



## IPRIME ANNUAL MEETING 2011 TABLE OF CONTENTS

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## **BUILDING INFORMATION**

### **LOCATIONS & MAP ON BACK COVER**

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<b>Amundson Hall</b>	421 Washington Avenue SE
<b>Coffman Memorial Union</b>	300 Washington Avenue SE
<b>Keller Hall</b>	200 Union Street SE
<b>McNamara Alumni Center</b>	200 Oak Street SE
<b>Mechanical Engineering Bldg</b>	111 Church Street SE
<b>Radisson University Hotel</b>	615 Washington Avenue SE

## **PROGRAM ABBREVIATIONS & NAMES**

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<b>BB</b>	Biocatalysis and Biotechnology
<b>BPM</b>	Biomaterials and Pharmaceutical Materials
<b>CPF</b>	Coating Process Fundamentals
<b>MH</b>	Magnetic Heterostructures
<b>MP</b>	Microstructured Polymers
<b>NMP</b>	Nanostructural Materials and Processes
<b>OEI</b>	Organic Optoelectronic Interfaces
<b>REM</b>	Renewable Energy Materials



## SCHEDULE OF EVENTS BY DATE IN ALPHABETICAL ORDER BY PROGRAM

Tuesday afternoon, May 31

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building map back cover

**Multilayer Coatings**

CPF Workshop Session I

1:25 – 5:00 PM

Keller Hall 3-180

**Sustainable Polymer Chemistry**

MP Workshop Session I

1:25 – 4:40 PM

Keller Hall 3-210

**High Resolution cryoSEM of Biological and Soft Materials**

NMP Workshop Session

1:25 – 5:20 PM

Keller Hall 3-230

Wednesday morning, June 1

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**Multilayer Coatings**

CPF Workshop Session II

8:25 – 11:40 AM

Keller Hall 3-180

**Sustainable Polymer Chemistry**

MP Workshop Session II

8:25 – 11:40 AM

Keller Hall 3-210

**New Materials for Organic Semiconductor Devices**

OEI Workshop Session

8:20 – 11:40 AM

Mechanical Eng 108

Wednesday lunch, June 1

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**Plenary Session & Luncheon**

*for IPrime faculty, company members, and invited guests*

11:45 AM – 1:05 PM

McNamara Alumni Center  
Johnson Great Room

Speaker Eray Aydil, REM Program Leader

“Solar Cells From Abundant Nontoxic Materials”



## SCHEDULE OF EVENTS BY DATE IN ALPHABETICAL ORDER BY PROGRAM

### Wednesday afternoon, June 1

building map back cover

Biomaterials and Pharmaceutical Materials

**BPM Program Review**

1:20 – 4:40 PM

Keller Hall 3-125

Coating Process Fundamentals

**CPF Program Review I**

1:20 – 4:40 PM

Keller Hall 3-180

Magnetic Heterostructures

**MH Program Review**

1:30 – 4:40 PM

Keller Hall 3-115

Microstructured Polymers

**MP Program Review I**

1:15 – 4:40 PM

Keller Hall 3-210

Nanostructural Materials and Processes

**NMP Program Review I**

1:15 – 4:40 PM

Keller Hall 3-230

Organic Optoelectronic Interfaces

**OEI Program Review**

1:15 – 5:00 PM

Mechanical Eng 108

### Wednesday evening, June 1

**Faculty-Industry Meet & Greet**

*for IPrime faculty, company members and invited guests*

5:00 – 5:45 PM

McNamara Alumni Center  
Johnson Great Room

**Poster Session**

*all attendees welcome*

5:45 – 7:30 PM

McNamara Alumni Center  
Memorial Hall

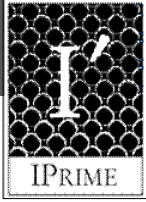
### Thursday morning, June 2

**Planning and Policy Board Breakfast Meeting**

*for designed IPrime Board members*

7:00 – 8:00 AM

Radisson University Hotel  
Alumni Room



## SCHEDULE OF EVENTS BY DATE IN ALPHABETICAL ORDER BY PROGRAM

### Thursday morning, June 2, cont'd

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building map back cover

Biocatalysis and Biotechnology  
**BB Program Review**

8:15 – 11:40 AM  
Keller Hall 3-125

Coating Process Fundamentals  
**CPF Program Review II**

8:25 – 11:40 AM  
Keller Hall 3-180

Microstructured Polymers  
**MP Program Review II**

8:15 – 11:40 AM  
Keller Hall 3-210

Nanostructural Materials and Processes  
**NMP Program Review II**

8:15 – 11:40 AM  
Keller Hall 3-230

Renewable Energy Materials  
**REM Program Review**

8:20 – 11:40 AM  
Mechanical Eng 108

### Thursday afternoon, June 2

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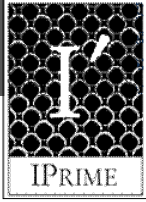
**Technical Advisory Committee (TAC) and Planning and Policy Board Meetings**  
*for designated IPrime TAC or Board members only*

**Biomaterials and Pharmaceutical Materials TAC**  
Meeting and Luncheon

12:00 – 1:45 PM  
Coffman Memorial Union, 4<sup>th</sup> fl  
Campus Club, Room 411

**Coating Process Fundamentals TAC**  
Meeting & Luncheon

12:00 – 1:45 PM  
Coffman Memorial Union, 4<sup>th</sup> fl  
Campus Club, Room BC



## SCHEDULE OF EVENTS BY DATE IN ALPHABETICAL ORDER BY PROGRAM

Thursday afternoon, June 2, cont'd

building map back cover

**Technical Advisory Committee (TAC) and Planning and Policy Board Meetings**  
*for designated IPrime TAC or Board members only*

**Microstructured Polymers TAC**  
Meeting & Luncheon

12:00 – 1:45 PM  
Coffman Memorial Union, 4<sup>th</sup> fl  
Campus Club, Dale Shephard Rm

**Nanostructural Materials and Processes TAC**  
Meeting & Luncheon

12:00 – 1:45 PM  
Coffman Memorial Union, 4<sup>th</sup> fl  
Campus Club, Room A

**Planning and Policy Board Board Meeting**

2:00 – 3:00 PM  
Coffman Memorial Union, 3<sup>rd</sup> fl  
Mississippi Room



UNIVERSITY OF MINNESOTA



## SCHEDULE OF EVENTS BY CATEGORY

### IN ALPHABETICAL ORDER BY EVENT & PROGRAM

#### **Faculty-Industry Meet & Greet**

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*for IPrime faculty and company members*

building map back cover

Wed., June 1, 5:00 – 5:45 PM

McNamara Alumni Center

Johnson Great Room

#### **Planning and Policy Board (PPB) Meetings**

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##### **PPB Breakfast Meeting**

*for designed IPrime Board members*

Thur., June 1, 7:00 – 8:00 AM

Radisson University Hotel

Alumni Room

##### **PPB Board Meeting**

*for designed IPrime Board members*

Thur., June 2, 2:00 – 3:00 PM

Coffman Memorial Union, 3<sup>rd</sup> flr

Mississippi Room

#### **Plenary Session & Luncheon**

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*for IPrime faculty, company members, and invited guests*

Speaker Eray Aydil, REM Program Leader

“Solar Cells From Abundant Nontoxic Materials”

Wed., June 1, 11:45 AM – 1:05 PM

McNamara Alumni Center

Johnson Great Room

#### **Poster Session**

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*all attendees welcome*

Wed., June 1, 5:45 – 7:30 PM

McNamara Alumni Center

Memorial Hall

#### **Program Reviews**

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Biocatalysis and Biotechnology

##### **BB Program Review**

Thur., June 2, 8:15 – 11:40 AM

Keller Hall 3-125

Biomaterials and Pharmaceutical Materials

##### **BPM Program Review**

Wed., June 1, 1:20 – 4:40 PM

Keller Hall 3-125

Coating Process Fundamentals

##### **CPF Program Review I**

Wed., June 1, 1:20 – 4:40 PM

Keller Hall 3-180



## SCHEDULE OF EVENTS BY CATEGORY IN ALPHABETICAL ORDER BY EVENT & PROGRAM

### **Program Reviews, cont'd**

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Coating Process Fundamentals  
**CPF Program Review II**

building map back cover

Thur., June 2, 8:40 – 11:40 AM  
Keller Hall 3-180

Magnetic Heterostructures  
**MH Program Review**

Wed., June 1, 1:30 – 4:40 PM  
Keller Hall 3-115

Microstructured Polymers  
**MP Program Review I**

Wed., June 1, 1:15 – 4:40 PM  
Keller Hall 3-210

Microstructured Polymers  
**MP Program Review II**

Thur., June 2, 8:15 – 11:40 AM  
Keller Hall 3-210

Nanostructural Materials and Processes  
**NMP Program Review I**

Wed., June 1, 1:15 – 4:40 PM  
Keller Hall 3-230

Nanostructural Materials and Processes  
**NMP Program Review II**

Thur., June 2, 8:15 – 11:40 AM  
Keller Hall 3-230

Organic Optoelectronic Interfaces  
**OEI Program Review**

Wed., June 1, 1:15 – 5:00 PM  
Mechanical Eng 108

Renewable Energy Materials  
**REM Program Review**

Thur., June 2, 8:20 AM – 12:00 PM  
Mechanical Eng 108

### **Technical Advisory Committees (TAC)**

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**Biomaterials and Pharmaceutical Materials TAC**  
Meeting & Luncheon  
*for designated TAC members*

Thur., June 2, 12:00 – 1:45 PM  
Coffman Memorial Union, 4<sup>th</sup> flr  
Campus Club, Room 411

**Coating Process Fundamentals TAC**  
Meeting & Luncheon  
*for designated TAC members*

Thur., June 2, 12:00 – 1:45 PM  
Coffman Memorial Union, 4<sup>th</sup> flr  
Campus Club, Room BC





## SCHEDULE OF EVENTS BY CATEGORY IN ALPHABETICAL ORDER BY EVENT & PROGRAM

### Technical Advisory Committees, cont'd

#### **Microstructured Polymers TAC**

Meeting & Luncheon

*for designated TAC members*

building map back cover

Thur., June 2, 12:00 – 1:45 PM

Coffman Memorial Union, 4<sup>th</sup> flr  
Campus Club, Dale Shepherd Rm

#### **Nanostructural Materials and Processes TAC**

Meeting & Luncheon

*for designated TAC members*

Thur., June 2, 12:00 – 1:45 PM

Coffman Memorial Union, 4th flr  
Campus Club, Room A

### Workshops

#### **Multilayer Coatings Session I**

Coating Process Fundamentals

Tue., May 31, 1:25 – 5:00 PM

Keller Hall 3-180

#### **Multilayer Coatings Session II**

Coating Process Fundamentals

Wed., June 1, 8:25 – 11:40 AM

Keller Hall 3-180

#### **Sustainable Polymer Chemistry Session I**

Microstructured Polymers

Tue., May 31, 1:25 – 4:40 PM

Keller Hall 3-210

#### **Sustainable Polymer Chemistry Session II**

Microstructured Polymers

Wed., June 1, 8:25 – 11:40 AM

Keller Hall 3-210

#### **High Resolution cryoSEM of Biological and Soft Materials**

Nanostructural Materials and Processes

Tue., May 31, 1:25 – 5:20 PM

Keller Hall 3-230

#### **New Materials for Organic Semiconductor Devices**

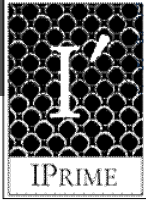
Organic Optoelectronic Interfaces

Wed., June 1, 8:20 – 11:40 AM

Mechanical Eng 108



UNIVERSITY OF MINNESOTA

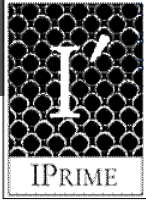


# WORKSHOPS

In alphabetical order by IPrime Partnership Program



UNIVERSITY OF MINNESOTA  
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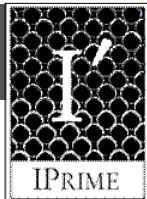
Tuesday, May 31, 1:25-5:00 PM  
Keller Hall, room 3-180

## Multilayer Coatings Workshop Session I

Coating Process Fundamentals Program

Lorraine Francis, Coordinator

<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:25 PM	Opening remarks	M. Carvalho, PUC-Rio
1:30 PM	An assessment of instabilities in multilayer coating systems: The road forward	B. Higgins, U of California
2:30 PM	Visualization study of flow stability between rigid and deformable rolls	M. Sasaki, JFE Steel Corp L. F. Francis, U MN W. J. Suszynski, U MN M. S. Carvalho, PUC- Rio
3:00 PM	Practical aspects of two-layer coating	T. Tsuda, Dai Nippon Printing
3:20 PM	Break, <i>refreshments served in Keller Hall north lobby</i>	
3:50 PM	Two layer slot coating: interlayer configuration and stability	M. Carvalho, PUC-Rio
4:20 PM	Visualization and analysis of paste and film during battery electrode fabrication	H. Hagiwara, Toyota Motor Co.
4:40 PM	The EDAC quantifier: Microcontaminant detection with superior noise immunity	T. Lynch, EDAC Medical, Inc.



Wednesday, June 1, 8:25-11:40 AM  
Keller Hall, room 3-180

## Multilayer Coatings Workshop Session II

Coating Process Fundamentals Program

Lorraine Francis, Coordinator

<u>Time</u>	<u>Title</u>	<u>Authors</u>
8:25 AM	Opening remarks	S. Kumar, U MN
8:30 AM	Continuum and molecular modeling of exponential growth in layer-by-layer assembly of polyelectrolyte multilayer films	R.G. Larson, U MN N. Hoda, U MN
9:10 AM	Layer-by-layer deposition of polyelectrolyte droplets on obstacles in microfluidics	C. Chung, U MN M. Lee, Seoul Nat'l U K. Char, Seoul Nat'l U S. J. Lee, Seoul Nat'l U
9:40 AM	Break, <i>refreshments served in Keller Hall north lobby</i>	
10:10 AM	Formation of topographical patterns on liquid film multilayer coatings using electric fields	S. Kumar, U MN
10:40 AM	Cold seal adhesives: The adhesive choice of chocoholics	D. Deak, Bostik, Inc.
11:00 AM	Challenges in understanding adhesion on printed laminated packaging	R. Durand, Sun Chemical



Tuesday, May 31, 1:25-4:40 PM  
Keller Hall, room 3-210

## Sustainable Polymer Chemistry Workshop Session I

Microstructured Polymers Program

Marc Hillmyer, Coordinator

<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:25 PM	Introductory remarks	
1:30 PM	Polymers derived from cyclic ethers and carbon dioxide	D. J. Darensbourg, Texas A&M
2:15 PM	Rosin-derived biopolymers: from biodegradable thermoplastics to antimicrobials	C. Tang, U of South Carolina
3:00 PM	Break, <i>refreshments served in Keller Hall north lobby</i>	
3:40 PM	Understanding rubber biosynthesis	M. Distefano, U MN
4:00 PM	A green approach to plexiglass	K. Zhang, U MN
4:20 PM	Renewable additives and feedstocks for the polymer industry	E. C. Hagberg, ADM
4:40 PM	Adjourn	



Wednesday, June 1, 8:25-11:40 AM  
Keller Hall, room 3-210

## Sustainable Polymer Chemistry Workshop Session II

Microstructured Polymers Program

Marc Hillmyer, Coordinator

<u>Time</u>	<u>Title</u>	<u>Authors</u>
8:25 AM	Introductory remarks	
8:30 AM	Performance enhancement of biobased polymers through reactive blending	J. Zhang, Washinton State U
9:15 AM	Hierarchically structured ecobionanocomposites	J. Dorgan, CO School of Mines B. Braun, PolyNew Inc. L. O. Hollingsworth, PolyNew
10:00 AM	Break, <i>refreshments served in Keller Hall north lobby</i>	
10:40 AM	Soy-based polyurethane foam	C. Macosko, U MN
11:00 AM	Synthesis and properties of structured biopolymers	J. Barrett, U MN D. Rouse, U MN F. Srienc, U MN
11:20 AM	New bio-based polycondensate derivatives from levulinic acid	B. Mullen, Segetis Inc. T. Mullen, Segetis Inc. L. Rieth, Segetis Inc. V. Badarinarayana, Segetis Inc.
11:40 AM	Adjourn	



Tuesday, May 31, 1:25-5:20 PM  
Keller Hall, room 3-230

## High Resolution cryoSEM of Biological and Soft Materials Workshop

Nanostructural Materials and Processes Program

Alon McCormick, Coordinator

<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:25 PM	Introduction to cryoSEM at the University of MN	A. McCormick, U MN C. Frethem, U MN
1:45 PM	Instrumentation and techniques for cryo-electron microscopy	K. Rensing, Leica
3:00 PM	SEM and dual-beam technology for biology	G. Hawkinson, FEI C. Mathisen, FEI
3:40 PM	Break, <i>refreshments served in Keller Hall north lobby</i>	
4:00 PM	TBA	S. Nagy, Gatan L. Tsung, Gatan
4:40 PM	Discussion led by University of Minnesota researchers, with brief vignettes	L. Francis, U MN A. Bates, UMN C. Zhou, U MN H. Lee, UMN & more



Wednesday, June 1, 8:20-11:40 AM  
Mechanical Engineering Bldg, room 108

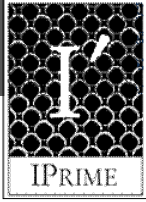
## **New Materials for Organic Semiconductor Devices Workshop**

Organic Optoelectronic Interfaces Program

C. Daniel Frisbie, Coordinator

<b><u>Time</u></b>	<b><u>Title</u></b>	<b><u>Authors</u></b>
8:20 AM	Welcoming remarks	R. Holmes, U MN
8:25 AM	New materials for organic electronics and optoelectronics	Y. Xia, Polyera
9:05 AM	Enabling materials for organic and printed electronics from Aldrich Materials Science	K. V. Josyula, Sigma-Aldrich
9:45 AM	<i>Break, refreshments served in Keller Hall north lobby</i>	
10:15 AM	Semiconducting carbon nanotubes for printed electronics	N. Yoder, NanoIntegris
10:55 AM	Solution-processed small molecule AMOLED displays	J. Merlo, Dupont
11:35 AM	Conclusion and adjourn	





# PROGRAM REVIEWS

In alphabetical order by IPrime Partnership Program



UNIVERSITY OF MINNESOTA  
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Thursday, June 2, 8:15-11:40 AM  
Keller Hall, room 3-125

## Biocatalysis and Biotechnology Program Review

Ping Wang, Program Leader

<u>Time</u>	<u>Title</u>	<u>Authors</u>
8:15 AM	Introduction	P. Wang, U MN
8:20 AM	Metagenomic technologies for public health, enzyme discovery, and human diarrheses	M. Sadowsky, U MN
8:45 AM	Bioelectrosynthesis: engineering of electrode-interfaced bacteria	D. E. Ross, U MN J. A. Gralnick, U MN J. M. Flynn, U MN K. A. Hunt, U MN D. R. Bond, U MN
9:10 AM	Design and evolution of cellulosic biofuel metabolism	F. Sreenc, U MN
9:35 AM	<i>Break, refreshments served in Keller Hall north lobby</i>	
10:15 AM	Biocatalytic protein modification	M. Distefano, U MN
10:40 AM	Applications of microbial enzymes	L. Wackett, U MN
11:05 AM	Salt-induced abnormal protein/enzyme adsorption	P. Wang, U MN
11:25 AM	Open panel discussion	



Wednesday, June 1, 1:20-5:00 PM, Keller Hall, room 3-125  
\* Denotes advisor/principal investigator

## Biomaterials and Pharmaceutical Materials Program Review

Ron Siegel, Program Leader

<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:20 PM	Polymeric biomaterials for delivering drugs, genes, and cells	D.P. Cross, U MN C. Wang, U MN *
1:40 PM	Engineered materials for regulating stem cell differentiation	W. Shen, U MN *
2:00 PM	Unimodal and bimodal non-isothermal crystallization of organic glasses explained by unified seed-facilitated surface crystallization model	S. Chatteraj, U MN C. Bhugra, C. Telang & Z. Wang, Boehringer- Ingelheim Pharmaceuticals C.C. Sun, U MN *
2:20 PM	Are cancer stem cells susceptible to magnetic hyperthermia?	T. Sadhukha, U MN L. Niu, U MN T. S. Wiedmann, U MN J. Panyam, U MN *
2:40 PM	<i>Break, refreshments served in Keller Hall north lobby</i>	
3:20 PM	Synergistic mechanical interactions between collagen and fibrin networks in co-gels	V. K. Lai, U MN E. A. Sander, U MN C. R. Frey, U MN V. H. Barocas, U MN R. T. Tranquillo, U MN *
3:40 PM	Swelling and dynamic mechanical studies of glucose sensitive hydrogels based on phenylboronic acids	A. Kim, U MN R. Siegel, U MN *
4:00 PM	Stability of buffer solutions in the frozen state: Methods of measuring and altering freezing-induced pH shifts	V. Ragoonanan, U MN M. Burcusa, U MN R. Suryanarayanan, U MN *
4:20 PM	Silicate prodrug-loaded block copolymer nanoparticles: controlling both the cargo and the packaging	A. R. Wohl, U MN J. Panyam, U MN T. R. Hoye, U MN C. W. Macosko, U MN *



Wednesday, June 1, 1:20-4:40 PM  
Keller Hall, room 3-180

## Coating Process Fundamentals Program Review I

Lorraine Francis & Satish Kumar, Program Leaders

<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:20 PM	The dynamics of three-dimensional liquid bridges with pinned and moving contact lines	S. Dodds, U MN M. Carvalho, PUC-Rio S. Kumar, U MN
1:40 PM	Investigating high-speed dynamic wetting near the limit of air entrainment for confined coating flows	E. Vandre, U MN M.S. Carvalho, PUC-Rio S. Kumar, U MN
2:00 PM	Modeling thin liquid film flows with application to coating and printing on chemically patterned surfaces	S. Kalpathy, U MN S. Kumar, U MN L.F. Francis, U MN
2:20 PM	Coating onto open celled foam	H. Zhang, U MN W.J. Suszynski, U MN L.F. Francis, U MN M. Tsapatsis, U MN
2:40 PM	<i>Break, refreshments served in Keller Hall north lobby</i>	
3:20 PM	Frequency response of slot coating	E. Areal, PUC-Rio M. S. Carvalho, PUC-Rio
3:40 PM	Tridimensional flow with suspended spherical particles: A fully-implicit finite element/fictitious domain approach	B. Kassar, PUC-Rio M. S. Carvalho, PUC-Rio
4:00 PM	Poster introductions	K. Price, U MN A. Corbett, U MN A. Ramkrishnan, U MN
4:20 PM	Coating process and visualization laboratory	W. Suszynski, U MN



Thursday, June 2, 8:40-11:40 AM  
Keller Hall, room 3-180

## Coating Process Fundamentals Program Review II

Lorraine Francis & Satish Kumar, Program Leaders

<u>Time</u>	<u>Title</u>	<u>Authors</u>
8:40 AM	Effect of soluble polymer on particle distribution in a drying coating	F. Buss, Karlsruhe Inst Tech S. Beasch, Karlsruhe Inst Tech K. Crawford, U MN L. Francis, U MN
9:00 AM	Modeling skin formation in drying droplets of colloidal suspensions	S. Kumar, U MN K. L. Maki, U MN
9:20 AM	Coating process regimes for particulate film production by forced-convection-assisted drag-out	D. D. Brewer, U MN S. Kumar, U MN M. Tsapatsis, U MN
9:40 AM	Break, <i>refreshments served in Keller Hall north lobby</i>	
10:20 AM	Drug-polymer coating microstructure evolution during thin-film drying	B. Forsyth, Boston Scientific J. Song, U MN L. Francis, U MN
10:40 AM	Block copolymer-modified epoxy coatings: Effect of block copolymer concentration	E. M. Redline, U MN L. F. Francis, U MN F. S. Bates, U MN
11:00 AM	Study of curing gradients development in UV curable epoxy coatings using microrheometry	J.-O. Song, U MN L.F. Francis, U MN



Wednesday, June 1, 1:30-5:00 PM  
Keller Hall, room 3-115

## Magnetic Heterostructures Program Review

Paul Crowell, Program Leader

<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:30 PM	Introduction	P. Crowell, U MN
1:40 PM	Giant magnetostrictive Fe-Ga alloy nanowires and thin films via electrochemistry: Investigations of deposition mechanisms and structural/magnetic characterization	M. Reddy, U MN J. J. Park, U MD S. M. Na, U MD M. M. Maqableh, U MN A. B. Flatau, U MD B. J. H. Stadler, U MN
2:10 PM	Spin torque oscillation of magnetic tunnel junction	Y. Zhang, U MN J.-P Wang, U MN
2:40 PM	Break, <i>refreshments served in Keller Hall north lobby</i>	
3:10 PM	Gas-phase synthesis of multifunctional and heterostructured magnetic nanoparticles and nanocomposites for biomedical and clean energy applications	J. P. Wang, U MN Y. Jing, U MN
3:40 PM	Ferromagnetic insulating state in tensile-strained LaCoO <sub>3</sub> thin films	H. Hsu, U MN P. Blaha, TU Wien R. Wentzcovitch, U MN C. Leighton, U MN
4:10 PM	Measurements of the inverse spin Hall effect in Fe/GaAs heterostructures	C. C. Geppert, U MN M. K. Chan, U MN E. S. Garlid, U MN Q. O. Hu, UCSB C. J. Palmstrøm, UCSB P. A. Crowell, U MN

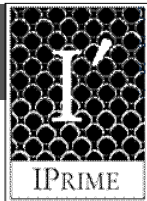


Wednesday, June 1, 1:15-4:40 PM  
Keller Hall, room 3-210

## Microstructured Polymers Program Review I

Marc Hillmyer, Program Leader

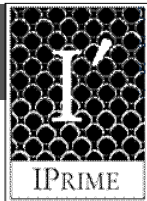
<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:15 PM	Introductory remarks	
1:20 PM	Block copolymer ion gels for gas separation applications	Y. Gu, U MN
1:40 PM	Macroporous polyolefins for membrane support	M. Trifkovic, U MN A. Hedegaard, U MN C.W. Macosko, U MN
2:00 PM	Nonlinear rheology of triblock/diblock copolymer blends	L. Martinetti, U MN S. Lee, U MN M. Martello, U MN F. S. Bates, U MN M. A. Hillmyer, U MN C. W. Macosko, U MN
2:20 PM	Stress-induced slip at polymer-polymer interfaces	A. Gustafson, U MN
2:40 PM	Break, <i>refreshments served in Keller Hall north lobby</i>	
3:20 PM	Thermoresponsive hydrogels from ABC triblock terpolymers	C. Zhou, U MN
3:40 PM	Stimuli responsive multicompartment micelles from block terpolymers in water	A. Moughton, U MN
4:00 PM	Micellization kinetics of diblock copolymers in a homopolymer matrix: A self-consistent field study	D. Morse, U MN R. Thiagarajan, U MN
4:20 PM	Non-classical order in sphere forming ABAC tetrablock copolymers	J. Zhang, U MN S. Sides, Tech-X Research Co. F. S. Bates, U MN
4:40 PM	Adjourn	

Thursday, June 2, 8:15-11:40 AM  
Keller Hall, room 3-210**Microstructured Polymers Program Review II**

Marc Hillmyer, Program Leader

<u>Time</u>	<u>Title</u>	<u>Authors</u>
8:15 AM	Introductory remarks	
8:20 AM	Tough polylactide graft copolymers	G. Theryo, U MN F. Jing, Georgia-Pacific M.L. Robertson, U TX Houston L. M. Pitet, U MN M. A. Hillmyer, U MN
8:40 AM	To cavitate, or not to cavitate, that is the question	C. Declet-Perez, U MN F.S. Bates, U MN
9:00 AM	Structure and mechanical behavior of elastomeric multiblock copolymers containing glassy, rubbery, and semicrystalline components	F. Zuo, U MN C. G. Alfonzo, U MN F. S. Bates, U MN
9:20 AM	Elastomeric polyurethane-vermiculite nanocomposites	Y. Qian, U MN C.W. Macosko, U MN A. Stein, U MN
9:40 AM	<i>Break, refreshments served in Keller Hall north lobby</i>	
10:20 AM	A metathesis route to light harvesting polymers with tunable molecular weights and band gaps	J. C. Speros, U MN B. D. Paulsen, U MN C. D. Frisbie, U MN M. A. Hillmyer, U MN
10:40 AM	Regio- and stereoselective ROMP of 3-substituted cyclooctenes	S. Kobayashi, U MN M. A. Hillmyer, U MN L. M. Pitet, U MN
11:00 AM	The effect of partial epoxidation on physical properties of poly(isoprene) homopolymer and poly(styrene-b-isoprene) diblock copolymer	S. Kim, U MN P. F. Nealey, U Wisconsin F. S. Bates, U MN
11:20 AM	A facile method to prepare ultrathin fibers	K. Lozano, U TX - PanAm Y. Rane, U TX - PanAm
11:40 AM	Adjourn	





Wednesday June 1, 1:15-4:40 PM  
Keller Hall, room 3-230

## Nanostructural Materials and Processes Program Review I

Alon McCormick, Program Leader

<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:15 PM	Introduction to the NMP Program	A. McCormick, U MN
1:20 PM	Gold nanoshells - Targeted heat delivery for biological applications	J. Zasadzinski, U MN
1:40 PM	In situ characterization of metal oxide aggregates using cryo-TEM	V. Yuwono, N. Burrows, J. Soltis, K. Sabyrov, and R. L. Penn, U MN
2:00 PM	Role of surfactant polydispersity in phase change emulsification	E. Morrison, Ecolab H. Lee, U MN A. McCormick, U MN
2:20 PM	Cryo-SEM and cryo-TEM monitoring of microemulsion processing	H. Lee, U MN E. Morrison, Ecolab A. McCormick, U MN
2:40 PM	Break, refreshments served in Keller Hall north lobby	
3:20 PM	Exploring phase behavior and interfacial properties of surfactant solutions and sorption in nanostructured media via Monte Carlo simulations	J.I. Siepmann, U MN
3:40 PM	Thermal stability and catalytic reactivity of nanostructured oxides for use in solar thermochemical fuel production	N. D. Petkovich, U MN S. G. Rudisill, U MN L. Venstrom, U MN J. H. Davidson, U MN A. Stein, U MN
4:00 PM	Probing humidity-dependent crystallization and glass transition at surfaces of ultrathin polymeric coatings	G. Haugstad, U MN K. Wormuth, Surmodics
4:20 PM	Chemical and structural analysis of organic compounds deposited from organic solutions	J. Block, P. Klick, and A. Dallas, Donaldson J. Dong, U MN G. Haugstad, U MN



Thursday, June 2, 8:15-11:40 AM  
Keller Hall, room 3-230

## Nanostructural Materials and Processes Program Review II

Alon McCormick, Program Leader

<u>Time</u>	<u>Title</u>	<u>Authors</u>
8:15 AM	Poster viewing and discussion	A. McCormick, U MN
8:40 AM	Synthesis and elastic modulus measurement of graphene oxide and graphene	K. Liao, U MN K. A. Mkhoyan, U MN C. W. Macosko, U MN
9:00 AM	Excited state charge transfer from porphyrin dyes to ZnO nanocrystals	A. Bierbaum, U MN W. Gladfelter, U MN
9:20 AM	Phase transition in silver chalcogenide nanocrystals	A. Sahu, U MN D. Deng, U MN M.S. Kang, U MN D.J. Norris, ETH Zurich
9:40 AM	Break, <i>refreshments served in Keller Hall north lobby</i>	
10:20 AM	Hierarchical manufacturing of molecular sieve nanostructures for catalysis and separations	M. Tsapatsis, U MN
10:40 AM	Transition metal-exchanged zeolites to sweeten natural gas: quantum chemical calculations	C.-Y. Sung, U MN M. Cococcioni, U MN A. McCormick, U MN M. Tsapatsis, U MN
11:00 AM	Cryo-electron microscopy reconstructions of $\Phi$ 29 bacteriophage	S. Cao, U MN S. Grimes, U MN P. Jardine, U MN W. Zhang, U MN
11:20 AM	Electrical characterization of long conjugated molecular wires using conducting probe AFM	L. Luo, U MN C. D. Frisbie, U MN



Wednesday, June 1, 1:15-5:00 PM  
Mechanical Engineering Bldg 108

## Organic Optoelectronic Interfaces Program Review

C. Daniel Frisbie, Program Leader

<u>Time</u>	<u>Title</u>	<u>Authors</u>
1:15 PM	Introduction	D. Frisbie, U MN
1:20 PM	Efficient organic photovoltaic cells using nanocrystalline donor-acceptor blends	R. Pandey, UMN R. J. Holmes, U MN *
1:40 PM	High-efficiency, single-Layer RGB organic light-emitting devices based on a graded-composition emissive layer architecture	N. C. Erickson UMN R. J. Holmes, U MN *
2:00 PM	Excited state dynamics in octaethyl porphyrins	J. Hinke & D. Blank *, U MN
2:20 PM	High-efficiency silicon nanocrystal light-emitting devices	K.-Y. Cheng, R. Anthony, U. R. Kortshagen * and R. J. Holmes *, U MN
2:40 PM	<i>Break, refreshments served in Keller Hall north lobby</i>	
3:20 PM	A metathesis route to conjugated polymers for bulk heterojunction solar cells	B. D. Paulsen, J. C. Speros, M. A. Hillmyer * and C. D. Frisbie *, U MN
3:40 PM	Printed, flexible organic circuits for displays and memories	M. Ha, D. Braga, W. Zhang, C. H. Kim * and C.D. Frisbie *, U MN M. J. Renn, Optomec. Inc †
4:00 PM	Transport in rubrene electrical double layer transistors at high surface charge densities	W. Xie, UMN C. D. Frisbie, U MN *
4:20 PM	Synthesis of new organic semiconductors: Tuning the molecular and packing structure of rubrenes	K. McGarry, UMN C. Douglas, U MN *
4:40 PM	Detailing the molecular packing and electrostatic and electronic properties of pentacene layers at the silica glass interface	L. Viani, Georgia Inst Tech Jean-Luc Bredas, GA Tech *

\* denotes faculty, † denotes industrial collaborator

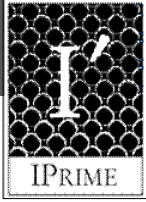


Thursday, June 2, 8:20 AM-12:00 PM  
Mechanical Engineering Building 108

### Renewable Energy Materials Program Review

Eray Aydil and Uwe Kortshagen, Program Leaders

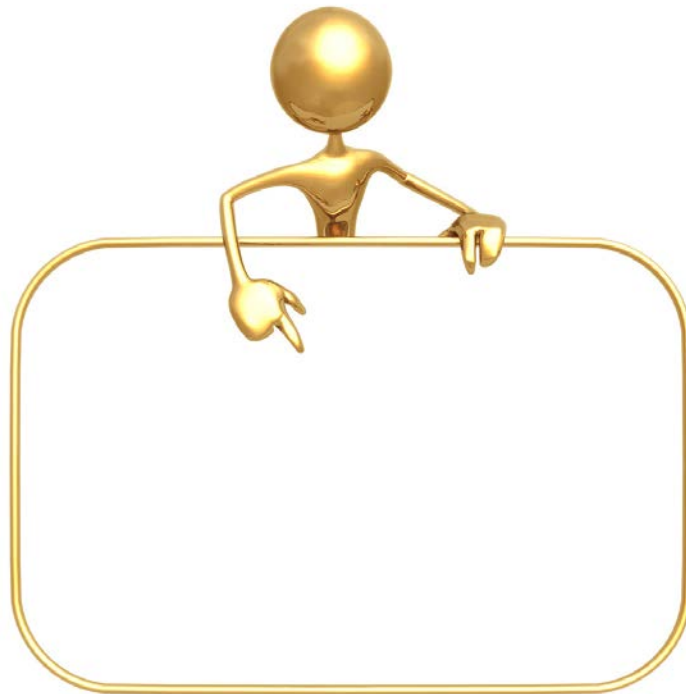
<u>Time</u>	<u>Title</u>	<u>Authors</u>
8:20 AM	Biosynthesis of isobutyric acid	K. Zhang, U MN
8:40 AM	Thermochemical routes for making fuels and chemicals from biomass-derived feedstock	A. Bhan, U MN
9:20 AM	Plasma assisted synthesis of silicon nanocrystals for thin film solar cells	D. J. Rowe, U MN U. R. Kortshagen, U MN
9:40 AM	<i>Break, refreshments served in Keller Hall north lobby</i>	
10:20 AM	Efficient luminescence from silicon nanocrystals: Role of the plasma afterglow	R. Anthony, U MN D. Rowe, U MN M. Stein, U of Duisburg-Essen J. Yang, U MN U. Kortshagen, U MN
10:40 AM	Electrical characterization of silicon nanocrystal films	N. Rastgar, D. Rowe, L. Wheeler, E. Aydil and U. Kortshagen, U MN
11:00 AM	Copper zinc tin sulfide solar cells	A. Khare, Y. Li, S. Tosun, A. Wills, D. Norris and E. Aydil, U MN
11:20 AM	Imaging and phase identification of $\text{Cu}_2\text{ZnSnS}_4$ thin films using confocal Raman spectroscopy	A.-J. Cheng, M. Manno, A. Khare, C. Leighton, S. A. Campbell and E. S. Aydil, U MN
11:40 AM	Alkene-functionalized silicon nanocrystals and air-stable solution-processable hybrid solar cells	J. Yang, U MN R. Anthony, U MN U. Kortshagen, U MN



Wednesday, June 1, 5:45 – 7:30 PM  
McNamara Alumni Center, Memorial Hall

# POSTER SESSION

In numerical & alphabetical order by IPrime Partnership Program



UNIVERSITY OF MINNESOTA  
**Driven to Discover**<sup>SM</sup>

**Poster Session**

<b>Biocatalysis and Biotechnology (BB)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
1	L. Zhang, U MN	Enzyme-polymer hybrids for self-cleaning coatings
2	M. Rashidian, U MN	Rapid and reversible site-specific protein immobilization and labeling via oxime and hydrazone ligations using Protein farnesyltransferase
3	S. Glasker, U MN P. Pena, U MN F. Srienc, U MN	Development of ethanol resistance in yeast for more efficient biofuel production
4	C. Lavarreda, MSP Corp. F. Srienc, U MN S. Walton, U MN	Automated flow cytometry as a bioreactor monitoring tool: online analysis of cell viability and product formation
5	J. Fan, U MN	Protein conservation and stabilization with hydrogels
6	M. D. Distefano, U MN S. L. Khatwani, U MN T. A. Taton, U MN	Covalent protein-DNA conjugates by copper-free click reaction



**Poster Session**

<b>Biomaterials and Pharmaceutical Materials (BPM)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
7	N. Atchison, U MN W. Fan, U MN B. Hering, U MN E. Kokkoli, U MN K.K. Papas, U MN M. Tsapatsis, U MN	Targeted delivery to pig islets to promote cell survival
8	J. Han, U MN T. Hoye, U MN C. Macosko, U MN J. Panyam, U MN A. Wohl, U MN	Block copolymer protected nanoparticles and drug release study for cancer therapy
9	B. R. Guru, U MN T. R. Hoye, U MN C. Macosko, U MN A. R. Michel, U MN J. Panyam, U MN A. Wohl, U MN	PEG-b-PLGA-based nanoparticle delivery of a silicate prodrug: tissue distribution in mice
10	W. Ji, U MN D. Panus, U MN C. Wang, U MN	Well-defined synthetic polymers for DNA vaccine delivery: Uptake and subcellular trafficking in dendritic cells
11	W. Ji, U MN X. Jiang, U MN D. Panus, U MN C. Wang, U MN	Side chain-length dependence of cationic polymers for DNA vaccine delivery

**Poster Session****Biomaterials and Pharmaceutical Materials (BPM)**

Poster #	Authors	Title
12	A. Kim, U MN R. A. Siegel, U MN	Swelling studies of glucose sensitive hydrogels containing phenylboronic acid
13	H. Hou, Abbott Labs Y. Huang, Abbott Labs S. Patel, U MN J. Strong, Abbott Labs C.C. Sun, U MN G.G.Z. Zhang, Abbott Labs	Mechanical properties of Copovidone (PVP/VA64) amorphous solid dispersions - effects of moisture, drug and surfactants loading
14	J. Barrett, UMN D. Escalante, UMN F. Sreenc, UMN	Biosynthesis strategies for controlling the nanostructure of polyhydroxyalkanoate block-copolymers
15	D. Abate-Pella, U MN D. Blank, U MN J. Ochocki, U MN M. D. Distefano, U MN E. V. Wattenberg, U MN N. Zeliadt, U MN	Photochemical modulation of Ras-mediated signal transduction via one- and two- photon activation of caged inhibitors of farnesylation
16	L. Shi, U MN C. Sun, U MN	Massing in high shear wet granulation can simultaneously improve powder flow and deteriorate powder compaction &ndash; a double edged sword
17	M. Adil, U MN L. Belur, U MN E. Kokkoli, U MN R.S. McIvor, U MN	Targeted PEGylated liposomes for DNA delivery specific to alpha <sub>5</sub> beta <sub>1</sub> bearing cancer cells

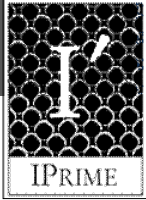




## Poster Session

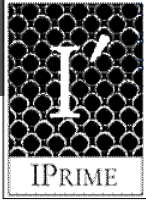
### **Biomaterials and Pharmaceutical Materials (BPM)**

<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
18	Bo Liu, U MN J. Riesberg, U MN W. Shen, U MN	Hybrid hydrogels composed of polysaccharides and polypeptides for tissue engineering
19	Y. Liu, U MN J. Riesberg, U MN W. Shen, U MN X. Wang, U MN	Engineered materials direct differentiation of human pluripotent stem cells
20	F. Osei-Yeboah, U MN C. C. Sun, U MN M. Wang, U MN	A formulation strategy for solving overgranulation problem in high shear wet granulation
21	A. Arunagirinathan, UMN E. Kokkoli, U MN E. Rexeisen, U MN K. Shroff, U MN	Fibronectin-mimetic peptide-amphiphile nanofiber hydrogels for tissue engineering
22	F.S. Bates, U MN E. Kokkoli, U MN T.O. Pangburn, U MN	Polymersomes functionalized with the PR_b peptide promote targeted drug delivery to cancer cells



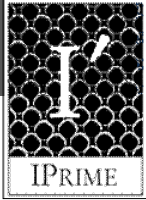
**Poster Session**

<b>Coating Process Fundamentals (CPF)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
23	Lorraine Francis, U MN B. Forsyth, Boston Sci Jin-Oh Song, U MN	Drug-polymer coating microstructure evolution during thin-film drying
24	L.F. Francis, U MN S. Kalpathy, U MN S. Kumar, U MN	Modeling thin liquid film flows with application to coating and printing on chemically patterned surfaces
25	M.S. Carvalho, PUC-Rio S. Kumar, U MN E. Vandre, U MN	Modeling the hydrodynamics of high-speed wetting in coating flows
26	S. Kumar, U MN A. Ramkrishnan, U MN	Electrostatic effects in coating and printing processes
27	S. Kumar, U MN K.L. Maki, U MN	Modeling skin formation in drying droplets of colloidal suspensions
28	L. Francis, U MN B. Huang, U MN A. McCormik, U MN K. Price, U MN	Stress development and cracking in colloidal coatings
29	M. Carvalho, PUC-Rio S. Dodds, U MN S. Kumar, U MN	Modeling liquid transfer in printing processes: one-, two-, and three-dimensional analyses



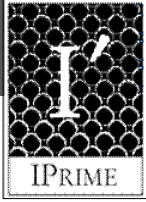
### Poster Session

<b>Coating Process Fundamentals (CPF)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
30	D. D. Brewer, U MN S. Kumar, U MN M. Tsapatsis, U MN	Coating process regimes for particulate film production by forced-convection-assisted drag-out
31	A. Corbett, U MN S. Kumar, U MN	Patterning of viscoelastic coatings with AC electric fields
32	L.F. Francis, U MN J.-O. Song, U MN	Real time monitoring of structure development and surface irregularities in drying and curing coatings



**Poster Session**

<b>Magnetic Heterostructures (MH)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
33	E. D. Dahlberg, U MN D. Endean, U MN J. Heyman, Macalaster S. Maat, Hitachi Global	Quantitative analysis of microwave measurements on giant magnetoresistance spin valves
34	A. Baruth, U MN M.J. Erickson, U MN M.A. Hillmyer, U MN C. Leighton, U MN M.D. Rodwogin, U MN A. Shankar, U MN M.A. Torija, U MN	A novel non-liftoff approach to block copolymer patterning of magnetic metals
35	E. D. Dahlberg, U MN F. Guo, U MN	Influence of the interface on conductance in AlOx-based magnetic tunnel junctions
36	T. Y. Chen, U MN P. A. Crowell, U MN M. J. Erickson, U MN C. Leighton, U MN	Non-linear dynamics of magnetic vortices
37	J. Harms, U MN D. Lilja, U MN A. Lyle, U MN S. Patil, U MN X. Yao, U MN	Magnetic tunnel junction based logic devices
38	M. M. Maqableh, U MN K. S. M Reddy, U MN B. J. H. Stadler, U MN	Optimized spin torque switching of Co/Cu multilayered nanowires at zero applied field



**Poster Session**

<b>Magnetic Heterostructures (MH)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
39	D. Dahlberg, U MN T. Schulz, U MN B. Stadler, U MN L. Tan, U MN	Superconducting vortex noise in niobium films with a periodic pinning lattice
40	T. Qu, U MN	Angular dependence of CPP GMR
41	M. J. Erickson, U MN P. A. Crowell, U MN C. Leighton, U MN	Temperature and thickness dependence of the spin accumulation in nanostructured metallic spin valve



**Poster Session**

<b>Microstructured Polymers (MP)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
42	R. H. Ewoldt, U MN C. Macosko, UMN H. C. Silvis, Dow J. Song, U MN	Flow accelerates adhesion between functional polyethylene and polyurethane
43	A. Baker, U MN C. Macosko, U MN J. Song, U MN C. Thurber, U MN	Functional polyolefin/PMMA blends for improved scratch resistance
44	A. Bringuier, Corning Cable Systems J. Song, U MN	Controlling adhesion of polyethylene coextruded to impact polypropylene
45	F. S. Bates, U MN P. K. Herman, Cummins Filtration C. W. Macosko, U MN D. H. Tan, U MN	Can supersonic melt blowing produce stable nanofibers
46	A. Hedegaard, U MN C. W. Macosko, U MN M. Trifkovic, U MN	PE/PEO cocontinuous polymer blends with application in gas separation membranes
47	K.-Y. Cheng, U MN R. Holmes, U MN B. Jones, U MN T. Lodge, U MN	Nanoporous conductive films derived from polymeric bicontinuous microemulsions

**Poster Session**

<b>Microstructured Polymers (MP)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
48	L. Yin, U MN	Polyethylene micelles and vesicles in water
49	F. S. Bates, U MN T. P. Lodge, U MN A. S. Mansour, U MN	Effect of crystallinity on the mechanical properties of cylinder forming pentablock copolymers with glassy matrices
50	I. Lee, U MN	Synthesis and characterization of multi-block copolymer with urethane links
51	C. G. Alfonzo, U MN F. S. Bates, U MN F. Zuo, U MN	Structure and mechanical behavior of elastomeric multiblock copolymers containing glassy, rubbery, and semicrystalline components
52	W. M. Gramlich, U MN M. A. Hillmyer, U MN	Conjugated dienes for post-polymerization functionalization
53	M. A. Hillmyer, U MN E. Kokkoli, U MN M. Petersen, U MN	Targeted bioresorbable polymersomes for the delivery of cisplatin
54	F. S. Bates, U MN B. M. Habersberger, U MN T. P. Lodge, U MN	Ternary polymer blends with hierarchically structured microphase separation
55	D. Morse, U MN R. Thiagarajan, U MN	Self-consistent field modeling of diblock copolymers in selective solvents

**Poster Session**

<b>Microstructured Polymers (MP)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
56	E. Jackson, U MN	Nanoporous thermoplastic elastomers from ordered SISL tetrablock terpolymers
57	Y. Lei, U MN	Thermoreversible ion gels from supramolecular assembly via hydrogen bonding
58	C. W. Macosko, U MN D. Morse, U MN K. Yoshida, Nitto Denko	Simulation of microstructure evolution in polymer / polymer / solvent phase separation
59	F. S. Bates, U MN R. H. Ewoldt, U MN C. W. Macosko, U MN L. Martinetti, U MN	Nonlinear rheology of chewing gum
60	K. Liao, U MN C. W. Macosko, U MN	Graphene/urethane-acrylate nanocomposites
61	I. Koonar, U MN R.A. Siegel, U MN	Synthesis and characterization of phase transition of aqueous poly-(N-isopropylacrylamide- <i>ran</i> -acrylic acid) solutions as a function of ionization of acrylic acid
62	T.P. Lodge, U MN M. Mok, U MN	Fluorescence-based characterization of block copolymer/ionic liquid micelles
63	Z. Bai, U MN T. P. Lodge, U MN	Polymersomes with ionic liquid interiors dispersed in water





### Poster Session

#### Microstructured Polymers (MP)

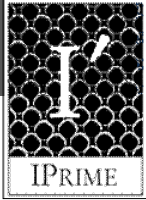
Poster #	Authors	Title
64	C. D. Frisbie, U MN K. Lee, U MN T. P. Lodge, U MN S. Zhang, U MN	Electrical impedance of spin-coatable ion gel films
65	F. S. Bates, U MN M. J. Blumele, Ashland Inc. S. Lee, U MN	Frank-Kasper $\sigma$ -phase in block copolymer melts
66	F. S. Bates, U MN L. F. Francis, U MN E. M. Redline, U MN	Block copolymer modified epoxies: effect of block copolymer concentration
67	C. D. Frisbie, U MN K. H. Lee, U MN T. P. Lodge, U MN J. Sun, U MN S. Zhang, U MN	Viscoelastic and electrical properties of block copolymer-based ion gel electrolytes

**Poster Session**

<b>Nanostructural Materials and Processes (NMP)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
68	N. D. Burrows, U MN C. Hale, U MN R. L. Penn, U MN V. M. Yuwono, U MN	Confidently determining the effect of ionic strength on the kinetics of crystal growth of iron oxide nanoparticles by oriented aggregation
69	J. H. Davidson, U MN N. D. Petkovich, U MN S. G. Rudisill, U MN A. Stein, U MN L. Venstrom, U MN	Thermal stability and catalytic reactivity of nanostructured oxides for use in solar thermochemical fuel production
70	P. Buhlmann, U MN M. A. Fierke, U MN E. J. Olson, U MN A. Stein, U MN	Detection of 2,4-dinitrotoluene with surface-modified three-dimensionally ordered macroporous (3DOM) carbon
71	W. Gladfelter, U MN R. Hue, U MN	Electron-rich ruthenium-bipyridine complexes for dye-sensitized solar cell applications
72	C. D. Frisbie, U MN M. S. Kang, U MN D. J. Norris, ETH, Zurich A. Sahu, U MN	Electrical transport through films of semiconductor nanocrystals
73	J. Block, DCI A. Dallas, DCI J. Dong, U MN G. Haugstad, U MN P. Klick, DCI	Chemical analysis of organic compounds deposited from organic solutions

**Poster Session**

<b>Nanostructural Materials and Processes (NMP)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
74	D.D. Deng, U MN M.S. Kang, U MN D.J. Norris, ETH Zurich A. Sahu, U MN	Phase transitions in silver chalcogenide nanocrystals
75	H. Lee, U MN A. McCormick, U MN E. Morrison, Ecolab	Cryo-SEM and cryo-TEM monitoring of microemulsion processing
76	C. D. Frisbie, U MN L. Luo, U MN	Electrical characterization of long conjugated molecular wires using conducting probe atomic force microscopy (CP-AFM)
77	N. Burrows, U MN R. L. Penn, U MN K. Sabyrov, U MN J. Soltis, U MN V. Yuwono, U MN	In situ characterization of metal oxide aggregates using cryo-TEM
78	J.Block, DCI A.Dallas, DCI J.Dong, U MN G. Haugstad, U MN P.Klick, DCI	Structural analysis of organic compounds deposited from organic solutions
79	A. Stein, U MN A. Vu, U MN	Iron phosphate-based nanostructured cathodes for high-power lithium ion batteries



**Poster Session**

**Nanostructural Materials and Processes (NMP)**

<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
80	C.W. Macosko, U MN Y. Qian, U MN A. Stein, U MN	Modifications of clay for better dispersion in polyurethane
81	A. Bierbaum, U MN	Excited state charge transfer from porphyrin dyes to ZnO nanocrystals

**Poster Session**

<b>Organic Optoelectronic Interfaces (OEI)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
82	R. Holmes, U MN G. Lodden, U MN	Light-matter interactions in optical nanostructures based on organic semiconductors
83	R. J. Holmes, U MN R. Pandey, U MN	Efficient organic photovoltaic cells using nanocrystalline donor-acceptor blends
84	A. Massari, U MN D. O'Brien, U MN	The interfacial carbonyl imide modes of PTCDI-C8 thin films on SiO <sub>2</sub> substrates
85	C. D. Frisbie, U MN M. A. Hillmyer, U MN B. D. Paulsen, U MN J. C. Speros, U MN	A metathesis route to light harvesting polymers with tunable molecular weights and band gaps
86	D. Braga, U MN C. D. Frisbie, U MN M. Ha, U MN C. H. Kim, U MN M. J. Renn, Optomec, Inc W. Zhang, U MN	Printable, high capacitance ion gel for displays and memories
87	D. Blank, U MN J. Hinke, U MN	Excited state dynamics in octaethyl porphyrins
88	C. D. Frisbie, U MN M. A. Hillmyer, U MN B. D. Paulsen, U MN J. C. Speros, U MN	Molecular weight dependent performance of polythienylene vinylene/fullerene bulk heterojunction solar cells



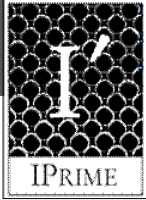
**Poster Session**

<b>Organic Optoelectronic Interfaces (OEI)</b>		
<b>Poster #</b>	<b>Authors</b>	<b>Title</b>
89	C. Douglas, U MN K. McGarry, U MN	Synthesis of new organic semiconductors: Tuning the molecular and packing structure of rubrenes
90	C. D. Frisbie, U MN W. Xie, U MN	Transport in rubrene electrical couple layer transistors at high surface charge densities
91	A.S. Davies, St. Cloud St U C.D. Frisbie, U MN M. Khadka, St. Cloud St U D. Lee, St. Cloud St U R.L. Lidberg, St. Cloud St U J.A. Lohrman, St. Cloud SU A.Z. Schulzetenberg, SCSU	Lateral field time-of-flight for determination of intrinsic charge carrier mobility at organic surfaces and interfaces
92	B.S. Backer, St. Cloud St U H.R. Deuermeyer, SCSU C.D. Frisbie, U MN M. Khadka, St. Cloud St U R.L. Lidberg, St. Cloud St U D.R. Neu, St. Cloud St U	Static growth of N,N'-dibutyl-3,4,9,10-perylene tetracarboxylic diimide nanowires
93	C. D. Frisbie, U MN M. J. Ha, U MN C. Leighton, U MN M. Manno, U MN S. Wang, U MN	Hopping transport in ion gel gated P3HT organic field effect transistors



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<b>Organic Optoelectronic Interfaces (OEI)</b>		
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94	K.-Y. Cheng, U MN R. Anthony, U MN U. R. Kortshagen, U MN R. J. Holmes, U MN	High-efficiency silicon nanocrystal light-emitting devices
95	H.-C. Chang, U MN P. P. Ruden, U MN Y. Liang, U MN C. D. Frisbie, U MN	Charge carrier extraction transient in organic field effect devices
96	A. Healy, U MN B. Bourdouris, U MN C. Daniel Frisbie, U MN M. Hillmyer, U MN D. Blank, U MN	One Dimensional Exciton Migration and Cooling in poly(3-hexylthiophene)
97	R. J. Holmes, U MN N. C. Erickson, U MN	High-efficiency, single-Layer RGB organic light-emitting devices based on a graded-composition emissive layer



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98	E. Aydil, U MN A. Khare, U MN Y. Li, U MN D. Norris, U MN S. Tosun, U MN A. Wills, U MN	Copper Zinc Tin Sulfide Solar Cells
99	U. R. Kortshagen, U MN L. M. Wheeler, U MN	Electrostatic stabilization of silicon nanocrystal colloids for solution-processed photovoltaics
100	L. Cui, U MN	Crystallization enhancement of amorphous silicon film by silicon nanoparticle seeding: stress analysis
101	E. Aydil, U MN U. Kortshagen, U MN N. Rastgar, U MN D. Rowe, U MN L. Wheeler, U MN	Electrical characterization of silicon nanocrystal films
102	L. Cui, U MN U. Kortshagen, U MN J. Trask, U MN A. J. Wagner, U MN	Novel Growth of Crystalline Silicon Thin Films for Photovoltaics
103	R. Anthony, U MN U. Kortshagen, U MN	Silyl effusion from plasma-produced silicon nanocrystals





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**Renewable Energy Materials (REM)**

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104	F. Di Fonzo, IIT U.R. Kortshagen, U MN N.J. Kramer, U MN	Self-assembled tree-like silicon microstructures for photovoltaic applications
105	R. Ewoldt, U MN	Intrinsic viscosity of actively swimming microalgae suspensions
106	U. R. Kortshagen, U MN D. J. Rowe, U MN	Plasma assisted synthesis of silicon nanocrystals for thin film solar cells
107	M. Johnson, U MN	Imaging and phase identification of Cu <sub>2</sub> ZnSnS <sub>4</sub> thin films using confocal Raman spectroscopy
108	E. S. Aydil, U MN B. D. Chernomordik, U MN D. J. Norris, ETH Zurich	Quantum dot solar cells for hot electron collection