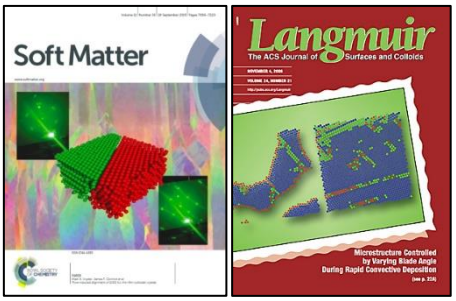
James F. Gilchrist – Curriculum Vitae



A. Biographical Information

Office Address
Department of Chemical and Biomolecular Engineering
Lehigh University
111 Research Drive – Iacocca Hall
Bethlehem, PA 18015
Ph: 610-758-4781, fax: 610-758-5057
Email: gilchrist@lehigh.edu
Website: *Laboratory for Particle Mixing and Self-Organization* - http://chaos.cc.lehigh.edu

Education

Washington University	Chemical Engineering	B.S. 1997
Northwestern University	Chemical Engineering	Ph.D. 2003

Advisor: Dean Julio M. Ottino

Employment

Professor — **June 2017-present**
Department of Chemical and Biomolecular Engineering
Lehigh University, Bethlehem, PA

Honorary Visiting Professorial Fellow — **June 2016-September 2016**
School of Chemical Engineering
University of New South Wales, Sydney, Australia

Class of 1961 Associate Professor — **March 2013-October 2015**
Department of Chemical and Biomolecular Engineering
Lehigh University, Bethlehem, PA

Associate Professor with Tenure — **May 2010-June 2017**
Department of Chemical and Biomolecular Engineering
Lehigh University, Bethlehem, PA

Visiting Associate and Lecturer (sabbatical) — **August 2011-June 2012**
Division of Chemistry and Chemical Engineering
California Institute of Technology, Pasadena, CA

P.C. Rossin Assistant Professor — **May 2007-May 2010**
Department of Chemical Engineering
Lehigh University, Bethlehem, PA

Assistant Professor — **August 2004-May 2007**
Department of Chemical Engineering
Lehigh University, Bethlehem, PA

Postdoctoral Research Associate **March 2003-July 2004**
Department of Materials Science and Engineering
University of Illinois, Urbana, IL
Mentor: Professor Jennifer A. Lewis (now at Harvard University)

B. Publications and Creative Activities

Refereed Articles

40) K. Joshi, Z. Zeng, X. Li, and J. F. Gilchrist, "Particle crystallinity in Automated Langmuir-Blodgett deposition: effect of speed and concentration", *submitted*.

39) K. Joshi and J. F. Gilchrist, "Estimation of drying length during particle assembly by convective deposition", *Journal of Colloid and Interface Science,* 496, 222-227, 2017.

38) A. Weldon, A. Routh, and J. F. Gilchrist, "Periodic uniform linear crack formation during convective deposition", *Journal of Colloid and Interface Science,* 487, 80-87, 2017.

37) K. Seven and J. F. Gilchrist, "Nucleating agents for high density polyethylene - A review", *Polymer Engineering & Science,* 56 (5), 541-554, 2016.

36) X. Li and J. F. Gilchrist, "Large-area Nanoparticle Films by Continuous Automated Langmuir-Blodgett Assembly and Deposition", *Langmuir,* 32 (5), 1220-1226, 2016.

35) K. Joshi, T. Muangnapoh, M. D. Stever, and J. F. Gilchrist, "Effect of ionic strength and surface charge on convective deposition", *Langmuir*, 31 (45), 12348-12353, 2015.

34) J. Boettcher, M. Joy, T. Muangnapoh, and J. F. Gilchrist, "Characteristic streak spacing during convective deposition" *Langmuir,* 31 (40), 10935-10938, 2015.

33) M. Joy, T. Muangnapoh, M. A. Snyder, and J. F. Gilchrist, "Non-templated flow aligned thin film colloidal crystals", *Soft Matter,* 11, 7092, 2015. *(Cover article)*

32) B. Xu and J. F. Gilchrist, "Microstructure of sheared monosized colloidal suspensions resulting from hydrodynamic and electrostatic interactions", *Journal of Chemical Physics*, 140, 204903, 2014.

31) T. Muangnapoh, A. L. Weldon, and J. F. Gilchrist, "Enhanced monolayer deposition via vibration-assisted convective deposition", *Applied Physics Letters,* 103, 181603, 2013.

30) X. H. Li, P. Zhu, G. Liu, J. Zhang, R. Song, Y. K. Ee, P. Kumnorkaew, J. F. Gilchrist, and N. Tansu, "Light Extraction Efficiency Enhancement of III-Nitride Light-Emitting Diodes by using 2-D Close-Packed TiO_2 Microsphere Arrays", *Journal of Display Technology*, 9, 5, 324-332, 2013.

29) P. F. Zhu, P. O. Weigel, G. Y. Liu, J. Zhang, A. L. Weldon, T. Muangnapoh, J. F. Gilchrist, and N. Tansu, "Optimization of Deposition Conditions for Silica / Polystyrene Microlens and

Nanolens Arrays for Light Extraction Enhancement in GaN Light-Emitting Diodes," Proc. of the SPIE Photonics West 2013, San Francisco, CA, January 2013.

28) Z. Song, E. S. Daniels, E. D. Sudol, M. S. El-Aasser, J. F. Gilchrist, and A. Klein, "Tracking the Fate of Seed Particles in Dispersion Polymerization: Preparation and Application of Fluorescent Polymer Particles", *Journal of Applied Polymer Science*, 127, 4, 2635-2640, 2013.

27) A. L. Weldon, P. Kumnorkaew, B. Wang, X. Cheng, and J. F. Gilchrist, "Fabrication of Macroporous Polymeric Membranes through Binary Convective Deposition", *ACS Applied Materials and Interfaces*, *4532-4540*, 2012.

26) B. Wang, P. Kumnorkaew, M. Wolfe, A. L. Weldon, J. F. Gilchrist, X. Cheng, "Study of surface nanotopography on immunoaffinity cell capture in microfluidic devices," *Langmuir*, 27 (17), 11229-11237, 2011.

25) X. H. Li, R. Song, Y. K. Ee, P. Kumnorkaew, J. F. Gilchrist, and N. Tansu, "Light Extraction Efficiency and Radiation Patterns of III-Nitride Light-Emitting Diodes With Colloidal Microlens Arrays With Various Aspect Ratios", *IEEE Photonics Journal*, vol. 3 (3), pp. 489-499, June 2011.

24) B. Xu and J. F. Gilchrist, "Shear migration and chaotic mixing of particle suspensions in a time-periodic lid-driven cavity", *Physics of Fluids*, 22, 053301, 2010.

23) C. Gao, S. D. Kulkarni, J. F. Morris, and J. F. Gilchrist, "Direct investigation of anisotropic suspension structure in pressure-driven flow", *Physical Review E*, 81, 041403, 2010.

22) P. Kumnorkaew, A. L. Weldon, and J. F. Gilchrist, "Matching constituent fluxes for convective deposition of binary suspensions", *Langmuir*, 26 (4), 2401-2405, 2010.

21) R. P. Slopek and J. F. Gilchrist, "Self-assembly of wires in acrylate monomer via nanoparticle dielectrophoresis", *Journal of Physics D- Applied Physics*, 43, 045402, 2010.

20) Y. K. Ee, P. Kumnorkaew, R. A. Arif, H. Tong, H. Zhao, J. F. Gilchrist, and N. Tansu, "Optimization of light extraction efficiency of III-nitride light emitting diodes with self assembled colloidal-based microlenses", *IEEE Journal Selected Topics in Quantum Electronics*, 15 (4), 1218-1225, 2009.

19) Y. K. Ee, P. Kumnorkaew, R. A. Arif, H. Tong, J. F. Gilchrist, and N. Tansu, "Light extraction efficiency enhancement of InGaN quantum wells light-emitting diodes with polydimethylsiloxane concave microstructures", *Optics Express*, 17, 16, 13747-13757, 2009.

18) P. Kumnorkaew and J. F. Gilchrist, "Effect of nanoparticle concentration on the convective deposition of binary suspensions", *Langmuir*, 25 (11), 6070-6075, 2009.

17) C. Gao, B. Xu, and J. F. Gilchrist, “Mixing and segregation of microspheres in microchannel flows of mono- and bi-dispersed suspensions”, *Physical Review E*, 79, 036311, 2009.

16) Y. K. Ee, P. Kumnorkaew, R. A. Arif, H. Tong, J. F. Gilchrist, and N. Tansu, "The Use of Polydimethylsiloxane Concave Microstructures Arrays to Enhance Light Extraction Efficiency of InGaN Quantum Wells Light-Emitting Diodes", in Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2009, Baltimore, MD, May 2009.

15) Y. K. Ee, P. Kumnorkaew, R. A. Arif, H. Tong, J. F. Gilchrist, and N. Tansu, "Enhancement of Light Extraction Efficiency of InGaN Quantum Wells Light-Emitting Diodes with Polydimethylsiloxane Concave Microstructures", in Proc. of the SPIE Photonics West 2009, LEDs: Materials, Devices, and Applications for Solid State Lighting XIII, San Jose, CA, Jan 2009.

14) K. J. Ford, J. F. Gilchrist, H. S. Caram, "Transitions to vibro-fluidization in a deep granular bed", *Powder Technology*, 192, 33, 2009.

13) P. Kumnorkaew, Y. Ee, N. Tansu, and J. F. Gilchrist, "Investigation of the deposition of microsphere monolayers for fabrication of microlens arrays", *Langmuir*, 24 (21), 12150-12157, 2008. (*Cover Article*).

12) Y. K. Ee, R. A. Arif, P. Kumnorkaew, J. F. Gilchrist, and N. Tansu, "Optimization and Fabrication of III-Nitride Light-Emitting Diodes with Self-Assembled Colloidal-Based Convex Microlens Arrays", in Proc. of the IEEE Photonics Global 2008, Nanophotonics Symposium, Singapore, Republic of Singapore, December 2008.

11) Y. K. Ee, P. Kumnorkaew, R. A. Arif, J. F. Gilchrist, and N. Tansu, "Size Effect of SiO2 / Polystrene Microspheres in the Enhancement of Light Extraction Efficiency of InGaN Quantum Wells LEDs", in Proc. of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2008, San Jose, CA, May 2008.

10) C. Gao and J. F. Gilchrist, “Shear-induced migration in 1D, 2D, and 3D microchannel flows”, *Physical Review E*, 77, 025301, 2008.

9) Y. K. Ee, P. Kumnorkaew, R. A. Arif, H. Tong, J. F. Gilchrist, and N. Tansu, "Comparison of Numerical Modeling and Experiments of InGaN Quantum Wells Light Emitting Diodes with SiO2 / Polystyrene Microlens Arrays", in Proc. of the SPIE Photonics West 2007, Light-Emitting Diodes: Research, Manufacturing, and Applications XII, San Jose, CA, Jan 2008.

8) Y. K. Ee, P. Kumnorkaew, R. A. Aref, J. F. Gilchrist, and N. Tansu, “Enhancement of Light Extraction Efficiency of InGaN Quantum Wells LEDs Using SiO2 Microspheres” Proc. Of the IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) 2007, Baltimore MD, May 2007.

7) J. F. Gilchrist and C. Gao, “Suspension Mixing and Segregation in 1D, 2D, and 3D Microchannel Flows”, Proc. of ASME ICNMM2007 5th International Conference on Nanochannels, Microchannels, and Minichannels, June 2007.

6) Y. K. Ee, R. A. Arif, N. Tansu, P. Kumnorkaew, and J. F. Gilchrist, "Enhancement of light extraction efficiency of InGaN quantum wells light emitting diodes using SiO2 microspheres", *Applied Physics Letters*, 91, 221107, 2007.

5) J. F. Gilchrist, A. T. Chan, E. R. Weeks, J. A. Lewis, "Phase behavior and 3D structure of strongly attractive microsphere-nanoparticle mixtures", *Langmuir*, 21, 11040-11047, 2005.

4) J. F. Gilchrist and J. M. Ottino, "Competition between chaos and order: mixing and segregation in a spherical tumbler", *Physical Review E*, 68, 061303, 2003.

3) K. M. Hill, D. V. Khakhar, J. F. Gilchrist, J. J. McCarthy, and J. M. Ottino, "Segregation-driven organization in chaotic granular flows", *Proceedings of the National Academy of Sciences*, 96(21), pp. 11701-11706, 1999. (*Cover Article*)

2) K. M. Hill, J. F. Gilchrist, D. V. Khakhar, J. J. McCarthy, and J. M. Ottino, "Mixing of granular materials: a test-Bed dynamical system for pattern formation", *International Journal of Bifurcation and Chaos*, 9, pp. 1467-1484, 1999. (*Cover Article*)

1) D. V. Khakhar, J. J. McCarthy, J. F. Gilchrist, and J. M. Ottino, "Chaotic mixing of granular materials in two-dimensional tumbling mixers", *Chaos*, 9(1), pp. 195-205, 1999.

Book Chapters

P. T. Spicer and J. F. Gilchrist, "Microstructure, Rheology, and Processing of Complex Fluids", Advances in Industrial Mixing: A companion to the Handbook of Industrial Mixing, First Edition, 2015 John Wiley & Sons.

Patents

Nelson Tansu, Yik Khoon Ee, **James F. Gilchrist**, Pisist Kumnorkaew, *Semiconductor Light-Emitting Devices having Concave Microstructures providing Improved Light Extraction Efficiency* (US patent #8,076,667)

Nelson Tansu, Xiao-Hang Li, Hongping Zhao, Guangyu Liu, Gensheng Huang, **James F. Gilchrist**, Pisist Kumnorkaew, *Supercontinuum Broadband White Light Emitting Diodes by Regrowth Method* (US patent #8,569,737)

Nelson Tansu, Yik Khoon Ee, **James F. Gilchrist**, Pisist Kumnorkaew, and Ronald A. Arif, *Novel techniques to achieve large light extraction efficiency of nitride-based LEDs using a low cost and straight forward approach.* (US patent #8,586,963)

C. Honors and Awards

Cover Article, *Soft Matter*	September 2015
Vice Chair/Chair elect, AIChE Fluid Mechanics (Area 1J)	elected November 2014
International Society of Coating Science and Technology Executive Board	September 2014
International Polymer Colloids Group Member (elected)	June 2013
Class of 1961 Associate Professorship, Lehigh University	March 2013

AIChE Fluid Mechanics Executive Committee (Area 1J)	November 2010
AIChE Particle Technology Forum Executive Committee (Area 3)	November 2010
AIChE North American Mixing Forum Executive Committee (Area 14)	November 2010
2008 Best Paper Award - Particle Technology Forum, Area 3C, AIChE	November 2009
Best Paper Award - IEEE Photonics Global Conference in Singapore	December 2008
Cover Article, *Langmuir*	November 2008
P.C. Rossin Assistant Professorship, Lehigh University	2007-2009
Start-up Grant in Mixing, North American Mixing Forum of the AIChE	May 2007

Prior to Lehigh

First Place, AIChE Chicago Section Poster Competition	April 2002
Apprentice Professorship Program, Northwestern University	Winter 2002
Cover Article, *Chaos*	1999
Cover Article, *Proceedings of the National Academy of Sciences*	1999
Cover Article, *International Journal of Bifurcation and Chaos*	1999
Walter P. Murphy Fellowship, Northwestern University	1997-1999

D. Research Funding (3.5M total, 2.1M as PI)

Competitively Awarded Research Grants

National Science Foundation

"Using Thermophoresis for Label free, Continuous Bionanoparticle Concentration in Microfluidic Devices" (PI: X. Cheng, coPI: J. F. Gilchrist), 08/2015-07/2018
$305,798

"SNM: Technologies for Nanoparticle Monolayer Self-Organization and Deposition"
(PI: James F. Gilchrist, co-PIs: X. Cheng, J. Mittal, M. Snyder, N. Tansu), 08/2011-07/2016
$1,100,000

"Mixing, Migration, and Structure of Suspensions in Pressure-Driven Flows"
(PI: James F. Gilchrist), 08/2010-08/2013
$290,000

"Investigation of Microsphere Convective Deposition for Photonic and Biological Applications"
(PI: James F. Gilchrist, co-PIs: Xuanhong Cheng, Nelson Tansu), 08/2008-08/2011
$300,000

"NER: Nanoparticle Assembly of Nanowire Composites and Nano- and Microfluidic Devices"
(PI: James F. Gilchrist, co-PI: Professor Christopher J. Kiely), 07/2006-06/2008
$120,000

"SGER: Observation of 3D Suspension Transport in Microchannels via High-Speed Confocal Microscopy" (PI: James F. Gilchrist), 05/2006-04/2008
$80,000

Department of Energy

"High Efficiency Organic Light Emitting Devices for Lighting" (PI: Franky So, U. Florida, co-PIs: Nelson Tansu, James F. Gilchrist), 08/2009-07/2012
$950,000

The Petroleum Research Fund
"Competition between Chaotic Mixing and Self-Organizing of Colloids and Nanoparticles" (PI: James F. Gilchrist), 01/2006-08/2008
$35,000

Pennsylvania NanoMaterials Commercialization Center
"Utilization of Self Assembled Nanoparticles to Generate Electricity from Ambient Lighting" (PI: Mark A. Snyder, co-PI: James F. Gilchrist), 06/2011-12/2011
$25,000

Commonwealth of Pennsylvania Department of Community and Economic Development and Ben Franklin Technology Development Authority
"Optical Characterization and Device Optimization of Dye Sensitized Solar Cells", University Commercialization Research Grant (PI: James F. Gilchrist, coPI Mark A. Snyder), 01/2013-12/2013
$25,000
"Porous Thin Film MgO Membranes for Molten Salt Batteries" (PI: James F. Gilchrist, co-PI: Mark A. Snyder), 06/2012-05/2013
$45,000
"Toward Commercialization of Nanostructured Anodes for Enhanced Photon/Electron Transport in Dye Sensitized Solar Cells" (PI: James F. Gilchrist, co-PI: Mark A. Snyder), 06/2011-12/2011
$25,000
"Investigation of Surface Chemistry and Morphology for Development of Dye-Sensitized Solar Cells", (PI: James F. Gilchrist, coPI: Mark Snyder), 07/2009-09/2010
$55,000

North American Mixing Forum, Start-up Grant in Mixing
"Mixing of polydisperse suspensions in 3D microchannel flows" (PI: James F. Gilchrist), 01/2008-12/2009
$24,000

Lehigh University
"Fabrication of Nanoporous Membranes for Bio-Nano-Particle Filtration", Biosystems Dynamics Summer Institute, Howard Hughes Medical Institute (PI: Xuanhong Cheng, coPI: James F. Gilchrist), 06/2010-06/2011
$60,000
"Control of Microstructure for Development of Dye-sensitized Solar Cells", Faculty Innovation Grant (PI: James F. Gilchrist), 07/2009-11/2010
$25,000
"Isolation and Analysis of Rare Cells from Biological Fluids Using a Reversible Cell Capture Platform", Biosystems Dynamics Summer Institute, Howard Hughes Medical Institute (PI: Xuanhong Cheng, coPI: James F. Gilchrist), 06/2009-06/2010
$60,000

Non-competitively Awarded Research Grants

"Development of a method of creating precision self-assembled nano- and micro-structured materials using nanoparticle dielectrophoresis", Center for Advanced Materials and Nanotechnology, NASA (PI: James F. Gilchrist), 07/2006-06/2009
$47,500

E. Editorial Activities

NSF: Grant reviewer and panel participant (NIRT, CBET, CDI, CAREER, and others)
Petroleum Research Fund: Grant reviewer
Article reviewer: *AIChE Journal, Analytical Chemistry, Applied Physics Letters, Automatica, Chemical Engineering Science, European Physical Letters, Journal of Colloid and Interfacial Science, Journal of Fluid Mechanics, Journal of Rheology, Langmuir, Lab on a Chip, Pharmaceutical Technology, Physics of Fluids, Physical Review E, Physical Review Letters, Soft Matter, and others.*

F. Scholarly Presentations

International invited presentations

8th Sino-US Congress of Chemical Engineering, Shanghai, China	October 2015
ICPEAM2014, Kuala Lumpur, Malaysia	June 2014
Keynote Presentation	
International Polymer Colloids Group, Shanghai, China	June 2013
Annual Meeting of the European Society of Rheology, Leuven, Belgium	April 2013
Keynote Presentation	
International Congress of Rheology, Lisbon, Portugal	August 2012
Keynote Presentation	
Composites at Lake Louise, Lake Louise, Canada	October 2011
5th Int. Conf. on Nanochannels, Microchannels and Minichannels, Puebla, Mexico	June 2007
Keynote Presentation	

National invited presentations

Gordon Research Conference	February 2016
Colloidal, Macromolecular & Polyelectrolyte Solutions	
IUTAM Symposium on Multi-phase Continuum Modeling of Particulate Flows	December 2015
University of Florida	
ASME Applied Mechanics Summer Conferences, Brown University	July 2013
Keynote Presentation	
TechConnect, Washington D.C.	May 2013
Keynote Presentation, Session "Soft Nanotechnology & Colloids II"	
Polymer Nanocomposites Conference	March 2013
Gordon Research Conference	July 2012
Granular and Wet-Granular Materials	
American Physical Society, March Meeting 2011	March 2011
Keynote Presentation, Session "Polymer Colloids: Structure, Function and Dynamics"	
American Chemical Society, Fall 2009 National Meeting	August 2009
Keynote Presentation, Session "Self and Directed Colloidal Assembly"	
SIAM Conference on Applications of Dynamical Systems, Snowbird, UT	May 2005

Academic invited presentations

University of New South Wales, School of Chemical Engineering — August 2016
University of Newcastle, Department of Physics — July 2016
Arizona State University, Department of Chemical Engineering — September 2015
Tulane University, Department of Chemical and Biological Engineering — March 2015
University of Illinois, Department of Mechanical Science and Engineering — February 2015
Colorado School of Mines, — November 2014
Department of Chemical and Biological Engineering
Drexel University, Department of Chemical and Biological Engineering — September 2014
Cornell University, Fluid Dynamics Seminar — April 2014
Case Western Reserve University, — August 2013
Department of Macromolecular Science and Engineering
Technical University of Denmark, Department of Chemical Engineering — April 2013
University of Amsterdam, The Netherlands, Institute of Physics — April 2013
University of Minnesota, Coating Process Fundamentals Program — July 2012
University of California, Santa Barbara, — June 2012
Center for Interdisciplinary Research in Fluids
California Institute of Technology, Department of Chemical Engineering — June 2012
University of Pittsburgh, Department of Chemical and Petroleum Engineering — January 2012
University of California, Irvine, — January 2012
Department of Chemical Engineering and Materials Science
University of Delaware, Center for Molecular and Engineering Thermodynamics — February 2011
Syracuse University, Department of Chemical and Biomolecular Engineering — February 2011
Princeton University, Department of Chemical Engineering — April 2010
City College of New York, Levich Institute — February 2010
University of Maryland, College Park, — September 2009
Department of Chemical and Biomolecular Engineering
Northwestern University, Department of Chemical and Biochemical Engineering — April 2009
University of Notre Dame, Department of Chemical Engineering — January 2009
University of Maryland, Baltimore County — December 2008
Department of Mechanical Engineering,
The Pennsylvania State University, Department of Chemical Engineering — October 2008
Temple University, Department of Mechanical Engineering — October 2008
Johns Hopkins University, Department of Chemical Engineering — February 2008
Rutgers University, Department of Chemical Engineering — December 2006
The Pennsylvania State University, Department of Mathematics — October 2006
Columbia University, Department of Chemical Engineering, — April 2006
(joint IGERT seminar with City College of New York)
Washington University, Department of Chemical Engineering — April 2006
Cornell University, Microsystems Seminar — March 2005

Contributed conference presentations

119) American Institute of Chemical Engineers Annual Meeting — November 2016
K. Joshi and J. F. Gilchrist, "Surface Tension-Driven Flows for Convective Deposition"
118) American Institute of Chemical Engineers Annual Meeting — November 2016

M. Joy, M. A. Snyder, and J. F. Gilchrist, "Stress-Driven Colloidal Crystal Reassembly through Darcy Flow during Vibration Assisted Convective Deposition"

117) American Institute of Chemical Engineers Annual Meeting November 2016
K. Joshi and J. F. Gilchrist, "Estimation of the Drying Length during Particle Assembly by Convective Deposition"

116) American Institute of Chemical Engineers Annual Meeting November 2016
X. Li and Z. Zeng, "Control of Microstructure during Roll-to-Roll Deposition of Self-Assembled Colloidal Monolayers"

115) 17th Coating Science and Technology Symposium September 2016
K. Joshi and J.F. Gilchrist, "Effect of particle-substrate electrostatic interactions during convective deposition"

114) 17th Coating Science and Technology Symposium September 2016
J.F. Gilchrist, K. Joshi, Z. Zeng, and X. Li, "Large-area nanoparticle films by continuous automated Langmuir-Blodgett assembly and deposition"

113) 17th Coating Science and Technology Symposium September 2016
J.F. Gilchrist, M.A. Snyder, N. Tansu, "Optical-scale microlens arrays for enhanced light emitting diode and dye sensitized solar cell performance"

112) American Chemical Society Colloids and Surface Science Symposium June 2016
A.L. Weldon, K. Joshi, A.F. Routh, and J.F. Gilchrist, "Uniform cracks in nanoparticle films deposited by convective assembly"

111) American Chemical Society Colloids and Surface Science Symposium June 2016
M. Joy, M.A. Snyder, J.F. Gilchrist, "Fabrication of tunable periodic defects in convectively assembled colloidal crystals through stress relaxation"

110) American Chemical Society Colloids and Surface Science Symposium June 2016
K. Joshi, J.F. Gilchrist, "Marangoni flow in colloidal self-assembly and deposition"

109) American Physical Society March Meeting March 2016
N. Selan, M. Blades, M. Joy, J. Gilchrist, and S. Rotkin, "Measurement of Diffraction Properties of Colloidal Crystals"

108) APS Division of Fluid Dynamics Annual Meeting November 2015
J. Gilchrist, K. Joshi, T. Muangnapoh, and M. Stever, "Surface tension gradient enhanced thin film flow for particle deposition"

107) American Institute of Chemical Engineers Annual Meeting November 2015
P. Spicer and J. F. Gilchrist, "Microstructure, Rheology, and Processing of Complex Fluids"

106) American Institute of Chemical Engineers Annual Meeting November 2015
Kedar Joshi, Tanyakorn Muangnapoh, Michael Stever and James F. Gilchrist, "Effect of Ionic Strength and Surface Charge on Capillary-Driven Colloidal Self-Assembly and Deposition"

105) American Institute of Chemical Engineers Annual Meeting November 2015
James F. Gilchrist, Jane Boettcher and Alexander L. Weldon, "Streak Formation and Suppression during Convective Deposition"

104) American Institute of Chemical Engineers Annual Meeting November 2015
Xue Li and James F. Gilchrist, "Instabilities during Large-Area Continuous Nanoparticle Film Deposition"

103) American Institute of Chemical Engineers Annual Meeting November 2015

Midhun Joy, Tanyakorn Muangnapoh, Mark A. Snyder and James F. Gilchrist, "Structural Diversity of Flow-Assisted Colloidal Crystallization in Vibration-Assisted Convective Assembly"

102) International Polymer Colloids Group 2015 Conference June 2015
K. Joshi, T. Muangnapoh, M. Stever, J. Gilchrist, "Effect of ionic strength and surface charge on capillary-driven colloidal self-assembly and deposition"

101) International Polymer Colloids Group 2015 Conference June 2015
M. Joy, T. Muangnapoh, M.A. Snyder, J. Gilchrist, "Flow-Templated Fabrication of FCC (100) Colloidal Crystal Structures"

100) International Polymer Colloids Group 2015 Conference June 2015
Xue Li and James Gilchrist, "Large-area nanoparticle films by continuous automated Langmuir-Blodgett assembly and deposition"

99) American Chemical Society Colloids and Surface Science Symposium June 2015
M. Joy, T. Muangnapoh, M.A. Snyder, J. Gilchrist, "Template-free fabrication of partially aligned (100) FCC thin film colloidal crystals"

98) American Chemical Society Colloids and Surface Science Symposium June 2015
X. Li, J. Gilchrist, "Large-area nanoparticle films by continuous automated Langmuir-Blodgett assembly and deposition"

97) American Chemical Society Colloids and Surface Science Symposium June 2015
K. Joshi, T. Muangnapoh, M. Stever, J. Gilchrist, "Effect of ionic strength and surface charge on capillary-driven colloidal self-assembly and deposition"

96) Lehigh Nanotechnology Network: Advancing Technology for Business Growth May 2015
Xue Li and James Gilchrist, "Large-area nanoparticle films by continuous automated Langmuir-Blodgett assembly and deposition"

95) 13th Tiger-Hen-Hawk Rheology Symposium May 2015
Midhun Joy, Tanyakorn Muangnapoh, Mark A. Snyder, and James F. Gilchrist, "Flow-Templated Fabrication of FCC (100) Colloidal Crystal Structures"

94) American Institute of Chemical Engineers Annual Meeting November 2014
Midhun Joy, Tanyakorn Muangnapoh, Mark A. Snyder, and James F. Gilchrist, "Non-Templated Fabrication of Partially Aligned FCC Thin Film Colloidal Crystals"

93) American Institute of Chemical Engineers Annual Meeting November 2014
Alexander Weldon, Alexander Routh, and James F. Gilchrist, "Hydrodynamic-Controlled Uniform Crack Spacing Following Convective Deposition"

92) American Institute of Chemical Engineers Annual Meeting November 2014
Tharanga Perera and James F. Gilchrist, "Direct visualization of near-wall structure of sheared monosized suspensions"

91) The Society of Rheology 86th Annual Meeting October 2014
Midhun Joy, Tanyakorn Muangnapoh, Mark A. Snyder, and James F. Gilchrist, "Non-templated fabrication of partially aligned FCC thin film colloidal crystals"

90) The Society of Rheology 86th Annual Meeting October 2014
Tharanga Perera and James F. Gilchrist, "Direct visualization of near-wall structure of sheared monosized suspensions"

89) 17th Coating Science and Technology Symposium September 2014
Midhun Joy, Tanyakorn Muangnapoh, Mark A. Snyder, and James F. Gilchrist, "Deposition of Non-Templated Cubic Colloidal Crystals"

88) 17th Coating Science and Technology Symposium September 2014

James Gilchrist and Alexander L. Weldon, "Streak Formation During Convective Deposition"

87) 17th Coating Science and Technology Symposium September 2014
James Gilchrist and Alexander L. Weldon, "Periodic Uniform Linear Crack Formation During Convective Deposition"

86) American Chemical Society Colloids and Surface Science Symposium June 2014
T. Perera and James F. Gilchrist, "Effect of smooth and rough boundaries on suspension microstructure"

85) American Chemical Society Colloids and Surface Science Symposium June 2014
A. Weldon and James F. Gilchrist, "Instability-driven macroscale defects in evaporation-driven particle assembly"

84) American Chemical Society Colloids and Surface Science Symposium June 2014
Tanyakorn Muangnapoh and James F. Gilchrist, "Vibration-assisted convective deposition"

83) GRC, Colloidal, Macromolecular & Polyelectrolyte Solutions February 2014
Alexander Weldon and James F. Gilchrist, "What Goes Wrong? Instability and Stress-Driven Macroscale Defects in Evaporation-Driven Particle Assembly"

82) GRC, Colloidal, Macromolecular & Polyelectrolyte Solutions February 2014
Tharanga Perera and James F. Gilchrist, "Near wall effects on suspension microstructure"

81) American Physical Society Division of Fluid Dynamics November 2013
Tanyakorn Muangnapoh and James F. Gilchrist, "Effect of lateral vibrations during convective deposition"

80) American Physical Society Division of Fluid Dynamics November 2013
Alexander Weldon and James F. Gilchrist, "Instability-Driven Streak Formation During Convective Deposition"

79) American Institute of Chemical Engineers Annual Meeting November 2013
Alexander Weldon and James F. Gilchrist, "Instability-Driven Streak Formation During Convective Deposition"

78) American Institute of Chemical Engineers Annual Meeting November 2013
Tharanga Perera and James F. Gilchrist, "Colloidal microstructure in sheared Boger fluids"

77) Society of Rheology 84th Annual Meeting October 2013
Tharanga Perera and James F. Gilchrist, "Colloidal microstructure in sheared Boger fluids"

76) TechConnect 2013 May 2013
James F. Gilchrist, Tanyakorn Muangnapoh, and Alexander L. Weldon, "Vibration-assisted convective deposition"

75) Society of Rheology 84th Annual Meeting February 2013
James F. Gilchrist, Tanyakorn Muangnapoh, and Alexander L. Weldon, "Vibration-assisted convective assembly and deposition for monolayer particle coatings from suspension"

74) Society of Rheology 84th Annual Meeting February 2013
James F. Gilchrist, Tharanga Perera, and Bu Xu, "Suspension structure visualization in simple and complex flows"

73) American Institute of Chemical Engineers Annual Meeting October 2012
Pisist Kumnorkaew, Midhun Joy, James F. Gilchrist, and Mark A. Snyder, "Multiscale Anode Assemblies for Improving Efficiency and Versatility of Dye-Sensitized Solar Cells"

72) American Institute of Chemical Engineers Annual Meeting October, 2012
Hugo Caram, James F. Gilchrist, and Kenneth J. Ford, "Measurement of Density Fluctuations in a Vertically Oscillated Granular Bed At the Onset of Vibrofluidization",

71) American Institute of Chemical Engineers Annual Meeting October 2012
Bu Xu, M. Tharanga Perera and James F. Gilchrist, "Direct Measurement of Suspension Microstructure: Effects of Combined Hydrodynamic Electrostatic, and Viscoelastic Interactions"

70) American Institute of Chemical Engineers Annual Meeting October 2012
Yajun Ding, James F. Gilchrist and Jeetain Mittal, "Equilibrium and Non-Equilibrium Dynamics and Structure of Soft Sphere Fluids",

69) 16th International Coating Science and Technology Symposium September 2012
A. Weldon, T. Muangnapoh, P. Kumnorkaew, and J. F. Gilchrist, "Convective Assembly for Nanostructured Optical and Biofunctional Coatings"

68) Mixing XXIII, Cancun, Mexico June 2012
Bu Xu, Tharanga Perera, and James Gilchrist, "Mixing and microstructure of suspensions in inertial-free complex flows"

67) American Physical Society Division of Fluid Dynamics November 2011
Bu Xu, M. Tharanga Perera, James F. Gilchrist "Direct experimental investigation of suspension microstructure"

66) American Physical Society Division of Fluid Dynamics November 2011
Alexander Weldon, Tanyakorn Muangnapoh, Pisist Kumnorkaew, and James F. Gilchrist, "Capillary-Driven Convective Assembly of Colloidal Monolayers"

65) American Physical Society Division of Fluid Dynamics November 2011
Tanyakorn Muangnapoh, Alexander Weldon, Pisist Kumnorkaew, and James F. Gilchrist, "Vibration Assisted Convective Deposition"

64) American Institute of Chemical Engineers Annual Meeting November 2011
Tanyakorn Muangnapoh, Alexander Weldon, Pisist Kumnorkaew, and James F. Gilchrist, "Assisted Convective Assembly of Colloidal Monolayers"

63) American Institute of Chemical Engineers Annual Meeting November 2011
Pisist Kumnorkaew, Mark A. Snyder, and James F. Gilchrist, "Anode Assembly and Templating Strategies for Improving Efficiency and Versatility of Dye-Sensitized Solar Cells"

62) American Institute of Chemical Engineers Annual Meeting November 2011
Bu Xu, M. Tharanga Perera, James F. Gilchrist, "Direct Investigation of 3D Suspension Microstructural Evolution"

61) The Society of Rheology 81st Annual Meeting October 2011
Bu Xu, M. Tharanga Perera, James F. Gilchrist, "Direct investigation of 3D suspension microstructural evolution"

60) The Society of Rheology 81st Annual Meeting October 2011
Alexander L. Weldon, Tanyakorn Muangnapoh, James F. Gilchrist, "Capillary-driven convective assembly of colloidal monolayers"

59) American Chemical Society Colloids and Surface Science Symposium June 2011
Bu Xu, Changbao Gao, James Gilchrist, "Determining hydrodynamic and electrostatic-driven suspension microstructure via high speed confocal microscopy"

58) MRS Fall 2010 Annual Meeting, November November 2010
P. Kumnorkaew, M. A. Snyder, J. F. Gilchrist, "Particle Assembly and Nanotemplating Strategies for Improving Efficiency of Dye-sensitized Solar Cells"

57) American Institute of Chemical Engineers Annual Meeting November 2010

B. Wang, P. Kumnorkaew, M. Wolfe, A. L. Weldon, J. F. Gilchrist, X. Cheng, "Effect of Surface Roughness On Affinity-Based Cell Capture"

56) American Institute of Chemical Engineers Annual Meeting November 2010
Bu Xu, Changbao Gao, and James F. Gilchrist, "Microstructure Evolution of near-Hard-Sphere Particle Suspensions"

55) American Institute of Chemical Engineers Annual Meeting November 2010
Alexander L. Weldon, Pisist Kumnorkaew, and James F. Gilchrist, "Convective Deposition of Microsphere Suspensions Into Targeted Submomolayer Morphologies"

54) The Society of Rheology 80th Annual Meeting October 2010
Bu Xu, Changbao Gao, James F. Gilchrist, "Microstructure evolution in near-hard-sphere particle suspensions"

53) The Society of Rheology 80th Annual Meeting October 2010
Bu Xu and James F. Gilchrist, "Mixing and segregation of particle suspensions in 2D chaotic flows"

52) Biomedical Engineering Society Annual Meeting October 2010
B. Wang, P. Kumnorkaew, M. Wolfe, A. Weldon, C. Tibaldi, J. Gilchrist, and X. Cheng, "Study of Surface Roughness on Affinity-Based Cell Capture in Microfluidic Devices"

51) American Physical Society, March Meeting March 2010
Xiao-Hang Li, Yik-Khoon Ee, Guangyu Liu, Pisist Kumnorkaew, James F. Gilchrist, Nelson Tansu, "MOCVD Epitaxy of GaN by Employing SiO_2 Colloidal Microspheres Templates"

50) Colloidal, Macromolecular & Polyelectrolyte Solutions, February 2010
Gordon Research Conferences

49) American Physical Society Division of Fluid Dynamics November 2009
James Gilchrist, Kenneth Ford, Colin Armstrong, Richard Evans, Hugo Caram, "Measurement of Density Fluctuations in a Vertically Oscillated Granular Bed at the Onset of Vibrofluidization"

48) American Institute of Chemical Engineers Annual Meeting November 2009
Changbao Gao and James F. Gilchrist, "Direct Measurement of Suspension Structure in Pressure Driven Flow"

47) American Institute of Chemical Engineers Annual Meeting November 2009
Pisist Kumnorkaew, Alexander L. Weldon, and James F. Gilchrist, "Convective Deposition of Binary Suspensions"

46) American Institute of Chemical Engineers Annual Meeting November 2009
Bu Xu and James F. Gilchrist, "Mixing and Shear-Induced Migration in a 2D Time-Periodic Cavity-Driven Flow"

45) The Society of Rheology 79th Annual Meeting October 2009
Pisist Kumnorkaew and James F. Gilchrist, "Convective Deposition of Binary Suspensions"

44) The Society of Rheology 79th Annual Meeting October 2009
Changbao Gao and James F. Gilchrist, "Direct measurement of suspension structure in pressure driven flow"

43) American Chemical Society Colloids and Surface Science Symposium June 2009
Pisist Kumnorkaew and James F. Gilchrist, "Direct Visualization of Convective Deposition of Microsphere Monolayers"

42) American Chemical Society Colloids and Surface Science Symposium June 2009

James F. Gilchrist and Ryan Slopek, "Fabrication of Microvasculature via Suspension Dielectrophoresis"

41) American Chemical Society Colloids and Surface Science Symposium June 2009
Changbao Gao, Bu Xu, and James F. Gilchrist, "Suspension Transport, Migration, and Structure in Microchannel Mixers"

40) 12th Tiger-Hen-Hawk Rheology Symposium, University of Delaware May 2009
P. Kumnorkaew and J. F. Gilchrist, "Direct imaging of convective deposition"

39) American Physical Society, March Meeting March 2009
James F. Gilchrist, Pisist Kumnorkaew, Nelson Tansu, Yik Khoon Ee, "Rapid Convective Deposition for Fabrication of Microlens Arrays"

38) SPIE Photonics West 2009 January 2009
Y. K. Ee, P. Kumnorkaew, R. A. Arif, H. Tong, J. F. Gilchrist, and N. Tansu, "Enhancement of Light Extraction Efficiency of InGaN Quantum Wells Light-Emitting Diodes with Polydimethylsiloxane Concave Microstructures"

37) Photonics Global 2008, Nanophotonics Symposium December 2008
Y. K. Ee, R. A. Arif, P. Kumnorkaew, J. F. Gilchrist, and N. Tansu, "Optimization and Fabrication of III-Nitride Light-Emitting Diodes with Self-Assembled Colloidal-Based Convex Microlens Arrays,"

36) American Physical Society Division of Fluid Dynamics November 2008
James F. Gilchrist, Kenneth J. Ford, and Hugo S. Caram, "Density Measurements n a Vibro-Fluidized Deep Granular Bed"

35) American Physical Society Division of Fluid Dynamics November 2008
James F. Gilchrist and Pisist Kumnorkaew, "Direct Visualization of Rapid Convective Deposition of Microsphere Monolayers"

34) American Institute of Chemical Engineers Annual Meeting November 2008
Ryan P. Slopek and James F. Gilchrist, "The Assembly of Microwires from Monomeric Solution of Nanoparticles Using Dielectrophoresis"

33) American Institute of Chemical Engineers Annual Meeting November 2008
Pisist Kumnorkaew and James F. Gilchrist, "Direct Visualization of Rapid Convective Deposition of Microsphere Monolayers"

32) American Institute of Chemical Engineers Annual Meeting November 2008
Changbao Gao and James F. Gilchrist, "Microscale Mixing of Mono- and Bi-Dispersed Microsphere Suspensions"

31) American Institute of Chemical Engineers Annual Meeting November 2008
Bu Xu and James F. Gilchrist, "Mixing and Shear-Induced Migration in a 2D Time-Periodic Cavity-Driven Flow"

30) American Institute of Chemical Engineers Annual Meeting November 2008
Kenneth J. Ford, James F. Gilchrist, and Hugo S. Caram, "Power Consumption and Granular Flow In a Vibro-Fluidized Stirred Granular Bed"

29) American Institute of Chemical Engineers Annual Meeting November 2008
Kenneth J. Ford, James F. Gilchrist, and Hugo S. Caram, "Density Measurements in a Vibro-Fluidized Deep Granular Bed"

28) The XVth International Congress on Rheology August 2008
James F. Gilchrist and Pisist Kumnorkaew, "Rapid convective deposition of microsphere monolayers for fabrication of microlens arrays"

27) IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) May 2008

Y. K. Ee, P. Kumnorkaew, R. A. Arif, H. Tong, J. F. Gilchrist, and N. Tansu, "Size Effects and Light Extraction Efficiency Optimization of III-Nitride Light Emitting Diodes with SiO2 / Polystyrene Microlens Arrays,"

26) 11th Tiger-Hen-Hawk Rheology Symposium, University of Delaware April 2008
C. Gao and J. F. Gilchrist, "Shear-induced migration in microchannel flows"

25) SPIE Photonics West 2008 January 2008
Y. K. Ee, P. Kumnorkaew, R. A. Arif, H. Tong, J. F. Gilchrist, and N. Tansu, " Comparison of Numerical Modeling and Experiments of InGaN Quantum Wells Light Emitting Diodes with SiO2 / Polystyrene Microlens Arrays"

24) American Institute of Chemical Engineers Annual Meeting November 2007
P. Kumnorkaew, Y. K. Ee, N. Tansu and J. F. Gilchrist, "Rapid Convective Deposition of Microsphere Monolayers for Fabrication of Microlens Arrays"

23) American Institute of Chemical Engineers Annual Meeting November 2007
J. F. Gilchrist and C. Gao, "Shear-Induced Migration of Suspensions in 1D, 2D, and 3D Microchannel Flows"

22) American Institute of Chemical Engineers Annual Meeting November 2007
K. J. Ford, J. F. Gilchrist, and H. S. Caram, "Power Consumption and Granular Flow in a Vibro-Fluidized Stirred Granular Bed"

21) The Society of Rheology 79th Annual Meeting October 2007
J. F. Gilchrist and C. Gao, "Shear-induced migration of suspensions in 1D, 2D, and 3D open flows"

20) American Chemical Society Colloids and Surface Science Symposium June 2007
C. Gao and J. F. Gilchrist, "Shear-induced migration of suspensions in 3D microfluidic geometries"

19) American Chemical Society Colloids and Surface Science Symposium June 2007
P. Kumnorkaew, Y. K. Ee, N. Tansu, J. F. Gilchrist, "Deposition of microsphere monolayers for microlens arrays"

18) IEEE/OSA Conference on Lasers and Electro-Optics (CLEO) May 2007
Y. K. Ee, P. Kumnorkaew, R. A. Aref, J. F. Gilchrist, and N. Tansu, "Enhancement of Light Extraction Efficiency of InGaN Quantum Wells LEDs Using SiO2 Microspheres"

17) American Physical Society Division of Fluid Dynamics November 2006
J. F. Gilchrist, K. J. Ford, and H. S. Caram, "Power dissipation and fluidization in a vibrated/stirred granular flow"

16) American Institute of Chemical Engineers Annual Meeting November 2006
J. F. Gilchrist, K. J. Ford, and H. S. Caram, "Flow Transitions in a Model High Shear Granulator"

15) American Institute of Chemical Engineers Annual Meeting November 2006
J. F. Gilchrist and C. Gao, "Competition between Particle Migration and Chaotic Advection in Microchannels"

14) The Society of Rheology 78th Annual Meeting October 2006
J. F. Gilchrist, K. J. Ford, and H. S. Caram, "Transitions in a vibrated/stirred granular flow"

13) The Society of Rheology 78th Annual Meeting October 2006
J. F. Gilchrist and C. Gao, "Particle migration in 1D, 2D, and 3D microchannel flows"

12) American Institute of Chemical Engineers Spring Meeting April 2006
K. J. Ford, J. F. Gilchrist, and H. S. Caram, "Agitation and Mixing in Vibrated Beds"

11) American Physical Society Division of Fluid Dynamics November 2005

J. F. Gilchrist and C. Gao, "Particle migration of a Brownian suspension in simple and chaotic pressure-driven microchannel flows"

10) American Chemical Society Colloids and Surface Science Symposium June 2005
J. F. Gilchrist, A. T. Chan, J. A. Lewis, and E. R. Weeks, "Phase Behavior and Structure of Strongly Adsorbing Microsphere-Nanoparticle Systems"

9) American Physical Society Division of Fluid Dynamics November 2004
J. F. Gilchrist, A. T. Chan, J. A. Lewis, E. R. Weeks, "Structure of Strongly Adsorbing Microsphere - Nanoparticle Mixtures"

8) American Institute of Chemical Engineers Annual Meeting November 2004
J. F. Gilchrist, A. T. Chan, E. R. Weeks, and J. A. Lewis**, "**Phase behavior and structure of strongly adsorbing microsphere-nanoparticle mixtures**"**

7) American Chemical Society Colloids and Surface Science Symposium June 2004
A. Chan, G. Gratson, C. Martinez, J. Gilchrist, J.A. Lewis, "Phase Behavior, Structure, and Assembly of Binary Mixtures"

6) American Institute of Chemical Engineers Annual Meeting November 2003
J. F. Gilchrist, A. T. Chan, C.J. Martinez, S. Rhodes, J. A. Lewis, and E. Weeks, "Phase Behavior and Structure of Colloidal Microsphere-Nanoparticle Mixtures"

5) American Institute of Chemical Engineers Annual Meeting November 2003
J. F. Gilchrist and J. M. Ottino, "Granular Flow, Mixing and Segregation in a Forced Spherical Tumbler"

4) Understanding Complex Systems Symposium, University of Illinois May 2003
J. F. Gilchrist, "Mixing and Segregation in a Spherical Granular Tumbler"

3) American Physical Society Division of Fluid Dynamics November 2002
J. F. Gilchrist and J. M. Ottino, "Axial Segregation in a Sphere"

2) American Institute of Chemical Engineers Annual Meeting November 2002
J. F. Gilchrist and J. M. Ottino, "Mixing and segregation of granular materials in spherical and cubical tumblers"

1) American Institute of Chemical Engineers Annual Meeting November 2002
J. F. Gilchrist and J. M. Ottino, "Persistence of axial segregation in rocking spherical tumblers"

G. Teaching and Research Advising

Courses Taught

Lehigh University

Material and Energy Balances of Chemical Processes (8 semesters) FL04-10, 12
(CHE 031 – 3 credits, 44, 64, 54, 63, 70, 81, 120 UGs, respectively)

Fluid Mechanics (1 semester) SP05
(CHE 044 – 4 credits, 30 UGs)

Unit Operations Laboratory (2 semesters, 1 section each) FL14, 15, 16
(CHE 202 – 3 credits, 14 UGs)

Opportunity for Student Innovation (14 semesters) FL04 - SP07, FL08-SP11, FL14-SP15, FL16-SP17
(CHE 185/186 – 3 credits, 3 UGs FL04-SP05, 4 UGs FL05-SP06,
2 UGs FL06-SP07, 3 UGs FL08-SP09, 2 UGs FL09-SP10, 1 UG FL14-SP15, 3 UGs FL16-)

Transport Processes (7 semesters) SP06-08, 11, 13-17
(CHE 415 – 4 credits, 9-30 graduate students, including distance ed. even years)

Characterization of Complex Fluids (1 semester) FL 2013
(CHE 398 – 3 credits, 6 students, 3 distance ed.)

Engineering Applications of Chemistry (2 semesters) FL05, SP06
(CHM 097 – 1 credit, 209 and 147 UGs, respectively)

Introduction to Engineering Practice (5 semesters) SP09-SP11
(ENG 005 – 3 credits, ~50 students/semester)

California Institute of Technology

Rheo-Optics: Characterization of Complex Fluids (1 quarter) Spring 2012
(3 credits, 12 students registered)

Northwestern University

Process Modeling and Control (1 quarter w/ B. Cohen) Winter 2002
(3 credits, ~35 students registered)

Advising

Postdoctoral

Dr. Ryan Slopek – Spring 2008-Spring 2009
Dr. Pisist Kumnorkaew – June 2010-June 2012
Dr. Alex Weldon – June 2014-August 2014
Dr. Eric Daniels – June 2011-November 2014
Dr. Xue Li – November 2014-November 2015

Doctoral

Dr. Kenneth Ford – Fall 2004-March 2008
Dr. Changbao Gao – Fall 2004-Fall 2009
Dr. Pisist Kumnorkaew – Fall 2005-Spring 2010
Dr. Bu Xu – Fall 2006-Spring 2012
Dr. Alexander Weldon – Fall 2008-Spring 2014
Dr. Tharanga Perera – Fall 2010-Summer 2014
Dr. Tanyakorn Mungnapoh – Fall 2009-Spring 2015
Dr. Yajun Ding – Fall 2010-Fall 2013
Dr. Midhun Joy – Fall 2011-May 2016
Kedar Joshi – Fall 2012-May 2017
Karl Seven – Spring 2014-present (*Polymer Science and Engineering*)
Thitiporn Kaewpetch – Fall 2015-present (M.S. 2017, *Polymer Science and Engineering*)

Masters

Qi Rao – Fall 2004-January 2008
Naval Singh – Fall 2014-Spring 2017
Zhiqiao Zeng – September 2015-Spring 2017

H. Service

Professional

Meeting Co-Organizer

13th Tiger-Hen-Hawk Rheology Symposium, Lehigh University May 2015
AIChE Fluid Mechanics (1J) Master Program Coordinator November 2011
12th Tiger-Hen-Hawk Rheology Symposium, Lehigh University May 2009
Multiple Sessions Chaired at Professional Meetings (AIChE, APS, ACS CSSS, ISCST, ASME SES)-not listed

Other

NSF Review Panel Participant (*multiple times – not listed*)
Lehigh Nanotechnology Network – *Executive Board Member*, 2005-2013
American Institute of Chemical Engineers – Member, 2001-present
- Fluid Mechanics Programming Committee – *Executive Board Member*, 2010-present
- Particle Technology Forum – *Executive Board Member*, 2009-present
- North American Mixing Forum - *Executive Board Member*, 2010-present
- Thomas Barron Award Committee Chair, 2013
- Particle Technology Forum Award Chair, 2014
- George Klinzing Best PhD Award Chair, 2015

American Physical Society – Member, 2001-present
American Chemical Society – Member, 2003-present
The Society of Rheology – Member, 2005-present
International Particle Colloids Group – Member, 2013-present
International Society of Coating Science and Technology – Member, 2014-present

Lehigh University

Department

Chair, Anderson Chair faculty search committee, 2014-present
Chemical Engineering Graduate Association (ChEGA) faculty advisor
ABET co-chair, 2005-2013 (2 successful reviews)
Curriculum committee member
Safety committee faculty representative
Department website committee member
CHM 97 committee member
Engineering 5/97 – experimental design and quarterly guest lectures
UG Student advisor
Seminar coordinator

College

College Tenure Committee (2013-current)
Faculty Committee on Advancement (2016-current)
Bioengineering Faculty Search Committee

University

NSF ADVANCE men faculty advocates (advocate and ally)
COACHE faculty job satisfaction survey task force
Graduate Research Committee, including fellowship and curriculum subcommittees
University Committee on Discipline (UCOD)

Chemistry Faculty Search Committee

Other
Center for Advanced Materials and Nanotechnology (CAMN) core faculty member
Center for Polymer Science and Engineering (CPSE) core faculty member
Emulsion Polymers Institute (EPI) core faculty member
Center for Photonics and Nanoelectronics (CPN) affiliated faculty member
Undergraduate Research Symposium
MOOV (Made Of Our Volunteers)
Lehigh Life Day Lunches
Discussion Group, "Tenure flexibility"
Discussion Group, "What makes Lehigh special"
Junior Open Houses (college panel member and department representative)
Co-authorship panel
BioEMB workshop participant
NSF Multiphase Flow workshop
ADVANCE participant (multiple events)