Eric Matthew Furst

William H. Severns Jr. Distinguished Chair of Chemical Engineering
Department of Chemical & Biomolecular Engineering
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Education

Stanford University, Ph.D., Chemical Engineering, 2000
Thesis: "Optical Trapping and Scattering Studies of Field-Induced Micromechanics, Interactions and Dynamics in a Colloidal Suspension." Advisor: Alice P. Gast

Stanford University, M.S., Chemical Engineering, 1996

Carnegie Mellon University, B.S. with University Honors, Chemical Engineering, 1995
Honors research: "Adsorption of Polyelectrolytes and Surfactants at the Solid-Liquid Interface."
Advisor: Robert D. Tilton

Professional Appointments and Experience

2024–	Treasurer, American Institute of Physics
2024–	Treasurer and Trustee (*ex officio*), AIP Foundation
2023	Pirkey Visiting Fellow, Chemical Engineering, The University of Texas at Austin (April)
2022–	William H. Severns Jr. Distinguished Chair of Chemical Engineering, University of Delaware
2022	Visiting Professor, Laboratoire Navier, École des Ponts, Marne-la-Vallée, France (September)
2020–2026	Member Society Director, American Institute of Physics
2018–	Academic Consultant, International Fine Particles Research Institute (IFPRI)
2017–2022	Department Chair, Chemical & Biomolecular Engineering, University of Delaware
2017	Visiting Professor, Université Paris-Est, Marne-la-Vallée, France (April)
2016	Guest Professor, Department of Materials, ETH Zürich, Switzerland (January–July)
2012–2022	Professor, Department of Chemical & Biomolecular Engineering, University of Delaware
2009	Visiting Professor, Department of Chemical Engineering, Katholieke Universiteit Leuven, Belgium
2008–2017	Director, Center for Molecular and Engineering Thermodynamics
2007–2019	Faculty, Center for Molecular and Engineering Thermodynamics (CMET)
2007–2012	Associate Professor, Department of Chemical & Biomolecular Engineering, University of Delaware
2001–2007	Assistant Professor, Department of Chemical Engineering, University of Delaware
2000–2001	Postdoctoral Trainee, Laboratoire de Physico-Chimie, Institut Curie, Paris
1997–1998	Graduate Teaching Assistant, Department of Chemical Engineering, Stanford University
1995–2000	Research Assistant, Department of Chemical Engineering, Stanford University
1995	Chemical Engineer, Lawrence Livermore National Laboratory, Livermore, California

Honors, Awards, and Fellowships

2024	Fellow of the Society of Rheology
2023	Louis T. Pirkey Centennial Lecture, Chemical Engineering, The University of Texas at Austin
2022	Botsaris Lectureship, Chemical and Biological Engineering, Tufts University
2020	Fellow of the American Association for the Advancement of Science
2016	College of Engineering Excellence in Teaching Award, University of Delaware
2014	NASA Exceptional Scientific Achievement Medal
2014	Fellow of the American Chemical Society
2014	Chaire Joliot, École Supérieure de Physique et de Chimie Industrielles (ESPCI), Paris
2013	Distinguished Lindsay Lecture, Department of Chemical Engineering, Texas A&M University
2013	Soft Matter Lectureship Award, Royal Society of Chemistry, UK
2013	Excellence in Undergraduate Advising and Mentoring Award, University of Delaware

Honors, Awards, and Fellowships, continued

2013 Award for Top Application from the International Space Station, American Astronautical Society
2013 Senior Thesis Mentor Award, University of Delaware
2010 Chaire Joliot, École Supérieure de Physique et de Chimie Industrielles (ESPCI), Paris
2009 Invited participant, National Academy of Engineering Frontiers of Engineering
2009 European Union Erasmus Mundus Scholar
2008 Society of Rheology Publication Award
2007 Outstanding Junior Faculty of Engineering, University of Delaware
2004 DuPont Young Professor Award
2003 National Science Foundation CAREER Award
2000 Bourse Chateaubriand Postdoctoral Fellowship (France)
1995 Carnegie Institute of Technology Honors
1995 DuPont Ph.D. Fellowship in Chemical Engineering (declined)
1995 AIChE Professional Promise Award, Chemical Engineering, Carnegie Mellon University
1994 ACS POLYED Undergraduate Scholarship for Research in Polymer Science
1991 Andrew Carnegie Merit Scholarship

Scholarly works

Books

1. Eric M. Furst and Todd M. Squires, *Microrheology*, Oxford University Press, New York, 2017.

Contributed book chapters

1. Eric M. Furst, "Suspension microrheology," in Jan Mewis and Norman J. Wagner, *Colloidal Suspension Rheology*, 1st ed., Cambridge University Press, New York, 2011.

2. Bum Jun Park, Daeyeon Lee, and Eric M. Furst, "Interactions and Conformations of Particles at Fluid-Fluid Interfaces" in To Ngai and Stefan A. F. Bon, Eds. *Particle-Stabilized Emulsions and Colloids: Formation and Applications*, Royal Society of Chemistry, Cambridge, UK, 2015.

3. Mahlet A. Woldeyes, Cesar Calero-Rubio, Eric M. Furst, and Christopher J. Roberts, "Light Scattering to Quantify Protein–Protein Interactions at High Protein Concentrations," in Jennifer J. McManus, Ed. *Protein Self-Assembly*, Humana, New York, NY.

Invited reviews and editorials

1. Eric M. Furst, "Interactions, structure and microscopic response: complex fluid rheology using laser tweezers," Soft Materials 1, 185 (2003).

2. Eric M. Furst, "Applications of laser tweezers in complex fluid rheology," Curr. Opin. Coll. Inter. Sci., 10, 79-86 (2005).

3. Marek Grzelczak, Jan Vermant, Eric M. Furst and Luis M. Liz-Marzán, "Directed self-assembly of nanoparticles," ACS Nano 4, 3591-3605 (2010). doi: 10.1021/nn100869j – *ISI Highly Cited Paper*

4. Eric M. Furst, "Directing colloidal assembly at fluid interfaces," Proc. Natl. Acad. Sci. USA 108, 20853-20854 (2011).

5. Kelly M. Schultz and Eric M. Furst, "Microrheology of biomaterial hydrogelators," Soft Matter 8, 6198 - 6205 (2012). doi:10.1039/C2SM25187F.

6. Eric M. Furst, "Directed Self-Assembly," Soft Matter, 9, 9039–9045 (2013). doi: 10.1039/c3sm90126b

7. Eric M. Furst, "Colloidal self-assembly: Reversible actuation," Nature Mater., 14, 19–20 (2015).

8. Jean-Louis Barrat, Emanuela Del Gado, Stefan U Egelhaaf, Xiaoming Mao, Marjolein Dijkstra, David J Pine, Sanat K Kumar, Kyle Bishop, Oleg Gang, Allie Obermeyer, Christine M Papadakis, Costantinos Tsitsilianis, Ivan I Smalyukh, Aurelie Hourlier-Fargette, Sebastien Andrieux, Wiebke Drenckhan, Norman Wagner, Ryan P Murphy, Eric R Weeks, Roberto Cerbino, Yilong Han, Luca Cipelletti, Laurence Ramos, Wilson CK Poon,

James A Richards, Itai Cohen, Eric M Furst, Alshakim Nelson, Stephen L Craig, Rajesh Ganapathy, Ajay Kumar Sood, Francesco Sciortino, M Mungan, Srikanth Sastry, Colin Scheibner, Michel Fruchart, Vincenzo Vitelli, SA Ridout, M Stern, I Tah, G Zhang, Andrea J Liu, Chinedum O Osuji, Yuan Xu, Heather M Shewan, Jason Stokes, Matthias Merkel, Pierre Ronceray, Jean-François Rupprecht, Olga Matsarskaia, Frank Schreiber, Felix Roosen-Runge, Marie-Eve Aubin-Tam, Gijsje Koenderink, Rosa M Espinosa-Marzal, Joaquin Yus, Jiheon Kwon, "Soft Matter Roadmap," J. Phys. Materials, (2023). doi: 10.1088/2515-7639/ad06cc

9. Eric M. Furst, Frank Scheffold, and Gareth H. McKinley, "Guest Editorial: Structure and Mechanics of Biofluids, Biomaterials, and Biologics," APL Bio, 9, 020401 (2025). doi: 10.1063/5.0274572

Peer reviewed publications

1. Eric M. Furst, Edward S. Pagac, and Robert D. Tilton "Coadsorption of polylysine and the cationic surfactant cetyltrimethylammonium bromide on silica," Ind. Eng. Chem. Res. 35, 1566 (1996).
2. Eric M. Furst and Alice P. Gast, "Particle dynamics in magnetorheological suspensions using diffusing wave spectroscopy," Phys. Rev. E 58, 3372 (1998).
3. Eric M. Furst, Chiemi Suzuki, Marc Fermigier, and Alice P. Gast, "Permanently-linked monodisperse superparamagnetic chains," Langmuir 14, 7334 (1998).
4. Eric M. Furst and Alice P. Gast, "Micromechanics of dipolar chains using optical trapping," Phys. Rev. Lett. 82, 4130 (1999).
5. Eric M. Furst and Alice P. Gast, "Micromechanics in magnetorheological suspensions," Phys. Rev. E 61, 6732 (2000).
6. Eric M. Furst and Alice P. Gast, "Dynamics and lateral interactions of dipolar chains," Phys. Rev. E, 62, 6916 (2000).
7. Loïc Le Goff, François Amblard and Eric M. Furst, "Motor-driven dynamics in actin-myosin networks," Phys. Rev. Lett. 88, 018101 (2002).
8. John P. Pantina and Eric M. Furst, "Directed assembly and rupture mechanics of colloidal aggregates," Langmuir 20, 3940 (2004).
9. Beyong Seok Chae and Eric M. Furst, "Probe surface chemistry dependence and local polymer network structure in F-actin microrheology," Langmuir 21, 3084 (2005).
10. Myung Han Lee, Frederick L. Beyer and Eric M. Furst, "Synthesis of monodisperse fluorescent core-shell silica particles using a modified Stöber method for imaging individual particles in dense colloidal suspensions," J. Colloid Interface Sci., 288, 114 (2005).
11. John P. Pantina and Eric M. Furst, "Elasticity and critical bending moment of model colloidal aggregates," Phys. Rev. Lett., 94, 138301 (2005).
12. Nori Yamaguchi, Beyong Seok Chae, Le Zhang, Kristi L. Kiick and Eric M. Furst, "Rheological characterization of polysaccharide-poly(ethylene glycol) star copolymer hydrogels," Biomacromolecules, 6, 1931 (2005).
13. Alexander Meyer, Andrew Marshall, Brian G. Bush and Eric M. Furst, "Laser tweezer microrheology of a colloidal suspension," J. Rheol., 50, 77-92 (2006). *2008 Society of Rheology Publication Award*
14. John P. Pantina and Eric M. Furst, "Colloidal aggregate micromechanics in the presence of divalent ions," Langmuir, 22, 5282-5288 (2006).
15. Le Zhang, Eric M. Furst and Kristi L. Kiick, "Manipulation of hydrogel assembly and growth factor delivery via the use of peptide-polysaccharide interactions," J. Control. Release, 114, 130 (2006).
16. Myung Han Lee and Eric M. Furst, "Formation and evolution of sediment layers in an aggregating colloidal suspension," Phys. Rev. E, 74, 031401 (2006).
17. Ji Yeon Huh and Eric M. Furst, "Colloid dynamics in semiflexible polymer solutions," Phys. Rev. E, 74, 031802 (2006).

18. Cecile Veerman, Karthikan Rajagopal, Chandra Sekhar Palla, Darrin J. Pochan, Joel P. Schneider and Eric M. Furst, "Gelation kinetics of β-hairpin peptide hydrogels," Macromolecules, 39, 6608-6614 (2006).

19. Nori Yamaguchi, Le Zhang, Byeong Seok Chae, Eric M. Furst and Kristi L. Kiick, "Growth factor-crosslinked polymeric matrices for controlled assembly and receptor-targeted erosion," J. Am. Chem. Soc, 129, 3040-3041 (2007).

20. Eric M. Furst and John P. Pantina, "Yielding in colloidal gels due to non-linear microstructure mechanics," Phys. Rev. E, 75, 050402(R) (2007).

21. Ji Yeon Huh, Matthew L. Lynch and Eric M. Furst, "Microscopic structure and collapse of depletion-induced gels in vesicle-polymer mixtures," Phys. Rev. E 76, 051409 (2007).

22. John P. Pantina and Eric M. Furst, "Micromechanics and contact forces of colloidal aggregates in the presence of surfactants," Langmuir 24, 1141 (2008). doi: 10.1021/la7023617.

23. Frances S. Spinelli, Kristi L. Kiick and Eric M. Furst, "The role of the self-association of heparin in the gelation of heparin-functionalized polymers," Biomaterials 29, 1299-1306 (2008). doi: 10.1016/j.biomaterials.2007.11.045

24. Bum Jun Park, John P. Pantina, Eric M. Furst, Martin Oettel, Sven Reynaert, and Jan Vermant, "Direct measurements of the effects of salt and surfactant on interaction forces between colloidal particles at water-oil interfaces," Langmuir, 24, 1686 (2008). doi: 10.1021/la7008804.

25. Travis H. Larsen and Eric M. Furst, "Microrheology of the liquid-solid transition during gelation," Phys. Rev. Lett. 100, 146001 (2008). doi: 10.1103/PhysRevLett.100.146001.

26. Myung Han Lee and Eric M. Furst, "Response of a colloidal gel to a microscopic oscillatory strain," Phys. Rev. E 77, 041408 (2008). doi: 10.1103/PhysRevE.77.041408.

27. Manish Mittal, Pushkar P. Lele, Eric W. Kaler and Eric M. Furst, "Polarization and interactions of colloidal particles in ac electric fields," J. Chem. Phys. 129, 064513 (2008). doi:10.1063/1.2969103

28. Travis H. Larsen, Kelly M. Schultz and Eric M. Furst, "Hydrogel microrheology near the liquid-solid transition," Korea-Aust. Rheol. J. 20, 165-173 (2008).

29. Pushkar P. Lele, Manish Mittal and Eric M. Furst, "Anomalous particle rotation and resulting microstructure of colloids in ac electric fields," Langmuir 24, 12842-12848 (2008). doi: 10.1021/la802225u

30. Bum Jun Park and Eric M. Furst, "Optical trapping forces for colloids at the oil-water interface," Langmuir 24, 13383-13392 (2008). doi: 10.1021/la802575k

31. Kelly M. Schultz, Aaron D. Baldwin, Kristi L. Kiick and Eric M. Furst, "Rapid rheological screening to identify conditions of biomaterial hydrogelation," Soft Matter 5, 740-742, (2009). doi: 10.1039/b818178k

32. Indira Sriram, Ryan DePuit, Todd M. Squires and Eric M. Furst, "Small amplitude active oscillatory microrheology of a colloidal suspension," J. Rheol. 53, 357-381 (2009).

33. John P. Singh, Pushkar P. Lele, Florian Nettesheim, Norman J. Wagner and Eric M. Furst, "One- and two-dimensional assembly of colloidal ellipsoids in ac electric fields," Phys. Rev. E 79, 050401(R), (2009). doi: 10.1103/PhysRevE.79.050401

34. Kelly M. Schultz, Aaron D. Baldwin, Kristi L. Kiick and Eric M. Furst, "Gelation of covalently cross-linked PEG-heparin hydrogels," Macromolecules 42 (14), 5310-5316 (2009). doi: 10.1021/ma900766u

35. Pushkar P. Lele and Eric M. Furst, "Assemble-and-stretch approach for creating two- and three-dimensional structures of anisotropic particles," Langmuir 25, 8875-8878 (2009). doi: 10.1021/la901743q

36. Manish Mittal and Eric M. Furst, "Electric field-directed convective assembly of ellipsoidal colloidal particles to create optically and mechanically anisotropic thin films," Adv. Func. Mater. 19, 3271-3278 (2009). doi: 10.1002/adfm.200900908

37. Travis H. Larsen, Monica Branco, Joel P. Schneider and Eric M. Furst, "Sequence-dependent gelation kinetics of beta-hairpin peptide hydrogels," Macromolecules 42, 8443-8450 (2009). doi: 10.1021/ma901423n

38. Bum Jun Park and Eric M. Furst, "Fluid-interface templating of two-dimensional colloidal crystals," Soft Matter 6, 485-488 (2010). doi: 10.1039/b919629c

39. Bum Jun Park and Eric M. Furst, "Fabrication of unusual asymmetric colloids at an oil-water interface," Langmuir 26, 10406-10410 (2010). doi:10.1021/la101030h

40. Indira Sriram, Alexander Meyer and Eric M. Furst, "Active microrheology of a colloidal suspension in the direct collision limit," Phys. Fluids 22, 062003 (2010). doi: 10.1063/1.3450319 – *Cover image*

41. Manish Mittal, Ryan K. Niles and Eric M. Furst, "Flow-directed assembly of nanostructured thin films from suspensions of anisotropic titania particles," Nanoscale 2, 2237-2243 (2010). doi: 0.1039/C0NR00275E

42. Kasper Masschaele, Bum Jun Park, Eric M. Furst, Jan Fransaer and Jan Vermant, "Finite ion-size effects dominate the interaction between charged colloidal particles at an oil-water interface," Phys. Rev. Lett. 105, 048303 (2010). doi: 10.1103/PhysRevLett.105.048303

43. Bum Jun Park, Jan Vermant and Eric M. Furst, "Heterogeneity of the electrostatic repulsion between colloids at the oil-water interface," Soft Matter 6, 5327-5333 (2010). doi: 10.1039/c0sm00485e *Top 10 most-read Soft Matter articles – Q1 2014*

44. Ji Yeon Huh, Matthew L. Lynch and Eric M. Furst, "Poroelastic consolidation in the phase separation of vesicle- polymer suspensions," Ind. Eng. Chem. Res. 50, 78-84 (2011). doi: 10.1021/ie1004543

45. Manish Mittal, Raul F. Lobo and Eric M. Furst, "Externally directed assembly of disk-shaped zeolite particles by an electric field," J. Mater. Res. 26, 215-222 (2011).

46. Bum Jun Park and Eric M. Furst, "Attractive interactions between colloids at the oil-water interface," Soft Matter 7, 7676-7682 (2011). doi:10.1039/C1SM00005E

47. Pushkar P. Lele, James W. Swan, John F. Brady, Norman J. Wagner and Eric M. Furst, "Colloidal diffusion and hydrodynamic screening near boundaries," Soft Matter 7, 6844-6852 (2011). doi:10.1039/c0sm01466d

48. Bum Jun Park and Eric M. Furst, "Micromechanics of colloidal aggregates at the oil-water interface," Soft Matter 7, 7683-7688 (2011). doi:10.1039/C1SM05254C

49. Jason D. Forster, Jin-Gyu Park, Manish Mittal, Heeso Noh, Carl F. Schreck, Corey S. O'Hern, Hui Cao, Eric M. Furst, and E. R. Dufresne, "Assembly of optical scale dumbbells into dense photonic crystals," ACS Nano 5, 6695-6700 (2011). doi:10.1021/nn202227f

50. Kelly M. Schultz and Eric M. Furst, "High-throughput rheology in a microfluidic device," Lab Chip, 11 3802-3809 (2011). doi: 10.1039/C1LC20376B

51. Patrick E. Hopkins, Manish Mittal, Lindsey M. Phinney, Anne M. Grillet and Eric M. Furst, "Tunable, ultra-low thermal conductivity nanoparticle films," Appl. Phys. Lett. 99, 133106 (2011).

52. Kelly M. Schultz, Alexandra V. Bayles, Aaron D. Baldwin, Kristi L. Kiick Eric M. Furst, "Rapid, high resolution screening of biomaterial hydrogelators by μ^2rheology," Biomacromolecules 12, 4178-4182 (2011). doi: 10.1021/bm201214r

53. Indira Sriram and Eric M. Furst, "Out-of-equilibrium forces between colloids," Soft Matter 8, 3335-3341 (2012). doi: 10.1039/C2SM06784F

54. Whirang Cho, Jeffrey D. Fowler and Eric M. Furst, "Targeted binding of M13 bacteriophage to thiamethoxam organic crystals," Langmuir, 28, 6013–6020 (2012). doi: 10.1021/la300522g

55. Peter J. Beltramo and Eric M. Furst, "Dielectric spectroscopy of bidisperse colloidal suspensions," J. Colloid Interface Sci., 380, 34–41 (2012). doi: 10.1016/j.jcis.2012.04.070

56. Kelly M. Schultz, Arron D. Baldwin, Kristi L. Kiick and Eric M. Furst, "Measuring the modulus and reverse percolation transition of a degrading hydrogel," ACS Macro Lett. 1, 706–708 (2012). doi: 10.1021/mz300106y

57. Peter J. Beltramo and Eric M. Furst, "Transition from dilute to concentrated electrokinetic behavior in the dielectric spectra of a colloidal suspension," Langmuir, 28, 10703–10712 (2012). doi: 10.1021/la301876w

58. Peter J. Beltramo and Eric M. Furst, "A simple, single measurement methodology to account for electrode polarization in the dielectric spectra of colloidal dispersions," Chem. Lett. 41, 1116–1118 (2012). doi: 10.1246/cl.2012.1116

59. James W. Swan and Eric M. Furst, "A simpler expression for Henry's function describing the electrophoretic mobility of spherical colloids," J. Colloid Interface Sci., 388, 92–94 (2012). doi: 10.1016/j.jcis.2012.08.026

60. James W. Swan, Paula A. Vasquez, Peggy A. Whitson, E. Michael Fincke, Koichi Wakata, Sandra H. Magnus, Frank De Winne, Michael R. Barratt, Juan H. Agui, Robert D. Green, Nancy R. Hall, Donna Y. Bohman, Charles T. Bunnell, Alice P. Gast and Eric M. Furst, "Multi-scale kinetics of a field-directed colloidal phase transition," Proc. Natl. Acad. Sci. USA, 109, 16023–16028 (2012). doi: 10.1073/pnas.1206915109

61. James W. Swan, Matthew M. Shindel and Eric M. Furst, "Measuring thermal rupture force distributions from an ensemble of trajectories," Phys. Rev. Lett., 109, 198302 (2012). doi: 10.1103/PhysRevLett.109.198302

62. Kelly M. Schultz, Laura Campo-Deaño, Aaron D. Baldwin, Kristi L. Kiick, Christian Clasen and Eric M. Furst, "Electrospinning covalently cross-linking biocompatible hydrogelators," Polymer, 54, 363–371 (2013). doi: 10.1016/j.polymer.2012.09.060.

63. Peter J. Beltramo and Eric M. Furst, "Predicting the disorder-order transition of dielectrophoretic colloidal assembly with dielectric spectroscopy," Electrophoresis, 34, 1000–1007, 2013. doi: 10.1002/elps.201200419

64. Mark M. Panczyk, Jin-Gyu Park, Norman J. Wagner and Eric M. Furst, "Two-dimensional directed assembly of dicolloids," Langmuir, 29, 75-81 (2013) doi: 10.1021/la303678f

65. James W. Swan and Eric M. Furst, "Nonequilibrium distributions and hydrodynamic coupling distort the measurement of nano-scale forces near interfaces," Biophys. J., 104, 863-872 (2013). doi: 10.1016/j.bpj.2012.12.014

66. Matthew M. Shindel, James W. Swan and Eric M. Furst, "An optical tweezer micro-rheometer: Calibration by sequential impulse response," Rheol. Acta, 52, 455–465 (2013). doi: 10.1007/s00397-013-0698-2

67. Bum Jun Park and Eric M. Furst, "Optical trapping forces depending on size of dielectric polystyrene microspheres," Macromol. Res. 21, 1167–1170 (2013). doi: 10.1007/s13233-013-1165-8

68. Dirk Schneider, Peter J. Beltramo, Maurizio Mattarelli, Patrick Pfleiderer, Jan Vermant, Daniel Crespy, Maurizio Montagna, Eric M. Furst, and George Fytas, "Elongated polystyrene spheres as resonant building blocks in anisotropic colloidal crystals," Soft Matter, 9 9219–9136 (2013). doi: 10.1039/C3SM50959A

69. Peter J. Beltramo, Rafael Roa, Félix Carrique, Eric M. Furst, "Dielectric spectroscopy of concentrated colloidal suspensions," J. Colloid Interface Sci., 408, 54–58 (2013). doi: 10.1016/j.jcis.2013.07.042

70. Jillian A. Emerson, Daniel T. W. Toolan, Jonathan R. Howse, Eric M. Furst, and Thomas H. Epps III "Determination of solvent-polymer and polymer-polymer Flory-Huggins interaction parameters for poly(3-hexylthiophene) via solvent vapor swelling," Macromolecules, 46, 6533–6540 (2013). doi: 10.1021/ma400597j

71. Yu-Cheng Tsai, Romain Fardel, Mark M. Panczyk, Eric M. Furst, and Craig B. Arnold, "Non-spherical particles for optical trap assisted nanopatterning," Nanotechnology, 24, 375303 (2013).

72. Kathryn A. Whitaker and Eric M. Furst, "Layer-by-layer synthesis of mechanically robust solvent-permeable silica nano-shells," Langmuir, 30, 584–591 (2014). doi: 10.1021/la402737f — *Cover article*

73. James W. Swan, Jonathan L. Bauer, Yifei Liu and Eric M. Furst, "Directed colloidal self-assembly in toggled magnetic fields," Soft Matter, 10, 1102–1109 (2014). doi: 10.1039/c3sm52663a – *2014 Soft Matter Hot Article*

74. James W. Swan, Eric M. Furst, and Norman J. Wagner "The medium amplitude oscillatory shear of semidilute colloidal dispersions, part 1: Linear response and normal stress differences," J. Rheol., 58, 307–338 (2014). doi: 10.1122/1.4861071

75. Christopher L. Wirth, Eric M. Furst and Jan Vermant, "Weak electrolyte dependence in the repulsion of colloids at an oil-water interface," Langmuir 30, 2670–2675 (2014). doi: 10.1021/la404538s

76. Haejin Han, Eric M. Furst and Chongyoup Kim, "Lagrangian analysis of consecutive images: Quantification of mixing processes in drops moving in a microchannel," Rheol. Acta 53, 489–499 (2014). doi: 10.1007/s00397-014-0769-z

77. Kathryn A. Whitaker, Lilian Hsiao, Michael J. Solomon and Eric M. Furst, "A model colloidal gel for coordinated measurements of force, structure, and rheology," J. Rheol., 58, 1485-1504 (2014).

78. Mark M. Panczyk, Norman J. Wagner and Eric M. Furst, "Short-time diffusivity of dicolloids," Phys. Rev. E 89, 062311 (2014). doi: 10.1103/PhysRevE.89.062311

79. Marco Caggioni, Alexandra V. Bayles, Jessica Lenis, Eric M. Furst, and Patrick T. Spicer "Interfacial stability and shape change of anisotropic endoskeleton droplets," Soft Matter, 10, 7647 (2014). doi: 10.1039/C4SM01482K

80. Bum Jun Park and Eric M. Furst, "Effects of coating on the optical trapping efficiency of microspheres using the geometrical optics approximation," Langmuir, 30, 11055–11061 (2014). doi: 10.1021/la502632h

81. James W. Swan, Paula A. Vasquez and Eric M. Furst, "Buckling instability of self-assembled colloidal columns," Phys. Rev. Lett., 113, 138301 (2014). doi: 10.1103/PhysRevLett.113.138301

82. Peter J. Beltramo, Dirk Schneider, George Fytas and Eric M. Furst, "Anisotropic hypersonic phonon propagation in films of aligned ellipsoids," Phys. Rev. Lett., 113, 205503 (2014). doi: 10.1103/PhysRevLett.113.205503

83. Indira Sriram and Eric M. Furst, "Two spheres translating in tandem through a colloidal suspension," Phys. Rev. E, 91, 042303 (2015). doi: 10.1103/PhysRevE.91.042303

84. Matthew M. Shindel and Eric M. Furst, "Frequency modulated microrheology," Lab on a Chip, 15, 2460–2466 (2015), doi: 10.1039/C5LC00351B

85. Whirang Cho, Xiaomeng Liu, James Forrest, Jeffrey D. Fowler, and Eric M. Furst, "Controlling the morphology of organic crystals with filamentous bacteriophages," ACS Appl. Mater. Interfaces, 7, 15707–15715 (2015). doi: 10.1021/acsami.5b05548

86. Jonathan L. Bauer, Yifei Liu, Martin Kurian, James W. Swan, and Eric M. Furst, "Coarsening mechanics of a colloidal suspension in toggled fields," J. Chem. Phys., 143, 074901 (2015). doi: 10.1063/1.4927563 — *Featured article and cover image*

87. Marco Caggioni, Jessica Lenis, Alexandra V. Bayles, Eric M. Furst, and Patrick T. Spicer, "Temperature-induced collapse, and arrested collapse, of anisotropic endoskeleton droplets," Langmuir, 31, 8558–8565 (2015). doi: 10.1021/acs.langmuir.5b00321

88. Bum Jun Park, Mina Lee, Bomsock Lee and Eric M. Furst, "Lateral capillary interactions between colloids beneath an oil-water interface that are driven by out-of-plane electrostatic double-layer interactions," Soft Matter, 11, 8701–8706 (2015). doi: 10.1039/C5SM02001H

89. Tamás Prileszky, Babatunde Ogunnaike and Eric M. Furst, "Statistics of droplet sizes generated by a microfluidic device," AIChE J., 62, 2923–2928 (2016). doi: 10.1002/aic.15246

90. Kathryn A. Whitaker and Eric M. Furst, "Bond rupture between colloidal particles with a depletion interaction," J. Rheol., 60, 517–529 (2016). doi: 10.1122/1.4948427 — *Featured article and cover image*

91. Lilian Lam Josephson, William J. Galush and Eric M. Furst, "Particle tracking microrheology of protein solutions," J. Rheol., 60, 531–540 (2016). doi: 10.1122/1.4948427

92. Tamás Prileszky and Eric M. Furst, "Crystallization kinetics of partially crystalline emulsion droplets in a microfluidic device," Langmuir, 32, 5141–5146 (2016). doi: 10.1021/acs.langmuir.6b00420

93. Tamás Prileszky and Eric M. Furst, "Fluid networks assembled from endoskeletal droplets," Chem. Mater., 28, 3734–3740 (2016). doi: 10.1021/acs.chemmater.6b00497

94. Jonathan L. Bauer, Martin J. Kurian, Johnathan Stauffer, and Eric M. Furst, "Suppressing the Rayleigh-Plateau instability in field-directed colloidal assembly," Langmuir, 32, 6618–6623 (2016). — *ACS Editors' Choice and cover image*

95. Lilian Lam Josephson, William J. Galush, and Eric M. Furst, "Parallel temperature-dependent microrheological measurements in a microfluidic chip," Biomicrofluidics, 10, 043503 (2016). doi: 10.1063/1.4953863

96. Mahlet A. Woldeyes, Cesar Calero-Rubio, Eric M. Furst, Christopher J. Roberts, "Predicting protein interactions of concentrated globular protein solutions using colloidal models," J. Phys. Chem. B, 121, 4756–4767 (2017). doi:10.1021/acs.jpcb.7b02183

97. Katelyn Nagy-Smith, Peter J. Beltramo, Eric Moore, Robert Tycko, Eric M. Furst, and Joel P. Schneider, "Molecular, local, and network-level basis for the enhanced stiffness of hydrogel networks formed from coassembled racemic peptides: Predictions from Pauling and Corey," ACS Central Science, 3, 586–597 (2017). doi: 10.1021/acscentsci.7b00115

98. Jillian A. Emerson, Nikolay Garabedian, Axel C. Moore, David L. Burris, Eric M. Furst, and Thomas H. Epps, III, "Unexpected tribological synergy in polymer blend coatings: Leveraging phase separation to isolate domain size effects and reduce friction," ACS Appl. Mater. Interfaces., 9, 34480–34488 (2017). doi: 10.1021/acsami.7b10170

99. Alexandra V. Bayles, Tamás Prileszky, Patrick J. Spicer and Eric M. Furst, "A model of structured emulsion droplet stability and reconfigurability," Langmuir, 34, 4116–4121 (2018). doi: 10.1021/acs.langmuir.8b00469

100. Jillian A. Emerson, Nikolay Garabedian, David L. Burris, Eric M. Furst, and Thomas H. Epps, III, "Exploiting feedstock diversity to tune the chemical and tribological properties of lignin-inspired polymer coatings," ACS Sustainable Chemistry & Engineering, 6, 6856–6866 (2018).

101. Hojin Kim, Yu Cang, Eunsoo Kang, Bartlomiej Graczykowski, Maria Secchi, Maurizio Montagna, Rodney D. Priestley, Eric M. Furst, and George Fytas, "Direct observation of polymer surface mobility via nanoparticle vibrations," Nat. Comm., 9, 2918 (2018). doi: 10.1038/s41467-018-04854-w

102. Mahlet A. Woldeyes, Lilian Lam Josephson, Danielle L. Leiske, William J. Galush, Christopher J. Roberts, and Eric M. Furst, "Viscosities and protein interactions of bispecific antibodies and their monospecific mixtures," Mol. Pharmaceutics, 15, 4745–4755 (2018). doi: 10.1021/acs.molpharmaceut.8b00706

103. Lilian Lam Josephson, James W. Swan, and Eric M. Furst, "*In situ* measurement of localization error in particle tracking microrheology," Rheol. Acta, 57, 793–800 (2018). doi: 10.1007/s00397-018-1117-5

104. Eunsoo Kang, Hojin Kim, Laura A. G. Gray, Dane Christie, Ulrich Jonas, Bartolomiej Graczykowski, Eric M. Furst, Rodney D. Priestley, George Fytas, "Ultrathin shell layers dramatically influence polymer nanoparticle surface mobility," Macromolecules, 51, 8522–8529 (2018). doi: 10.1021/acs.macromol.8b01804

105. Mahlet A. Woldeyes, Wei Qi, Vladimir Razinkov, Eric M. Furst, and Christopher J. Roberts, "How well do low- and high-concentration protein interactions predict solution viscosities of monoclonal antibodies?" J. Pharm. Sci., 108, 142–154 (2019). doi: 10.1016/j.xphs.2018.07.007

106. Tamás Prileszky and Eric M. Furst, "Magnetite nanoparticles program the assembly, response, and reconfiguration of structured emulsions," Soft Matter, 15, 1529–1538 (2019). doi: 10.1039/C8SM01931B

107. Hojin Kim, John L. Bauer, Paula A. Vasquez, and Eric M. Furst, "Structural coarsening of magnetic ellipsoid particle suspensions driven in toggled fields," J. Phys. D: Appl. Phys., 52, 184002 (2019). doi: 10.1088/1361-6463/ab062f

108. Kathryn A. Whitaker, Lilian Hsiao, Zsigmond Varga, Michael J. Solomon, James W. Swan, and Eric M. Furst, "Colloidal gel elasticity arises from the packing of locally glassy clusters," Nat. Comm., 10, 2237 (2019). doi: 10.1038/s41467-019-10039-w

109. Kimberly A. Dennis, Yan Gao, Alhad Phatak, Philip F. Sullivan, and Eric M. Furst, "Design, operation, and validation of a microrheology instrument for high-pressure linear viscoelasticity measurements," J. Rheol. 64, 205–212 (2020); doi: 10.1122/1.5126682

110. Caitlin V. Wood, Sean McEvoy, Vladimir I. Razinkov, Wei Qi, Eric M. Furst, and Christopher J. Roberts, "Kinetics and competing mechanisms of antibody aggregation via bulk and surface-mediated pathways," J. Pharm. Sci. 109, 1449–1459 (2020). doi: 10.1016/j.xphs.2020.01.005 – *Featured article*

111. Hojin Kim and Eric M. Furst, "Magnetic properties, responsiveness, and stability of paramagnetic dumbbell and ellipsoid colloids," J. Colloid Interface Sci., 566, 419–426 (2020). doi:10.1016/j.jcis.2020.01.061

112. Francesco Bonacci, Xavier Chateau, Eric M. Furst, Jennifer Fusier, Julie Goyon, and Anaël Lemaître, "Contact and macroscopic aging in dense colloidal suspensions," Nat. Mater., 19, 775–780 (2020). doi: 10.1038/s41563-020-0624-9

113. Yimin Luo, Yu-Fan Lee, Kimberly A. Dennis, Carlos Velez, Scott C. Brown, Eric M. Furst and Norman J. Wagner, "One-step, in situ jamming point measurements by immobilization cell rheometry," Rheol. Acta, 59, 209–225 (2020). doi: 10.1007/s00397-020-01187-8

114. Hojin Kim, Moujhuri Sau, and Eric M. Furst, "An expanded state diagram for the directed self-assembly of colloidal suspensions in toggled fields," Langmuir, 36, 9926–9934 (2020). doi: 10.1021/10.1021/acs.langmuir.0c01616

115. Yu-Jiun Lin, Jeffrey Horner, Brandon Illie, Matthew L. Lynch, Eric M. Furst, Norman J. Wagner, "Molecular engineering of thixotropic, sprayable fluids with yield stress using associating polysaccharides," J. Colloid Interface Sci. 580, 264–274 (2020). doi: 10.1016/j.jcis.2020.06.107

116. Mahlet A. Woldeyes, Wei Qi, Vladimir Razinkov, Eric M. Furst, and Christopher J. Roberts, "Temperature-dependence of protein solution viscosity and protein-protein interactions: Insights for the origins of high-viscosity protein solutions," Mol. Pharmaceutics, 17, 4473–4482 (2020). doi: 10.1021/acs.molpharmaceut.0c00552.

117. Caitlin V. Wood, Sean McEvoy, Vladimir I. Razinkov, Wei Qi, Eric M. Furst, and Christopher J. Roberts, "A rapid, small-volume approach to evaluate protein aggregation at air-water interfaces," J. Pharm. Sci., 110, 1083–1092 (2021). doi: 10.1016/j.xphs.2020.11.024

118. Francesco Bonacci, Xavier Chateau, Eric M. Furst, Julie Goyon, and Anäel Lemaître, "Yield stress aging in attractive colloidal suspensions," Phys. Rev. Lett., 128, 018003 (2022). doi:10.1103/PhysRevLett.128.018003

119. Zuyuan Wang, Hojin Kim, Maria Secchi, Maurizio Montagna, Eric M. Furst, Bahram Djafari-Rouhani, and George Fytas, "Quantization of acoustic modes in dumbbell nanoparticles," Phys. Rev. Lett., 128, 048003 (2022). doi: 10.1103/PhysRevLett.128.048003

120. Nicholas Sbalbi, Qi Li, and Eric M. Furst, "Effect of scatterer interactions on photon transport in diffusing wave spectroscopy," Phys. Rev. E, 106, 064609 (2022). doi: 10.1103/PhysRevE.106.064609 — *Editors' suggestion*

121. Caitlin V. Wood, Vladimir I. Razinkov, Wei Qi, Christopher J. Roberts, Jan Vermant, and Eric M. Furst, "Antibodies adsorbed to the air-water interface form soft glasses," Langmuir, 39, 22, 7775–7782 (2023). doi: 10.1021/ acs.langmuir.3c00616

122. Qi Li, Kimberly A. Dennis, and Eric M. Furst, "Two-point microrheology and diffusing wave spectroscopy," Journal of Rheology, 67, 1107–1118 (2023). doi: 10.10.1122/8.0000664 — *AIP Scilight: "Non-invasive rheological testing overcomes a critical setback," October 10, 2023.* doi: 10.1063/10.0021516

123. Hojin Kim, Abdellatif Gueddida, Zuyuan Wang, Bahram Djafari-Rouhani, George Fytas, and Eric M. Furst "Tunable hypersonic bandgap formation in anisotropic crystals of dumbbell nanoparticles," ACS Nano, 17, 19224–19231 (2023). doi: 10.1021/acsnano.3c05750

124. Brian Paul, Eric M. Furst, Abraham M. Lenhoff, Norman J. Wagner, and Susana C. M. Teixeira, "Combined effects of pressure and ionic strength on protein-protein interactions: an empirical approach," Biomacromolecules, 25, 338–348 (2024). doi: 0.1021/acs.biomac.3c01001

125. Kimberly A. Dennis, Qi Li, Nicholas Sbalbi, and Eric M. Furst, "Diffusing wave spectroscopy measurements of colloidal suspension dynamics," Langmuir, 40, 6129–6137 (2024). doi: 10.1021/acs.langmuir.3c03118

126. Matthew G. Langenstein, Kenneth Crane-Moscowitz, James M. Brennan, Christopher J. Kloxin, Eric M. Furst, Darrin J. Pochan, "Sequential growth of quantized peptide brushes on colloidal gold," Langmuir, 41, 3130–3139 (2025). doi: 10.1021/acs.langmuir.4c03698

127. Jason Conradt and Eric M. Furst, "Quantitative imaging of colloidal structures," Langmuir, 41, 8176–8191 (2025). doi: 10.1021/acs.langmuir.4c05270

128. Brian Paul, Eric M. Furst, Abraham M. Lenhoff, Norman J. Wagner, and Susana C. M. Teixeira, "Influence of pressure holding time on ovalbumin solution behavior via small-angle neutron scattering and diffusing wave spectroscopy," Journal of Food Process Engineering 48, e70088 (2025). doi: 10.1111/jfpe.70088

129. Brian Paul, Abraham M. Lenhoff, Susana C. M. Teixeira, Norman J. Wagner, and Eric M. Furst, "High-pressure rheology of a thermoreversible protein sol-gel," Ind. Eng. Chem. Res., accepted (2025). doi: 10.1021/acs.iecr.5c01984

130. Jason Conradt and Eric M. Furst, "Magnetostatic energies in crystals of paramagnetic particles," Phys. Rev. E, 113, 015407 (2026). doi: 10.1103/pb3d-yg31

131. Jason Conradt, Zachary Sherman, and Eric M. Furst, "Surface energies in crystals of mutually polarizing dipolar particles," J. Chem. Phys., accepted (2025).

132. Jason Conradt and Eric M. Furst, "Active dynamics of dissipatively-assembled magnetic ribbons," submitted (2025).

133. Breanna M. Huntington, Johannes A. Dresel, Maren Schweitzer, Eric M. Furst, Pol Besenius, April M. Kloxin, "Thermoresponsive, shear-thinning supramolecular hydrogels from peptide–polymer conjugates for bioinspired 3D cell culture," submitted (2025).

Proceedings papers

1. Paula A. Vasquez, Eric M. Furst, Juan Agui, Jeffrey Williams, Don Pettit, and Ed Lu "Structural transitions of MR fluids in microgravity," Proceedings of the 46th AIAA Aerospace Sciences Meeting, January 7-10, 2008, Reno, NV. AIAA 2008-815.

2. Eric M. Furst, Paula A. Vasquez, Eric Bennung, Michael Boyle, Malvika Ogale, Juan Agui, Donna Bohman, Charles Bunnell and Peggy Whitson, "Field-Responsive Colloidal Suspensions in Microgravity," Proceedings of the 46th AIAA Aerospace Sciences Meeting, January 5-8, 2009, Orlando, FL. AIAA 2009-955.

3. T. H. Larsen, K. Rajagopal, J. P. Schneider, and Eric M. Furst. Microrheology of responsive hydrogel networks. In Co, A. Leal, L. G. Colby, R. H. and Giacomin, A. J. Editors, XVth International Congress on Rheology - The Society of Rheology 80th Annual Meeting, Pts 1 and 2, volume 1027 of AIP Conference Proceedings, pages 1090-1092, Melville, NY. 15th International Congress on Rheology/80th Annual Meeting of the Society of Rheology, Monterey, CA, August 3–8, 2008.

4. Patrick E. Hopkins, Manish Mittal, Leslie M. Phinney, Anne M. Grillet and Eric M. Furst, "Tunable thermal conductivity of TiO_2 nanoparticle close-packed films," Proceedings of the ASME/JSME 8th Thermal Engineering Joint Conference, AJTEC2011, Honolulu, HI, March 13 - 17, 2011.

Published open access data sets

1. Larsen, Travis H., and Furst, Eric M. (2023). Image data for: Microrheology of the liquid-solid transition during gelation [Data set]. In Physical Review Letters (Vol. 100, p. 146001). Zenodo. `https://doi.org/10.5281/zenodo.8353281`

Published open access code repositories

1. Nicholas Sbalbi, Qi Li, and Eric M. Furst (2022). DWS-interactions. Github. `https://github.com/emfurst/DWS-interactions.git`

2. Jason Conradt and Eric M. Furst (2024). Quantitative Imagining of Colloidal Structures. Zenodo. `https://doi.org/10.5281/zenodo.14537365`

3. Eric M. Furst (2025). SimpleMD: A simple molecular dynamics code for a Lennard-Jones system. Github. `https://github.com/emfurst/SimpleMD.git`

4. Jason Conradt and Eric M. Furst (2025). Magnetostatic Energies in Crystals of Paramagnetic Particles. Zenodo. `https://doi.org/10.5281/zenodo.15602616`

Invited Lectures

Universities, Institutes, and Workshops

1. École Supérieure de Physique et de Chimie Industrielles (ESPCI), April 11, 2000, Paris, France.

2. Universität Konstanz, Fachbereich Physik, Konstanz, Germany.

3. Princeton University, Complex Fluid Materials Seminar, Department of Chemical Engineering, September 17, 2001, Princeton, NJ.
4. University of Delaware, Polymer Research Group, December 6, 2001, Newark, DE.
5. NIST, Polymer Division, March 5, 2002, Gaithersburg, MD.
6. University of Delaware, Department of Mathematics, Applied Math Seminar, October 29, 2002, Newark, DE.
7. University of Delaware, Chemistry-Biology Interface Program, March 11, 2003, Newark, DE.
8. University of Florida, Department of Chemical Engineering, September 22, 2003, Gainesville, FL.
9. University of Virginia, Department of Chemical Engineering, March 4, 2004, Charlottesville, VA.
10. Carnegie Mellon University, Department of Chemical Engineering, April 15, 2004, Pittsburgh, PA.
11. Osaka University, Department of Applied Physics, August 31, 2004, Osaka, Japan.
12. Johns Hopkins University, Department of Chemical Engineering, September 9, 2004, Baltimore, MD.
13. Yale University, Department of Chemical Engineering, October 5, 2004, New Haven, CT.
14. Colorado School of Mines, Department of Chemical Engineering, October 22, 2004, Golden, CO.
15. European Union Network of Excellence Workshop (COLCOMP), January 20, 2005, Leuven, Belgium.
16. Levich Institute, City College of New York, September 13, 2005, New York, NY.
17. University of Massachusetts, Department of Chemical Engineering, November 10, 2005, Amherst, MA.
18. University of Illinois, Student Ceramic Society Seminar, Materials Science and Engineering, November 17, 2005, Urbana, IL.
19. Lehigh University, Department of Chemical Engineering, December 7, 2005, Bethlehem, PA.
20. MIT, Program in Polymer Science and Technology Seminar, December 14, 2005, Cambridge, MA.
21. University of Pennsylvania, Condensed Matter Physics Seminar, Department of Physics and Astronomy, February 23, 2006.
22. IFPRI Workshop on Colloidal Gels, June 26-26, 2006, Santa Barbara, CA.
23. New York University, Condensed Matter Physics Seminar, Department of Physics, September 27, 2006.
24. University of California, Santa Barbara, Department of Chemical Engineering, October 26, 2006.
25. Georgia Institute of Technology, Department of Chemical Engineering, November 28, 2006.
26. Workshop on Colloidal Ceramic Powder Processing: Role of Interfaces, February 9, 2007, Melbourne, Australia.
27. University of Notre Dame, Department of Chemical Engineering, March 20, 2007.
28. National Institute for Nano-Engineering (NINE) Topical Meeting on NanoMaterials Manufacturing, Sandia National Laboratories, May 8, 2007, Albuquerque, New Mexico.
29. California Institute of Technology, Department of Chemical Engineering, November 15, 2007.
30. Mid-Atlantic Soft Matter Workshop, Georgetown University, November 30, 2007, Washington, DC.
31. "Cool stuff" physics lecture, Newark High School, January 25, 2007, Newark, DE.
32. Frontiers in Microrheology Workshop, UCLA, February 8-10, 2008, Los Angeles, CA.
33. University of Tennessee, Department of Chemical Engineering, September 30, 2008, Knoxville, TN.
34. Adolphe Merkle Institute, Université de Fribourg, March 2, 2009, Fribourg, Switzerland.

35. University of Crete, Department of Materials Science and Engineering and Foundation for Research and Technology Hellas (FORTH), April 3, 2009, Crete, Greece.

36. École Supérieure de Physique et de Chimie Industrielles (ESPCI), April 24, 2009, Paris, France.

37. Universität Karlsruhe, Institute for Mechanical Process Engineering and Mechanics, May 18, 2009, Karlsruhe, Germany.

38. Forschungszentrum Jülich, Institut für Festkörperforschung, Soft Matter Seminar, May 30, 2009, Jülich, Germany.

39. Universiteit Twente, Physics of Complex Fluids Group, June 2, 2009, Enschede, the Netherlands.

40. Sandia National Laboratories, July 29, 2009, Albuquerque, New Mexico.

41. University of Illinois Urbana-Champaign, Department of Chemical and Biomolecular Engineering, January 26, 2010, Champaign, IL.

42. University of Maryland, Department of Chemical and Biomolecular Engineering, March 30, 2010, College Park, MD.

43. Ben Gurion University, Department of Chemical Engineering, May 3, 2010, Be'er Sheva, Israel.

44. Technion Israel Institute of Technology, Department of Chemical Engineering, May 4, 2010, Haifa, Israel.

45. École Supérieure de Physique et de Chimie Industrielles (ESPCI), Seminaire PMMH, July 9, 2010, Paris, France.

46. Princeton University, PRISM Seminar, October 13, 2010, Princeton, NJ.

47. Brown University, Center for Fluid Mechanics, Division of Applied Mathematics, November 16, 2010, Providence, RI.

48. Pennsylvania State University, Polymer Physics Seminar, Department of Materials Science and Engineering, February 21, 2011.

49. University of North Carolina, Department of Chemistry, Charlotte, NC, April 4, 2011.

50. Illinois Institute of Technology, Department of Chemical and Biological Engineering, Chicago, IL, April 27, 2011.

51. 13th European Rheology School, Katholieke Universiteit Leuven, Belgium, September 9, 2011.

52. Rice University, Department of Chemical and Biomolecular Engineering, Houston, TX, November 17, 2011.

53. University of Houston, Department of Chemical Engineering, Houston, TX, November 18, 2011.

54. St. Joseph's University, Department of Physics, Philadelphia, PA, March 14, 2012.

55. École des Ponts ParisTech, Workshop on Flocculated Suspensions, Laboratoire Navier, Champs-sur-Marne, France, June 28-29, 2012.

56. National University of Singapore, SMART BioSystems & Micromechanics (BioSyM) seminar, Singapore, July 2, 2012.

57. University of Wyoming, Department of Chemical and Petroleum Engineering, Laramie, WY, October 1, 2012.

58. University of Pennsylvania, Department of Chemical and Biological Engineering, Philadelphia, PA, January 16, 2013.

59. University of Minnesota, Department of Chemical Engineering and Materials Science, Minneapolis, MN, March 26, 2013.

60. NIST Center for Neutron Research (NCNR), Gaithersburg, MD, May 17, 2013.

61. University of Pittsburgh, Department of Chemical and Petroleum Engineering, Pittsburgh, PA, July 10, 2013.

62. University of Massachusetts, Polymer Science and Engineering, Amherst, MA, October 4, 2013.

63. New Jersey Institute of Technology, Department of Chemical Engineering, Newark, NJ, December 2, 2013.

64. Pacific Northwest National Laboratory, Collaboratory on Mathematics for Mesoscopic Modeling Webinar, June 9, 2014.

65. École Supérieure de Physique et de Chimie Industrielles (ESPCI), Seminaire PMMH, July 4, 2014, Paris, France.

66. Biomolecular Interactions Technology Center Symposium, Newark, DE, August 4, 2014.

67. Hong Kong University of Science and Technology, 5th Unilever–RSC symposium, Hong Kong, September 13, 2014.

68. Sichuan University, 5th Unilever–RSC symposium, Chengdu, China, September 15, 2014.

69. Levich Institute, City College of New York, September 30, 2014, New York, NY.

70. International Interdisciplinary Initiatives Lecture Series, University of Delaware, December 1, 2014, Newark, DE.

71. North Carolina State University, MRSEC seminar, December 11, 2014, Raleigh, NC.

72. University of Delaware, Colloidal Gel Workshop, January 8, 2015, Newark, DE.

73. Colorado School of Mines, Department of Chemical Engineering, March 20, 2015, Golden, CO.

74. Stanford University, Department of Chemical Engineering, April 20, 2015, Palo Alto, CA.

75. University of Delaware, 2015 UD Biophysical & Colloidal Characterization Workshop, October 6, 2015, Newark, DE.

76. University of Wisconsin, Department of Chemical and Biological Engineering, November 24, 2015, Madison, WI.

77. Institute of Food, Nutrition and Health, ETH Zürich, Apirl 12, 2016, Zürich, Switzerland.

78. Workshop on emergent dynamics of out-of-equilibrium colloidal systems at nano- to microscales, CECAM / EPFL, April 18–20, 2016, Lausanne, Switzerland.

79. Université de Fribourg, Department of Physics, June 6, 2016, Fribourg, Switzerland.

80. Universität Konstanz, Department of Physics, July 13, 2016, Konstanz, Germany.

81. Universidad Autónoma de San Luis Potosí, Instituto de Física, October 18, 2016, San Luis Potosí, Mexico.

82. 6th Northeast Complex Fluids and Soft Matter Workshop, January 13, 2017, Stevens Institute of Technology, Hoboken, NJ.

83. Workshop on Nanomaterials Manufacturing, January 18, 2017, Georgia Institute of Technology, Atlanta, GA.

84. Biomolecular Interaction Technologies Center Summer Symposium, July 13, 2017, Newark, DE.

85. Texas Tech University, Department of Chemical Engineering, March 30, 2018, Lubbock, TX.

86. University of California, Irvine, Department of Chemical Engineering and Materials Science, June 1, 2018, Irvine, CA.

87. 9th IFPRI Workshop on Particle Technology—Suspensions and Slurries: Insights from New Physics, June 22–23, 2018, University of Edinburgh, Edinburgh, UK.

88. Workshop on Complex Fluids in Biological Systems, Banff International Research Station, Banff, Alberta, Canada, July 22–27, 2018.

89. Johns Hopkins University, Department of Chemical and Biomolecular Engineering, November 8, 2018, Baltimore, MD.

90. University of Oklahoma, School of Chemical, Biological and Materials Engineering, November 27, 2018, Norman, OK.

91. University of Houston, Department of Chemical and Biomolecular Engineering, Houston, TX, January 17, 2019.

92. Lehigh University, Department of Chemical and Biomolecular Engineering, March 6, 2019, Bethlehem, PA.

93. Florida State University, Department of Chemical and Biomedical Engineering, April 5, 2019, Tallahassee, FL.

94. University of California San Diego, Distinguished Seminar, Department of NanoEngineering, La Jolla, CA, February 12, 2020.

95. The 1000× Lab Open Hardware Initiative Workshop, February 20–21, 2020, Austin, TX.

96. Northeastern University, Distinguished Seminar, Department of Chemical Engineering, Boston, MA, February 28, 2020.

97. New York University, Department of Chemical and Biomolecular Engineering, October 9, 2020, New York, NY (virtual).

98. Princeton Institute of Materials (PRISM), Princeton University, September 22, 2021.

99. North Carolina State University, Department of Chemical and Biomolecular Engineering, November 15, 2021, Raleigh, NC.

100. Columbia University, Department of Chemical Engineering, November 23, 2021, New York, NY (virtual).

101. University of Delaware Osher Lifelong Learning Institute (OLLI), April 4, 2022, Newark, Delaware.

102. Virginia Commonwealth University, Chemical and Life Science Engineering, April 20, 2022, Richmond, Virginia.

103. ETH Zürich, Soft Materials Group, July 6, 2022, Zürich, Switzerland.

104. Missouri University of Science and Technology, Department of Chemical and Biological Engineering, Rolla, Missouri, November 27, 2022 (virtual).

105. University of Delaware, IT-Academic Technology Services Tech Talk, December 6, 2022, Newark, Delaware.

106. Workshop on Antibody Adsorption and Solution Stability, December 15–16, 2022, University of Manchester, Manchester, UK.

107. Workshop on Recent Trends in Microrheology and Microfluidics, January 10–12, 2023, Okinawa Institute of Science and Technology, Okinawa, Japan.

108. Colorado School of Mines, Department of Chemical and Biological Engineering, February 2, 2023, Golden, Colorado.

109. University of Texas at Austin, Center for Dynamics and Control of Materials, April 26, 2023, Austin, Texas.

110. Sungkyungkwan University, School of Chemical Engineering, May 9, 2023, Suwon, Korea.

111. Kyung Hee University, Department of Chemical Engineering, May 10, 2023, Suwon, Korea.

112. Seoul National University, School of Chemical and Biological Engineering, May 11, 2023, Seoul Korea.

113. Hanyang University, Department of Chemical Engineering, May 12, 2023, Seoul, Korea.

114. Federal University of Rio de Janeiro (UFRJ), Applied Thermodynamics and Molecular Simulation Seminar, September 21, 2023 (virtual).

115. Auburn University, Department of Chemical Engineering, September 27, 2023, Auburn, AL.

116. University of Delaware, Winter Research Review, Department of Chemical and Biomolecular Engineering, January 22, 2025, Newark, DE.

117. University of Delaware, Chemistry-Biology Interface Program, July 30, 2025, Newark, DE.

Industrial

1. DuPont Marshall Laboratories, April 17, 2002, Philadelphia, PA.
2. Rhodia, January 26, 2004, Cranberry, NJ.
3. Procter and Gamble, October 3, 2005, West Chester, OH.
4. Rhodia, August 27, 2007, Bristol, PA.
5. DuPont Experimental Station, September 10, 2008, Wilmington, DE.
6. International Fragrances and Flavors, February 24, 2009, Union Beach, NJ.
7. Procter and Gamble, September 18, 2009, West Chester, OH.
8. Syngenta Crop Protection, February 2, 2011, Greensboro, NC.
9. International Fragrances and Flavors, July, 2011, Union Beach, NJ.
10. Genentech, June 4, 2012, South San Francisco, CA.
11. Abbott Nutrition, January 25, 2013, Columbus, OH.
12. International Fragrances and Flavors, February 20, 2013, Union Beach, NJ.
13. Unilever, 5th Unilever-RSC symposium, September 13, 2014, Shanghai, China.
14. ExxonMobil, November 24, 2014, Annandale, NJ.
15. Janssen Pharmaceutical, March 10, 2015, Spring House, PA.
16. DuPont Experimental Station, May 13, 2015, Wilmington, DE.
17. Genentech, December 9, 2015, South San Francisco, CA.
18. Dow, January 28, 2016, Collegeville, PA.
19. Schlumberger, June 14, 2016, Cambridge, UK.
20. Nestlé, June 22, 2016, Lausanne, Switzerland.
21. LG Chemical, May 15, 2023, Seoul, Korea.
22. LS Instruments, September 12, 2023 (webinar).
23. Dow, March 13, 2024, Collegeville, PA.
24. DuPont, July 15, 2025, Newark, DE.

Plenary Talks

1. "Overcoming kinetic barriers to self-assembly: Field-directed colloidal phase transitions," 2nd Annual ISS Research and Development Conference, American Astronautical Society, July 15-17, 2013, Denver, Colorado.
2. "Directing colloidal self-assembly," Area Plenary: Interfacial Phenomena, 2016 AIChE Annual Meeting, November 13–17, 2016, San Francisco, CA.
3. "Microrheology's place in the rheologist's toolbox," 88th Annual Society of Rheology Meeting, February, 2017, Tampa Bay, FL.
4. "Dissipative self-assembly in colloidal dispersions," 51st General Assembly of the German Colloid Society, September 27–30, 2022, Berlin.
5. "Dissipative self-assembly of colloidal dispersions," 01J Area Plenary in honor of James W. Swan, 2022 AIChE Annual Meeting, November 13–18, 2022, Phoenix, AZ.
6. "Interactions, elasticity, aging and yielding of colloidal gels," 19th International Congress on Rheology, July 31–August 5, 2023, Athens, Greece.

Invited and Keynote Conference Presentations

1. "Nano- and micromechanical spectroscopy of cytoskeletal and extracellular matrix polymers," Symposium on Nanoscale Imaging of Biological Surfaces, 225th ACS National Meeting, March 23-27, 2003, New Orleans, LA.
2. "Probing the micromechanics and nanoscale interactions of particulate gels using optical tweezers," 2004 AIChE Annual Meeting, November 9, 2004, Austin, TX.
3. "Bending colloidal aggregates with light: the micromechanics of particulate gels" Symposium on Colloidal Materials, 2006 Materials Research Society Spring Meeting, April 20, 2006, San Francisco, CA.
4. "Colloidal interactions at the oil-water interface," Drops and Bubbles Session, 3rd Australian Colloid and Interface Science Symposium, February 4-8, 2007, Sydney, Australia.
5. "Hydrogel microrheology," Gordon Research Conferences, "Elastomers, Networks, and Gels," July 15-19, 2007, Colby-Sawyer College, New London, NH.
6. "Direct measurements of the effects of salt and surfactant on interaction forces between colloidal particles at water-oil interfaces," 2007 AIChE Annual Meeting, November 6, 2007, Salt Lake City, UT.
7. "Active microrheology of colloidal suspensions," Gordon Research Conferences, "Polyelectrolyte, Macromolecular and Colloidal Solutions," February, 2008, Ventura, CA.
8. "Microrheology of the liquid-solid transition during gelation," International Symposium on Applied Rheology, May 15, 2008, Seoul, Korea.
9. "Microrheology and rapid screening of therapeutic hydrogelators," Joint meeting of the Belgian Group of Rheology and Dutch Rheological Society, April 22, 2009, Rotterdam, The Netherlands.
10. "Microrheology of hydrogelation and its application to high-throughput screening," EU SoftComp Annual Meeting, May 6, 2009, Venice, Italy.
11. "Colloidal interactions at a liquid-liquid interface," International Association of Colloid and Interface Science / ACS Colloids and Surface Science Symposium joint meeting, June 16, 2009, New York, NY.
12. "Non-linear microrheology of colloidal suspensions," 5th Pacific Rim Conference on Rheology, August 1-6, 2010, Sapporo, Japan.
13. "Complex fluid microrheology," Four invited lectures for the XXIII Encuentro de Ciencia y Tecnología de Fluidos Complejos, August 16-20, 2010, San Luis Potosí, Mexico.
14. "Non-linear rheology at the micro-scale," 82nd Society of Rheology meeting, October 24-28, 2010, Santa Fe, NM.
15. "Field-directed assembly of nanoparticles," 5th Asian Particle Technology Symposium, July 2-5, 2012, Singapore.
16. "High-throughput viscosity measurements using microfluidics-based microrheology," Biological & Pharmaceutical Complex Fluids meeting, July 30-August 3, 2012, Tomar, Portugal.
17. "Nanoparticle directed assembly using electric fields," Annual Meeting of the American Electrophoresis Society (AES), October 28-November 1, 2012, Pittsburgh, PA.
18. "Self- and directed-assembly of nanoparticles," ITT/Vanguard: Next, December 6-7, 2012, Seattle, WA.
19. "Directing the path of colloidal assembly for functional nanomaterials," Physics of Colloids in External Fields, March 5-7, 2013, Mainz, Germany.
20. "Overcoming kinetic barriers to self-assembly using directing fields," Symposium on Remotely Controlled Colloids and Interfaces, 245th ACS National Meeting, April 7–11, 2013, New Orleans, LA.
21. "Directed assembly of oriented ellipsoidal colloids to control acoustic phonon transport," Symposium on Anisotropic Colloids: Synthesis, Fabrication, Assembly, and Applications, 246th ACS National Meeting, September 8-12, 2013, Indianapolis, IN.

22. "The mechanics of non-spherical, shape-changing endoskeletal droplets," Symposium on Particles, Colloids and Drops, 246th ACS National Meeting, September 8-12, 2013, Indianapolis, IN.

23. "Self-assembly by a field-directed colloidal phase transition," International Soft Matter Conference, Rome, Italy, September 16–19, 2013.

24. "Moving charges to order particles: The disorder-order transition of dielectrophoretic colloidal assembly," American Electrophoresis Society, September 30, 2013, Milwaukee, WI.

25. "Nanoparticle directed self-assembly," Department of Chemical and Biomolecular Engineering Annual Research Symposium keynote talk, University of Delaware, Newark, DE, January 29, 2014.

26. "Overcoming kinetic barriers to self-assembly," International Space Station Workshop, American Physical Society Annual Meeting, Denver, CO, March 2, 2014.

27. "Microrheology of protein solutions," Biological & Pharmaceutical Complex Fluids II meeting, Durham, NC, August 9-14, 2014.

28. "Hydrogel microrheology," Gordon Research Conferences, "Macromolecular Materials," January, 2015, Ventura, CA.

29. "Electrostatic repulsion between colloids at the oil-water interface," Symposium on Particles at Interfaces, 249th ACS National Meeting, Denver, Colorado, March 22–26th, 2015.

30. "Assembly and Buckling of Self-Assembled Colloidal Columns," 15th International Association of Colloid and Interface Scientists, Mainz, Germany, May 24–28, 2015.

31. "Directing colloidal self-assembly with toggled fields," 18th Swiss Soft Days, Zürich, Switzerland, March 30, 2016.

32. "Rheology's role in developing new medicines that save lives," 20th Meeting of the European Society of Rheology, Switzerland, March 31–April 1, 2016.

33. "Endoskeletal droplets: Anisotropic emulsions with internal structure," 7th International Colloids Conference, Barcelona, Spain, June 18–21, 2017.

34. "Anisotropic, stimuli responsive endoskeletal emulsions," Symposium BM02: Multiphase Fluids for Materials Science–Droplets, Bubbles and Emulsions, MRS Fall Meeting, Boston, MA, November 27–December 1, 2017.

35. "Overcoming Kinetic Bottlenecks of Colloidal Self-Assembly," Session Y32: Condensed Matter Experiments on the ISS, American Physical Society March Meeting 2018, Los Angeles, California, March 5–9, 2018.

36. "Scalable directed self-assembly of metamaterials from nanoparticles," Materials and Manufacturing for Advanced Photonics (MMAP), 2018 IEEE Research and Applications of Photonics In Defense Conference (RAPID), Miramar Beach, FL, August 21–24, 2018.

37. "Colloidal gel elasticity arises from the packing of locally glassy clusters," 33rd conference of the European Colloid and Interface Society, Leuven, Belgium, September 9–14, 2019.

38. "InSPACE-4: Kinetics of nanoparticle self-assembly in directing fields," ISS Increment 65 Science Symposium, June 22–24, 2021.

39. "Phase separation and emergent dynamics of paramagnetic suspensions in toggled magnetic fields," American Physical Society March Meeting, Chicago, Illinois, March 14–18, 2022.

40. "InSPACE-4 – Directing the self-assembly of functional materials," 11th annual International Space Station Research and Development Conference (ISSRDC), Washington, DC, July 26, 2022.

41. "Microrheology of biomolecular solutions," American Association of Pharmaceutical Scientists, Boston, Massachusetts, October 17, 2022.

42. "Adsorption and interfacial rheology of monoclonal antibodies," American Chemical Society Spring 2024 Meeting, March 17-21, 2024, New Orleans, LA.

43. "Colloid contact mechanics and macroscopic rheology in colloidal gels," American Chemical Society Spring 2024 Meeting, March 17-21, 2024, New Orleans, LA.

44. "Dissipative self-assembly and active matter behavior of magnetic colloidal suspensions in microgravity," 95th Society of Rheology meeting, October 13–17, 2024, Austin, TX.

45. "Driven phase separation and gel-like states during dissipative assembly," American Chemical Society Spring 2025, March 23–27, 2025, San Diego, CA.

46. "Dynamics of a colloidal suspension during dissipative self-assembly," American Chemical Society Fall 2025, August 17–21, 2025, Washington, DC.

Technical Presentations, last three years

Listed are contributed technical presentations by myself and members of my research group.

200. B. Paul, N. J. Wagner, E. M. Furst, A. M. Lenhoff, S. C. M. Teixeira, "Ovalbumin Dense Phase Formation in Concentrated Electrolyte Solutions." Neutrons and Food 6, May 16–18, 2022, Tokyo, JP (virtual).

201. B. Paul, N. J. Wagner, E. M. Furst, A. M. Lenhoff, S. C. M. Teixeira, "Structural Investigation of Salt-Induced Local Ordering in Protein Dense Phases," 95th ACS Colloid and Surface Science Symposium, June 14–16, 2021 (virtual).

202. E. M. Furst, "Contact mechanics between colloidal particles," Society of Rheology Annual Meeting, October 10–14, 2021, Bangor, Maine.

203. Q. Li and E. M. Furst, "Bond forming dynamics of a model colloidal suspension with depletion interaction," Society of Rheology Annual Meeting, October 10–14, 2021, Bangor, Maine.

204. B. Paul, N. J. Wagner, E. M. Furst, A. M. Lenhoff, S. C. M. Teixeira, "Crystal, Liquid, or Gel: A Thermodynamic Framework for Phase Behavior in Dilute Protein Solutions with Increasing Salt Concentration." 11th American Conference on Neutron Scattering, June 5–9, 2022, Boulder, CO, USA.

205. J. Conradt and E. M. Furst, "Dissipative self-assembly of paramagnetic colloidal suspensions in microgravity," ACS Colloid and Surface Science Symposium, July 11–13, 2022, Golden, CO, USA

206. K. Crane-Moscowitz, E. M. Furst, C. J. Kloxin, D. J. Pochan, "Stability and Self-Assembly of Cylindrical Coiled-Coil Domains into Discrete Nanoparticles and Soluble Aggregates," 96th Annual Colloid and Surface Science Symposium, July 11-13, 2022, Golden, CO, USA

207. E. M. Furst, "Photon transport in diffusing wave spectroscopy microrheology," Society of Rheology Annual Meeting, October 9–13, 2022, Chicago, IL.

208. B. Paul, N. J. Wagner, E. M. Furst, A. M. Lenhoff, S. C. M. Teixeira. "Variation in protein dense phase structure with increasing salt concentration," Gordon Research Conference on Colloidal, Macromolecular, and Polyelectrolyte Solutions, November 5 –11, 2022, Ventura, CA, USA (poster presentation).

209. J. Conradt and E. M. Furst, "Dissipative self-assembly of paramagnetic suspensions in microgravity," Gordon Research Conference on Colloidal, Macromolecular, and Polyelectrolyte Solutions, November 5–11, 2022, Ventura CA, USA (poster presentation.)

210. B. Paul, S. C. M. Teixeira, E. M. Furst, A. M. Lenhoff, N. J. Wagner, "In-situ high pressure scattering for studying protein behavior," American Crystallographic Association, June 7 – 11, 2023, Baltimore MD (oral presentation.)

211. B. Huntington, J. Dresel, M. Schweitzer,E. M. Furst, P. Besenius, A. M. Kloxin "Assessing Cellular Response in Viscoelastic Supramolecular hydrogels for bioinspired three-dimensional cell culture," Gordon Research Conference on Biomaterials and Tissue Engineering, July 15–21 2023, Holderness, NH.

212. B. Paul, S. C. M. Teixeira, E. M. Furst, A. M. Lenhoff, N. J. Wagner. "Interplay between pressure and salt effects on protein-protein interactions," American Chemical Society Biochemical Technology Division, August 13–17, 2023, San Francisco CA.

213. B. Paul, S. C. M. Teixeira, E. M. Furst, A. M. Lenhoff, N. J. Wagner. "Thermorheological investigation of a food-grade gelatin gel via microrheology," 21st Gordon Research Conference on Colloidal, Macromolecular, and Polyelectrolyte Solutions, February 10–16, 2024, Ventura CA.

214. K. Crane-Moscowitz, E. M. Furst, C. J. Kloxin, D. J. Pochan, "Ionic strength determines self-assembly, solution stability, and interactions between coiled coil nanoparticles," Gordon Research Seminar and Gordon Research Conference: Colloidal, Macromolecular and Polyelectrolyte Solutions, February 9-16, 2024, Ventura, CA, USA (poster presentation).

215. J. Conradt and E. M. Furst, "Multiscale analysis of the dissipative self-assembly of polarizable colloids," Gordon Research Conference on Colloidal, Macromolecular, and Polyelectrolyte Solutions, February 1–6, 2024, Ventura CA. (poster presentation).

216. B. Paul, S. C. M. Teixeira, E. M. Furst, A. M. Lenhoff, N. J. Wagner, "In-situ high pressure scattering for studying protein behavior," American Crystallographic Association, June 7 – 11, 2023, Baltimore MD (oral presentation.)

217. B. Paul, E. M. Furst, A. M. Lenhoff, N. J. Wagner, S. C. M. Texeira. "Combined effects of pressure and ionic strength on protein-protein interactions: An empirical approach," Symposium on Neutrons & Food 7, June 10-13, 2024, Newark DE.

218. J. Conradt and E. M. Furst, "Dissipative self-assembly of polarizable colloids in toggled magnetic fields," American Chemical Society Colloid and Surface Science Symposium, June 23-26, 2024, Seattle, WA, USA.

219. K. Crane-Moscowitz, C. J. Kloxin, D. J. Pochan, E. M. Furst, "The role of surface charge on the dynamics and interactions between peptide-based coiled coil nanoparticles," American Chemical Society Colloid and Surface Science Symposium, June 23-26, 2024, Seattle, WA, USA.

220. K. Crane-Moscowitz, M. Langenstein, Y. Shi, R. Guo, J. Saven, C. J. Kloxin, D. J. Pochan, E. M. Furst, "Characterizing solution dynamics and interactions of bundlemers and bundlemer-hybrids via light scattering," Conference Across MRSEC and PREM Schools, August 2-3, 2024, Chicago, IL, USA (poster presentation)

Theses and Student Research Supervised

Ph.D. theses supervised (25 total, current employer is given in parentheses)

1. John P. Pantina, Micromechanics of Model Colloidal Aggregates, 5/06 (Ingredion).
2. Myung Han Lee, Structure and Microrheology of Particulate Gels, 7/07 (LG Chemical, Korea).
3. Ji Yeon Huh, Structure and Dynamics of Colloid-Polymer Solutions, 9/08 (DuPont).
4. Travis H. Larsen, Microrheology of Responsive Hydrogels, 10/08 (Halliburton).
5. Indira Sriram, Active and Non-linear Microrheology, 1/10 (NIST).
6. Manish Mittal, Directed Self-Assembly of Colloidal Particles Using External Fields, 4/10 (Apple).
7. Pushkar Lele, Directed Self-Assembly in Electrical and Optical Fields, 5/10 (Chemical Engineering, Texas A&M).
8. Bum Jun Park, Interactions, Micromechanics and Applications of Colloidal Particles at Fluid Interfaces, 6/10 (Chemical Engineering, Kyung Hee University, Korea).
9. Kelly M. Schultz, High-Throughput Microrheological Characterization of Biocompatible Hydrogelators, 4/11 (Chemical Engineering, Lehigh University).
10. Mark Panczyk (co-advised with Norman Wagner), Directed Self-Assembly of Dicolloid Suspensions, 8/13. (Ingredion)
11. Peter Beltramo, Polarization and Self-Assembly of Colloids, 12/13. (Chemical Engineering, University of Massachusetts, Amherst)
12. Kathryn Whitaker, Microrheology of Colloidal Glasses and Gels, 4/15 (Dow).

13. Jonathan Bauer, Directed Self-Assembly in Toggled Fields, 6/15 (TE Connectivity).
14. Lillian Lam Josephson, Microrheology for Protein Therapeutics Development, 11/16 (Ecolab)
15. Jillian Emerson (co-advised with Thomas H. Epps III), The Thermodynamics of Polymer Mixtures in Solution and Their Applications in Functional, Microstructured Films, 12/16 (Dow)
16. Mahlet Woldeyes (co-advised with Christopher Roberts), Molecular-scale understanding of protein interactions and solution viscosities, 10/18 (Ely Lilly).
17. Celeste Prilezsky, Structural programming: Balancing external stress with internal structure in shape-responsive emulsions, 12/18 (La Vie).
18. Caitlin Wood (co-advised with Christopher Roberts), Mechanistic insights of protein aggregation at interfaces, 8/20 (Merck)
19. Kimberly Dennis, Applications of diffusing wave spectroscopy to complex fluids in industry, 11/20 (Waters).
20. Hojin Kim, Field-directed self-assembly of colloidal particles for engineering phononic materials, 1/21. (ExxonMobil)
21. Brian Paul (co-advised with Abraham Lenhoff and Norman Wagner), Structure, rheology, and phase behavior of protein formulations under high pressure, 1/25. (Gilead)
22. Jason Conradt, Dissipative self-assembly of paramagnetic suspensions, 12/25.
23. Kenneth Crane-Moscowitz (with Chris Kloxin and Darrin Pochan), Interactions and stability of peptide bundlemers.
24. Bree Huntington, Measurements of local hydrogel mechanics in tissue culture.
25. Matthew Pitell, Contact mechanics in colloidal dispersions.
26. Michelle Sandag (co-advised with Norman Wagner), Combined neutron scattering and rheology measurements.
27. Harrison Davis (co-advised with Chris Roberts and Susana Teixeira), Degradation mechanisms and stabilization of AAV-based delivery systems

Master's theses supervised

1. John P. Pantina, Directed Assembly and Micromechanics of Colloidal Gel Backbone Mimics, 8/03.
2. Hongguang Huo, Tailoring Cell Adhesion in PEG-polysacharride Hydrogels, 9/06.
3. Bum Jun Park. Interactions Between Colloidal Particles at Oil-Water Interfaces, 12/07.
4. Meghan Reilly, Enhancing the Mechanical Properties of a MAX1 Hydrogel by Incorporating Lysyl Oxidase, 8/08. Co-advised with J. Schneider (Chemistry and Biochemistry).
5. Frances Spinelli, Rheology of Heparin Hydrogels, 11/08.
6. Kimberly Dennis, "High-pressure linear viscoelasticity measurements," 10/17.

Postdoctoral researchers supervised (16 total, current employer is given in parentheses)

1. Dr. Byeong Seok Chae, 2001–2003 (Johnson & Johnson)
2. Dr. Chandra Sekhar Palla, 2003–2004 (Unilever)
3. Dr. Cecile Veerman, 2004–2005 (DSM, Netherlands)
4. Dr. Tristan Williams, 2005–2006
5. Prof. Paula Vasquez, 2007–2009 (Applied Mathematics, University of South Carolina)
6. Dr. Florian Nettesheim, 2007–2008 (DuPont)

7. Dr. John Paul Bir Singh, 2007–2008 (Halliburton)
8. Prof. Prachi Thereja, 2010–11 (Chemical Engineering, Indian Institute of Technology Gandhinagar)
9. Dr. Whirang Cho, 2010–2012 (NIST)
10. Prof. James W. Swan, 2011–2013 (Chemical Engineering, MIT)
11. Dr. Matthew Shindel, 2011–2013 (Campbell-Alliance)
12. Dr. Joel Roevner, 2012–2015 (co-advised with Chris Roberts and Steve Hudson)
13. Dr. Nesrin Senbil, 2015 (Université de Fribourg)
14. Dr. Yu-Jiun (Nate) Liu, 2018–2020 (with Norman Wagner, Merck)
15. Prof. Yimin Luo, 2018–2020 (with Norman Wagner, Yale)
16. Dr. Qi Li, 2020–2022 (GSK)

Thesis committees. I have served on the following thesis committees at the University of Delaware. The primary advisor is given in parentheses.

1. Brian Lefebvre, PhD 2002 (Robinson)
2. Sudhir Shenoy, PhD 2003 (Wagner)
3. Kapil Mayawala, MS 2003 (Edwards)
4. Belgin Baser, PhD 2004 (Kaler)
5. Erde Can, PhD 2004, Materials Science and Engineering (Wool)
6. Yamaira Gonzalez, PhD 2004 (Kaler)
7. Lakshmi Krishnamurtha, PhD 2005 (Wagner)
8. Ronald Egres, PhD 2005 (Wagner)
9. Bryan Berger, PhD 2006 (Kaler/ Lenhoff)
10. Yakov Lapitsky, PhD 2006 (Kaler)
11. Gaurav Arora, PhD 2006 (Sandler)
12. Kim Goodwin, PhD 2007 (Edwards)
13. Le Zhang, PhD 2007, Materials Science and Engineering (Kiick)
14. Travis Hogdon, PhD 2008 (Kaler)
15. Volha Lazouskaya, PhD 2008, Plant and Soil Sciences (Jin)
16. Erik S. Welf, PhD 2009 (Ogunnaike)
17. Matthew Helgeson, PhD 2009 (Wagner/ Kaler)
18. Naa Teokor McFarlane, PhD 2009 (Wagner/ Kaler)
19. Monica Branco, PhD 2009 (Wagner/ Schneider)
20. Dennis Kalman, PhD 2010 (Wagner)
21. Jason McMullan, PhD 2010 (Wagner)
22. Nathan Hould, PhD 2011 (Lobo)
23. Kory Blocker, PhD 2011 (Sullivan)

24. Wen-Shiue (Owen) Young, PhD 2012 (Epps)
25. Aaron Baldwin, PhD 2012, Materials Science and Engineering (Kiick)
26. Brett Guralnick, PhD 2012 (Mackay)
27. Carrie Street, PhD 2012 (Wagner)
28. Jeong-Jae Wie, PhD 2012 (Mackay)
29. Abbygail Foster, PhD 2014 (Sullivan)
30. A. Kate Gurnon, PhD 2014 (Wagner)
31. Elizabeth Kelley, PhD 2014 (Epps and Sullivan)
32. Sarah Mastroianni, PhD 2014 (Epps)
33. P. Douglas Godfrin, PhD 2015 (Wagner)
34. Matthew J. Armstrong, PhD 2015 (Wagner and Beris)
35. Alex Apostolidis, PhD 2015 (Beris)
36. Gregory Barnett, PhD 2015 (Roberts)
37. Angela Holmburg, PhD 2015 (Epps)
38. Colin Cwalina, PhD 2015 (Wagner)
39. Ming Luo, PhD 2016 (Epps)
40. Roddel Remy, PhD 2016, Materials Science and Engineering (Mackay)
41. Jingsi Gao, PhD 2017 (Wagner)
42. Michelle Calabrese, PhD 2017 (Wagner)
43. P. Masafu Mwasame, PhD 2017 (Beris and Wagner)
44. Ryan Murphy, PhD 2017 (Wagner)
45. Cesar Calero-Rubio, PhD 2017 (Roberts)
46. Ru Xie, PhD 2018 (Wagner)
47. Andrew Zgorski, PhD 2018, Physics (Lyman)
48. Stijn Koshari, PhD 2018 (Lenhoff and Wagner)
49. Thomas Gartner, PhD 2019 (Jayaraman)
50. Melody Morris, PhD 2019 (Epps)
51. Jeffrey Horner, PhD 2020 (Beris and Wagner)
52. Julie Hipp, PhD 2020 (Wagner)
53. Michiel Wessels, PhD 2021 (Jayaraman)
54. Yu-Fan Lee, PhD 2022 (Wagner)
55. Ying-Heng Summer Tein, PhD 2022 (Wagner)
56. Jennifer N. Mills, PhD 2022 (Wagner)
57. Cristobal Garcia Garcia, PhD 2022, Materials Science and Engineering (Kiick)
58. Christian Heil, PhD 2023 (Jayaraman)

59. Soham Jariwala, PhD 2023 (Beris and Wagner)

60. James Forder, PhD 2024 (Roberts)

61. Shizhao Lu, PhD 2024 (Jayaraman)

62. Joshua Meisenhelter, PhD 2024 (C. Kloxin)

63. Nikhil Karthikeyan, PhD 2025 Materials Science and Engineering (Schiller)

64. Albree Rae Weisen, PhD 2025 Materials Science and Engineering (C. Kloxin and Pochan)

Thesis committees and juries at other universities. I have served on the following thesis committees at other universities. The institution and primary advisor is given in parentheses.

1. Sven Reynaert, PhD 2007 (Katholieke Universiteit Leuven, Belgium, Advisor: J. Vermant)

2. Jonathan Chi Kuen Foong, PhD 2008 (University of Melbourne, Australia, Advisor: P. Scales)

3. Elia Boonen, PhD 2009 (Katholieke Universiteit Leuven, Belgium, Advisors: P. Moldernaers and P. van Puyvelde)

4. Thesis examiner, Department of Chemical Engineering, McGill University, Montreal, Canada, 2010.

5. Ryan DePuit, PhD 2011 (Department of Chemical Engineering, University of California Santa Barbara, Advisor: Todd Squires).

6. Siddharth Kulkarni, PhD 2017 (Department of Chemical Engineering, IIT Ghandinagar, Advisor: Prachi Thareja)

7. Francesco Bonacci, PhD 2019 (Université Paris-Est, Marne-la-Vallée, France, Main supervisor: Xavier Chateau, Co-supervisors: Anaël Lemaître, Julie Goyon)

8. Leonardo Martin-Alarcon, PhD 2021 (Biomedical Engineering Graduate Program, University of Calgary, Advisor: Milana Trifkovic)

9. Ann Marie Aisling, PhD 2025 (Chemical Engineering, Drexel University, Advisor: Nicolas Javier Alvarez)

Other juries and committees

1. Olivia Du Roure, Habilitation à Diriger des Recherches, 2014 (ESPCI, Paris)

Graduate advising for interdisciplinary training programs
Chemistry-Biology Interface Program (6 week rotation in laboratory)

1. Erin Cullison, Biology, Fall 2004.

2. Meghan Reilly, Chemical Engineering, Spring 2006.

Undergraduate Research Experiences Supervised
Honors Theses

1. John Bishop, "Development of an optical trap microrheometer using video microscopy," (BChE, 2003; PhD 2008, Princeton).

2. Brian Bush, "Optical trapping as a means to study dense colloidal suspensions" (BChE, 2003; PhD 2009, Berkeley).

3. Richard Dombrowski, "Novel microfluidic separations" (BChE, 2003; PhD 2007, University of Queensland).

4. Becky Gable, "Surface chemistry dependence of microrheological measurements" (BChE, 2006). Recognized by Sigma Xi Undergraduate Thesis Award (one of three awarded University-wide in 2006.)

5. Matthew Rosborough, "Nonlinear Microrheology and Micromechanics" (BChE, 2007).

6. Eric Bennung, "Structural Transitions of Magnetorheological Fluids in Microgravity" (BChE, 2009).

7. Alexandra Bayles, "Micromechanics of Anisotropic Partially Crystalline Emulsions," (BChE, 2013; PhD UC Santa Barbara). Recognized by Goldwater Scholarship and Sigma Xi Undergraduate Thesis Award (one of three awarded University-wide in 2013.)
8. Kaelan Reed, "Dielectrophoretic Assembly of Colloids in Toggled AC Fields" (BChE, 2017).
9. Tyler Gaeman, "Effects of Petrolatum Concentration on Petrolatum-Based Yield Stress Fluid Contact Angles and Adsorption Properties with Linear Alkane Liquid Interface" (BChE, 2020)
10. Dylan Stare, "Electrostatic Interactions Between Coiled Coil Peptides" (BChE, 2026)

Senior Research Projects

1. Javier Salcedo, "Design of microfluidic channels for separations" (BChE, 2003)
2. Jed Johnhope, "Microrheology of organogels and PEO networks" (BChE, 2003)
3. Steven Kestel, "Microfluidic separations" (BChE, 2004)
4. Phuong Nguyen, "Microrheology of ballistic gelatin" (BChE, 2005)
5. Andrew Marshall, "Microrheology and micromechanics of colloidal suspensions" (BChE, 2005)
6. Michael Boyle, "Preparing asymmetric nanoscale magnetic and non-magnetic particles" (BChE, 2009)
7. Yifei Liu, "Directed assembly of paramagnetic colloids in pulsed magnetic fields" (BChE, 2013; PhD University of Wisconsin)
8. Qi (Matthew) Zhang, "Utilizing and evaluating nanoscale characterization techniques by probing the remodeling of responsive synthetic extracellular matrices under 3D cell culture techniques" (BChE, 2023), with April Kloxin.

Undergraduate Senior Thesis Committees

1. Chris McCalicher, BChE 2003 (Wool)
2. Noel Comolli, BChE 2003 (Robinson)
3. Charles Collins-Chase, BChE 2004 (Wool)
4. Michael Lowinger, BChE 2004 (Kaler)
5. Timothy Bogart, BChE 2010 (Epps)
6. Joey Kim, BChE 2012 (Epps)
7. Ellen Reed, BChE 2014 (Epps)
8. Carla Battistoni, BChE 2018 (Roberts)
9. Samuel MacDonald, BChE 2026 (Blenner)

Research outreach activities

Research experiences for undergraduates (REU) and high school students

1. Melissa Plummer (Summer REU student, 2002)
2. Malvika Ogale (Summer REU student, 2008)
3. Donald Johnson (ACS SEED student, 2009)
4. Ryan K. Niles (Summer REU student, 2009)
5. Matthew Dion (Summer REU student, 2010)
6. Robert Sido (Summer REU student, 2010)
7. Yura Kim (ACS SEED student, 2010)

8. Jordan Jackson (ACS SEED student, 2011)
9. Hassan Siddiqui (Summer REU student, 2011)
10. Benjamin Fogal (Summer student, 2012)
11. Johnathan Stauffer (Rising Sun High School, 2012-2013)
12. Martin Kurian (Wilmington Charter School, 2013-2014)
13. Moujhuri Sau (Summer REU student, 2018)
14. Nicholas Sbalbi (Summer REU student, 2021)
15. Maddy Ohta (Germantown Friends School, January 2023)
16. Isaac Torchinsky-Field (Germantown Friends School, January 2024)

RET (Research Experience for Teachers) participants

1. Daniel Bondanza (Sun Valley High School, PA, 2010)

Teaching Experience and Qualifications

The numbers in brackets indicate the course or course section enrollment.

Courses instructed at Delaware

CHEG 332 [72] Chemical Engineering Kinetics, two sections, co-taught with Prof. M. Barteau, fall 2001.

CHEG 345 [55] Junior Laboratory, co-taught with Profs. A. Robinson and S. I. Sandler, spring 2002.

CHEG 332 [56] Chemical Engineering Kinetics, two sections, fall 2002.

CHEG 667 [7] Cellular Biophysics and Biomechanics, spring 2003.

CHEG 332 [46] Chemical Engineering Kinetics, co-taught with Prof. B. Willis, fall 2003.

CHEG 667 [9] Cellular Biophysics and Biomechanics, spring 2004.

CHEG 332 [61] Chemical Engineering Kinetics, two sections, co-taught with Prof. Willis, fall 2004.

CHEG 617/867 [23] Advanced Colloid Science and Engineering, spring 2005.

CHEG 667 [10] Cellular Biophysics and Biomechanics, spring 2006.

CHEG 341 [45] Fluid Mechanics, fall, 2006.

CHEG 845 [24] Advanced Transport Phenomena, co-taught with Dr. J. Tilton, spring 2007.

CHEG 341 [48] Fluid Mechanics, fall, 2007.

CHEG 845 [11] Advanced Transport Phenomena, co-taught with Dr. J. Tilton, spring 2008.

CHEG 341 [36] Fluid Mechanics, fall, 2008.

CHEG 341 [57] Fluid Mechanics, fall, two sections 1/3 co-taught by Prof. E. Papoutsakis, 2009.

CHEG 845 [25] Advanced Transport Phenomena, co-taught with Dr. J. Tilton, spring 2010.

CHEG 231 [88] Chemical Engineering Thermodynamics, two sections co-taught with Prof. Doug Buttrey and Dr. David Johnson, fall 2010.

CHEG 231-H [20] Honors Chemical Engineering Thermodynamics, two sections (joint with non-honors sections) and one additional lecture per week co-taught with Prof. Doug Buttrey and Dr. David Johnson, fall 2010.

CHEG 845 [29] Advanced Transport Phenomena, co-taught with Dr. J. Tilton, spring 2011.

CHEG 231 [92] Chemical Engineering Thermodynamics, two sections co-taught with Profs. Doug Buttrey and Feng Jiao, fall 2011.

CHEG 231-H [33] Honors Chemical Engineering Thermodynamics, two sections (joint with non-honors sections) and one additional lecture per week co-taught with Profs. Doug Buttrey and Feng Jiao, fall 2011.

CHEG 867 [11] Advanced Colloid Science, spring 2012.

CHEG 231 [89] Chemical Engineering Thermodynamics, two sections co-taught with Prof. Feng Jiao, fall 2012.

CHEG 231-H [32] Honors Chemical Engineering Thermodynamics, two sections (joint with non-honors sections) and one additional lecture per week co-taught with Prof. Feng Jiao, fall 2012.

CHEG 845 [30] Advanced Transport Phenomena, co-taught with Dr. J. Tilton, spring 2013.

CHEG 667 [5] Rheology and microrheology, fall 2013.

CHEG 325 [97] Chemical Engineering Thermodynamics II, two sections co-taught with Prof. Stanley Sandler, spring 2014.

CHEG 401 [92] Process Dynamics and Control, co-taught with Prof. Abraham Lenhoff and James Park (teaching fellow), fall 2014.

CHEG 325 [85] Chemical Engineering Thermodynamics II, two sections co-taught with Prof. Thomas H. Epps, III, spring 2015.

CHEG 401 [94] Process Dynamics and Control, two sections co-taught with Prof. Abraham Lenhoff and Dr. Nicholas Hernjak, fall 2015.

CHEG 401 [74] Process Dynamics and Control, co-taught with Dr. Nicholas Hernjak (1/3), fall 2016.

CHEG 325 [94] Chemical Engineering Thermodynamics II, two sections co-taught with Prof. Feng Jiao, spring 2017.

CHEG 432 [15] Chemical Process Design II, Design project: Bioprocess for astraxanthin, with Greg Taylor, spring 2018.

CHEG 401 [88] Process Dynamics and Control, co-taught with Prof. Abraham Lenhoff and Melody Morris (teaching fellow), fall 2018.

CHEG 432 [15] Chemical Process Design II, Design project: Bioprocess for the production of omega-3 fatty acids, with Greg Taylor, spring 2019

CHEG 401 [67] Process Dynamics and Control, two sections co-taught with Prof. Abraham Lenhoff and Dr. Nicholas Hernjak, fall 2019.

CHEG 432 [15] Chemical Process Design II, Design project: Biological production of 1,3-propanediol, with Greg Taylor, spring 2020.

CHEG 825 [30] Graduate Thermodynamics, with Prof. Norman Wagner, fall 2020.

CHEG 432 [15] Chemical Process Design II, Design project: Biological production of astraxanthin, with Greg Taylor, spring 2021.

CHEG 811 [12] Chemical Interfaces and Surfaces, with Prof. Norman Wagner, fall 2021.

CHEG 432 [15] Chemical Process Design II, Design project: Bioprocess for the Production of Omega-3 Fatty Acids, spring 2022.

CHEG 231 [40] Chemical Engineering Thermodynamics I, two sections co-taught with Prof. Raul Lobo, fall 2023.

CHEG 231-H [40] Honors Chemical Engineering Thermodynamics, two sections (joint with non-honors sections) and one additional lecture per week co-taught with Prof. Raul Lobo, fall 2024.

CHEG 811 [22] Chemical Interfaces and Surfaces, spring 2024.

CHEG 231 [41] Chemical Engineering Thermodynamics I, two sections co-taught with Prof. Raul Lobo, fall 2024.

CHEG 231-H [32] Honors Chemical Engineering Thermodynamics, two sections (joint with non-honors sections) and one additional lecture per week co-taught with Prof. Raul Lobo, fall 2024.

CHEG 811 [22] Chemical Interfaces and Surfaces, spring 2025.

CHEG 667-013 [18] Chemical Engineering with Computers, designed and co-taught with Prof. Will Hartt, spring 2025.

CHEG 231 [43] Chemical Engineering Thermodynamics I, two sections co-taught with Prof. Raul Lobo, fall 2025.

CHEG 231-H [48] Honors Chemical Engineering Thermodynamics, two sections (joint with non-honors sections) and one additional lecture per week co-taught with Prof. Raul Lobo, fall 2025.

CHEG 811 [30] Chemical Interfaces and Surfaces, spring 2026.

CHEG 667-013 [18] Chemical Engineering with Computers, designed and co-taught with Prof. Will Hartt, spring 2026.

Delaware supplemental and guest lectures

ENGG 100 Introduction to Engineering, fall, 2009. Lecture to six sections on microfluidics.

EGGG 101 Introduction to Engineering, fall, 2010. Lecture to six sections on microfluidics.

CHEG 673 fall 2014. Particle Characterization and Measurement. Lecture on colloidal interactions, stability, and gelation.

CHEG 673 fall 2015. Particle Characterization and Measurement. Lecture on colloidal interactions, stability, and gelation.

CHEG 673 fall 2016. Particle Characterization and Measurement. Lecture on colloidal interactions, stability, and gelation.

CHEG 673 fall 2017. Particle Characterization and Measurement. Lecture on colloidal interactions, stability, and gelation.

CHEG 673 fall 2018. Particle Characterization and Measurement. Lecture on colloidal interactions, stability, and gelation.

CHEG 673 fall 2019. Particle Characterization and Measurement. Lecture on colloidal interactions, stability, and gelation.

CHEG 667/867 [12] Applied Rheology, fall 2023. Lecture on microrheology theory and practice.

CHEG 667/867 [16] Applied Rheology, fall 2024. Lecture on microrheology theory and practice.

Delaware video instructional program

CHEG 667 [2] Cellular Biophysics and Biomechanics, Spring 2004.

CHEG 667 [2] Cellular Biophysics and Biomechanics, Summer 2006.

Courses Instructed at other institutions and universities

"Introduction to Microrheology," Graduate Biotechnology Course, Forschungszentrum Jülich, 18, 2009, Jülich, Germany.

"Introduction to Microrheology," Graduate Short Course, Institute for Electronic Structure and Laser, Foundation for Research and Technology Hellas (IESL-FORTH), April 1-2, 2009, Heraklion, Greece.

"Introduction to Microrheology," Graduate Short Course, EUrheo Master's Program in Engineering Rheology, Department of Chemical Engineering, KU Leuven, May 11-12, 2009, Leuven, Belgium.

"Microrheology," SOMATAI training network course on interfacial rheology, March 8-10, 2016, ETH Zürich, Switzerland.

"Colloidal gels – Multiscale approaches to structure and rheology," March 26-31, 2017, Université Paris-Est/ École des Ponts, Marne-la-Vallée, France.

"Colloidal gels: Multiscale approaches to their structure and rheology," September 2022, Université Paris-Est/ École des Ponts, Marne-la-Vallée, France.

Professional Service

Professional society memberships

American Association for the Advancement of Science (AAAS)
American Chemical Society (ACS)
American Institute of Chemical Engineers (AIChE)
American Physical Society (APS)
Society of Rheology

Professional leadership and service

Current appointments

2024–2029	University of Pennsylvania Chemical and Biomolecular Engineering Advisory Board
2024–2026	Treasurer, American Institute of Physics
	Chair (*ex officio*), Finance Committee
	Chair (*ex officio*), Investment Advisory Committee
	Member (*ex officio*), Audit Committee
2024–2026	Treasurer and Trustee (*ex officio*), AIP Foundation
	Chair (*ex officio*), Finance and Audit Committee, 2024–2026
	Planning Study Committee, 2025
2020–2026	Board of Directors, American Institute of Physics
	Board Vice Chair, 2022–2024
	Vice-Chair, Compensation Committee, 2020–2024
	Member, Nominations and Governance Committee, 2020–2024
	By-Laws Review subcommittee, 2021
	Special Committee on Publication Agreements, 2022–2024
	Vice-Chair, Audit Committee, 2024–2026
2021–	Colloid and Surface Science Symposium Committee, American Chemical Society

Past appointments

2024	Physical Review E Lead Editor Search Committee
2021	French American Workshop on Green Materials Steering Committee
2018–2022	Council Member, International Association of Colloid and Interface Scientists (IACIS)
2018–2019	Member-at-Large, Society of Rheology
2017	Rheologica Acta publication award committee
2016	American Chemical Society, Colloid and Interface Science Division Strategic Planning Committee
2015–2019	Society of Rheology Member Society Representative, American Institute of Physics
2015–2016	Associate to the Committee on Science, American Chemical Society
2014–2017	Bingham Medal Award Committee, Society of Rheology (Chair, 2017)
2014–2016	Councilor, American Chemical Society, Colloid and Interface Science Division (COLL)
2009–2010	Member, Journal of Rheology publication award committee, Society of Rheology
2008–2012	Chair, Colloid and Surface Science Symposium Committee, American Chemical Society Division of Colloid and Surface Chemistry
2008–2018	Member, Area 1J Programming Committee, American Institute of Chemical Engineers
2008	American Chemical Society, Colloid and Interface Science Division Strategic Planning Committee

Editorial advisory boards

Current appointments

2016–	APL Bioengineering, editorial advisory board
2011–	Langmuir, editorial advisory board

Past appointments

2015–2022	Rheologica Acta, editorial board
2013–2017	Journal of Colloid and Interface Science, editorial board

Conference and meeting organization

1. Technical Program Co-Chair (with Antony Beris), 78th National Meeting of the Society of Rheology, October, 2006, Portland, Maine.

2. Co-chair (with Eric Kaler and Norman Wagner), 81st ACS Colloid and Surface Science Symposium, June, 2007, University of Delaware, Newark, Delaware.

3. Co-organizer (with Dan Blair), 3rd Mid-Atlantic Soft Matter Workshop, Friday, October 17, 2008, University of Delaware, Newark, Delaware.

4. Co-organizer (with Dan Blair), 11th Mid-Atlantic Soft Matter Workshop, Thursday, July 11, 2013, University of Delaware, Newark, Delaware.

5. Meeting Program Chair (MPC), Area 1J American Institute of Chemical Engineers, November 8-13, 2015, Salt Lake City, UT.

6. Co-Vice-Chair (with Wilson Poon, University of Edinburgh) Gordon Research Conference on Colloidal, Macromolecular, and Polyelectrolyte Solutions GRC, February 7-12, 2016.

7. Co-organizer (with Dan Blair), 11th Mid-Atlantic Soft Matter Workshop, Thursday, July 11, 2013, University of Delaware, Newark, Delaware.

8. Co-Chair (with Wilson Poon, University of Edinburgh) Gordon Research Conference on Colloidal, Macromolecular, and Polyelectrolyte Solutions GRC, February 4–9, 2018.

9. Co-Chair (with Norman Wagner) 100th ACS Colloid and Surface Science Symposium, June, 2026, University of Delaware, Newark, Delaware.

10. Co-organizer (with Dan Blair), 24th Mid-Atlantic Soft Matter Workshop, Friday, November 12, 2024, University of Delaware, Newark, Delaware.

Short courses instructed

1. "Principles and applications of microrheology," DPOLY Short Course: Rheology and Dynamics of Polymers and Complex Fluids, American Physical Society Annual Meeting, March 20-21, 2004, Montreal, Quebec. Course organizer: Wesley Burghardt (Northwestern) Co-instructors: Frank Bates, Jean-François Berret, William Graessley, Ron Larson, Scott Milner.

2. "Resolving single particles and molecules: New microscopy techniques for rheology," Society of Rheology, October 15-16, 2005, Vancouver, British Columbia. Co-instructors: Michael Solomon (University of Michigan) and Patrick Doyle (MIT).

3. "Directed self-assembly," University of Delaware, June 28, 2007, Newark, Delaware. Co-Instructors: Eric Kaler (UD), Norman Wagner (UD), Orlin Velev (NCSU), John Brady (Caltech).

4. "Joint EU-IFPRI Workshop on Colloidal Gels," June 14, 2008, Crete, Greece. Co-instructors: Wilson C. K. Poon, Jan Vermant, Richard Buscall.

5. "Microrheology: Theory, Practice and Applications," Society of Rheology, October 24, 2010, Santa Fe, NM. Co-instructors: Patrick Doyle (MIT) and Patrick Spicer (Procter and Gamble).

6. "Colloidal suspension rheology," DuPont Experimental Station, June 14, 2013, Wilmington, DE. Co-instructor: Norman Wagner.

7. "Active and Passive Microrheology: Theory and Experimental Application," Society of Rheology, October 10–11, 2015, Baltimore, MD. Co-instructor: Roseanna Zia.

8. "Rheology: Principles, Measurements, and Applications," August 17–29, 2021, Wilmington, DE. Directed by Chris Macosko. Co-instructors: Randy Ewoldt, Gerry Fuller, Gareth McKinley, and Kelly Schultz.

Chaired or co-chaired conference sessions since September, 2001

1. Session presider, Bulk rheology and dynamics in complex fluids, 75th ACS Colloids and Surface Science Symposium, Pittsburgh, PA.

2. Co-chair, Rheology and dynamics in complex fluids, 76th ACS Colloids and Surface Science Symposium, Ann Arbor, MI

3. Chair, Poster Session, 74th National Meeting Society of Rheology, Minneapolis, MN.

4. Co-chair, Colloidal Dispersions, 78th ACS Colloids and Surface Science Symposium, Yale University, New Haven, Connecticut.
5. Chair, Biological Systems, 76th National Meeting of the Society of Rheology, Lubbock, TX.
6. Chair, Rheology and dynamics of complex fluids, 79th ACS Colloids and Surface Science Symposium, Clarkson University, Potsdam, NY.
7. Co-organizer and chair (with Victor Breedveld), Symposium on Colloid-Polymer Solutions, 230th ACS National Meeting, Washington, DC.
8. Chair, Colloidal Hydrodynamics (Area 1J), AIChE Annual Meeting, October 30-November 2, 2005, Cincinnati, OH.
9. Co-Chair, Particulate and Multi-phase flows (Area 1J), AIChE Annual Meeting, October 30-November 2, 2005, Cincinnati, OH.
10. Chair, General Papers, 80th ACS Colloids and Surface Science Symposium, June 18-21, 2006, University of Colorado, Boulder, CO.
11. Chair, Colloidal Dispersions (Area 1C), AIChE Annual Meeting, November 12-17, 2006, San Francisco, CA.
12. Chair, Microrheology, 79th Society of Rheology meeting, October 7-11, 2007, Salt Lake City, UT.
13. Chair, Particulate and Multi-phase flows (Area 1J), AIChE Annual Meeting, November 3-9, 2007, Salt Lake City, UT.
14. Chair, Colloidal Dispersions (Area 1C), AIChE Annual Meeting, November 3-9, 2007, Salt Lake City, UT.
15. Co-Chair, Rheology and Microrheology, International Conference on Surface and Colloid Science and 83rd ACS Colloid and Surface Science Symposium, June 14-19, 2009, Columbia University, New York, NY.
16. Co-organizer and chair (with Matthew Lynch), Symposium on Contemporary Topics in Colloid-Polymer Mixtures, 239th ACS National Meeting, March 21-25, 2010, San Francisco, CA.
17. Co-Chair, Particulate and Multiphase Processes (Area 1J), AIChE Annual Meeting, October 16-21, 2011, Minneapolis, MN.
18. Co-Chair, Microrheology and Microfluidics, 8th Annual European Rheology Conference, April 2–5, 2013, Leuven, Belgium.
19. Co-Chair, Electrokinetics for Self-Assembly, American Electrophoresis Society, November 17-19, 2014, Atlanta, GA.
20. Co-Chair (with Roseanna Zia), Colloidal Hydrodynamics (Area 1J), AIChE Annual Meeting, November 17-20, 2014, Atlanta, GA.
21. Co-Chair (with Ilona Kretzschmar), 89th ACS Colloid & Surface Science Symposium, June 15-17, 2015, Pittsburgh, PA.
22. Co-Chair, Probe Microrheology (with Roseanna Zia), 87th Society of Rheology meeting, October 11–15, 2015, Baltimore, MD.
23. Co-Chair (with Patrick Spicer), Plenary Session: Fluid interfaces, AIChE National meeting, November 8-13, 2015, Salt Lake City, UT.
24. Co-chair (with Anke Linder), Micro and nanorheology, microfluidics, Annual European Rheology Conference, April 4-6, 2017, Copenhagen, Denmark.
25. Co-chair (with Sibani Lisa Biswal and Xiang Cheng), Rheology of Active Matter and Directed Systems, Society of Rheology meeting, October 9–13, 2022, Chicago, IL.

Department, College and University Service at Delaware

Department Service

2025	Chair, Ad hoc department workload policy committee
2023–2024	Ad hoc Communications Committee
2017–2022	Department Chair, Chemical and Biomolecular Engineering
2016–2017	Chair, faculty search committee
2015–2019	Co-Director, NSF REU Site: Interfacing Sustainable Energy and Materials
2014–2015	Gore Centennial Chair search committee
2013–2014	Faculty search committee
2013–2016	Awards Committee
2010–2013	Diversity Committee
2010–2013	Graduate Studies Committee
2009	Chair, graduate program coordinator search
2007–2013	Chair, Graduate Admissions Committee
2004–2007	Graduate Admissions Committee
2005–2007	Chair, Web and Public Relations Committee
2002–2004	Departmental Seminar Coordinator
2002–2003	Faculty search committee
2003–2009	Curriculum committee
2001–	Undergraduate Advisor

College Service

2024–	College of Engineering Promotion and Tenure Committee
2025	Chair, Mechanical Engineering Department Chair Search Committee
2024	Laird Fellowship selection committee
2013	Faculty search committee
2010–2011	College of Engineering Core Facilities Committee
2008	College of Engineering Strategic Planning Committee
2008–2010	Engineering Outreach advisory council
2007	Chemical Engineering Chair Search Committee
2005	Chemical Engineering Chair Search Committee
2004–2007	College of Engineering Elections Committee
2003	DelaWorld 101 Advising for Entering Students
2003–2017	Met with prospective students at Blue and Gold Days, Delaware Discovery Days and Delaware Decision Days.

University Service

2023–	University Laser Safety Committee
2014–2015	Board of Senior Thesis Readers
2010–2012	Graduate Council
2004	Research presentation at Bright Minds admissions recruiting day.

Graduate Training Programs

2003–	Chemistry-Biology Interface Program
2005–2008	NSF IGERT Biotechnology Training Program