of Events by Category (continued):

Event	Dates and Times	Location
Program Reviews		
Magnetic Heterostructures Program Review (MH)	Wednesday, May 27 8:40 AM to 11:00 AM	EE/CSci 3-111
Organic Optoelectronic Interfaces Program Review (OEI)	Wednesday, May 27 1:15 PM to 5:00 PM	EE/CSci 3-115
Microstructured Polymers Program Review (MP), Session I	Wednesday, May 27 1:15 PM to 5:00 PM	EE/CSci 3-210
Microstructured Polymers Program Review (MP), Session II	Thursday. May 28 8:15 AM to 11:40 AM	EE/CSci 3-210
Biomaterials and Pharmaceutical Materials Program Review (BPM)	Wednesday, May 27 1:15 PM to 5:00 PM	EE/CSci 3-125
Nanostructural Materials and Processes Program Review(NMP), Session I	Wednesday, May 27 1:15 PM to 5:20 PM	EE/CSci 3-230
Nanostructural Materials and Processes Program Review(NMP), Session II	Thursday, May 28 8:15 AM to 11:20 AM	EE/CSci 3-230
Coating Process Fundamentals Program Review (CPF), Session I	Wednesday, May 27 1:20 PM to 4:40 PM	EE/CSci 3-180
Coating Process Fundamentals Program Review (CPF), Session II	Thursday, May 28 8:40 AM to 11:20 AM	EE/CSci 3-180
Biocatalysis and Biosynthesis Program Review (BB)	Thursday, May 28 8:15 AM to 11:20 AM	EE/CSci 3-125
Renewable Energy Materials Program Review (REM)	Thursday, May 28 8:00 AM to 11:40 AM	EE/CSci 3-111

Schedule of Events by Category (continued):

Event	Dates and Times	Location
Technical Advisory Committees		
Biomaterials and Pharmaceutical Materials TAC Session & Luncheon	Thursday, May 28 12:00 PM to 1:45 PM	Campus Club Room 411 Coffman Memorial Union
Coating Process Fundamentals TAC Session & Luncheon	Thursday, May 28 12:00 PM to 1:45 PM	Campus Club Dale Shepherd Room Coffman Memorial Union
Microstructured Polymers TAC Session & Luncheon	Thursday, May 28 12:00 PM to 1:45 PM	Campus Club Conference Rooms B&C Coffman Memorial Union
Nanostructural Materials and Processes TAC Session & Luncheon	Thursday, May 28 12:00 PM to 1:45 PM	Campus Club Conference Room A Coffman Memorial Union
Board Meetings		
Planning & Policy Board Breakfast Meeting	Thursday, May 28 7:00 AM to 8:00 AM	Radisson Hotel, President's Room
Planning & Policy Board Meeting	Thursday, May 28 2:00 PM to 3:30 PM	Coffman Memorial Union 3rd floor, President's Room

WORKSHOPS

Materials for Convergent Biomedical Products (BPM)

Workshop

Date: Wednesday, May 27 **Time:** 8:00 AM to 11:40 AM **Location:** EE/CSci 3-125

Time	Title	Authors
8:00 AM	Combination devices: a useful partnership or marriage of convenience?	David Grainger, University of Utah
9:00 AM	Drug Mechanism of Release Models for Controlled Release Implants	Ed Parsonage, Boston Scientific
9:20 AM	Break	Wieslaw Suszynski, U MN
9:50 AM	Emerging anti-biofilm biomaterial strategies	James Bryers, University of Washington
10:50 AM	Local Drug Delivery for Abdominal Aortic Aneurysms: Is it possible?	Brian Fernandes, Medtronic
11:40 AM	Adjourn	

Coating Characterization: Methods & Challenges (CPF)

Workshop Session I

Date: Tuesday, May 26 **Time:** 1:25 PM to 5:00 PM **Location:** EE/CSci 3-180

Time	Title	Authors
1:25 PM	Welcome	Lorraine Francis, U MN
1:30 PM	Particle Imaging Velocimetry	Marcio Carvalho, U MN
2:00 PM	Equipment Advances Open New Possibilities for Coating Process Visualizations	Wieslaw Suszynski, U MN
2:30 PM	High Shear Rate Rheometry Using Parallel Plates	Robert Secor, 3M
3:00 PM	Break	
3:30 PM	AFM of Polymer-Drug Coatings: Effects of Hydration and Aqueous Immersion	Greg Haugstad, U MN
4:00 PM	Nanoindentation	William Gerberich, U MN
4:30 PM	Influence of Physical Properties on Crown Formation	Katsunori Tsuchiya, Dai Nippon Printing
5:00 PM	Adjourn	

Coating Characterization: Methods & Challenges (CPF)

Workshop Session II

Date: Wednesday, May 27 **Time:** 8:30 AM to 11:30 AM **Location:** EE/CSci 3-180

Time	Title	Authors
8:30 AM	Depth Analysis of Implant Drug Coating – Opportunities and Challenges	Pankaj Gupta, Boston Scientific
9:00 AM	Cryogenic Scanning Electron Microscopy of Coatings	Christine Cardinal, U MN
9:30 AM	Confocal Raman Microscopy	Jinping Dong, U MN
10:00 AM	Break	
10:30 AM	Rutherford Backscattering of Coatings	Greg Haugstad, U MN
11:00 AM	On-line coating measurements for thickness and haze	David Hofeldt, 3M
11:30 AM	Adjourn	
7:00 PM	Special follow-up demonstrations: IT Characterization Lab Demonstrations: Depth-dependent Characterization of Coatings Depart Poster Session from CharFac Table	Greg Haugstad, U MN Jinping Dong, U MN Chris Frethem, U MN Christine Cardinal, U MN

Sustainable Polymers
(MP)

Workshop Session I

Date: Tuesday, May 26 **Time:** 1:25 PM to 5:20 PM **Location:** EE/CSci 3-210

Time	Title	Authors
1:25 PM	Introductory remarks	Marc Hillmyer, U MN
1:30 PM	Efficient enzyme-catalyzed routes to biobased prepolymers and hydroxyl fatty acid monomers	Richard Gross, Polytechnic Institute of NYU
2:20 PM	The Development and Commercialization Of PHBV Polymers in China	James Lunt, Jim Lunt & Associates LLC
2:40 PM	Advances in IngeoTM Polylactide Technology	Richard Bopp, NatureWorks
3:00 PM	Bio-based Unsaturated Polyester Resins for use in Thermoset Composite Applications	Darcy Culkin, Ashland Chemical
3:20 PM	Break	
4:00 PM	Toughening polylactide and its copolymers	SuPing Lyu, Medtronic
4:20 PM	Novel Materials from Renewable Feedstocks	Cora Leibig, Segetis
4:40 PM	Novel Applications for Metathetically Polymerized Triglycerides	Mike Tupy, Elevance Renewable Sciences
5:00 PM	TBD	TBD
5:20 PM	Adjourn	

Sustainable Polymers (MP)

Workshop Session II

Date: Wednesday, May 27 **Time:** 8:00 AM to 11:30 AM **Location:** EE/CSci 3-210

Time	Title	Authors
8:00 AM	Natural oil-based polyols in Polyurethanes	Timothy Abraham, Cargill
8:20 AM	Sustainable Materials Development - An Industry Perspective	Kelly Anderson, 3M
8:40 AM	Polyolefins and sustainability	Alan Vaughan, ExxonMobil
9:00 AM	Break	
9:40 AM	Development of New Routes to Benign Polymeric Materials	Geoff Coates, Cornell University
10:30AM	Overview of Sustainable Polymer Research at UMN	Marc Hillmyer, U MN
10:50AM	Panel discussion	
11:30AM	Adjourn	

Flexible Organic Electronics (OEI)

Workshop

Date: Wednesday, May 27 **Time:** 8:20 AM to 11:35 AM **Location:** EE/CSci 3-115

Time	Title	Authors
8:20 AM	Welcoming Remarks	Daniel Frisbie, U MN
8:25 AM	Implementing Printed Electronics to Achieve Commercialization	John Heitzinger, Soligie
9:05 AM	Flexible Organic Photovoltaics: Challenges and Opportunities	Srini Balasubramanian, Konarka
9:45 AM	Break	Richard Bopp, NatureWorks
10:15AM	Phosphorescent OLEDs for Displays and Lighting Applications	Michael Weaver, Universal Display Corporation
10:55AM	Pilot Line Technology and Active Matrix Backplanes on HS-PEN and Stainless Steel	Shawn O'Rourke, Flexible Display Center
11:35AM	Wrap-up and Adjourn for Plenary Lunch	

Special

Characterization Facility Lab Demos

Date: Wednesday, May 27 **Time:** 7:00 PM to 9:00 PM **Location:** *Depart from CharFac Table at Poster Session*

Time	Title	Authors
7:00 PM	IT Characterization Lab Demonstrations: Depth-dependent Characterization of Coatings Schedule	Greg Haugstad, U MN

Program Reviews

Biocatalysis and Biosynthesis (BB)

Mike Sadowsky, Coordinator

Program Review

Date: Thursday, May 28 **Time:** 8:15 AM to 11:20 AM **Location:** EE/CSci 3-125

Time	Title	Authors
8:15 AM	Introduction	Michael Sadowsky, U MN
8:20 AM	Metagenomic Platforms for Gene and Enzyme Discovery	Michael Sadowsky, U MN
8:40 AM	Applications for Biocatalysts Acting on *s*-Triazines	Larry Wackett, U MN
9:00 AM	Engineering enzymes to solve problems	Romas Kazlauskas, U MN
9:20 AM	Nanoscale Structures for Bioactive Materials	Ping Wang, U MN
9:40 AM	Break	
10:20 AM	Enzymatic protein labeling and photocontrol	Mark Distefano, U MN
10:40 AM	Engineering Microbes for Biosynthesis and Bionergy Applications	Claudia Schmidt-Dannert , U MN
11:00 AM	Conversion of CO_2 into Plastics with Tunable Properties	Friderich Srienc, U MN
11:20 AM	Adjourn	

Biomaterials and Pharmaceutical Materials (BPM)

Ron Siegel, Coordinator

Program Review

Date: Wednesday, May 27 **Time:** 1:15 PM to 5:00 PM **Location:** EE/CSci 3-125

Time	Title	Authors
1:15 PM	Introduction	
1:20 PM	Engineering pharmaceutical powders for superior performance in tablet manufacturing	Calvin Sun, U MN
1:40 PM	Microfabrication of a Device to Evaluate the Swelling of Glucose Sensitive Hydrogels under Isochoric Conditions.	David Barriet, U MN Ronald Siegel, U MN
2:00 PM	Orthosilicate Prodrug Models: Synthesis, Hydrolysis, and Encapsulation in Block Copolymer Nanoparticles	Adam Wohl, U MN Tom Hoye, U MN Chris Macosko, U MN
2:20 PM	Poly(ortho ester amides): Acid-labile Temperature-responsive Copolymers for Potential Biomedical Applications	Chun Wang, U MN
2:40 PM	Break	
3:20 PM	Targeting biofilm infections: Application for biomaterials surfaces	Ayman Noreddin, U MN Walid El-Khatib, U MN
3:40 PM	Engineering Hydrogels for Tissue Engineering	Wei Shen, U MN
4:00 PM	Targeting Colon Cancer Cells using PEGylated Liposomes modified with a Fibronectin-Mimetic Peptide	Ashish Garg, U MN Efi Kokkoli, U MN
4:20 PM	Determination of Phase Transformation in Pharmaceutical Solid Dosage Form (Tablet) by Multivariate Analysis	Paroma Chakravarty, U MN Raj Suryanarayanan, U MN
4:40 PM	Sustained Release Curcumin Microspheres for Inhibition of Breast Cancer	Komal Shahani, U MN Jayanth Panyam, U MN
5:00 PM	Adjourn	

Coating Process Fundamentals (CPF)

Lorraine Francis, Coordinator

Program Review Session I

Date: Wednesday, May 27 **Time:** 1:20 PM to 4:40 PM **Location:** EE/CSci 3-180

Time	Title	Authors
1:20 PM	Stability of Viscoelastic Liquid Curtain	Marcio Carvalho, U MN
1:40 PM	Two-Layer Tensioned-Web-Over-Slot Die Coating: Effect of Operating Conditions	Jaewook Nam, U MN
2:00 PM	Operating Window of Slide Coating Process	Kristianto Tjiptowidojo, U MN
2:20 PM	Finite-Element Modeling of Slot Coating Subject to Time-Periodic Disturbances	Yoshifumi Morita, Nitto Denko
2:40 PM	Break	
3:20 PM	Leveling of Thin Films of Colloidal Suspensions	Satish Kumar, U MN
3:40 PM	The Emptying of Liquid from Gravure Cells	Shawn Dodds, U MN
4:00 PM	Shear-Induced Suppression of Rupture in Thin Liquid Films with Application to Lithographic Printing	Sreeram Kalpathy, U MN
4:20 PM	Delaying Air Entrainment in High Speed Coating Flows: Progress and Plans	Eric Vandre, U MN
4:40 PM	Adjourn	

Coating Process Fundamentals (CPF)

Program Review Session II

Date: Thursday, May 28 **Time:** 8:40 AM to 11:20 AM **Location:** EE/CSci 3-180

Time	Title	Authors
8:40 AM	Drying Regime Maps for Particulate Coatings	Christine Cardinal, U MN
9:00 AM	Effect of Lateral Drying Front on Stress and Cracking in Particulate Coatings	Karan Jindal, U MN
9:20 AM	Morphology and Structure in Assembled Silica Particulate Films	Damien Brewer, U MN
9:40 AM	Break	
10:20 AM	Modeling Cure Induced Stress Generation In Polymer Coatings	Daniel O'Neal, U MN
10:40 AM	Structure Formation Caused by Phase Separation During Drying of Polymer Blend Coatings	Kazuhiko Morizawa, Sony
11:00 AM	Magnetic Microrheology of Drying Coatings	Jin-Oh Song, U MN
11:20 AM	Adjourn	

Magnetic Heterostructures (MH)

Paul Crowell, Coordinator

Program Review

Date: Wednesday, May 27 **Time:** 8: 40 AM to 11:00 AM **Location:** EE/CSci 3-111

Time	Title	Authors
8:40 AM	Overview of Research in Magnetic Heterostructures	Paul Crowell, U MN
9:00 AM	Temperature Dependence of the Non-local Spin Signal in Cu-based Lateral Spin Valves	Michael Erickson, U MN Chris Leighton, U MN Paul Crowell, U MN
9:20 AM	Density of States Effects in Nickel based Magnetic Tunnel Junctions	Greg Mckusky, U MN Dan Dahlberg, U MN
9:40 AM	Break	
10:20AM	An investigation of the magnetic state dependent low frequency noise in Magnetic Tunnel Junctions	Dan Dahlberg, U MN
10:40AM	Spin-dependent intergranular transport in highly spin-polarized $Co_{1-x}Fe_xS_2$ thin films	Michael Manno, U MN Rachel Frakie, U MN Bruce Bolon, U MN Chris Leighton, U MN
11:00AM	Adjourn	

Microstructured Polymers (MP)

Marc Hillmyer, Coordinator

Program Review Session I

Date: Wednesday, May 27 **Time:** 1:15 PM to 4:40 PM **Location:** EE/CSci 3-210

Time	Title	Authors
1:15 PM	Introductory remarks	Marc Hillmyer, U MN
1:20 PM	Block Polymers and Ionic Liquids: A New Class of Functional Nanocomposites	Timothy Lodge, U MN
1:40 PM	Block Copolymer Micelle Shuttles between Water and Ionic Liquids	Zhifeng Bai, U MN
2:00 PM	Phase Behavior and Ionic Conductivity of Polystyrene-*b*-Polyethylene Oxide Copolymers Swollen with an Ionic Liquid	Peter Simone, U MN
2:20 PM	Relaxation Kinetics of Highly Amphiphilic Diblock Copolymer Micelles in Ionic Liquids	Luciana Meli, U MN
2:40 PM	Break	
3:20 PM	Multiblock copolymers: How many blocks are too many blocks?	Frank Bates, U MN
3:40 PM	Controlling Crystallinity in Poly(cyclohexylethylene)-*b*-poly(ethylene) Copolymers	Ameara Mansour, U MN
4:00 PM	Network Morphologies by Design: ECD and CECD Block Terpolymers	Michael Bluemle, U MN
4:20 PM	Structure and Properties of Hexa- and Undeca- block Terpolymers with Hierarchical Molecular Architectures. Towards New Elastomeric Materials with Enhanced Mechanical Properties	Guillaume Fleury, U MN
4:40 PM	Adjourn	

Microstructured Polymers (MP)

Program Review Session II

Date: Thursday, May 28 **Time:** 8:15 AM to 11:40 AM **Location:** EE/CSci 3-210

Time	Title	Authors
8:15 AM	Introductory remarks	Marc Hillmyer, U MN
8:20 AM	Polymer Melt Processing for Controlled Morphology and Adhesion	Chris Macosko, U MN
8:40 AM	Processing, Morphology and Properties of Exfoliated Graphite/Thermoplastic Polyurethane Nanocomposites	Hyunwoo Kim, U MN
9:00 AM	Compatibilization of cocontinuous blends with block copolymers.	Carlos Lopez Barron, U MN
9:20 AM	Investigating block copolymers as a starting material for melt blowing	Dawud Tan, U MN
9:40 AM	Break	
10:20 AM	Renewable resource block polymers	Marc Hillmyer, U MN
10:40 AM	Oxidized Dihydrocarvone as a Renewable Resource Cross-linking Agent	Jennifer Lowe, U MN
11:00 AM	Stereoselective And Controlled Polymerization of D,L-Lactide Using Indium Trichloride	Agostino Pietrangelo, U MN
11:20 AM	Toughening Polylactide with the Incorporation of Soybean Oil	Megan Robertson, U MN
11:40 AM	Adjourn	

Nanostructural Materials and Processes (NMP)

Alon McCormick, Coordinator
David Norris, Coordinator

Program Review Session I

Date: Wednesday, May 27 **Time:** 1:15 PM to 5:20 PM **Location:** EE/CSci 3-230

Time	Title	Authors
1:15 PM	Opening Remarks	
1:20 PM	Optical Sensors for Organic Compounds and Oxygen that Use Crystals with Nanoscopic Pores	Kent Mann, U MN
1:40 PM	Atomic-Resolution Structure of Complex Biological Machines	Paul Jardine, U MN
2:00 PM	Electrical Characterization of Long Conjugated Molecular Wires by Conducting Probe AFM	Seongho Choi, U MN
2:20 PM	Efficient low-temperature emitters from metallic photonic crystals	Prashant Nagpal, U MN Sang Eon Han, U MN Andreas Stein, U MN David Norris, U MN
2:40 PM	Break	
3:00 PM	Growth Patterns and Shape Development of Zeolite Nanocrystals in Confined Synthesis	Won Cheol Yoo, U MN Sandeep Kumar, U MN R. Lee Penn, U MN Michael Tsapatsis, U MN Andreas Stein, U MN
3:20 PM	Confined synthesis of silicalite-1 nanocrystals in three dimensionally ordered mesoporous carbon	Pyung-Soo Lee, U MN
3:40 PM	Size Control and Surface Bonding of Alkylamine Stabilized ZnO Nanocrystals	Bing Luo, U MN Wayne Gladfelter, U MN
4:00 PM	Photo-Induced Electron Transfer from Solar Cell Dyes to Colloidal Zinc Oxide	Andrew Bierbaum, U MN

Nanostructural Materials and Processes Program Review (continued):

4:20 PM	Thermally decomposable ligands to increase the conductivity of nanocrystal solids	Andrew Wills, U MN Moon Sung Kang, U MN Wayne Gladfelter, U MN David Norris, U MNJinping Dong, Dean Poppe—U MN
4:40 PM	Micropattern Deposition of Semiconductor Nanocrystals by Aerodynamic Focusing	Lejun Qi, U MN
5:00 PM	In-situ Characterization of Nanoparticle Growth by Cryo-TEM	Virany Yuwono, U MN
5:20 PM	Adjourn	

Nanostructural Materials and Processes (NMP)

Program Review Session II

Date: Thursday, May 28 **Time:** 8:15 AM to 11:20 AM **Location:** EE/CSci 3-230

Time	Title	Authors
8:15 AM	NMP Overview	Andreas Stein, U MN Michael Tsapatsis, U MN
8:20 AM	The Role of Three-Dimensionally Ordered Macroporous Carbon as a Solid Contact in Ion-Selective Electrodes	Melissa Fierke, U MN Chun-Ze Lai Philippe Bühlmann, U MN Andreas Stein, U MN
8:40 AM	Manipulating Colloids and Surfactant as Co-Templates for Hierarchically Porous Nanostructures and Nanocomposites	Fan Li, U MN
9:00 AM	Metallic Photonic Crystals for Thermal Emission	Nick Denny, U MN
9:20 AM	Nanoscale crystalline zeolite layers for separation and catalytic applications	Sudeep Maheshwari, U MN
9:40 AM	Break	Zhiyong Wang, Melissa A. Fierke, Andreas Stein—U MN
10:00 AM	Environmental Digital Pulsed Force Mode AFM and Confocal Raman Microscopy in Biomedical Coatings Research	Greg Haugstad, U MN Klaus Wormuth, SurModics Inc.
10:20 AM	A Cryo-TEM Study on the Early Stages of MFI Growth	Sandeep Kumar, U MN
10:40 AM	Effect of the Coating Morphology on Drug Release Profiles from Engineered Drug-Polymer Nanocomposites	Jinping Dong, U MN Chris Frethem, U MN Greg Haugstad, U MN Bob Hoerr, Nanocopoeia, Inc. John Foley, Nanocopoeia, Inc. Mike Matuszewski, Nanocopoeia, Inc. Judit Puskas, University of Akron

Nanostructural Materials and Processes Program Review (continued):

11:00 AM	*In Situ* Confocal Raman Characterization and Scanning Electron Microscopy of Drug Delivery Systems	Ruth Kemp, U MN Jinping Dong, U MN Jeannette Polkinghorne, Boston Scientific
11:20 AM	Adjourn	

Organic Optoelectronic Interfaces (OEI)

Dan Frisbie, Coordinator

Program Review

Date: Wednesday, May 27 **Time:** 1:15 PM to 5:00 PM **Location:** EE/CSci 3-115

Time	Title	Authors
1:15 PM	Introduction:	Russell Holmes, U MN
1:20 PM	Enhanced exciton diffusion in organic photovoltaic cells by energy transfer using a phosphorescent sensitizer	Wade Luhman, U MN Russell Holmes, U MN
1:40 PM	Engineering film morphology for high efficiency organic photovoltaic cells	Richa Pandey, U MN Russell Holmes, U MN
2:00 PM	Enhancement of the morphology and open circuit voltage in bilayer polymer/fullerene solar cells	Derek Stevens, U MN
2:20 PM	Exciton dynamics (energy and charge transfer) in C60-polythiophene triads.	Andy Healy, U MN Bryan Boudouris, U MN Daniel Frisbie, U MN Marc Hillmyer, U MN David Blank, U MN
2:40 PM	Break	
3:20 PM	Electric fields at buried interfaces in P3HT/PCBM bulk heterojunction solar cells	Travis Mills, U MN Matthew Goertz, U MN Xiaoyang Zhu, U MN
3:40 PM	All-Printed Low Voltage Operation Polymer Transistors and Circuits Based on Ion Gel Gate Dielectrics	Yu Xia, U MN Jeong Ho Cho, U MN Mingjing Ha, U MN Michael J. Renn, Optomec Daniel Frisbie, U MN
4:00 PM	Experimental and Theoretical Study of the Traps States in Organic Semiconductor using Long-Channel Capacitors and Displacement Current	Yan Liang, U MN Hsiu-Chuang Chang, U MN

Organic Optoelectronic Interfaces Program Review (continued):

4:20 PM	Synthetic routes to functionalized tetracenes and rubrenes via cross-coupling.	Elisey Yagodkin, U MN Christopher J. Douglas, U MN Daniel Frisbie, U MN
4:40 PM	Observation of Unusual Homo-Epitaxy in Pentacene Films and Correlated Surface Potential Domains.	Vivek Kalihari, U MN David Ellison, U MN Greg Haugstad, U MN Daniel Frisbie, U MN
5:00 PM	Adjourn	

Renewable Energy Materials (REM)

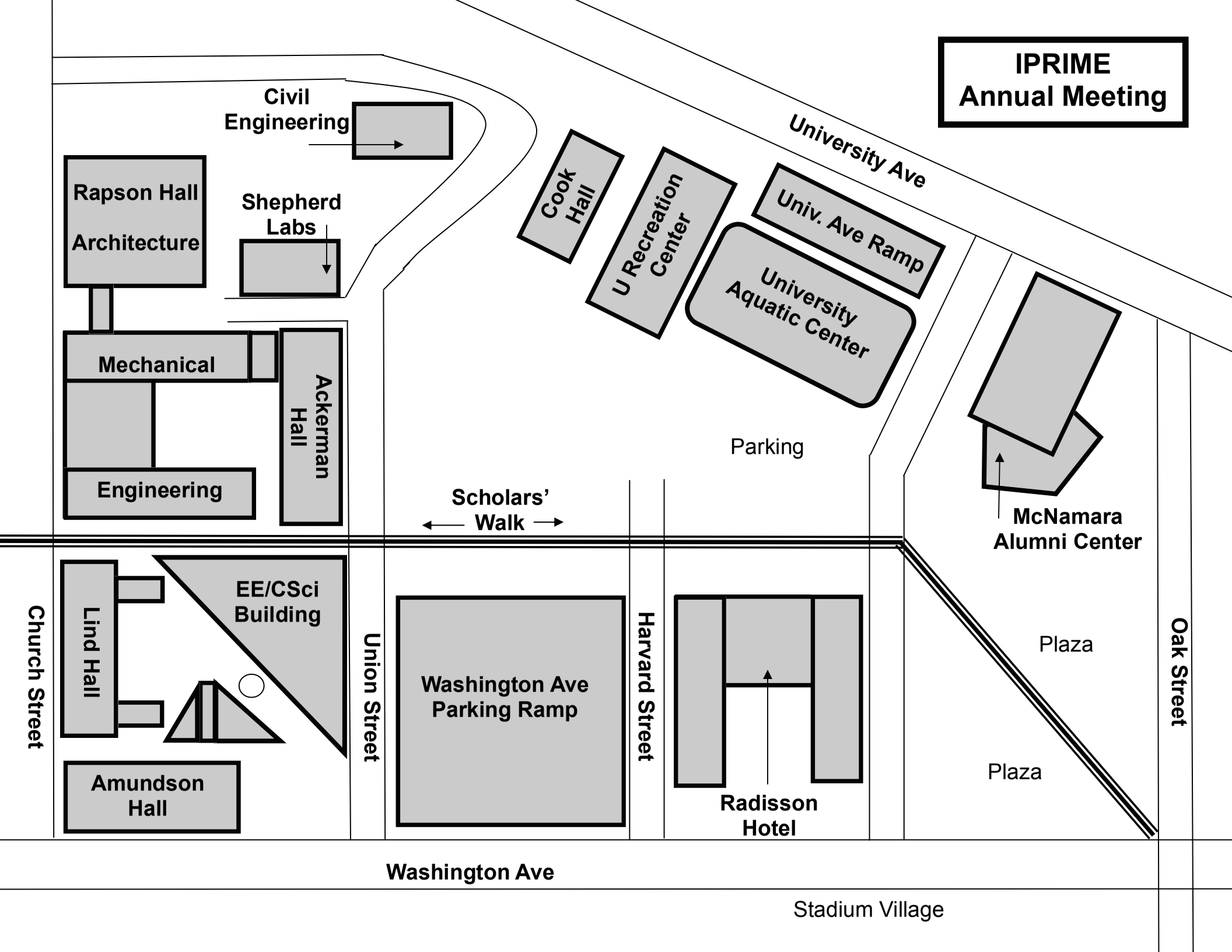
Uwe Kortshagen, Coordinator
Eray Aydil, Coordinator

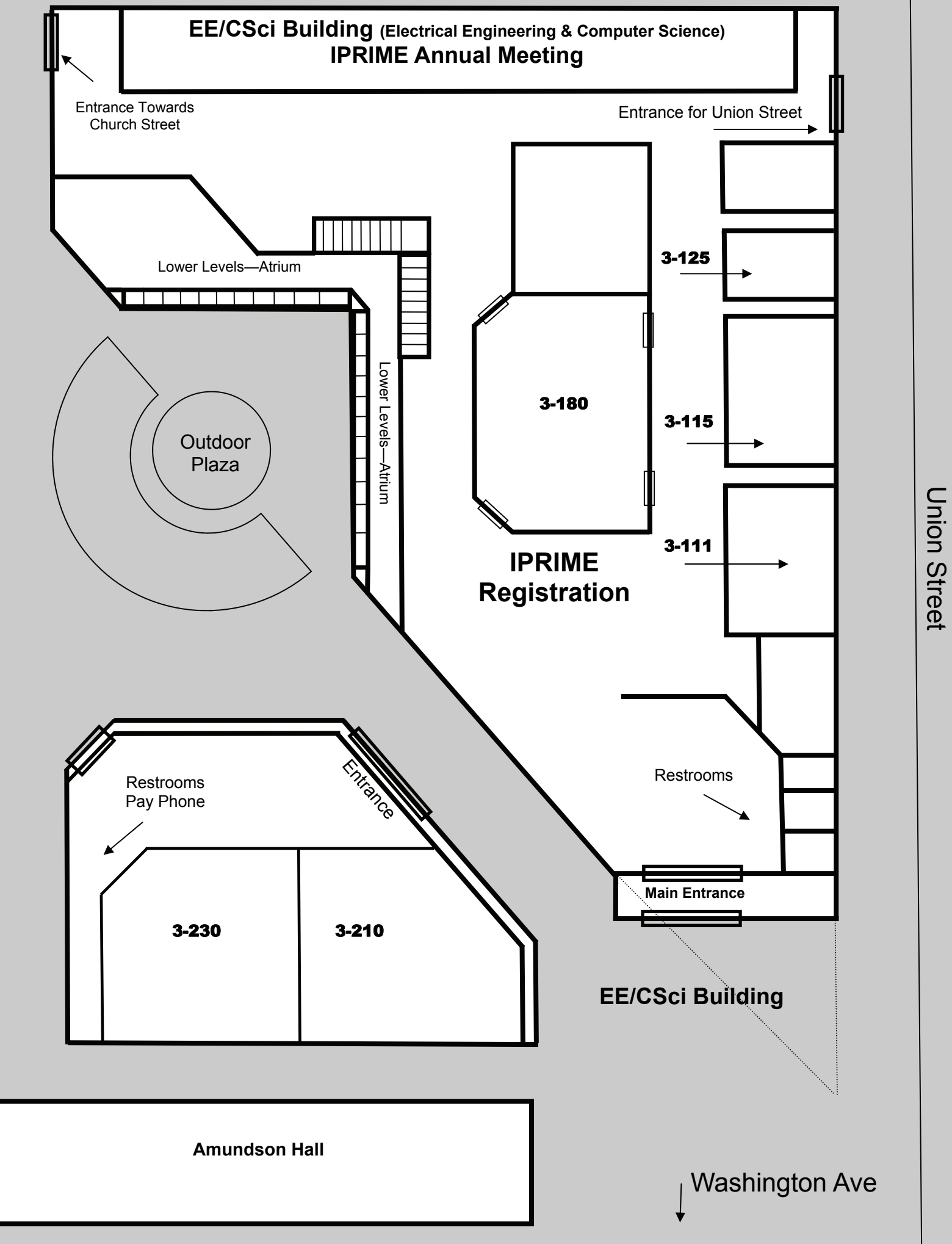
Program Review

Date: Thursday, May 28 **Time:** 8:00 AM to 11:40 AM **Location:** EE/CSci 3-111

Time	Title	Authors
8:00 AM	Group IV nanocrystal materials for photovoltaics and thermoelectrics	Uwe Kortshagen, U MN
8:40 AM	Tailoring the Glow of Nanostructured Metals: From Thermophotovoltaics to Thermal Beaming	David Norris, U MN
9:20 AM	Catalytic Processes for Conversion of Oxygen-containing Chemical Platforms	Aditya Bhan, U MN
10:00 AM	Break	
10:20 AM	Next generation plastic solar cells – Ongoing research at Minnesota	Russell Holmes, U MN Daniel Frisbie, U MN
11:00 AM	Nanostructured Materials for Solar Energy Conversion and Storage	Eray Aydil, U MN
11:40 AM	Adjourn	

Poster Session & Reception


IPRIME
Annual Meeting
Civil
Engineering
University Ave
Rapson Hall
Architecture
Shepherd
Labs
Cook
Hall
U Recreation
Center
Univ. Ave Ramp
University
Aquatic Center
Mechanical
Ackerman
Hall
Engineering
Parking
Scholars'
Walk
McNamara
Alumni Center
Church Street
Lind Hall
EE/CSci
Building
Union Street
Washington Ave
Parking Ramp
Harvard Street
Radisson
Hotel
Plaza
Plaza
Oak Street
Amundson
Hall
Washington Ave
Stadium Village


EE/CSci Building (Electrical Engineering & Computer Science)
IPRIME Annual Meeting
Entrance Towards Church Street
Entrance for Union Street
Lower Levels—Atrium
Lower Levels—Atrium
Outdoor Plaza
3-125
3-180
3-115
3-111
IPRIME Registration
Restrooms Pay Phone
Entrance
Restrooms
Main Entrance
3-230
3-210
EE/CSci Building
Amundson Hall
Washington Ave
Union Street

Poster Session & Reception

Memorial Hall, McNamara Alumni Center, 5:30 PM – 7:45 PM, Wednesday, May 27

Poster #	Presenting Author	Affiliated Program(s)	Poster Title
1	Mark Amendt	MP	Morphological and Mechanistic Investigation of Nanostructured DCPD
2	Bryan Boudouris	MP	Poly(3-hexylthiophene)-based Block Copolymers for Organic Photovoltaics
3	Jihua Chen	MP & OEI	PEO/$LiClO_4$ Based Solid Block Copolymer Electrolytes for High Capacitance Dielectrics in Bottom-Gate Pentacene Thin Film Transistors
4	SooHyung Choi	MP	Chain Exchange Kinetics of Poly(styrene-*b*-ethylene-*alt*-propylene) Micelles in Squalane
5	Jun Kyung Chung	MP	Quantifying deviations from the RPA: Theory and Simulations
6	Ashish Gaikwad	MP	Effect of hydrogen bonding on dynamics of miscible polymer blends
7	William Gramlich	MP	Reactive Blending of End-Functionalized Polylactide
8	Brian Habersberger	MP	Investigation of the Phase Behavior of Conformationally Asymmetric Ternary Polymer Blends
9	Elizabeth Jackson	MP	Nanoporous Water Filtration Membranes Derived from Self-Assembled Thermoplastic Elastomer Containing Block Terpolymers
10	Brad Jones	MP	Nanoporous Materials Derived from a Polymeric Bicontinuous Microemulsion
11	Sangwon Kim	MP	ABC Triblock Terpolymers for Self-Assembly on Chemically Nanopatterned Substrates
12	Hyunwoo Kim	MP	Processing, Morphology and Properties of Exfoliated Graphite/Thermoplastic Polyurethane Nanocomposites
13	Shingo Kobayashi	MP	Synthesis of amino-functionalized polyethylenes using ring opening metathesis polymerization.
14	Sangwoo Lee	MP	Process Dependent Microstructures in Non-ionic Block Copolymer/ /Water/Oil Mixtures
15	Yu Lei	MP	Thermoreversible Ion Gels from Supramolecular Assembly via Hydrogen Bonding in Ionic Liquids
16	Chun Liu	MP	Multicompartment Micelles from pH-responsive Miktoarm Star Block Terpolymers
17	Carlos Lopez Barron	MP	3D-Image analysis of cocontinuous blends.
18	Sahban Ozair	MP	Chain Dynamics in Poly(ethylene oxide)/Poly(vinyl phenol) Blends
19	Matthew Petersen	MP	Targeted Degradable Polymersomes for Treatment of Colorectal Cancer

Poster Session & Reception

Memorial Hall, McNamara Alumni Center, 5:30 PM – 7:45 PM, Wednesday, May 27

20	Louis Pitet	MP	Block Copolymers with Complex Architectures Utilizing Newly Developed Chain Transfer Agents in Ring-Opening Metathesis Polymerization
21	Haitao Qian	MP	Synthesizing polymeric biomaterials in a “green” way by using organocatalysts and friendly organometallics
22	Jian Qin	MP	Fluctuations in Diblock Copolymer Melts: Simulation and Theory
23	Yang Qin	MP	Low Bandgap Poly(3-hexyl-2,5-thienylene vinylene) by ADMET Polymerization of a Dipropenyl Monomer for Photovoltaic Devices
24	Erica Redline	MP	Radical Cured Block Copolymer Modified Thermosets
25	Marc Rodwogin	MP	Nanoarrays from Block Polymer Precursors
26	Jie Song	MP	Functionalized Polyolefins for Improved Adhesion
27	Derek Stevens	MP & OEI	Enhancement of the morphology and open circuit voltage in bilayer polymer/fullerene solar cells
28	Dawud Tan	MP	Influence of viscosity and elasticity on the statistical properties of meltblown polymer fibers
29	Suqin Tan	MP	Soy-based Polyurethane Rigid Foam
30	Rajiv Taribagil	MP	Compartmentalized networks from associative triblock copolymers in water
31	Grayce Theryo	MP	Improving the Toughness of Polylactide through Copolymerization and Architectural Control
32	Raghuraman Thiagaran	MP	Self-Consistent Field Modeling of Diblock Copolymers in Selective Solvents
33	Zachary Thompson	MP	Block Copolymer Modified Epoxy: Role of Epoxy Crosslink Density
34	Ligeng Yin	MP	Self-Assembled Worm-like Micelles in Water for Filtration Applications
35	Sipei Zhang	MP	Optimization of Ion Gel Gate Dielectrics for Organic Thin Film Transistors (OTFTs)
36	Zhengxi Zhu	MP	Polyelectrolyte Stabilized Drug Nanoparticles made by Flash Nanoprecipitation
37	Bryan Boudouris	OEI & MP	Poly(3-hexylthiophene)-based Block Copolymers for Organic Photovoltaics
38	OPEN		
39	Kai-Yuan Cheng	OEI & REM	Performance Improvement and Morphology Study in Hybrid-Silicon-Nanoparticle Organic Light-Emitting Devices

Poster Session & Reception

Memorial Hall, McNamara Alumni Center, 5:30 PM – 7:45 PM, Wednesday, May 27

40	Christopher J.Douglas	OEI	Synthetic routes to functionalized tetracenes and rubrenes via cross-coupling.
41	Jon Hinke	OEI	The dynamics of platinum (II) octaethyl porphyrin (PtOEP): contrasting thin films and solutions.
42	Jung Yong Kim	OEI	High Open-Circuit Voltage Photovoltaic Cells with a Low Bandgap Copolymer of Isothianaphthene, Thiophene and Benzothiadiazole Units
43	Yan Liang	OEI	Experimental and Theoretical Study of the Traps States in Organic Semiconductor using Long-Channel Capacitors and Displacement Current
44	Grant Lodden	OEI	The Origin of Electro- and Photoluminescence in Strongly Coupled Organic Microcavities
45	Wade Luhman	OEI & REM	Enhanced exciton diffusion in organic photovoltaic cells by energy transfer using a phosphorescent sensitizer
46	Richa Pandey	OEI & REM	Engineering film morphology for high efficiency organic photovoltaic cells
47	YuXia	OEI	All-Printed Low Voltage Operation Polymer Transistors and Circuits Based on Ion Gel Gate Dielectrics
48	Mohammad Yunus	OEI	Effects of spin dependent contact resistances on the magneto-resistance of organic spin valves.
49	Ariel Chatman	REM	Semiconductor Nanoparticles for Thermoelectric Materials
50	Zachary Holman	REM	Germanium Nanocrystal Films for Photovoltaic Applications
51	SeongHo Jeong	REM	Epitaxial growth of Cu_2O thin films on ZnO for solar cells
52	Ankur Khare	REM	Synthesis of Copper (I) Sulfide Nanocrystals for Environmentally Benign Solar Cells.
53	Kurtis Leschkies	REM	Solar Cells Based on Semiconductor Nanocrystals and ZnO Nanostructures
54	BinLiu	REM	Titanium dioxide nanowires for dye sensitized solar cells
55	Bin Liu	REM	Oriented Single-Crystalline TiO_2 Nanowires for Lithium Ion Batteries
56	Chin-Yi Liu	REM	Hybrid Solar Cells from Polymers and Silicon Nanocrystals
57	Prashant Nagpal	REM	Metamaterials for renewable energy generation

Poster Session & Reception

Memorial Hall, McNamara Alumni Center, 5:30 PM – 7:45 PM, Wednesday, May 27

58	Daniel Abate Pella	BB	Caging the farnesyltransferase inhibitor L-744,832 with the photoremovable protecting group bromohydroxyquinoline (BHQ)
59	Johnathan Gorke	BB	Design and synthesis of carotenoid-based polymers
60	Olivier Henry	BB	A new versatile photoactivable probe designed to investigate the diphosphate binding site of enzyme using isoprenoid diphosphates as substrates
61	Yun Jiang	BB	Structural differences between esterases/lipases and acyltransferases
62	Chris McChalicher	BB	Production and Extraction of Commercially Relevant PHA Biopolymers
63	Pornkamol (Apple)Unrean	BB	Efficient production of ethanol from hexoses and pentoses using co-immobilized cells of *Escherichia coli*
64	JamesWollack	BB	An isoprenoid diphosphate substrate suitable for copper-free bioorthogonal conjugation through tetrazine ligation
65	Songtao Wu	BB	Highly Stable Enzymic Thin Film Coatings for Bioactive Materials
66	Tyler Yin	BB	Engineering perhydrolase activity in Pseudomonas fluorescens esterase: the role of Pro 29
67	Sun-Young Choh	BPM	Engineering biomaterials as synthetic stem cell niche
68	Daisy Cross	BPM	Parallel Biomaterial Approaches to Cardiac Repair
69	Dan Jung	BPM	Lattice Model Monte-Carlo Simulations of Phase Separation and Crystallization
70	Arum Kim	BPM	Amine Effect on Glucose Sensing of Phenylboronic Acid (PBA) Based Hydrogels
71	Isha Koonar	BPM	Synthesis and Characterization of Stimulus Responsive Di- and Tri- Block Copolymers
72	Andrew Lewis	BPM	A synthetic polypeptide/PEG hydrogel for engineering three-dimensional microvascular networks
73	OPEN		
74	Udaya Toti	BPM	cRGD Peptide Functionalized Polymeric Nanoparticles for Tumor Targeting

Poster Session & Reception

Memorial Hall, McNamara Alumni Center, 5:30 PM – 7:45 PM, Wednesday, May 27

75	Damien Brewer	CPF	Characterization of Morphology in Ordered Lysine-Silica Particulate Coatings
76	Christine Cardinal	CPF	Crack Prevention in Soft Latex Coatings
77	Shawn Dodds	CPF	Liquid Transfer during Printing: Visualization of Contact Line Motion
78	Sreeram Kalpathy	CPF	Coating on Chemically Patterned Substrates
79	J. Alex Lee	CPF	Prediction of Banded Film Morphologies Coated by the Method of Convective Assembly
80	Tomohiro Matsuda	CPF	Low-flow Limits in Slot Coating with Apparent Pinning Effect and No Recirculation
81	Jaewook Nam	CPF	Single-Layer Tensioned-Web-Over-Slot Die Coating
82	Jaewook Nam	CPF	Two-Layer Tensioned-Web-Over-Slot Die Coating: Effect of Die Design
83	Daniel O'Neal	CPF	Viscoelasticity and Reaction: Modeling Curing and Stress Generation During Coating Solidification
84	Scott A.Roberts	CPF	Patterning of Polymer Films with Electric Fields
85	Takumi Shibuta	CPF	Effects of Coating Conditions on Particulate Assembly
86	Robert Shurig	CPF	Finite Element Analysis of the Deflection of Coated Cantilever Beams
87	Jin-Oh Song	CPF	Design of Magnetic Microrheometer to Measure Local Viscosity of Coatings
88	Kristianto Tjiptowidojo	CPF	Hybrid Model of Slide Coating
89	Eric Vandre	CPF	Delaying Air Entrainment in High Speed Coating Flows: Progress and Plans
90	Te-Yu Chen	MH	Domain Depinning and Nonlinear Dynamics of Magnetic Vortices
91	Eric Garlid	MH	Electrical Detection of Spin Transport in Semiconductor Devices
92	Chunyong He	MH	Low temperature Schottky anomalies in the specific heat of $LaCoO_3$: Defect-stabilized finite spin-states
93	Stephanie Hernandez	MH	Current-Induced Magnetization Reversal in Co/Cu Multilayer Nanowires
94	Han Hsu	MH	Hubbard *U* and the spin-state transition in $(Mg,Fe)SiO_3$ under pressure
95	Andrew Lyle	MH	Spin Torque Transfer Switching with Composite Free Layer
96	Mazin Maqableh	MH	Novel Magnetoresistive Structures Using Self-Assembly and Nanowires on Si
97	Tanner Schulz	MH	Pinned Superconducting Vortices on Alumina Membranes with Periodic Holes
98	Manish Sharma	MH	Magnetic phase separation-induced coercivity enhancement in epitaxial $Nd_{0.5}Sr_{0.5}CoO_3$films on $SrTiO_3$ (001) substrates

Poster Session & Reception

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99	Abraham Spinelli	MH	Electronic Transport near the Metal-Insulator Transition in Doped SrTiO3 Single Crystals
100	Yisong Zhang	MH	Magnetic Tunnel Junction Based Spin Torque Oscillator and Array
101	Seongho Choi	NMP	Electrical Characterization of Long Conjugated Molecular Wires by Conducting Probe AFM
102	Nicholas Denny	NMP	Metallic Photonic Crystals for Thermal Emission
103	Jinping Dong	NMP	Effect of the Coating Morphology on Drug Release Profiles from Engineered Drug-Polymer Nanocomposites
104	Melissa Fierke	NMP	The Role of Three-Dimensionally Ordered Macroporous Carbon as a Solid Contact in Ion-Selective Electrodes
105	Greg Haugstad	NMP	Environmental Digital Pulsed Force Mode AFM and Confocal Raman Microscopy in Biomedical Coatings Research
106	Ruth Kemp	NMP	In Situ Confocal Raman Characterization and Scanning Electron Microscopy of Drug Delivery Systems
107	Chongai Kuang	NMP	Atmospheric Nucleation: Mechanisms, Measurements, and Dynamics
108	Changyub Paek	NMP	Modification of High Surface Area Substrates to Develop Robust Carbonaceous Packings for Liquid Chromatography
109	Lejun Qi	NMP	Micropattern Deposition of Semiconductor Nanocrystals by Aerodynamic Focusing
110	Ayaskanta Sahu	NMP	Doping Semiconductor Nanocrystals with Silver
111	Apostolos Vagias	NMP	Cryo-TEM of surfactant nanostructures in aqueous solutions
112	Danhui Ye	NMP	Triconstituent synthesis of thin films with controllable composition and mesoporosity
113	Won Cheol Yoo	NMP	Growth Patterns and Shape Development of Zeolite Nanocrystals in Confined Synthesis
114	OPEN		
115	OPEN		