

CURRICULUM VITAE

ROSEANNA N. ZIA

Associate Professor of Chemical Engineering
and by Courtesy, Mechanical Engineering

Terman Faculty Fellow

Stanford University

443 Via Ortega, Stanford, CA 94305

RZIA@stanford.edu

EDUCATION

California Institute of Technology

Ph.D. Mechanical Engineering. *Minor in Chemical Engineering*. June 2011.

Thesis: *Nonlinear microrheology: microviscosity, microdiffusivity, and normal stresses*

Advisor: Prof. John F. Brady

University of Michigan

M.Eng. Mechanical/manufacturing Engineering.

Thesis: *Multiple Output Dome Switch for Airbag Deployment Algorithm*

Advisor: Prof. Liwei Lin (presently at U.C. Berkeley)

University of Missouri

B.S.M.E. Mechanical Engineering. *Honors Scholar*.

Thesis: *FMEA Analysis for automotive transmission subassembly*

PROFESSIONAL EXPERIENCE

Associate Professor with Tenure, Chemical Engineering, Stanford University	2021 – present
By Courtesy, Mechanical Engineering, Stanford University	2018 – present
Assistant Professor, Chemical Engineering, Stanford University	2017 – 2020
Terman Faculty Fellow, Stanford University School of Engineering	2017 – present
Assistant Professor, Chemical & Biomolecular Engineering, Cornell University	2013 – 2017
James C. and Rebecca Q. Morgan Sesquicentennial Faculty Fellow, Cornell	2013 – 2017
Postdoctoral Scholar, Mechanical & Aerospace Engineering, Princeton University	2011 – 2012
Graduate Researcher, Mechanical Engineering, California Institute of Technology	2006 – 2011
Delphi Automotive Corp. Engineering Manager. Detroit, Michigan.	2001-2006

TEACHING ACTIVITIES:

Stanford University:

1. ChemEng 422 Suspension Mechanics (graduate elective designed by RNZ)	2018 – present
2. ChemEng 310 Fluid Mechanics (graduate core)	2018 – present
3. ChemEng 120B Heat and Mass Transport (undergraduate core)	2019 – present
4. ChemEng 699 Colloquium	2017 – 2020

Cornell University:

5. CHEME 3230 Fluid Mechanics (undergraduate core)	2013 – 2017
6. CHEME 7340 – Low-Reynolds Number Hydrodynamics (grad elective designed by RNZ)	2014 – 2017
7. CHEME 4900 – AIChE ChemE Car Project Team – Faculty Advisor	2013 – 2017
8. CHEME 4320 – Unit Operations Laboratory	2016

Short Courses:

Microrheology – 27th Intl. Conf. on Complex Fluids @ San Luis Potosi, Mexico (2015)

Microrheology (co-taught with E.M. Furst, U. Delaware) Society of Rheology Conference (2015)

Colloidal Gels – American Physical Society March Meeting (2016)

Colloidal Dispersions (w/ C. Macosko, G. Fuller, G. McKinley, & R. Ewoldt) – @ Stanford (2019)

Colloidal Dispersions – FORTH / University of Crete (2019)

FELLOWSHIPS, HONORS AND AWARDS

- 2020 Corrsin Lecturer, Johns Hopkins University Chemical Engineering (moved to Nov2021 due to COVID)
- 2020 Tau Beta Pi Teaching Award List, Stanford School of Engineering
- 2019 PECASE – Presidential Early Career Award for Scientists and Engineers
- Nominator: *Department of Defense*
- 2019 PECASE – Presidential Early Career Award for Scientists and Engineers
- Nominator: *National Science Foundation*
- 2017 Terman Faculty Fellow, Stanford University
- 2017 ONR Director of Research Early Career Award
- 2016 Associate Editor, *Journal of Rheology*
- 2016 Advisory Board Member, *Physics of Fluids*
- 2015 NAE Frontiers in Engineering
- 2015 Cornell College of Engineering (Sonny Yau '72) Teaching Award
- 2015 White House Workshop on the National Strategic Computing Initiative held by Executive Order of President Barack Obama
- 2014 ONR Young Investigator Award
- 2014 NSF CAREER Award (selected fall 2013)
- 2014 NAE Frontiers in Engineering Education
- 2014 Best Paper Award in Session, AIChE Area 1J Fluid Mechanics
- 2014 Cover of the *Journal of Rheology*, Special Issue, Volume 58, Issue 5
- 2014 Cover of the *Journal of Rheology*, Volume 58, Issue 1
- 2014 Cover of the Society of Rheology Bulletin, Q1
- 2014 Featured on NSF XSEDE Year 1 Retrospective Report
- 2013 Publication of the Year, *Journal of Rheology*
- 2013 NSF BRIGE Award, National Science Foundation
- 2013 Cover of the *Journal of Rheology*, Volume 57, Issue 2
- 2013 James C. and Rebecca Q. Morgan Faculty Fellow Cornell University
- 2012 Best Poster, Princeton University Research Symposium, Princeton University
- 2008-11 NDSEG Fellow (2008 – 2011) California Institute of Technology
- 2011 Everhart Lecturer, California Institute of Technology
- 2011 Graduate Dean's Award, California Institute of Technology
- 2010 P.E.O. Scholar Award, California Institute of Technology
- 2009 Best Overall Poster, Poster Symposium, California Institute of Technology
- 2008 First Place, Best Poster, International Congress on Rheology
- 2006-7 Moore Fellow, California Institute of Technology
- Honors Scholar, University of Missouri
- President, Pi Tau Sigma Honor Society for Mechanical Engineering, Univ. of Missouri chapter
- Tau Beta Pi Engineering Honor Society
- National Merit Special Scholarship

PUBLICATIONS *=CORRESPONDING AUTHOR. TOP 10 CITED ARTICLES †2014, ††2017, †††2019

- J. G. Wang & R. N. Zia*, Vitrification is a spontaneous non-equilibrium transition driven by osmotic pressure. *J. Phys. Condensed Matter, Invited, Special Issue on Glasses and gels: a crossroad of molecular liquids, polymers and colloids*. doi: 10.1088/1361-648X/abeec0
- E. G. Gonzalez, C. A. Aponte-Rivera, & R. N. Zia*, Impact of polydispersity and confinement on diffusion in hydrodynamically interacting colloidal suspensions. *J. Fluid Mech* (Accepted)
- L. C. Johnson & R. N. Zia*, Phase mechanics of colloidal gels: osmotic pressure drives non-equilibrium phase separation. *Soft Matter Emerging Investigators 2021, Invited*. DOI: 10.1039/d0sm02180f (2021)
- B. E. Dolata & R. N. Zia*, Faxén formulas for particles of arbitrary shape and composition. *J. Fluid Mech.* **910** (A22) 1-19 (2021)

J. G. Wang, X. Peng, Q. Li, D. Chen, G. B. McKenna and R.N. Zia*, “Dense diffusion’ in colloidal glasses: short-ranged long-time self-diffusion as a mechanistic model for relaxation dynamics” *Soft Matter* **16** 7370-7389 (2020)

B. E. Dolata & R. N. Zia*, Heterogenous dispersions as microcontinuum fluids, *J. Fluid Mech.* **888** (A28) 1-30 (2020).

E. Ong*, M. Ramaswamy, R. Niu, N. Lin, A. Shetty, R. Zia, G. McKinley, & I. Cohen, Stress decomposition in LAOS of dense colloidal suspensions, *J. Rheology*, **64**(2), 343–351 (2020). **Invited, Cover of Journal.**

A. J. Maheshwari, A. M. Sunol, E. Gonzalez, D. Endy, & R. N. Zia*, Colloidal hydrodynamics of biological cells: A frontier spanning two fields. *Phys. Rev. Fluids* **4**, 110506 (2019) **Invited Article.**

R. P. Mohanty & R. N. Zia*, Transient nonlinear microrheology in hydrodynamically interacting colloidal dispersions: flow cessation. *J. Fluid Mech.* **884**, A14 (2019)

D. E. Huang & R. N. Zia*, Sticky-probe active microrheology: Part 2. The influence of attractions on non-Newtonian flow, *J. Colloid & Interface Sci.* **562**, 293–306 (2019)

D. E. Huang & R. N. Zia*, Sticky, active microrheology: Part 1. Linear-response. *J. Colloid & Interface Science.* **554**, 580–591 (2019)

+++L. C. Johnson, R. N. Zia*, E. Moghimi, & G. Petekidis, “Influence of structure on the linear response rheology of colloidal gels”. *J. Rheol.*, **63**(4) 583-608 (2019).

H. C. W. Chu & R. N. Zia*, Toward a nonequilibrium Stokes-Einstein relation via active microrheology of hydrodynamically interacting colloidal dispersions. *J. Colloid & Interface Science.* **539**, 388-399 (2019).

J. C. Kuo, J. G. Gandhi, R. N. Zia & M. J. Paszek* “The Physical Biology of the Glycocalyx: A Cancer Perspective”. *Nature Phys.* [10.1038/s41567-018-0186-9](https://doi.org/10.1038/s41567-018-0186-9) **14**(7): 658-669 (2018).

X. Peng, J. G. Wang, Q. Li, D. Chen, R.N. Zia*, & G.B. McKenna “Exploring the validity of time-concentration superposition in glassy colloids.” *Phys.Rev.E* **98** 062602 (2018)

P. Padmanabhan and R. N. Zia*, “Gravitational collapse of colloidal gels: Non-equilibrium phase separation driven by osmotic pressure”, *Soft Matter* **14**(17) 3265-3287 (2018) **Front Cover.**

L. C. Johnson, B. J. Landrum, and R. N. Zia*, “Yield of reversible colloidal gels during flow startup: the role of Brownian and glassy dynamics”, *Soft Matter* **14**(18) 5048-5068 (2018)

R. P. Mohanty and R.N. Zia*, “The impact of hydrodynamics on stress formation, relaxation, and memory in colloidal dispersions: Transient, non-linear microrheology.” *AIChE J.* **Invited: Futures Issue.** (2018)

C.A. Aponte-Rivera, Y. Su, and R.N. Zia*, “Equilibrium structure & diffusion in concentrated, hydrodynamically interacting suspensions confined in a spherical cavity”, *J. Fluid Mech.* **836** (2018)

R. N. Zia* “Active and passive microrheology: Theory and simulation.” *Ann. Rev. Fluid Mech.* **50**:1–33 (2018)

B. E. Dolata & R.N. Zia*, “Non-equilibrium pair interactions in colloidal dispersions”. *J. Fluid Mech.* **836**: 694-739. (2018)

Y. Su, J.W. Swan, and R.N. Zia*, “Pair mobility functions for rigid spheres in concentrated colloidal dispersions: stresslet and straining motion.” *J. Chem. Phys.*, **146** (12), 124903 (2017)

H.C.W. Chu and R.N. Zia*, “The non-Newtonian rheology of hydrodynamically interacting colloids via active, nonlinear microrheology.” *J. Rheol.*, **61**(3), 551-574 (2017)

C.A. Aponte-Rivera and R.N. Zia*, “Simulation of hydrodynamically interacting particles confined by a spherical cavity .” *Phys. Rev. Fluids* **1**(2), 023301 (2016)

++B.J. Landrum, W.B. Russel, and R.N. Zia*, "Delayed yield in colloidal gels: Creep, flow, and re-entrant solid regimes." *J. Rheol.* **60** (4), 783 – 807 (2016). **Featured in UT Austin TACC Podcast** (<https://www.tacc.utexas.edu/-/sudden-collapse-supercomputing-spotlight-on-gels>)

H.C.W. Chu and R.N. Zia*, Active microrheology of hydrodynamically interacting colloids: normal stresses and entropic energy density.” *J. Rheol.* **60** (4), 755 – 781 (2016)

N.J. Hoh and R.N. Zia*, “The impact of probe size on measurements of diffusion in active microrheology.” *Lab on a Chip – Invited, Emerging Investigators Issue*, **16**, 3114 – 3129 (2016)

N.J. Hoh and R.N. Zia*, “Force-induced diffusion in suspensions of hydrodynamically interacting colloids.” *J. Fluid Mech.* **795**, 739-783 (2016)

N.J. Hoh and R.N. Zia*, “Hydrodynamic diffusion in active microrheology of non-colloidal suspensions: the

role of interparticle forces." *J. Fluid Mech.* **785**, 189-218 (2015)

R.N. Zia*, J.W. Swan, and Y. Su, "Pair mobility functions for rigid spheres in concentrated colloidal dispersions: force, torque, translation, and rotation." *J. Chem. Phys.* **143**, 224901 (2015)

†R.N. Zia*, B.J. Landrum, and W.B. Russel, "A micro-mechanical study of coarsening and rheology of colloidal gels: Cage building, cage hopping, and Smoluchowski's ratchet." *J. Rheol.* **58**(5), (2014) **Invited**.

†J.W. Swan*, R.N. Zia, and J.F. Brady, "Large amplitude oscillatory microrheology." *J. Rheol.*, **58**(1), 1-41 (2014) **Cover of Journal**.

J.W. Swan and R.N. Zia*, "Active microrheology: fixed-velocity versus fixed-force." *Phys. Fluids*, **25**(8), 083303(1-23) (2013)

N.Y.C. Lin, S. Goyal, X. Cheng, R.N. Zia, F. Escobedo, and I. Cohen*, "Far-from-equilibrium sheared colloidal liquids: Disentangling relaxation, advection, and shear-induced diffusion." *Phys. Rev. E*, **88**, (2013)

R.N. Zia* and J.F. Brady, "Stress development, relaxation and memory in colloidal dispersions: transient nonlinear microrheology." *J. Rheol.*, **57**(2), (2013) **Cover of Journal**.

R.N. Zia* and J.F. Brady, "Microviscosity, microdiffusivity, and normal stresses." *J. Rheol.*, **56**, 1175-1208 (2012) **Publication of the Year**.

J.W. Swan, J.F. Brady, R.S. Moore, L. Dooling, N.J. Hoh, J. Choi, & R.N. Zia. "Modeling hydrodynamic self-propulsion with Stokesian Dynamics." *Phys. Fluids*, **23**(7), 071901(1-19) (2011)

R.N. Zia* and J.F. Brady. "Single particle motion in colloids: force-induced diffusion." *J. Fluid Mech.* **658**, 188-210 (2010).

ARTICLES IN REVIEW* = CORRESPONDING AUTHOR

A. Maheshwari, E. Gonzalez, A. Sunol, D. Endy, R. N. Zia* Colloidal physics reveal Brownian motion is too slow to enable some life-essential processes in prokaryotes. *Cell*.

C. Aponte-Rivera & R. N. Zia*, The confined Generalized Stokes-Einstein relation and its consequence on intracellular two-point microrheology, *Physical Review Letters*.

G. J. Ouaknin, Y. Su, & R. N. Zia*, Simulation of large-scale particle systems at low Reynolds number: Parallel algorithms for Accelerated Stokesian Dynamics, *J. Comp. Phys*.

CHAPTER IN BOOK

R. N. Zia & J. F. Brady. "Theoretical microrheology," in Complex Fluids in Biological Systems: Experiment, Theory, and Computation, ed. S. Spagnolie (Springer, NY, 2014)

FEATURE ARTICLES AND PODCASTS

Feature article and **Podcast** on UT Austin's Texas Advanced Computing Center
<https://www.tacc.utexas.edu/-/sudden-collapse-supercomputing-spotlight-on-gels>

INVITED SEMINARS / KEYNOTE / PLENARY TALKS

67. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter". **Corrsin Lecture, Johns Hopkins University Chemical Engineering**, Rescheduled to November 4, 2021.

66. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter". **American Institute of Chemical Engineers National Conference**. November 2020. **Invited Keynote**.

65. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter". **American Chemical Society National Fall Conference**. August 2020. **Invited Keynote**.

64. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter". **International Colloids Conference**, Palma Mallorca, Spain. June 2020. **Invited Keynote**. Rescheduled for December 2020.

63. "Toward operational mastery of biological cells: a physics-based perspective". **American Chemical Society Colloids Conference**. June 2020. **Invited Keynote**. Rescheduled for 2021.

62. "Toward operational mastery of biological cells: a physics-based perspective". **International Conference on Engineering Synthetic Cells and Organelles**. May 2020. **Special Contributed**. *Rescheduled for 2021*.
61. "Toward operational mastery of biological cells: a physics-based perspective". **Flatiron Institute**, New York NY. May 2020. *Rescheduled for Fall 2020*.
60. "Toward operational mastery of biological cells: a physics-based perspective". **Lawrence Berkeley National Lab**. April 2020. *Rescheduled for Fall 2020*.
59. "Toward operational mastery of biological cells: a physics-based perspective", **J. Craig Venter Institute, La Jolla, CA**. April 2020. *Rescheduled for Fall 2020*.
58. "Toward operational mastery of biological cells: a physics-based perspective". **U. C. Berkeley** Department of BioEngineering Departmental Seminar. April 2020. *Rescheduled for Fall 2020*.
57. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter", **University of Wisconsin**. April 2020. *Rescheduled for Fall 2020*.
56. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter", **Levich Institute, The City College of New York**. Feb. 2020.
55. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter", **Harvard University**, Applied Physics Colloquium, March 2020. *Reschedule May 15 2020*.
54. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter", **University of Delaware** Chemical Engineering Colloquium, Dec 2019.
53. "Towards operational mastery of biological cells: A physics-based perspective", **California Institute of Technology** Chemical Engineering Colloquium, November 2019.
52. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter", **UCSB** Chemical Engineering Colloquium, November 2019
51. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter", **University of Illinois Urbana Champagne** Chemical Engineering Colloquium, Oct 2019.
50. "Phase Mechanics of Arrested Colloidal Gels: A New Paradigm for Non-Equilibrium Phase Transitions in Soft Matter", **Massachusetts Institute of Technology** Chemical Engineering Symposium, October 2019.
49. "Phase mechanics" of arrested colloidal gels" 4th **Edwards Symposium: Emerging Trends in Soft Matter**, Cambridge University, Sep. 2019. Invited Talk.
48. "Phase mechanics" of arrested colloidal gels" **Lund University**, Department of Chemistry, Sweden, August 2019.
47. "The Brownian hydrodynamics of intracellular transport", **American Chemical Society** Annual Fall Meeting, San Diego, August 2019. Invited Talk.
46. "Future Strategies in Biotechnology". **U.S. Under-Secretary of Defense for Research and Engineering, United States Pentagon**. Washington D.C. July 8, 2019.
45. "The Brownian hydrodynamics of intracellular transport", **Hellenic Society of Rheology**, Samos, Greece, June 2019. Invited Talk.
44. "The Brownian hydrodynamics of intracellular transport", **IUTAM – India Institute of Technology**, Kanpur, India, Dec. 2018. Invited Talk.
43. "The Brownian hydrodynamics of intracellular transport", Departmental Seminar, **University of Minnesota** Dept. of Chemical Engineering, Dec. 2018.
42. "The Brownian hydrodynamics of intracellular transport", **American Physical Society – Division of Fluid Dynamics** Annual Meeting, Atlanta GA, Nov. 2018. Invited Talk.
41. "The hydrodynamics of intracellular transport", **CECAM** Workshop on Collective Behavior of Soft Matter Under Confinement. Mainz, Germany, Sept. 2018. Keynote Talk.
40. "The hydrodynamics of intracellular macromolecular motion", **BIRS Workshop** on Complex Fluids in Biological Systems, Banff, Canada, July 2018. Invited Talk.
39. "Understanding kinetic arrest in colloidal glasses and gels via large-scale dynamic simulation", **IFPRI** Workshop, Edinburgh UK, July 2018. Plenary Talk.

38. "The hydrodynamics of intracellular macromolecular motion: Toward operational mastery of living cells", **NASA Ames Research Center**, May 2018. Invited Lecture.
37. "The hydrodynamics of intracellular transport", School of Chemical, Biological, & Materials Engineering Department Seminar, **University of Oklahoma**, April 2018.
36. "Strong, tough, or fragile: Brownian motion and the osmotic pressure of colloidal gels" in Structure & Rheology of Hydrogels. **APS March Meeting**, Los Angeles, March 2018. Keynote.
35. "'Phase Mechanics' of colloidal gels: A new paradigm for yielding and phase transitions in soft matter", Special Symposium, Department of Mechanical Engineering & Polymer Technology, Technical **University of Eindhoven**, February 2018.
34. "'Phase Mechanics' of colloidal gels: A new paradigm for yielding and phase transitions in soft matter", Chemical Eng. Dept. Seminar, **UT Austin**. February 2018.
33. "Gravitational Collapse of Colloidal Gels". **CECAM Gels**, Lyon France. June 2017. Invited.
32. "'Phase Mechanics' of colloidal gels: A new paradigm for yielding and phase transitions in soft matter", Invited. **IUTAM Workshop**, Berkeley, CA. May 2017.
31. "'Phase Mechanics' of colloidal gels: A new paradigm for yielding and phase transitions in soft matter", Chemical Eng. Dept. Seminar, **Texas Technological University** May 2017.
30. "'Phase Mechanics' of colloidal gels: A new paradigm for yielding and phase transitions in soft matter", Mechanical Eng. Dept. Seminar, **California Institute of Technology** April 2017.
29. "'Phase Mechanics' of colloidal gels: A new paradigm for yielding and phase transitions in soft matter", Chemical Eng. Dept. Seminar, **Carnegie Mellon University** March 2017.
28. "'Phase Mechanics' of colloidal gels: A new paradigm for yielding and phase transitions in soft matter", Chemical Eng. Dept. Seminar, **University of Pennsylvania**, September 2016.
27. "'Phase Mechanics' of colloidal gels: A new paradigm for yielding and phase transitions in soft matter", CBE Departmental Seminar, **Princeton University**, October 2016.
26. "Gravitational collapse of colloidal Gels", **International Congress of Rheology**, Kyoto, Japan, August 2016. Invited Keynote Talk
25. "Coarsening, yield, and collapse of reversible colloidal gels", **ECI: Colloidal, Macromolecular, & Biological Gels**, Hernstein, Austria, July 2016. Invited Talk.
24. "On-demand liquids: to yield or not to yield?", **Active and Smart Matter Workshop IZCAM**, Syracuse, NY, June 2016. Invited Keynote Talk.
23. "On-demand liquids: to yield or not to yield?" **Case Western Reserve University**, April 2016.
22. "Coarsening, yield, and collapse of reversible colloidal gels", **APS March Meeting**, Particulate Flows March 2016. Invited Session.
21. "Delayed Yield in Colloidal Gels", **Lehigh University**, Chemical Engineering, December 2015.
20. "Delayed Yield in Colloidal Gels: a Micro-Mechanical Perspective", Mechanical Engineering Departmental Seminar, **Johns Hopkins University**, October 2015.
19. "Delayed Yield in Colloidal Gels: a Micro-Mechanical Perspective", Soft Matter Physics Seminar, **New York University**, September 2015.
18. "Diffusion and rheology in crowded, 3D-confined suspensions: A model for intracellular transport." Applied Mathematics Laboratory Seminar Series, **Courant Institute**, October, 2015.
17. "Delayed Yield in Colloidal Gels", **Syracuse University**, September 2015.
16. "Delayed Yield in Colloidal Gels: a Micro-Mechanical Perspective." Special Rheology Symposium in Honor of R.I Tanner, Department of Mathematics at the University of the Aegean and the Hellenic Society of Rheology, Vathi, Samos, Greece. July 2015. Plenary.
15. "A micro-mechanical study of coarsening and rheology of colloidal gels: Cage building, cage hopping, and Smoluchowski's ratchet". **University of California-Los Angeles**, January 2015.
14. "A micro-mechanical study of coarsening and rheology of colloidal gels: Cage building, cage hopping, and Smoluchowski's ratchet". **UC Santa Barbara**, November 2014.
13. "A micro-mechanical study of coarsening and rheology of colloidal gels: Cage building, cage hopping, and Smoluchowski's ratchet". **Emory University**, November 2014.

12. "A micro-mechanical study of coarsening and rheology of colloidal gels: Cage building, cage hopping, and Smoluchowski's ratchet". **University of Wisconsin-Madison**, October 2014.
11. "A micro-mechanical study of coarsening and rheology of colloidal gels: Cage building, cage hopping, and Smoluchowski's ratchet". **Stanford University**, September 2014.
10. "Micromechanics and rheology of reversible colloidal gels", R. N. Zia*, B. J Landrum, and W. B. Russel. Hellenic Society of Rheology, Crete, Greece. July 2014. Invited.
9. "Rheology and structure during aging and collapse of colloidal gels." **Procter and Gamble**, Research and Development. Cincinnati, OH. May 2014.
8. "Rheology and structure during aging and collapse of colloidal gels." **Los Alamos National Labs**, Center for NonLinear Studies. Los Alamos, NM. March 2014.
7. "Rheology and structure during aging and collapse of colloidal gels." **Carnegie Mellon University**, Fluid Mechanics Seminar Series, Pittsburgh, PA. November 2013.
6. "Rheology and structure during aging and collapse of colloidal gels." **RIT**, 2013.
5. "Rheology and structure during aging of colloidal gels." **Brown University** Feb 2013.
4. "Colloidal Suspensions: Dispersed Flow to Kinetic Arrest." 13th **NY Soft Matter Conf.**, 2012.
3. "Rheology and structure during aging and collapse of colloidal gels." **SJU**, Philadelphia, 2012.
2. "Microviscosity, Microdiffusivity, and Normal Stresses in Colloidal Dispersions." **NJIT**, 2012.
1. "Individual particle motion at the microscale: a Brownian ballet." **Everhart Lecturer**, Everhart Lecture Series, **California Institute of Technology**, Pasadena, CA. May 2011.

EDITORIAL AND JOURNAL POSITIONS

- Associate Editor, **Journal of Rheology** (2016 – present)
- Editorial Board Member, **Physics of Fluids** (2016 – 2019)
- Editorial Board Member, **AIChE J** (2020 – present)
- Guest Editor, **PNAS** (Proceedings of the National Academy of Sciences) 2019
- Guest Editor, **PLOS One** 2017
- *Ad hoc* Journal peer reviewing (J. Rheol, JFM, PRL, PNAS, JCIS, Soft Matt., + others)

POST-DOCTORAL RESEARCHERS SUPERVISED

1. Dr. Nicholas J. Hoh, *PhD Caltech. October 2013 – October 2015 (Sr. Data Scientist, Intuit)*
2. Dr. Poornima Padmanabhan, *PhD Cornell. Feb. 2016 – July 2017 (Asst Prof., RIT)*
3. Dr. Gaddiel Ouaknin, *PhD UCSB. August 2016 – present*
4. Dr. Monica E. A. Zakhari, *PhD Eindhoven Univ. of Tech., Netherlands. April 2018 - present*

PHD STUDENTS SUPERVISED

17. Theo S. Yang, *Chemical Engineering* March 2021 – present
16. Aaron Brown, *Mechanical Engineering* March 2020 – present
15. Akshay Maheshwari, **Bioengineering** March 2019 – present co-advised with Drew Endy
13. Jennifer Hofmann, *Chemical Engineering* March 2019 – present
12. Brian Ryu, *Chemical Engineering* March 2018 – present
11. Alp M. Sunol, *Chemical Engineering* March 2018 – present
10. Emma Gonzalez, *Chemical Engineering* October 2016 – present
9. Derek Huang, *Chemical & Biom. Engineering. **PhD Jun 2020***, now NRC Postdoctoral Fellowship at **NIST**
8. J. Galen Wang, *Mechanical & Aerospace Engineering. October 2014 – **PhD Aug 2020*** now Postdoctoral Fellow at **Lawrence Berkeley National Lab**
7. Benjamin Dolata, *Chemical & Biomol. Eng. **PhD Aug 2019***, Postdoctoral Fellow at **Georgetown Univ.**
6. Yu Su, *Chemical & Biomolec. Engineering. **PhD June 2018***, now Sr. Scientist, **Oracle Corp.**
5. Ritesh Mohanty, *Chemical & Biomol. Eng. **PhD June 2018*** now Senior Research Scientist at **Corning Inc.**
4. Lilian Johnson, *Chemical & Biomol. Engineering. **PhD Dec 2018***. Now NRC Postdoctoral Fellow at **NIST**.

3. Christian Aponte-Rivera, *Chemical & Biomolecular Engineering*. **PhD December 2017** (postdoc with Prof. Michael Rubinstein, **Duke University**)
2. Henry Chi Wah Chu, *Mechanical & Aerospace Engineering*. **PhD June 2017** (**Assistant Professor, Chemical Engineering, University of Florida**)
1. Benjamin J. Landrum (*Princeton University, Chemical Engineering*) **PhD March 2015**
(co-Advised by W.B. Russel, Princeton; resident at Cornell); Now Senior Scientist at **Intel**.

SERVICE: CONFERENCE ORGANIZATION / COMMITTEES / MANUSCRIPT, PANEL REVIEW

Conference Session or Symposium Organizer

1. AIChE **Meeting Programming Chair** (MPC) for O1J Fluid Mechanics, 2021
2. ICTAM 2020 Thematic Session co-Organizer, 2019-2020
3. ACS Colloids Symposium Organizer, Colloidal Gels **2016, 2017, 2018**
4. American Institute of Chemical Engineers Annual Meeting (AIChE) **2012, 2014-2018**
5. Society of Rheology Annual Meeting (SOR) **2013, 2015, 2018, 2019**
6. American Society of Mechanical Engineers (ASME), SES 50th Annual Meeting:, 2013
7. US National Congress of Theoretical and Applied Mechanics (USNCTAM), June 2014

Committee Service

AIP Publishing Partnerships Comm. (representing the Society/Journal of Rheology) 2016 - 2021
 International Thesis Committee – Eindhoven Univ, Netherlands (M. Zakhari) *chair: P. Anderson*
 International Thesis Committee – Univ. of Crete (L. Gury) *chair: D. Vlassopoulos*
Chair, Media & Science Rel Committee, APS DFD, (co-chair 2018, chair 2019)
 Program Committee, American Physical Society – Division of Fluid Dynamics 2015-2018
Chair, Electronic Publishing Committee, Society of Rheology, 2015-2016
 Publication Award Committee, Society of Rheology 2013-2014
 Fluids (Area 1J) Programming Committee, AIChE 2014-2019
Meeting Program Chair, Fluids (Area 1J) Programming Committee, AIChE 2021

Panel Service: NSF (2013 – 2018); ACS PRF (2015)

Department and University Service

AIChE Student Chapter Faculty Advisor (Stanford: 2017 – present; Cornell: 2013 – 2017)
 AIChE ChemE Car Team Advisor, Cornell (2013 – 2017)
 Chemical Engineering Colloquium, Stanford (2018 – present)
 Undergraduate Curriculum Committee, Stanford (2019 – 2020)
 Graduate Committee, Stanford (2020 – present)
 Graduate Curriculum Committee, Stanford (2020 – present)

Community Service

- Chemical & Biomolecular Engineering Faculty sponsor of Cornell *CATALYST summer STEM camp* for high school students of under-represented groups in STEM.
 Chemical & Biomolecular Engineering Faculty sponsor of Cornell *CURIE STEM summer camp* for high school girls, with continued mentoring through the college application process
- *Science Scrimmage Saturdays*, an outreach program I developed to bring hands-on scientific research to under-represented minority students at New York NACME high schools (while assistant professor at Cornell University)
- P.I.E.R. – Publishing Inclusion and Equity in Rheology – *ad hoc* working group I established with peers at Sandia National Labs, Lehigh University, and the American Institute for Physics Publishing, aimed toward examining how race and gender affect publication rates.