

# Ilsoon Lee, Ph. D.

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## Research

### Interests

Nanotechnology, Bioenergy, Alternative Energy, Biomimetics, Polymers, Particles, Self-assembly, Nanomixing, Nanodispersion, Functional Materials, Opto-electronics, and Anti-wrinkling applications

## Teaching

### Interests

Fluid Mechanics, Heat Transfer, Molecular Engineering, Molecular Self-Assembly, Advanced Materials Processing, Transport Phenomena

## Educational Background

### Postdoctoral Associate, 2002

MIT, Departments of Chemical Engineering and Materials Science and Engineering, Cambridge, MA

### Ph. D. in Chemical Engineering, 2000

University of Delaware, Department of Chemical Engineering, Newark, DE

### M. S. in Chemical Engineering, 1995

Seoul National University, Department of Chemical Engineering, Seoul, Korea

### B. S. in Chemical Engineering, Summa Cum Laude, 1993

Seoul National University, Department of Chemical Engineering, Seoul, Korea

## Experience

### Assistant Professor, 2002-2008

Michigan State University, Dept of Chemical Engineering and Materials Science, East Lansing, MI

## Teaching

### Experience

#### Professor at Michigan State University

- CHE 311: Fluid Flow and Heat Transfer
- CHE 316: Lab Practice and Statistics
- CHE 316: Unit Operational Laboratory
- CHE 891: Molecular Self-Assembly and Engineering
- CHE 891: Molecular Self-Assembly

#### Graduate Teaching Assistant

- Senior lab (design of cure cycles for thick section composites), fall 1999, UD Newark, DE
- Mathematical methods in chemical engineering, spring 1995, SNU Seoul, Korea
- Chemical engineering calculations, fall 1993, SNU Seoul, Korea

## Honors/ Award

Excellence Award in Interdisciplinary Scholarship, Phi Kappa Phi Honor Society, 2007  
Outstanding Young Investigator Award, AIChE Annual Meeting, San Francisco, California, 2006  
Peebles Award, Adhesion Society (February, 2000)  
Finalist in AIChE Student Poster Competition, American Institute of Chemical Engineers (November 1998)  
Best Student Award in Chemical Engineering, Seoul National University Alumni Association (1993)  
Summa Cum Laude in Chemical Engineering (February 1993)  
Dean's List (1989-1992)  
Silver Prize in the National Contest of Transport Phenomena, Korean Institute of Chemical Engineers (1992)  
Seoul National University Honors Fellowship (1990-1993)

Hanyang Chemical Co., Inc. Fellowship (1991-1992)

## Student Awards

### Sumit Mehrotra

1. Fitch Beach Nomination December [2009]
2. Sigma Xi (MSU chapter) graduate student award. [2009]
3. Graduate school (MSU) summer support fellowship award. [Summer 2009]
4. Graduate school (MSU) travel award for ACS 2008 annual meeting. [Fall 2008]

### Devesh Srivastava, “Dissertation Completion Fellowships for 2008”

Devesh Srivastava received a “Travel Award from American Electrophoresis Society 2006” to attend the AIChE 2006 Annual conference

Troy R. Hendricks, “Entrepreneurial Faculty Fellowship,” from the Graduate School at Michigan State University (MSU) and the Michigan Center for Innovation & Economic Prosperity (MCIEP) at James Madison College, Fall 2007

Troy R. Hendricks, “Dissertation Completion Fellowships for 2007”

Troy R. Hendricks - Graduate school travel award - 2006

### Srivatsan Kidambi, “Finalist for the ICI student award,” Fall ACS 2007 Boston meeting

- ACS Excellence Award in Polymer Science Graduate Research Symposium – Spring ’2006
- Graduate school travel award – 2006
- Dissertation fellowship – 2006
- COGS Dissertation completion award – 2006
- Food, Nutrition, and Chronic Disease Fellowship – 2006

Srivatsan Kidambi Receives ACS Best Paper Award – “Polymers for Bioactive Surfaces” Symposium at the 230th ACS National Meeting held at Washington, DC on Aug 28-Sep 1, 2005.

Srivatsan Kidambi, “Engineering Polyelectrolyte Multilayer (PEM) Surfaces to Create Cell Resistant and Adhesive Surfaces,” The CFMR Symposium, MSU Feb 16, 2004.

Neeraj Kohli - Won First Prize at the ISPE Great Lakes Chapter Regional Meeting Poster Competition held at Indianapolis, Indiana, March 2005.

**Professional Affiliations** American Institute of Chemical Engineers (AIChE)  
Materials Research Society (MRS)  
American Chemical Society (ACS)  
American Society for Engineering Education (ASEE)  
Adhesion Society (AS)  
Korean Society of Rheology

**Other Activities** US-Korea Conference Organizer (August 9-12, 2001)) MIT, Cambridge, MA  
NECYG Conference Organizer (November 10-12, 2001) MIT, Cambridge, MA  
KSEA-NE officer (postdoctoral affairs) (Since June 2001) Cambridge, MA  
The 11<sup>th</sup> Polymer Processing Society (PPS), Meeting Secretariat, (1995) Seoul, Korea  
Tutoring of Mathematics, English, Physics, and Chemistry to high school students (1989-1993)  
Nodagi, a literary meeting (1989-1990)

## Graduate/ Postdoc Advisees

- (1) Troy Hendricks, CHE **PHD completed 2008**, PhD dissertation, “Polyelectrolyte Multilayer Coatings For Conductive Nanomaterials Patterning And Anti-Wrinkling Applications,” (Oak Ridge National Laboratory, Postdoc)

- (2) **Devesh Srivastava**, MSE PHD completed 2008, “Fabrication Of Nanostructures And Nanostructure Based Interfaces For Biosensor Application,” (*Intel – Research Scientist*)
- (3) **Neeraj Kohli**, CHE PHD completed 2007, PhD dissertation, “Polyelectrolytes Based Biomimetic Interfaces for Bioelectronic Applications,” January 2007. (*Merrimack Pharm. – Research Scientist*)
- (4) **Srivatsan Kidambi**, CHE PHD completed 2007, PhD dissertation, “Engineering Invitro Microenvironment Using Polyelectrolyte Multilayer Films to Control Cell Adhesion and For Drug Delivery Applications,” January 2007. (*Harvard University- Postdoc*)
- (5) **Jin Soo Ahn**, MSE MS completed, “Self-Assembled, Functional Particle Monolayers on Polyelectrolyte Multilayers for Optical Coatings and Diffuse Reflectors,” (*U of Florida – PhD*)
- (6) **Jue Lu**, Postdoc. Graphite nanoplatelets (xGnPs) for Biosensor Applications, January 2006 -
- (7) **Sumit Mehrotra**, MSE PHD candidate, PhD thesis, “Molecular Design of Drug Delivery,” 2009 (expected)
- (8) **Shaowen Ji**, CHE PHD candidate, PhD thesis, “Functionalized Nanoparticles Using High Shear Force Nanomixer and Nanoprecipitation/Emulsion for Biological Applications,” 2011 (expected)
- (9) **Ankush Gokhale**, CHE PHD candidate, 2012 (expected)
- (10) **Wei Wang**, CHE PHD candidate, 2012 (expected)

### Under-Graduate Advisees

Erin Dams, MSE, 2003-2004  
 James West, CHE, 2003-2004  
 Samhitha Muralidhar, CHE, 2005 - 2006  
 Steven Thomas Wensing, CHE, 2005 – 2007  
 Owen Valley, CHE, 2005 – 2007  
 Andrew Cook, CHE, 2007 – 2009  
 Alex Nezich, CHE, 2007 - 2008  
 Philip Lehman, CHE, 2007 – 2009  
 Jorge Fontes, CHE, 2007 – 2008  
 Scott Stone, CHE, 2008 – 2009  
 Nathan Joseph Parker, 2009- current

### International Graduate Advisee

Jung-Eun Yang, MSE PHD candidate, KJIST, Korea, 2004.

## Publications (Peer Reviewed Archival Journals)

\* = Corresponding author

\*\* = ISI Journal Impact Factor (or IF )

- [41] Mehrotra, S.; Hunley, G.; Pawelec, K.M.; Zhang, L.; **Lee, I.**; Baek, S; Chan, C.. “ Cell Adhesive Response And Substrate Displacement Modeling Of Thin Polyelectrolyte Multilayers In Linear Growth Regime,” Submitted, (2010).
- [40] Lu, J.; Do., I., Fukushima, H.; **Lee, I.\***; Drzal, L. T.\* “ Stable Aqueous Suspension and Self-Assembly of Graphite Nanoplatelets Coated with Various Polyelectrolytes,” Submitted, (2010).
- [39] Hendricks, T. R.; Wang, W.; **Lee, I.\*** “ Buckling in Nanomechanical Films,” *Soft Matter*, In press, (2010). (IF = 4.7)
- [38] Srivastava, D.; Kohli, N.; Richardson, R. J.; Worden, R. M.; **Lee, I.\*** “ Neuropathy Target Esterase Biosensor,” In Intelligent and Biosensors; Somerset, V. S., Ed., IN-TECH, (ISBN: 978-953-7619-58-9), 231-244, (2010). (Invited Book Chapter)
- [37] Kohli, N.; **Lee, I.\***; Richardson, R. J.; Worden, R. M. “ Theoretical and Experimental Study of Bi-Enzyme Electrodes with Substrate Recycling,” *J. Electroanalytical Chemistry* **641**, 104-110, (2010), (IF = 2.5)

- [36] Mehrotra S, Lynam D, Maloney R, Pawelec K M, Tuszynski M, **Lee I**, Chan C, Sakamoto J. Time controlled protein release from layer-by-layer assembled multilayer functionalized agarose hydrogels. *Advanced Functional Materials* **20**, 247-258 (2010). (IF= 6.8)
- [35] Mehrotra, S.; **Lee, I.**; Chan, C. "Multilayer Mediated Forward Patterned siRNA Transfection using Linear-PEI at Extended N/P Ratios," *Acta Biomaterialia*, **5**, 1474-1488, (2009). (IF=3.7)
- [34] Lu, J.; Do, I.; Drzal, L.T.; Worden, R.M.; **Lee, I.\*** "Nanometal-Decorated Exfoliated Graphite Nanoplatelet Based Glucose Biosensors with High Sensitivity and Fast Response," *ACS Nano* **2**, 1825- 1832, (2008). [Featured in Sept. 8 *Nanowerk* "Spotlight" ] (IF = 5.5)
- [33] Hendricks, T. R.; Lu, J. Drzal, L. T.; **Lee, I.\***, " Intact Pattern Transfer of Conductive Exfoliated Graphite Nanoplatelet Nanocomposite Films to Polyelectrolyte Multilayer Platforms," *Advanced Materials* **20**, 2008-2012, (2008). (ISI Journal Impact Factor **\*\*=8.2**)
- [32] Kidambi, S.; Chan, C.\*; **Lee, I.\*** "Tunable Resistive m-dPEG Acid Patterns on Polyelectrolyte Multilayers at Physiological Condition for Directed Deposition of Multiple Biomacromolecules," *Langmuir* **24**, 224 -230, (2008). (\*\*=4.0)
- [31] Kidambi, S.; **Lee, I.\***; Chan, C.\* "Patterned Co-culture of Neurons and Astrocytes on Polyelectrolyte Multilayer Films for Studying Astrocyte Mediated Oxidative Stress in Neurons," *Advanced Functional Materials* **18**, 294-301, (2008). (\*\*=7.5)
- [30] Hassler, B.; Amundsen, T. J.; Zeikus, J.G.; **Lee, I.**; Worden, R.M.\*, " Bioelectronic Interfaces on Flexible Non-conductive Substrates," *Biosensors and Bioelectronics* **23**, 1481- 1487, (2008). (\*\*=5.1)
- [29] Hendricks, T. R.; **Lee, I.\*** "Wrinkle-Free Nanomechanical Film: Control and Prevention of Polymer Film Buckling," *Nano Letters*, **7** (2), 372 -379, (2007). [Featured in more than 50 news including Discovery Channel, Chemistry World, MRS bulletin, Times on line, Medical News Today, and Science News Daily] (\*\*=9.6)
- [28] Ahn, J. S.; Hendricks, T. R.; **Lee, I.\*** "Control of Specular and Diffuse Reflection of Light Using Particle Self-Assembly at the Polymer and Metal Interface," *Advanced Functional Materials* **17**, 3619 - 3625, (2007). (\*\*=7.5)
- [27] Lu, J.; Drzal, L.T.; Worden, R.M.\*; **Lee, I.\*** " Simple Fabrication of a Highly Sensitive Glucose Biosensor Using Enzymes Immobilized in Exfoliated Graphite Nanoplatelets Nafion Membrane," *Chemistry of Materials* **19**, 6240- 6246, (2007) (\*\*=4.9)
- [26] Hendricks, T. R.; Dams, E. E.; Wensing, S. T.; **Lee, I.\*** "Effects of Catalyst Introduction Methods Using PAMAM Dendrimers on Selective Electroless Nickel Deposition on Polyelectrolyte Multilayers," *Langmuir* **23**, 7404 -7410, (2007). (\*\*=4.0)
- [25] Srivastava, D.; Hendricks, T. R.; **Lee, I.\*** "Step-edge Like Template Fabrication of Polyelectrolyte Supported Nickel Nanowires," *Nanotechnology* **18**, 245305-245310, (2007). (\*\*=3.3)
- [23] Kohli, N.; Worden, R.M.; **Lee, I.\*** "Direct Transfer of Preformed Patterned Bio-Nanocomposite Films on Polyelectrolyte Multilayer Templates," *Macromolecular Bioscience* **7**, 789-797, (2007). (\*\*=2.8)
- [25] Kohli, N.; Sivastava, D.; Sun, J.; Richardson, R.J.; **Lee, I.\***; Worden, R.M.\* "Nanostructured Biosensor for Measuring Neuropathy Target Esterase Activity," *Analytical Chemistry* **79**, 5196-5203, (2007). (\*\*=5.3)

- [22] Kidambi, S.; Udpa, N.; Schroeder, S.A.; Findlan, R.; **Lee, I.\***; Chan, C.\* "Cell Adhesion on Polyelectrolyte Multilayer Coated Poly(dimethylsiloxane) Surfaces with Varying Topographies," *Tissue Engineering* **13**, 2105-2117, (2007). (\*\*=4.4)
- [21] Kidambi, S.; Sheng, L.; Yamushc, M.; Tonerc, T.; **Lee, I.\***; Chan, C.\* "Patterned Co-culture of Primary Hepatocytes and Fibroblasts using Polyelectrolyte Multilayer Templates," *Macromolecular Bioscience* **7(3)**, 344 - 353, (2007). (\*\*=2.8)
- [26] Hassler, B.; Kohli, N.; Zeikus, J.; **Lee, I.**; Worden, R.M.\* "Renewable Dehydrogenase Based Interfaces for Bioelectronic Applications," *Langmuir* **23**, 7127 -7133 (2007). (\*\*=4.0)
- [19] Srivastava, D.; **Lee, I.\*** "Nanorice and Nanospears from Polymer Nanospheres," *Advanced Materials* **18**, 2471- 2475, (2006). (\*\*=8.2)
- [18] Hendricks, T. R.; **Lee, I.\*** "A Versatile Approach to Selective and Inexpensive Copper Patterns Using Polyelectrolyte Multilayer Coatings," *Thin Solid Films* **515**, 2347- 2352, (2006). (\*\*=1.7)
- [17] Kohli, N.; Hassler, B.L.; Parthasarathy, L.; Richardson, R.J.; Ofoli, R.Y.; Worden, R.M.\*; **Lee, I.\*** "Tethered Lipid Bilayers on Electrolessly Deposited Gold for Bioelectronic Applications," *Biomacromolecules* **7**, 3327-3335, (2006). (\*\*=4.4)
- [16] Kohli, N.; Vaidya, S.; Ofoli, R.Y.; Worden, R.M.; **Lee, I.\*** "Arrays of Lipid Bilayers on Patterned Polyelectrolyte templates," *Journal of Colloid and Interface Science*, 301, 461-469, (2006). (\*\*=2.3)
- [15] Kohli, N.; Worden, R. M.; **Lee, I.\*** "Intact Transfer of Layered, Bionanocomposite Arrays by Microcontact Printing," *Chem Commun.*, 316-318, (3), (2005). (\*\*=5.1)
- [14] Ahn, J. S.; Hammond, P. T.; Rubner, M. F.; **Lee, I.\*** "Self-Assembled Particle Monolayers on Polyelectrolyte Multilayers: Particle Size Effects on Formation, Structure, and Optical Properties," *Colloids and Surfaces A* **259**, 45-53, (2005). (\*\*=1.6)
- [13] Kidambi, S.; **Lee, I.**; Chan, C.\* "Controlling Primary Hepatocyte Adhesion and Spreading on Protein Free Polyelectrolyte Multilayer Films," *J. Am. Chem. Soc.*, 126 (50), 16286 -16287 (2004). (\*\*=7.9)
- [12] Kidambi, S.; Chan, C.; **Lee, I.\*** "Selective Depositions on Polyelectrolyte Multilayers: Self-Assembled Monolayers of m-dPEG Acid as Molecular Templates," *Journal of the American Chemical Society* **126**, 4697-4703 (2004). (\*\*=7.9)
- [11] Kohli, N.; Dvornic, P. R.; Kaganove, S. N.; Worden, R. M.; **Lee, I. \***, "Nanostructured Cross-linkable Micropatterns via Amphiphilic Dendrimer Stamping," *Macromolecular Rapid Communications* **25(9)**, 935-941 (2004). (**Issue Cover: May 7, 2004**) (\*\*=3.4)
- [10] **Lee, I.\***; Ahn, J. S.; Hendricks, T. R.; Rubner, M. F.; Hammond, P. T. "Patterned and Controlled Polyelectrolyte Fractal Growth and Aggregations," *Langmuir* **20**, 2478-2483 (2004). (\*\*=4.0)
- [9] **Lee, I.\***; Hammond, P. T.; Rubner, M. F., " Selective Electroless Nickel Plating of Particle Arrays on Polyelectrolyte Multilayers," *Chemistry of Materials* **15**, 4583-4589 (2003). (\*\*=4.9)
- [8] Zheng, H.; **Lee, I.**; Rubner, M. F.; Hammond, P. T.\*; " Two Colloidal Particles Adsorption on Patterned Polyelectrolyte Templates," *Advanced Materials* **14**, 569-572 (2002). (\*\*=8.2)

- [7] Lee, I.; Zheng, H.; Rubner, M. F.; Hammond, P. T.\*; “ Controlled Cluster Size in Patterned Particle Arrays via Directed Adsorption on Confined Surfaces,” *Advanced Materials* **14**, 572–577 (2002). (Issue Cover: April 18, 2002 & Book Cover Image: Mar, 2003) (\*\*=8.2)
- [6] Lee, I.; Wool, R. P.\*, “ Thermodynamic Analysis of Polymer Adhesion: Sticker Group and Receptor Group Effects,” *Journal of Polymer Science: Polymer Physics*, **40**, 2343–2353 (2002).
- [5] Lee, I.; Wool, R. P.\*, “ Optimum Polymer–Solid Interface Design for Adhesion Strength: Carboxylation of Polybutadiene and Mixed Silanes Surface Modification of Aluminum Oxide,” *Journal of Adhesion*, **75**, 299–323 (2001).
- [4] Lee, I.; and Wool, R. P.\* , "Polymer Adhesion vs. Substrate Receptor Group Density," *Macromolecules*, **33(7)**, 2680–2687 (2000).
- [3] Lee, I.; and Wool, R. P.\*, “ Controlling Amine Receptor Group Density on Aluminum Oxide Surfaces by Mixed Silane Self Assembly,” *Thin Solid Films*, **379**, 94–100 (2000).
- [2] Park, S. J.; Lee, I.; Lee, S. J.; Lee, S. J.\* “ The Determination of Continuous Relaxation Time Spectrum of Linear Polymer,” *The Korean J. of Rheology*, **8(2)**, 103–118 (1996).
- [1] Lee, I.; Ahn, K. H.; Lee, S. J.\* “ Linear Viscoelastic Properties and Relaxation Time Spectrum of Dilute Polymer Solutions,” *The Korean J. of Rheology*, **7(3)**, 211–224 (1995).

## RESEARCH FUNDING (2003–2008):

- [1] NSF – CMMI, “ Hybrid Nanostructured Material Systems for Tailored Stress–Wave Mitigation of Impact and Blast Effects,” \$300,000, (Role: Co-PI)
- [2] NSF – CMMI, “ SGER: Nanoparticle Incorporated Transferable Wrinkle Free Films,” \$65,932, (Role: PI)
- [3] University Research Corridor (URC), “ Novel Nano–Biocarriers for Continuous Saccharification of Biomass,” \$283,231, (Role: PI)
- [4] Technova Corp., “ Biomimetic Adhesives using Micro– and Nano–structure Arrays,” \$171,978, (Role: PI)
- [5] NSF – CBET, “ NER: Novel and Effective Fabrication of Anisotropic Functional Nanoparticles and Their Uses in Biosensors,” \$110,000, (Role: PI)
- [6] Primix Corp., “ Enhancement of Nanomixing and Nanodispersion Using High Shear Force Nanomixer,” \$70,000, (Role: PI)
- [7] Air Force Office of Scientific Research (AFOSR), “ Experimental Equipment for Powder Processing,” \$210,430, (Role: Co-PI)
- [8] Michigan Economic Development Corporation (MEDC – MTTC), “ Functional and Nanostructured Biomimetic Interfaces,” \$1,400,000, (Role: Co-PI)
- [9] Strategic Partnership Grant (SPG), “ Nanotechnology in the Health and Life Sciences,” \$750,000, (Role: Co-PI)
- [10] Center for Fundamental Materials Research (CFMR), “ Functional and Structured Thin Films Based on Polyelectrolyte Multilayers,” \$50,000, (Role: PI)
- [11] Intramural Research Grant Program (IRGP), “ Nanofabrication of Functional Biomimetic Interfaces: Polyelectrolyte Multilayer Approaches,” \$50,000, (Role: PI)

**INTELLECTUAL PROPERTIES:(8 US or World Patents Filed – Non-provisional)**  
**(Invention Disclosure, Provisional or Final Non-provisional Patent Application)**

- [1].“ Customizable and Renewable Nanostructured Interface for Bioelectronic Applications” (MSU Invention Number 05-097) Provisional Patent Filed. **Final Patent Application Filed. 2006 PCT/US2006/018083.**
- [2].“ pH and Salt Responsive PEG SAMs on Polyelectrolyte Multilayer (PEM) Films” (MSU Invention Number 05-124F). **Final Patent Application filed. March 2007**
- [3].“ Development of Polyelectrolyte Multilayer Coatings for Primary Hepatocyte Cell Culture System” (MSU Invention Number 06-026). Invention disclosure submitted. Being combined with others.
- [4].“ Effective Fabrication of High Aspect Ratio Nanoparticles” (MSU Invention Number 06-011). Provisional Patent filed. **Final Patent Application Filed, July 2007**
- [5].“ Solution, PEM and Membrane Aided Nanoinjection Molding Process” (MSU Invention Number 06-024). Invention disclosure submitted.
- [6].“ Low Cost Patterned Metal Deposition Techniques via PEM Coatings and Microcontact Printing” (MSU Invention Number 06-027). Provisional Patent filed. **Final Patent Application Filed, June 2007**
- [7].“ Nanostructured Biosensor Containing Neuropathy Target Esterase,” (MSU Invention Number 06-063). Provisional Patent Filed. **Final Patent Application Filed, 2007**
- [8].“ Aptamer Arrays on Polyelectrolyte Multilayer Films” (MSU Invention Number 05-117F). Invention disclosure submitted.
- [9].“ RNA Arrays on Polyelectrolyte Multilayer Films,” (MSU Invention Number ). Invention disclosure submitted.
- [10]“ Continuous Nanonoodle Processing for nanowires and Nanotubes,” (MSU Invention Number 06-025). Invention disclosure submitted.
- [11]“ Wrinkle-free Nanomechanical Films,” (MSU Invention Number 07-071F), (10-18-06). **Provisional Patent filed.** November 2006, Final **Non-provisional World patent filed on November 15, 2007.**
- [12]“ Micropatterning of Low Cost and Highly Conductive Exfoliated Graphite Nanoplatelets (xGnPs) using Microcontact Printing,” (on 10-27-06) (MSU Invention Number 07-072F). Provisional Patent filed, **Provisional Patent Filed, November 2006, Final Non-provisional Patne filed Nov. 2007.**
- [13]“ Engineering Surface Topography for Cytophobic and Cytophilic Properties,” Invention Disclosure was filed on November 8, 2006. **Provisional Patent Filed, March 2007**
- [14]“ High-Performance Biosensors Based on Exfoliated Graphite Nanoplatelets and Nanometal Decorations,” Invention Disclosure submitted. 07/31/07, (MSU Invention Disclosure Number: 08-002F).
- [15]“ Polyelectrolyte Multilayers: An Efficient Tool for Localized SiRNA Delivery with a Top-Down Forward Transfection Approach,” MSU Invention Disclosure Filed on 07/27/07 (MSU Invention Disclosure Number: 08-0009F).
- [16] “ Novel Continuous Pretreatment of Transgenic Lignocellulosic Biomass for Biofuels,” TEC2009-0051, MSU Invention Disclosure filed.

## Conference Proceedings

- [15] Kidambi, S.; Lee, I.\*; Chan, C.\* " Aptamer incorporated polyelectrolyte multilayer films targeting influenza virus's hemagglutinin binding region," *Polymeric Materials: Science and Engineering* **97**, 246-247, (2007).
- [14] Hendricks, T. R.; Lu, J.; Drzal, L. T.; Lee, I.\* "Versatile Conductive Patterning Using Exfoliated Graphite Nanoplatelets, Copper, and Polyelectrolytes," *Polymeric Materials: Science and Engineering* **96**, 293-294, (2007).
- [13] Hendricks, T. R.; Lee, I.\* "Control and Prevention of Polymer Film Buckling by Incorporating Surface Topographies and Nanoparticles," *Polymer Preprints* **48(1)**, 668-669, (2007).
- [12] Srivastava, D.; Lee, I.\* "Novel Fabrication of Anisotropic Polymer Nanoparticles Using Solvent-Aided Nano-injection Molding Process," *Polymeric Materials: Science and Engineering* **96**, 869-870, (2007).
- [11] Kidambi, S.; **Lee, I.\***; Chan, C.\* "Salt Tunable m-dPEG Acid Patterns on Polyelectrolyte Multilayers – Templates for Directed Deposition of Macromolecules," *Polymer Preprints*, **47(1)**, 41-42, (2006).
- [10] Kidambi, S.; **Lee, I.\*** Chan, C.\*, "Polyelectrolyte Multilayer as Bioactive Surface for Cell Adhesion", *Polymer Preprints*, 46(2), 1271-1272, (2005)
- [9] Kohli, N.; Vaidya, S.; Ofoli, R.Y.; Worden, R.M.\*; **Lee, I.\*** "3-D Bionanocomposite Surfaces and Interfaces: Fabrication and Characterization," *Polymer Preprints* 45(1), 124-125, (2004).
- [8] Kidambi, S.; **Lee, I.\***; Chan, C.\* "Engineering Polyelectrolyte Multilayer (PEM) Surfaces to Create Cell Resistant and Adhesive Surfaces," *Polymer Preprints* 45(1), 88-89, (2004).
- [7] Kohli, N.; Hassler, B.; Vaidya, S.; Parthasarathy, L. Ofoli, R. Y.; **Lee, I.\***; Worden, R. M.\*; Kim, P.; Mason, A. "Biomimetic Interfaces for Integrated Biosensor Arrays," The American Chemical Institute of Chemical Engineers: Sensors Topical Conference, pp3-8 (2003).
- [6] **Lee, I.**; Zheng, H. Rubner, M. F.; Hammond, P. T. " 2D Functional Colloidal Arrays on Surfaces for Photonic Wave Guide Using Polyelectrolyte Multilayers as Templates," *Polymer Preprints*, 43(1), pp36-37 (2002).
- [5] Zheng, H.; **Lee, I.**; Rubner, M. F.; Hammond, P. T. " Selective Deposition of Two-dimensional Colloidal Arrays on Patterned Polyelectrolyte Multilayer Templates," *Materials Research Society Symposium Proceedings*, 697(Surface Engineering 2001), pp439-443 (2002).
- [4] Zheng, H.; **Lee, I.**; Rubner, M. F.; Hammond, P. T. " Two Dimensional Patterning of Colloidal Arrays on Polymer Templates for Photonic Applications," *Polymer Preprints*, 43(1), pp17-18 (2002).
- [3] Lee, I.; and Wool, R. P.<sup>2</sup>, " Polymer Adhesion vs. Substrate Receptor Group Density," Proceedings of the Adhesion Society 23rd Annual Meeting, Myrtle Beach, SC, Feb 20-23, 513-515 (2000).
- [2] Lee, I.; and Wool, R. P.<sup>2</sup>, " A Study of Copolymer Adhesion and Adsorption on Chemically Disordered Surfaces," Proceedings of the American Institute of Chemical Engineers Annual Meeting, Miami Beach, FL, Nov (1998).
- [1] Lee, I.; Park, S. J.; Ahn, K. H.; Lee, S. J.<sup>2</sup> " Studies on the Linear Viscoelastic Properties and Relaxation Time Spectrum of Polymers," Proceedings of the Korean Society of Rheology Annual Meeting, Seoul, Korea, October, 98-100 (1995).

## Invited Presentations

### (a) Invited papers/presentations

- [30] Lee, I. “ Functional Nanoparticles for biosensor, biocatalytic system (e.g., biofuel), and drug delivery,” Brown Bag Seminar at the college of engineering, MSU, September 23, 2008. (Invited Presentation)
- [29] Ilsoon Lee, “ Nanotech Solutions to Wrinkled Human Skin,” Amore Pacific Corporation, Kyungki-do, Kiheung Si, Korea, December 10, 2007. (Invited Presentation).
- [28] Ilsoon Lee “ Primix-MSU Nanomixing Nanotechnology Innovation,” Primix Corporation, Tokyo, Japan, December 4, 2007. (Invited Presentation).
- [27] Ilsoon Lee\* and Troy R. Hendricks, “ Nanomechanical and Biofunctional Films as Next Wrinkle Fighter,” HBA Global Exposition & Educational Conference, Jacob K. Javits Convention Center, New York City, September 18-20, 2007. (Invited Presentation).
- [26] Ilsoon Lee, “ Polyelectrolyte Based Functional Materials and Films: Self-assembly and Nanostructures,” The Procter & Gamble Company, Miami Valley Innovation Center, Cincinnati, OH, June 27, 2007. (Invited Presentation).
- [25] Ilsoon Lee, “ Polyelectrolyte Based Functional Materials and Films: Self-assembly and Nanostructures,” Department of Chemical Engineering, Korea University, Seoul-Korea, June 11, 2007. (Invited Department Presentation).
- [24] Ilsoon Lee, “ Polyelectrolyte Based Functional Materials and Films: Self-assembly and Nanostructures,” Department of Chemical Engineering, Yonsei University, 2007 Spring Symposium, Seoul-Korea, June 9, 2007. (Invited Symposium Presentation).
- [23] Ilsoon Lee, “ Polyelectrolyte Based Functional Materials and Films: Self-assembly and Nanostructures,” School of Chemical Engineering, Zhejiang University, Hangzhou- China, June 4, 2007. (Invited Department Presentation).
- [22] Ilsoon Lee, “ Polyelectrolyte Based Functional Materials and Films: Self-assembly and Nanostructures,” Department of Macromolecular Science, Fudan University, Shanghai- China, May 30, 2007. (Invited Department Presentation).
- [21] Ilsoon Lee, “ Polyelectrolyte Based Functional Materials and Films: Self-assembly and Nanostructures,” Department of Chemical Engineering, Shanghai Jiao Tong University, Shanghai- China, May 30, 2007. (Invited Department Presentation).
- [20] Ilsoon Lee, “ Biofunctional and Nanostructured Polyelectrolyte Multilayer Films for Drug Discovery and Delivery,” the 5th Anniversary of Drug Discovery Conference and Expo-Shanghai, China, May 28-June 5, 2007. (Invited International Conference Presentation)
- [19] Ilsoon Lee, "Biofunctional and Nanostructured Polyelectrolyte Multilayer Films," The 34th Annual Spring Symposium Michigan Chapter of the American Vacuum Society, (Smart Functional Materials and Thin Films for Biomedical Applications) Michigan Union Ballroom, University of Michigan, May 9, 2007. (Invited Conference Presentation)

- [18] Ilsoon Lee, "Self-Assembly and Nanostructured Materials," Department of Materials Science and Engineering, University of Michigan, March 23, 2007. **(Invited Department Seminar)**
- [17] Ilsoon Lee, "Self-Assembly and Nanostructured Materials," Department of Mechanical Engineering, Michigan State University, February 6, 2007. **(Invited Department Seminar)**
- [16] Ilsoon Lee,\* " Physico-chemical and Biological Aspects of Polyelectrolyte Multilayers," the Open Forum for Korean and American Chemical Engineers in the AICHE 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006. **(Invited Award Presentation)** – Award Recipient Presentation [Outstanding Young Investigator Award by The Korean Institute of Chemical Engineers US Chapter].
- [15] Ilsoon Lee,\* " Functional and Nanostructured Polyelectrolyte Multilayer Films," Joint 2006 ACS Central Regional Meeting and 29th Global Silicon Symposium (Functionalized Polymer Interfaces and Adhesion), Frankenmuth, MI, May 16-20. **(Invited Conference/Symposium Presentation)**
- [14] Ilsoon Lee\* and Mark Worden, " Functional and Nanostructured Interfaces for Medically Important Proteins," Mid-Tech II: Taking Technology Innovations to Market, Ashman Court Hotel, Midland, MI, May 11, 2006 **(Invited Symposium Presentation)**
- [13] Ilsoon Lee\*, " Softlithography in Emerging Bio- and Nano- Research," LB11: The Eleventh International Conference on Organized Molecular Films, Sapporo Japan, June 26-30, 2005 **(Invited International Conference Presentation)**.
- [12] Kohli, N.\*; Sun, J.; Ofoli, R.; Lee, I.; Worden R.M. " Biomimetic Interfaces for Pharmaceutical Applications," ISPE Annual International Meeting at Phoenix, Arizona, November, 2005 **(Invited Conference Presentation)**.
- [11] I. Lee,\* " Polyelectrolyte Multilayer Based Molecular Self-Assembly and Engineering: Opto-electronic and Bio-applications," School of Chemical Engineering, Seoul National University, Seoul, Korea, May, 2004. **(Invited Department Presentation)**
- [10] I. Lee,\* " Polyelectrolyte Multilayer Based Molecular Self-Assembly and Engineering: Opto-electronic and Bio-applications," Korea Institute of Industrial Technology, CheonAn-Si, Korea, June, 2004. **(Invited Presentation)**
- [9] I. Lee,\* " Polyelectrolyte Multilayer Based Molecular Self-Assembly and Engineering: Opto-electronic and Bio-applications," LG Chem Company, Daejeon-Si, Korea, June, 2004. **(Invited Presentation)**
- [8] Lee, I.\*, " Engineering Surfaces and Interfaces," CFMR colloquium, Center for Fundamental Research at MSU, April 25, 2003. **(Invited Colloquium Presentation)**
- [7] Lee, I.\*, " A New Micro- Nanostructured Device Assembly Research in Chemical Engineering," EGR freshmen course, Invited talk, Fall, 2003. **(Invited Presentation)**
- [6] Lee, I.\*, " A New Micro- Nanostructured Device Assembly Research in Chemical Engineering," EGR freshmen course, Invited talk, Fall, 2003. **(Invited Presentation)**
- [5] I. Lee " Selective Self-Assembly of Colloidal Particles, Polyelectrolytes, Metal Nanoparticles on Surfaces," MIT 10.975 Seminar Series (October 17, 2001), Cambridge, MA **(Invited Presentation)**
- [4] I. Lee\*, " Adhesion at Polymer-Solid Interfaces: Sticker and Receptor Groups Effects," MIT Dept. of Chemical Engineering, Invited Seminar(May 30, 2000), Boston, MA. **(Invited Presentation)**

[3] I. Lee\*, " Adhesion at Polymer–Solid Interfaces: Sticker and Receptor Groups Effects," duPont P&IP, Invited Seminar (May 24, 2000), Wilmington, DE. **(Invited Presentation)**

[2] I. Lee\*, " A Study of Copolymer Adhesion and Adsorption on Chemically Disordered Substrates," Hercules Inc. Invited talk (November 23, 1998), Wilmington, DE. **(Invited Presentation)**

[1] I. Lee\*, " Copolymer Behavior at the Solid Interfaces: Heterogeneous Surface Effects," Hercules, Inc., Invited talk, (May 1, 1998), Wilmington, DE. **(Invited Presentation)**

## b) Submitted papers/presentations (outside MSU)

(\* = speaker or presenter)

[72] Mehrotra S\*, Lynam D, Pawelec K M, Tuszynski M, Lee I, Sakamoto J, Chan C. " Time controlled protein release from LbL multilayer functionalized agarose hydrogels" , 2009 BMES Annual Fall Meeting, October 7–10, 2009, Pittsburgh, PA.

[71] Mehrotra, S.\*; Lynam, D.; Tuszynski M, Lee I, Sakamoto J, Chan C. " Multilayer functionalized agarose hydrogel scaffolds for sustained protein release to promote nerve regeneration" , 238th ACS National Meeting, August 16–20, 2009, Washington, DC.

[70] Mehrotra, S.; Lee, I.; Chan, C. "Integrating Polyelectrolyte Multilayers and Microcontact Printing for Patterned siRNA delivery," 236th ACS National Meeting & Exposition, Philadelphia, PA, August 17–21, 2008..

[69] Mehrotra, S.; Lynam, D.; Peterson, C.; Gros, T.; Lee, I.; Tuszynski, M.; Chan, C.; Sakamoto, J. " Multifunctional Agarose Hydrogel Scaffolds for Nerve Repair" , The TERMIS–NA 2008 Annual Conference & Exposition, San Diego, CA, December 7–10, 2008.

[68] Mehrotra, S.; Lee, I.; Chan, C. " pH Responsive Multilayer mediated Patterned siRNA Transfection using Linear–PEI at Extended N/P Ratios, " 2008 BMES Annual Fall Meeting, St. Louis, MO, October 2–4, 2008. .

[67] Srivastava, D.\*; Chundawat, S.P.S.; Dale, B.E.; Lee, I. " Development of a nanoparticle based nanosome to enhance enzyme proximity synergy between  $\alpha$ -glucosidase and cellobiohydrolase," AIChE 2007 Annual Meeting, Salt Palace Convention Center, Salt Lake City, Utah, November 4 –9, 2007.

[66] Hendricks, T. R.\*; Lee, I. " Nanomaterial Incorporation to Prevent Polymer Film Buckling," AIChE 2007 Annual Meeting, Salt Palace Convention Center, Salt Lake City, Utah, November 4 –9, 2007.

[65] Srivastava, D.\*; Lee, I. " Fabrication of functionalized nanoparticles using high shear force nanomixer and nanoprecipitation for biological applications," AIChE 2007 Annual Meeting, Salt Palace Convention Center, Salt Lake City, Utah, November 4 –9, 2007.

[64] Hendricks, T. R.\*; Lu, J.; Drzal, L. T.; Lee, I. " Conductive Patterning Utilizing Polyelectrolytes for Plastic Electronics," AIChE 2007 Annual Meeting, Salt Palace Convention Center, Salt Lake City, Utah, November 4 –9, 2007.

[63] Mehrotra, S.\*; Lee, I.; Chan, C. " Three–Dimensional 3–D Cellular Assembly Using Self–Standing Composite Polyelectrolyte Multilayers," AIChE 2007 Annual Meeting, Salt Palace Convention Center, Salt Lake City, Utah, November 4 –9, 2007.

- [62] Kidambi, S.\*; Mehrotra, S.; Gredell, J.A.; Walton, S.P.; Lee, I.; Chan, C. " Polyelectrolyte multilayer films as platforms for efficient siRNA delivery," The 234th ACS National Meeting, Boston, MA, August 19–23, 2007.
- [61] Kidambi, S.\*; Lee, I.; Chan, C. " Aptamer incorporated polyelectrolyte multilayer films targeting influenza virus's hemagglutinin binding region," The 234th ACS National Meeting, Boston, MA, August 19–23, 2007.
- [60] Hendricks, T. R.; Lee, I. "Functional Polyelectrolyte Multilayer Coatings," The 34th Annual Spring Symposium Michigan Chapter of the American Vacuum Society, Michigan Union Ballroom, University of Michigan, May 9, 2007.
- [59] Srivastava, D.\*; Lee, I. "Fabrication of Nanostructures and Application in biomimetic Interfaces," The 34th Annual Spring Symposium Michigan Chapter of the American Vacuum Society, Michigan Union Ballroom, University of Michigan, May 9, 2007.
- [58] Hendricks, T. R.\*; Lee, I. "Control and Prevention of Polymer Film Buckling by Incorporating Surface Topographies and Nanoparticles," The 233rd ACS National Meeting, Chicago, IL, March 25–29, 2007.
- [57] Hendricks, T. R.\*; Lu, J.; Drzal, L. T.; Lee, I. "Versatile Conductive Patterning Using Exfoliated Graphite Nanoplatelets, Copper, and Polyelectrolytes," The 233rd ACS National Meeting, Chicago, IL, March 25–29, 2007.
- [56] Srivastava, D.\*; Lee, I. "Novel Fabrication of Anisotropic Polymer Nanoparticles Using Solvent-aided Nanoinjection Molding Process," The 233rd ACS National Meeting, Chicago, IL, March 25–29, 2007.
- [55] Srivastava, D.\*; Kohli, N.; Worden, R. M.; Lee, I. "Fabrication of Nanostructured Biomimetic Interfaces," The 233rd ACS National Meeting, Chicago, IL, March 25–29, 2007.
- [54] Hassler, B. L.\*; Kohli, N.; Lee, I.; Worden, R.M. "Renewable Bioelectronic Interfaces for Biosensor Applications," The 233rd ACS National Meeting, Chicago, IL, March 25–29, 2007.
- [53] Ilsoon Lee,\* " Engineering Physico-Chemical Polyelectrolyte Multilayer Films," AIChE 2006 Annual Meeting, San Francisco, CA, November 12–17, 2006.
- [52] Kidambi, S.\*; Lee, I.; Chan, C. " Engineering Aptamer and siRNA Based Drug Delivery Systems Using Polyelectrolyte Multilayer Films," AIChE 2006 Annual Meeting, San Francisco, CA, November 12–17, 2006.
- [51] Kohli, N.\*; Srivastava, D.; Richardson, R.; Ofoli, R.; Lee, I.; Worden, M. " Nanostructured Biosensor for Detecting Neuropathic Agents," AIChE 2006 Annual Meeting, San Francisco, CA, November 12–17, 2006.
- [50] Srivastava, D.\*; Kohli, N.; Worden, M.; Lee, I. " Nanostructure Based Biomimetic Interfaces for Bioelectronic Interfaces," AIChE 2006 Annual Meeting, San Francisco, CA, November 12–17, 2006.
- [49] Srivastava, D.\*; Lee, I. " Fabrication of Novel Nanostructures Using Ordered Porous Templates," AIChE 2006 Annual Meeting, San Francisco, CA, November 12–17, 2006.
- [48] Srivastava, D.\*; Lee, I. " Fabrication of Nanostructured Biomimetic Interfaces," AIChE 2006 Annual Meeting, San Francisco, CA, November 12–17, 2006.
- [47] Hendricks, T.R.\*; Lee, I. " Nanoscopic Wrinkled Morphology of Polyelectrolyte Multilayer Films on Poly(Dimethylsiloxane) Substrates Induced by Thermal Processing, AIChE 2006 Annual Meeting, San Francisco, CA, November 12–17, 2006.

- [46] Hendricks, T.R.\*; Lee, I. “ Versatile Conductive Patterning Using Polyelectrolytes,” AICHE 2006 Annual Meeting, San Francisco, CA, November 12-17, 2006.
- [45] Ilsoon Lee\* and Devesh Srivastava, “ Nanofabrication, Nanomixing, Nanodispersion, and Nanoassembly, NanoMSU.org Symposium 2006, MSU Radiology Bldg, East Lansing, MI, Sept. 16, 2006.
- [44] Neeraj Kohli\*; Devesh Srivastava; Rudy J. Richardson; Robert Ofoli; Ilsoon Lee; and Mark Worden, “ Nanostructured Biomimetic Interfaces for Sensing Applications,” NSTI Nanotech 2006 Meeting, Hynes Convention Center, Boston, MA, May 7-11, 2006.
- [43] Kohli, N.\*; Srivastava, S.\*; Vaidya, S.; Richardson, R.; Ofoli, R.; Lee, I.; Worden, M. ” Biomimetic Interfaces for Phamaceutical Applications,” the Nanomedicine Conference on April 29th, 2006, Kellogg Center Auditorium, Michigan State University, East Lansing, MI 28824.
- [42] Srivastava, D.\*; Kohli, N.; Worden, M.; Lee, I. ” Nanostructue Based Biomimetic Interfaces for Bioelectronic Applications,” the Nanomedicine Conference on April 29th, 2006, Kellogg Center Auditorium, Michigan State University, East Lansing, MI 28824.
- [41] Hassler, B.\*; Kohli, N.; Parthasarathy, L.; Ofoli, R.; Lee, I.; Worden, M. “ Functional Bioelectronic Interfaces on Electroless Deposited Gold for Bioelectronic Applications,” the Nanomedicine Conference on April 29th, 2006, Kellogg Center Auditorium, Michigan State University, East Lansing, MI 28824.
- [40] Kidambi, S.\*; Chan, C.; Lee, I. “ Salt Tunable n-dPEG Acid Patterns on Polyelectrolyte Multilayers – Templates for Directed Deposition of Macromolecules,” the Nanomedicine Conference on April 29th, 2006, Kellogg Center Auditorium, Michigan State University, East Lansing, MI 28824.
- [39] Sachin Vaidya, Neeraj kohli, Brian Hassler, Lavanya Parthasarathy Robert Ofoli, Ilsoon Lee, Mark Worden and Donna Wang,\* “ Integrated Electrochemical and Optical Methods for Studying TRPV Channel Proteins,” the Nanomedicine Conference on April 29th, 2006, Kellogg Center Auditorium, Michigan State University, East Lansing, MI 28824.
- [38] Hendricks, T. R.\*; Lee, I., “ Effects of Catalyst Introduction Methods on Metal Pattern Structure and Selectivity Using Dendrimer/Polyelectrolyte Multilayer Multilayer Coated Substrates,” AICHE National Meeting at Cincinnati, Ohio, October 30-Novemver 4, 2005.
- [37] Hassler, B. L.\*; Kohli, N.; Parthasarathy, L.; Ofoli, R.Y.; Lee, I.; Worden, R.M., “ Functional Bioelectronic Interfaces on Electrolessly Deposited Gold for Bioelectronic Applications,” AICHE National Meeting at Cincinnati, Ohio, October 30-Novemver 4, 2005.
- [36] Kidambi, S.\*; Chan, C.; Lee, I., “ pH and Salt Responsive PEG SAMs on Polyelectrolyte Multilayers,” AICHE National Meeting at Cincinnati, Ohio, October 30-Novemver 4, 2005.
- [35] Kidambi, S.\*; Lee, I.; Chan, C., “ Patterns of Aptamers on Polyelectrolyte Multilayers,” AICHE National Meeting at Cincinnati, Ohio, October 30-Novemver 4, 2005.
- [34] Kohli, N.\*; Vaidya, S.; Ofoli, R.; Lee, I.; Worden R.M., Srivastava, D.; Richardson, R.J. ” Biomimetic Interfaces for Characterizing Membrane Proteins,” AICHE National Meeting at Cincinnati, Ohio, October 30-Novemver 4, 2005.
- [33] Kohli, N. \*; Worden R.M.; Lee, I.” Intact Transfer of Layered Bionanocomposite Arrays,” AICHE National Meeting at Cincinnati, Ohio, October 30-Novemver 4, 2005.

- [32] Kidambi, S.\*; Lee, I.; Chan, C., “ Polyelectrolyte Multilayer as Bioactive Surface for Cell Adhesion,” ACS National Meeting, Washington D.C., August 28–September 1, 2005.
- [31] Kohli, N.\*; Vaidya, S.; Ofoli, R.Y.\*; Worden M.; Lee, I., ” Development and Characterization of Biomimetic Interfaces Using Lipid Bilayer Arrays on Patterned Polyelectrolyte Templates,” 79th ACS Colloid and Surface Science Symposium Clarkson University, Potsdam, NY, June 12–15, 2005.
- [30] Kohli, N.\*; Vaidya, S.; Ofoli, R.; Lee, I.; Worden R.M. ” Biomimetic Interfaces for Studying Membrane Proteins,” Pfizer Research Forum, East Lansing, April, 2005.
- [29] Kohli, N.\*; Vaidya, S.; Hassler, B.; Parthasarthy, L.; Ofoli, R.; Lee, I.; Worden R.M. ” Integrating Optical and Electrochemical Methods for Studying Membrane Proteins,” ISPE Great Lakes Chapter Regional Meeting at Indianapolis, Indiana , March 8–9, 2005.
- [28] Kohli, N.\*; Vaidya, S.; Ofoli, R.; Worden R.M.; Lee, I., ” 3-D Arrays of Lipid Bilayers and Liposomes on Polyelectrolytes Multilayers,” AIChE National Meeting at Texas Austin, November 7, 2004.
- [27] Kidambi, S.\*; Lee, I.; Chan, C.,” Selective Hepatocyte Adhesion on Polyelectrolyte Multilayer: Template for Patterned Cell Co-Culture,” AIChE National Meeting at Texas Austin, November 7, 2004.
- [26] Ahn, J.S., Hammond, P.T., Rubner, M.F., Lee, I.\* “ Self-Assembled, Functional Particle Monolayers on Polyelectrolyte Multilayers for Optical Coatings and Diffuse Reflectors,” AIChE National Meeting at Texas Austin, November 7, 2004.
- [25] Kohli, N.; Vaidya, S.; Ofoli, R.Y.; Worden, R.M.; Lee, I.\* "3-D Bionanocomposite Surfaces and Interfaces: Fabrication and Characterization," 227th ACS National Meeting, March 28–April 1, 2004 Anaheim, CA, March 28–April 1, 2004.
- [24] Kidambi, S.; Lee, I.; Chan, C.\* "Engineering Polyelectrolyte Multilayer (PEM) Surfaces To Create Cell Resisting And Adhesive Surfaces," 227th ACS National Meeting, March 28–April 1, 2004 Anaheim, CA, March 28–April 1, 2004.
- [23] Kidambi, S.; Kohli, N.; Chan, C.; Worden, R.M.; Lee, I.\* “ Cell-Cell Interaction Studies via Nanostructured, Biomimetic Interfaces,” AIChE, San Francisco, CA, November, 2003.
- [22] Ahn, J. S.; Hendrick, T.; Hammond, P.T.; Rubner, M.F.; Lee, I.\* “ Particle Self-Assembly Based Optoelectronic Coatings,” AIChE, San Francisco, CA, November, 2003.
- [21] Lee, I.\*; Wool, R.P.<sup>2</sup> “ Thermodynamic Structure and Strength Analysis of Polymers at Interfaces: Sticker and Receptor Group Effects,” AIChE, San Francisco, CA, November, 2003.
- [20] Kohli, N.; Kim, P.<sup>2</sup>; Mason, A.; Ofoli, B.; Lee, I.\*; Worden, R.M. “ Biomimetic Interfaces for Integrated Biosensor Arrays,” AIChE, San Francisco, CA, November, 2003.
- [19] Lee, I.\*; Wool, R.P.<sup>2</sup> “ Thermodynamic Structure and Strength Analysis of Polymers at Interfaces: Sticker and Receptor Group Effects,” Gordon Research Conferences, Polymer–East, Mount Holyoke, MA, June 15–20, 2003.
- [18] I. Lee\*, M.F. Rubner, P.T. Hammond, “ Ordered and Random Polymer–Metal Hybrid Particle Arrays on Polyelectrolyte Templates for Photonics and Microelectronics,” AIChE, Indianapolis, IN, November, 2002.
- [17] I. Lee\*, H. Zheng, M. F. Rubner, P. T. Hammond, “ Systematically Controlled Colloid Arrays on Surfaces Using Polyelectrolyte Multilayer Templates,” ACS Orlando, FL, April, 2002.

- [16] I. Lee\*, H. Zheng, M. F. Rubner, P. T. Hammond, “ 2D Functional Colloidal Arrays on Surfaces for Photonic Wave Guides Using Polyelectrolyte Multilayers as Templates,” ACS Orlando, FL, April, 2002 ACS Orlando, FL, April, 2002.
- [15] Lee, I.\*; Zheng, H.; T. C. Wang, Rubner, M. F.; L. C. Rubner, L. C. Kimerling, Hammond, P. T.; “ 2D Colloidal Arrays on top of Circle Patterned Polyelectrolyte Templates: Controlling And Selective Metal Coatings of Colloidal Clusters,” MRS Boston, November, 2001.
- [14] Zheng, H.\*; Lee, I.; Rubner, M. F.; L. C. Kimerling, Hammond, P. T.; “ Surface Directed Assembly of 2D Colloidal Arrays,” AIChE Reno, NV, November, 2001.
- [13] Lee, I.\*; Zheng, H.; Rubner, M. F.; L. C. Kimerling, Hammond, P. T.; “ 2D Colloidal Arrays on Surfaces Using Patterned Polyelectrolyte Multilayers, ACS Chicago IL, August, 2001.
- [12] Lee, I.\*; Zheng, H.; Rubner, M. F.; L. C. Kimerling, Hammond, P. T.; “ Selective Metal Coatings of 2D Colloidal Arrays on Patterned Polyelectrolyte Multilayers,” Gordon Conference (Organic Thin Films), Salve Regina University, RI, June, 2001.
- [11] Lee, I.\*; and Wool, R. P.<sup>2</sup>., “ Adhesion as a Function of Polymer Sticker and Substrate Receptor Groups,” ACS San Diego, CA, April, 2001.
- [10] Lee, I.; X.\* Jiang, Zheng, H.; K.M. Chen, Rubner, M. F.; L.C. Kimerling, and Hammond, P. T. “ Periodic patterning of Colloidal Particles via Surface Pattern Matching,” ACS San Diego, CA, April, 2001.
- [9] Jiang, X.\*; Chen, K.; Zheng, H.; Lee, I.; Rubner, M. F.; Kimerling, L. C.; Hammond, P. T., “ Selective Self-organization of Colloids on Patterned Polyelectrolyte Templates,” ACS San Diego, CA, April, 2001.
- [8] Zheng, H.\*; X. Jiang, Lee, I.; K.M. Chen, L.C. Kimerling, Rubner, M. F.; Hammond, P. T., “ Close Packed Particle Assemblies on Patterned Polyelectrolyte Multilayer Films,” ACS San Diego, CA, April, 2001.
- [7] R.P. Wool<sup>2</sup>\* and Lee, I.; “ Polymer–Solid Interfaces: Role of Sticker and Receptor Groups on Adhesion,” APS Seattle CA, March, 2001.
- [6] Wool, R. P.<sup>2</sup>\* and Lee, I.; “ Polymer–Solid Interfaces: Role of Sticker and Receptor Groups,” The Adhesion Society 2001 Annual Meeting, Williamsburg, VA, February, 2001.
- [5] Lee, I.\*; and Wool, R. P.<sup>2</sup>, “ Polymer Adhesion vs. Substrate Receptor Group Density,” The Adhesion Society Annual Meeting (AS), Myrtle Beach, SC; February, 2000.
- [4] R.P. Wool<sup>2</sup>\*, K.A. Welp, L. Gong, and Lee, I.; “ Adhesion at Model Polymer Interfaces,” APS, Los Angeles, CA; March, 1999.
- [3] Lee, I.\*; and Wool, R. P.<sup>2</sup>, “ A Study of Copolymer Adhesion and Adsorption on Chemically Disordered Surfaces,” AIChE Miami Beach, FL, November 1998.
- [2] Lee, I.\*; and Wool, R. P.<sup>2</sup>, “ Sticker Group Effect on Copolymer–Solid Adhesion,” ACS Boston, MA, August 1998.
- [1] Lee, I.\*; S. J. Park, K. H. Ahn, and S. J. Lee<sup>2</sup>, “ Studies on the Linear Viscoelastic Properties and Relaxation Time Spectrum of Polymers,” The 1995 Fall Meeting of Korean Society of Rheology, Seoul, Korea, October 1995.

### c) MSU Internal Conference Presentations and Others

- [40] Mehrotra, S.; Lee, I.; Chan, C. “ pH Responsive Multilayer mediated Patterned siRNA Transfection using Linear-PEI at Extended N/P Ratios, 2008 CheMS Blue/Green Seminar, The University Club, Michigan State University, East Lansing, MI, October 9, 2008.
- [39] Stone, S.; Srivastava, D.; Lee, I. “ Transferable Wrinkle Free Nanomechanical Films,” Fall Research Forum for undergraduate students, College of Engineering, Michigan State University, October, 2008.
- [38] Srivastava, D.; Lee, I. “ FABRICATION OF NANOSTRUCTURES AND APPLICATION IN BIOMIMETIC INTERFACES,” The 2007 CHEMS Research Forum, April 5-6, Lansing Convention Center, Lansing, MI.
- [37] Hendricks, T. R.; Lee, I. “ Wrinkle Prevention in Polymer Films Using Nanoparticles,” The 2007 CHEMS Research Forum, April 5-6, Lansing Convention Center, Lansing, MI.
- [36] Hendricks, T. R.; Lu, J.; Drzal, L.T.; Lee, I. “ Conductive Patterning for Flexible Electronics,” The 2007 CHEMS Research Forum, April 5-6, Lansing Convention Center, Lansing, MI.
- [35] Mehrotra, S.; Lee, I.; Chan, C. “ An Approach to Three-dimensional Cellular Assembly via Polyelectrolyte Multilayer Printing In Aqueous Conditions,” The 2007 CHEMS Research Forum, April 5-6, Lansing Convention Center, Lansing, MI.
- [34] Neeraj Kohli, Devesh Srivastava, Sachin Vaidya, Rudy J. Richardson, Robert Ofoli, Ilsoon Lee and Mark Worden, “ Biomimetic Interfaces for Pharmaceutical Applications,” The 2006 CHEMS Research Forum, March 30-31, Lansing Center, Lansing, MI.
- [33] Hendricks, Troy R.; Lee, Ilsoon, “ Versatile Polyelectrolyte Multilayer Coatings,” The 2006 CHEMS Research Forum, March 30-31, Lansing Center, Lansing, MI.
- [32] Srivastava, D.; Kohli, N.; Worden, M. Lee, I., “ Nanostructure based biomimetic interfaces for bioelectronic applications, The 2006 CHEMS Research Forum, March 30-31, Lansing Center, Lansing, MI.
- [31] Kidambi, Srivatsan; Lee, Ilsoon; Chan, Christina., “ Salt tunable m-dPEG acid patterns on polyelectrolyte multilayers: Templates for directed deposition of macromolecules,” The 2006 CHEMS Research Forum, March 30-31, Lansing Center, Lansing, MI.
- [30] Hassler, B.; Neeraj. K.; Lavanya, P.; Ofoli, R.; Lee, I.; Worden, M., “ Functional Bioelectronic Interfaces on Electroless Deposited Gold for Bioelectronic Applications,” The 2006 CHEMS Research Forum, March 30-31, Lansing Center, Lansing, MI.
- [29] Kohli, N.; Sun, J.; Ofoli, R.; Lee, I.; Worden R.M. ” Biomimetic Interfaces for Pharmaceutical Applications,” MSU-UM Blue-Green Seminar at Ann Arbor, Michigan, November, 2005.
- [28] Hendricks, T.; Lee, I. “ Highly Selective Copper Patterns on Polyelectrolyte Multilayer Coated Substrates,” MSU-CHEMS Annual Research Forum 2005, Lansing Convention Center, Lansing, Michigan, April 7, 2005.
- [27] Kidambi, S.; Lee, I.; Chan, C. “ Selective Primary Hepatocyte Adhesion on Polyelectrolyte Multilayer: Template for Patterned Cell Co-Culture,” MSU-CHEMS Annual Research Forum 2005, Lansing Convention Center, Lansing, Michigan, April 7, 2005.

- [26] Kohli, N.; Sun, J.; Ofoli, R.; Lee, I.; Worden R.M. " Biomimetic Interfaces for Characterizing Membrane Proteins," MSU-CHEMS Annual Research Forum Seminar, April 7, 2005.
- [25] Kidambi, S.; Lee, I.; Chan, C., " Selective Hepatocyte Adhesion on Polyelectrolyte Multilayer: Template for Patterned Cell Co-Culture," UM-MSU symposium day, October 2004.
- [24] Neeraj Kohli, Sachin Vaidya, Robert Ofoli, Robert M. Worden and Ilsoon Lee, " 3-D Arrays of Lipid Bilayers and Liposomes on Polyelectrolytes Multilayers," UM-MSU symposium day, October 2004
- [23] Erin E. Dams, Troy Hendricks, and Ilsoon Lee, " Electroless Deposition of Nickel on Chemically Modified Surfaces," MSU summer undergraduate research presentation, October 22, 2004.
- [22] Hendricks, T. R.; Dams, E. E.; Lee, I. " Electroless Deposition and Microcontact Printing on Polyelectrolyte Multilayers Using PAMAM Dendrimers and Dendrimer Encapsulated Nanoparticles," The CFMR Symposium 2004, Feb 15-16, MSU.
- [21] Ahn, J. S.; Lee, I. " Self-Assembled Particle Monolayers as Diffuse Reflectors," The CFMR Symposium 2004, Feb 15-16, MSU.
- [20] Kohli, N.; Worden, M.; Lee, I. " Covalently Crosslinked Micropatterning Using Amphiphilic Poly(amidoamine-organosilicon) (PAMAMOS) Dendrimers," The CFMR Symposium 2004, Feb 15-16, MSU.
- [19] Kidambi, S.; Chan, C.; Lee, I., " Engineering Polyelectrolyte Multilayer (PEM) Surfaces to Create Cell Resistant and Adhesive Surfaces," The CFMR Symposium 2004, Feb 15-16, MSU.
- [18] Hendricks, T. R.; Dams, E. E.; Lee, I. " Electroless Deposition and Microcontact Printing on Polyelectrolyte Multilayers Using PAMAM Dendrimers and Dendrimer Encapsulated Nanoparticles," The CHEMS Departmental Research Forum 2004, March 13, MSU.
- [17] Ahn, J. S.; Lee, I. " Self-Assembled Particle Monolayers as Diffuse Reflectors," The CHEMS Departmental Research Forum 2004, March 13, MSU.
- [16] Kohli, N.; Worden, M.; Lee, I. " Covalently Crosslinked Micropatterning Using Amphiphilic Poly(amidoamine-organosilicon) (PAMAMOS) Dendrimers," The CHEMS Departmental Research Forum 2004, March 13, MSU.
- [15] Kidambi, S.; Chan, C.; Lee, I., " Engineering Polyelectrolyte Multilayer (PEM) Surfaces to Create Cell Resistant and Adhesive Surfaces," The CHEMS Departmental Research Forum 2004, March 13, MSU.
- [14] Lee, I.; Wool, R.P<sup>2</sup>. " Thermodynamic Structure and Strength Analysis of Polymers at Interfaces: Sticker and Receptor Group Effects," Gordon Research Conferences, Polymer-East, Mount Holyoke, MA, June 15-20, 2003.
- [13] Kidambi, S., Chan, C., Lee, I., " Biocomparable Polyelectrolyte Multilayer Surfaces," CFMR symposium at MSU, March 30-31, 2003.
- [12] Kohli, N., Hassler, B., Lee, I., Worden, R.M., " Biomimetic Interfaces for Integrated Biosensor Arrays," CFMR symposium at MSU, March 30-31, 2003.
- [11] Kidambi, S., Chan, C., Lee, I., " Biocomparable Polyelectrolyte Multilayer Surfaces," UM/MSU joint Conference at MSU, April 30-31, 2003.

- [10] Kohli, N., Hassler, B., Lee, I., Worden, R.M., “ Biomimetic Interfaces for Integrated Biosensor Arrays,” UM/MSU joint conference, April, 2003.
- [9] Lee, I., “ Self-Assembly of Functional Particle Arrays,” UM/MSU joint conference, April, 2003.
- [8] Dams, E., Hendricks, T., Lee, I., “ Micropatterning of PAMAM dendrimers: Generation Effects,” MSU undergraduate summer research conference, October, 2003.
- [7] West, J., Kohli, N., Lee, I., “ Micropatterned Protein and PAMAMOS Biocompositefilms,” MSU undergraduate summer research conference, October, 2003.
- [6] Lee, I. “ Adhesion at Polymer-Solid Interfaces: Sticker and Receptor Groups Effects,” Center for Composite Materials (CCM) Research Review (June 20, 2000), Newark, DE.
- [5] Lee, I. and R. P. Wool<sup>2</sup>, “ Adhesion Dynamics at Polymer-Solid Interfaces,” The 5th Annual Meeting of Tiger-Hen Rheology Symposium, Newark, DE, Jan 15, 2000
- [4] Lee, I., “ Adhesion at Polymer-Solid Interfaces: Sticker Group and Receptor Group Effects,” Colburn Winter Research Reviews (February 2, 2000), Newark, DE.
- [3] Lee, I., “ Polymer Adhesion Dynamics vs. Substrate Active Receptor Group Density,” Center for Composite Materials (CCM) Research Reviews (February 17, 1999), Newark, DE.
- [2] Lee, I., “ A Study of Polymer Adhesion on Chemically Disordered Substrates,” Colburn Summer Research Reviews (June 17, 1998), Newark, DE.
- [1] Lee, I., “ Dynamic Polymer Adhesion on Disordered Substrate,” Center for Composite Materials (CCM) Research Reviews (March 6, 1998), Newark, DE.