Curriculum Vitae

Chelsea Simone Davis, Ph.D.

701 West Stadium Avenue, West Lafayette, IN | 765.494.9216 | Chelsea@purdue.edu

EDUCATION

University of Massachusetts, Amherst, MA
Ph.D. in Polymer Science and Engineering **May 2012**
Thesis: "Surface Instabilities for Adhesion Control"
Advisor: Alfred J. Crosby

University of Massachusetts, Amherst, MA
M.S. in Polymer Science and Engineering **Sept. 2007**

North Carolina State University, Raleigh, NC
B.S. in Textile Engineering **Dec. 2005**
Area of Concentration: Product and Process Design
Received College of Textiles Academic Honors Award
Graduated Summa Cum Laude

North Carolina State University, Raleigh, NC
B.A. in Spanish Language and Literature **Dec. 2005**
Graduated Summa Cum Laude

APPOINTMENTS AND PROFESSIONAL EXPERIENCE

Purdue University School of Materials Engineering
Assistant Professor **2017 – Present**
Research Area: Characterization of polymer interfaces via contact and fracture mechanics coupled with fluorescence microscopy.

École Supérieure de Physique et de Chimie Industrielles, Paris, France
Visiting Professor **2016**
Collaborators: Costantino Creton and Anke Lindner
Research Area: Wrinkle geometry-dependent adhesion

National Institute of Standards and Technology, Gaithersburg, MD
Materials Research Engineer **2015 – 2016**
Research Area: Characterization of energy absorbing materials via contact and fracture mechanics.

National Institute of Standards and Technology, Gaithersburg, MD
National Research Council Post-Doctoral Research Fellow **2013 – 2015**
Advisor: Jeffrey Gilman
Research Area: Characterization of cellulosic nanocomposites utilizing novel fluorescence imaging techniques coupled with mechanical testing.

CHELSEA SIMONE DAVIS

765.494.9216 ● Chelsea@purdue.edu

École Supérieure de Physique et de Chimie Industrielles, Paris, France
Michelin Post-Doctoral Research Fellow **2012 – 2013**
Advisors: Costantino Creton and Anke Lindner
Research Area: Contact time dependence of adhesion strength in viscoelastic polymers.

University of Massachusetts, Amherst, MA
Graduate Research Assistant **2007 – 2012**
Advisor: Alfred Crosby
Research Areas: Patterned surface roughness and buckling instabilities for adhesion control.

Milliken and Company, LaGrange, GA
Process Improvement Engineer **2006**
Applied statistical process control tools to improve production of silicone-coated automotive fabrics.

Milliken Research Center, Spartanburg, SC
Engineering Intern **2005**
Optimized novel automotive fabric patterning equipment and coordinated implementation in production facility.

North Carolina State University, Raleigh, NC
Undergraduate Research Assistant **2003**
Advisor: Wendy Krause
Research Area: Effect of additives on the rheological properties of hyaluronic acid and the time dependence of the viscoelastic response.

PUBLICATIONS

1. A. Chau, N. Deneke, **C.S. Davis**, "Pressure Tunable Adhesion of Dewetted Thin Film Surfaces." Under Review, **2020**.
2. M.L. Rencheck, J.A.Gohl, H.P. Grennan, K.A. Erk, **C.S. Davis**, "The Tape Drape Test – A practical and nondestructive way to assess elastic moduli of pavement marking tapes in the field." Under Review, **2020.**
3. Y. Piao, V.N.Tondare, **C.S. Davis**, J.M.Gorham, E.J. Petersen, J.W. Gilman, K. Scott, A.E. Vladar, A.R. Hight Walker, "Comparative study of multiwall carbon nanotube nanocomposites by Raman, SEM, and XPS measurement techniques." Under Review, **2020.**
4. N. Deneke, M.L. Rencheck, **C.S. Davis**, "An engineer's introduction to mechanophores." *Soft Matter*, (16) **2020**, 6230-6252. Featured on Journal Cover.
5. M.L. Rencheck, A. Weiss, S. El Awad Azrak, E. Forti, M. Nuruddin, J.P. Youngblood, **C.S. Davis**, "Nanocellulose film modulus determination via buckling mechanics approaches." *ACS Applied Polymer Materials*, (2) **2020**, 578-584.
6. H. Son, A.L. Chau, **C.S. Davis**, "Polymer thin film adhesion utilizing the transition from surface wrinkling to delamination." *Soft Matter,* (15) **2019,** 6375-6382.
7. E. Shi, S. Deng, B. Yuan, Y. Gao, Akriti, L. Yuan, **C.S. Davis**, D.Y. Zemlyanov, Y. Yu, L. Huang, L. Dou, "Extrinsic and dynamic edge states of two-dimensional lead halide perovskites." *ACS Nano, 13* (2) **2019**, 1635-1644.

8. M.L. Rencheck, R. Rodriguez, N.A. Miller, **C.S. Davis**, "A buckling mechanics approach to elastic modulus determination of glassy polymer films." *Journal of Polymer Science B, 57* (1) **2018**, 15-20.
9. A.J. Nolte, J.Y. Chung, **C.S. Davis**, C.M. Stafford, "Wrinkling-to-delamination transition in thin polymer films on compliant substrates." *Soft Matter,* (13) **2017,** 7930.
10. J.E. Seppala, S.H. Han, K.E. Hillgartner, **C.S. Davis**, K.B. Migler, "Weld formation during material extrusion additive manufacturing." *Soft Matter,* (13) **2017,** 6761.
11. **C.S. Davis**, K.E. Hillgartner, S.H. Han, J.E. Seppala, "Mechanical strength of welding zones produced by polymer extrusion additive manufacturing." *Additive Manufacturing*, (16) **2017,** 162**.**
12. J.W. Woodcock, R. Beams, **C.S. Davis**, N. Chen, S.J. Stranick, D.U. Shah, F. Volrath, J.W. Gilman, "Observation of interfacial damage in a silk-epoxy composite, using a simple mechanoresponsive fluorescent probe." *Advanced Materials Interfaces,* (4) **2017,** 1601018. Featured on Journal Cover.
13. D.M. Fox, R.S. Rodriguez, M.N. Devilbiss, J.W. Woodcock, **C.S. Davis**, R. Sinko, S. Keten, J.W. Gilman, "Simultaneously tailoring surface energies and thermal stabilities of cellulose nanocrystals using ion exchange: effects on polymer composites properties for transportation, infrastructure, and renewable energy applications." *ACS Applied Materials & Interfaces,* (40) **2016**, 27270.
14. D.M. Fox, N. Kaufman, J.W. Woodcock, C.S. Davis, J.W. Gilman, J.R. Shields, R.D. Davis, S. Matko, M. Zammarano, "Epoxy composites using wood pulp components as fillers." Chapter 11 from Composites from Renewable and Sustainable Materials. **2016,** 199.
15. B. Natarajan, N.D. Orloff, R. Ashkar, S. Doshi, K.A. Twedt, A. Krishnamurthy, **C.S. Davis**, A.M. Forster, E. Thostenson, J. Obrzut, R. Sharma, J.A. Liddle, "Multiscale metrologies for process optimization of carbon nanotube polymer composites." *Carbon,* (108) **2016,** 381.
16. M. Zhu, T. Li, **C.S. Davis**, Y. Yao, J. Dai, Y. Wang, F. AlQatari, J.W. Gilman, L. Hu, "Transparent and haze wood composites for highly efficient broadband light management in solar cells." *Nano Energy*, (26) **2016**, 332.
17. **C.S. Davis**, N.D. Orloff, J.W. Woodcock, C.J. Long, K.A. Twedt, B. Natarajan, J.E. Seppala, J.J. McClelland, J. Obrzut, J.A. Liddle, J.W. Gilman, "Domain formation in carbon nanotube composites controlled by mass fraction impacts electrical properties." *Composites Science and Technology,* (133) **2015**, 23.
18. **C.S. Davis**, D.L. Grolman, A. Karim, J.W. Gilman, "Perspective: What do we still need to understand to commercialize nanocellulose?" *Green Materials*, (3) **2015**, 53.
19. **C.S. Davis**, R.J. Moon, S. Ireland, E.J. Foster, L. Johnston, J.A. Shatkin, K. Nelson, A.M. Forster, M.T. Postek, A.E. Vladár, J.W. Gilman, "NIST-TAPPI Workshop on Measurement Needs for Cellulose Nanomaterials Report", Vancouver, Canada, **2015**, DOI: 10.6028/NIST.SP.1192.
20. J.H. Kim, N.A. Heckert, S.P. Mates, J.E. Seppala, W.G. McDonough, **C.S. Davis**, K.D. Rice, G.A. Holmes, "Effect of fiber gripping method on the single fiber tensile test: II. Comparison of fiber gripping materials and loading rates." *Journal of Material Science*, (50) **2015**, 2049.
21. **C.S. Davis**, J.W. Woodcock, J.W. Gilman, "Preparation of nanoscale multi-walled carbon nanotube dispersions in a polyetheramine epoxy for ecotoxicological assessment." *NIST Special Publication Series*, (1200-9) **2015**. DOI: 10.6028/NIST.SP.1200-9.
22. E. Kroner, **C.S. Davis**, "A Study of the Adhesive Foot of the Gecko: Translation of a Publication by Franz Weitlaner." *The Journal of Adhesion,* (91) **2015**, 481.
23. **C.S. Davis**, F. Lemoine, T. Darnige, D. Martina, C. Creton, A. Lindner, "Debonding mechanisms of soft materials at short contact times." *Langmuir*, (35) **2014**, 10626.
24. **C.S. Davis**, D. Martina, C. Creton, A. Lindner, A.J. Crosby, "Enhanced adhesion of elastic materials to small-scale wrinkles." *Langmuir*, (28) **2012**, 14899.

25. **C.S. Davis**, A.J. Crosby, "Wrinkle morphologies with two distinct wavelengths." *Journal of Polymer Science B,* (50) **2012**, 1225. Featured on Journal Cover.
26. **C.S. Davis**, A.J. Crosby, "Mechanics of wrinkled surface adhesion." *Soft Matter,* (7) **2011**, 5373.
27. S. Kundu, **C.S. Davis**, T. Long, R. Sharma, A.J. Crosby, "Adhesion of non-planar wrinkled surfaces." *Journal of Polymer Science B,* (49) **2011**, 179.
28. G. Miquelard-Garnier, A.B. Croll, C.S. Davis, A.J. Crosby, "Contact-line mechanics for pattern control." *Soft Matter*. (6) **2010**, 5789.

SCIENTIFIC PRESENTATIONS

Invited Presentations and Seminars

1. **C.S. Davis**, "Illuminating Interfacial Mechanics: Applying New Tools to Old Question," *William Maxwell Reed Seminar Series*, Department of Mechanical Engineering, University of Kentucky, Lexington, KY, December 2019.
2. **C.S. Davis**, "Illuminating Interfacial Mechanics: Applying New Tools to Old Question," *Materials and Manufacturing Directorate*, Air Force Research Laboratory, Wright-Patterson AFB, Dayton, OH, November 2019.
3. **C.S. Davis,** D. Martina, H. Son, A. Chau, F. Lemoine, C. Creton, A. Lindner, "Illuminating interfacial mechanics: coupling microscopy and mechanical testing to understand soft interfaces," *Pressure Sensitive Tape Council Technical Meeting*, Baltimore, MD, May 2019.
4. **C.S. Davis**, J.W. Woodcock, K. Khare, M. Wang, R. Beams, S. Stranick, A.M. Forster, J.W. Gilman, "Visualizing mechanical damage via molecular sensors," *American Chemical Society*, Orlando, FL, April 2019.
5. **C.S. Davis**, "Illuminating Interfacial Mechanics: Applying New Tools to Old Question," *American Vacuum Society Seminar, University of Illinois Urbana-Champaign*, Urbana, IL, March 2019.
6. **C.S. Davis**, "Buckling Delaminations: Insights into Thin Film Adhesion," *Deformation, Yield, and Fracture of Polymers,* Kerkrade, Netherlands, March 2018.
7. **C.S. Davis**, "Self-Reporting Damage Sensors," *Niagara Bottling Company, Inc.*, Ontario, CA, December 2017.
8. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Self-Reporting Damage Sensors," *Composites at Lake Louise,* Lake Louise, Alberta, Canada, November 2017.
9. **C.S. Davis**, "Interfacial mechanics: Challenges in pharmaceutical polymer processing," *Eli Lilly Research Laboratories*, July 2017.
10. **C.S. Davis**, "Interfacial mechanics: Contact time effects on the adhesion of viscoelastic polymers," *Department of Materials, ETH,* Zürich, Switzerland, December 2016.
11. **C.S. Davis**, "Visualizing polymer interfaces: Unique measurement strategies," *Department of Materials Science and Engineering, Virginia Polytechnic Institute and State University*, Blacksburg, VA, September 2016.
12. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Self-Reporting Damage Sensors," *Nonwovens and Related Technologies Conference*, Raleigh, NC, September 2016.
13. **C.S. Davis**, J.W. Woodcock, R. Beams, S. Stranick, J.W. Gilman, "Visualizing polymer composite interfacial deformation, *ECI Composites at Lake Louise*, Lake Louise, Canada, November 2015.
14. **C.S. Davis**, "Visualizing polymer interfaces: Unique measurement strategies," *Department of Materials Science and Engineering, University of Maryland*, College Park, MD, October 2015.

15. **C.S. Davis**, "Understanding polymer interfaces: Unique measurement strategies," *Department of Mechanical Engineering, Johns Hopkins University,* Baltimore, MD, April 2015.
16. **C.S. Davis**, "Polymer interfaces: Applying new tools to old questions," *School of Materials Engineering, Purdue University*, West Lafayette, IN, November 2014.
17. **C.S. Davis**, J.W. Woodcock, M. Zammarano, J.W. Gilman, "Visualizing the interface: Applying optical methods to nanoscopic questions," *AVS 61st International Symposium & Exhibition*, Baltimore, MD, November 2014.
18. **C.S. Davis**, "Polymer adhesion: Dwell time effects," *Department of Physics, Georgetown University*, Washington, DC, May 2014.
19. **C.S. Davis**, "Polymer adhesion: Dwell time effects," *École Supérieure de Physique et de Chimie Industrielles ParisTech*, Paris, France, March 2014.
20. **C.S. Davis**, D. Martina, F. Lemoine, C. Creton, A. Lindner, "Polymer adhesion: Contact time effects," *Science of Adhesion Gordon Research Seminar*, South Hadley, MA, July 2013.
21. **C.S. Davis**, A. Lindner, C. Creton, A.J. Crosby, "Polymer adhesion: Contact time and roughness effects," *Macromolecular Materials Gordon Research Seminar*, Ventura, CA, January 2013.
22. **C.S. Davis**, A.J. Crosby, "Contact adhesion of wrinkled surfaces," *Annual Meeting of the Adhesion Society*, Peebles Student Award Session, Savannah, GA, February 2011.

Contributed Presentations

23. **C.S. Davis**, A. Chau, H. Son, "Polymer Thin Film Adhesion by Transition from Wrinkling to Delamination," *Annual Meeting of the Adhesion Society*, Charleston, SC, February 2020.
24. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Self-Reporting Damage Sensors," *American Physical Society March Meeting*, Boston, MA, March 2019.
25. **C.S. Davis**, A. Chau, H. Son, "Polymer Thin Film Adhesion by Transition from Wrinkling to Delamination," *Annual Meeting of the Adhesion Society*, Hilton Head, SC, February 2019.
26. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Self-Reporting Damage Sensors," *American Physical Society March Meeting*, Los Angeles, CA, March 2018.
27. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Self-Reporting Damage Sensors," *Annual Meeting of the Adhesion Society*, San Diego, CA, February 2018.
28. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Self-Reporting Damage Sensors," *Annual Meeting of the Adhesion Society*, St. Petersburg, FL, February 2017.
29. **C.S. Davis**, J.W. Woodcock, R.N. Beams, K. Khare, S.J. Stranick, J.W. Gilman, "Interfacial Self-Reporting Damage Sensors," *American Physical Society March Meeting*, Baltimore, MD, March 2016.
30. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Self-Reporting Damage Sensors," *Annual Meeting of the Adhesion Society*, San Antonio, TX, February 2016.
31. **C.S. Davis**, D. Grolman, J. Youngblood, J.W. Gilman, A. Karim, "Strengthening block copolymer thin films with cellulose nanocrystals (CNC)," *TAPPI International Conference on Nanotechnology for Renewable Materials*, Atlanta, GA, June 2015.
32. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Zammarano, S.J. Stranick, J.W. Gilman, "Visualizing the interface: Applying optical methods to nanoscopic questions," *Annual Meeting of the Adhesion Society*, Savannah, GA, February 2015.

33. **C.S. Davis**, D. Martina, F. Lemoine, C. Creton, A. Lindner, "Polymer adhesion: Short contact time effects," *Annual Meeting of the Adhesion Society*, San Diego, CA, March 2014.
34. **C.S. Davis**, F. Lemoine, D. Martina, C. Creton, A. Lindner, "Polymer adhesion: Contact time effects," *Annual Meeting of the Adhesion Society*, Daytona Beach, FL, March 2013.
35. **C.S. Davis**, D. Martina, A. Lindner, C. Creton, A.J. Crosby, "Mechanics of wrinkle adhesion in elastic and viscoelastic films," *Annual Meeting of the Adhesion Society*, New Orleans, LA, February 2012.
36. **C.S. Davis**, A.J. Crosby, "Mechanics of wrinkled surface adhesion," *American Physical Society March Meeting,* Dallas, TX, March 2011.
37. **C.S. Davis**, A.J. Crosby, "Adhesion of aligned wrinkles," *Annual Meeting of the Adhesion Society*, Daytona Beach, FL, February 2010.

Poster Presentations

38. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Mechanophore Activation in a Cross-linked Polymer Matrix via Instrumented Scratch," *Science of Adhesion Gordon Research Conference*, South Hadley, MA, July 2017.
39. **C.S. Davis**, J.W. Woodcock, R.N. Beams, M. Wang, A.F. Forster, S.J. Stranick, J.W. Gilman, "Mechanophore Activation in a Cross-linked Polymer Matrix via Instrumented Scratch," *American Physical Society March Meeting*, New Orleans, LA, March 2017.
40. **C.S. Davis**, J.W. Woodcock, R.N. Beams, S.J. Stranick, J.W. Gilman, "Visualizing strain at the interface of silk/epoxy composites," *3rd International Workshop on Multiscale Dynamics of Polymeric Materials*, Paris, France, November 2016.
41. **C.S. Davis**, J.W. Woodcock, R.N. Beams, S.J. Stranick, J.W. Gilman, "Visualizing strain at the interface of silk/epoxy composites," *Science of Adhesion Gordon Research Conference*, South Hadley, MA, July 2015.
42. **C.S. Davis**, N.D. Orloff, J.W. Woodcock, C.J. Long, K.A. Twedt, B. Natarajan, J.J. McClelland, J. Obrzut, J.A. Liddle, J.W. Gilman, "Carbon nanotube-rich domain effects on bulk electrical properties of nanocomposites," *NIST Sigma Xi Postdoctoral Poster Presentations*, Gaithersburg, MD, February 2015.
43. **C.S. Davis**, J.W. Woodcock, M. Zammarano, S. Stranick, J.W. Gilman, "Imaging cellulosic composite interfaces with FRET," *TAPPI International Conference on Nanotechnology for Renewable Materials*, Vancouver, BC, Canada, June 2014.
44. **C.S. Davis**, D. Martina, F. Lemoine, C. Creton, A. Lindner, "Adhesion at short dwell times," *NIST Sigma Xi Postdoctoral Poster Presentations*, Gaithersburg, MD, February 2014.
45. **C.S. Davis**, D. Martina, F. Lemoine, C. Creton, A. Lindner, "Adhesion at short dwell times," *Science of Adhesion Gordon Research Conference*, South Hadley, MA, July 2013.
46. **C.S. Davis**, D. Martina, A. Lindner, C. Creton, A.J. Crosby, "Wrinkle adhesion of confined elastomers," *Macromolecular Materials Gordon Research Conference*, Ventura, CA, January 2013.
47. **C.S. Davis**, D. Martina, A. Lindner, C. Creton, A.J. Crosby, "Mechanics of wrinkle adhesion in elastic and viscoelastic films," *Center for UMass/Industry Research on Polymers Fall Meeting*, Amherst, MA, October 2011.
48. **C.S. Davis**, A.J. Crosby, "Model wrinkle adhesion," *Center for UMass/Industry Research on Polymers Fall Meeting*, Amherst, MA, October 2010.
49. **C.S. Davis**, A.J. Crosby, "Model wrinkle adhesion," *NEW.Mech Poster Event*, Cambridge, MA, September 2010.
50. **C.S. Davis**, A.J. Crosby, "Adhesion of aligned wrinkles," *Gecko Workshop*, Saarbrücken, Germany, July 2010, First Prize Poster Award.

51. **C.S. Davis**, A.J. Crosby, "Adhesion of aligned wrinkles," *IGERT Project Meeting Poster Session*, Washington, DC, May 2010.
52. **C.S. Davis**, A.J. Crosby, "Crumpled shell and membrane adhesion," *Science of Adhesion Gordon Research Conference*, New London, NH, July 2009, Excellent Poster Award.
53. **C.S. Davis**, A.J. Crosby, "Crumpled shell adhesion," *Annual Meeting of the Adhesion Society*, Savannah, GA, February 2009.
54. **C.S. Davis**, A.J. Crosby, "Adhesion of responsive shell surfaces," *American Physical Society March Meeting*, New Orleans, LA, March 2008.
55. **C.S. Davis**, A.J. Crosby, "Adhesion of surface ribbons," *Center for UMass/Industry Research on Polymers Fall Meeting*, Amherst, MA, October 2007.

AWARDS AND HONORS

Air Force Research Laboratory Summer Faculty Fellowship	**2020**
Purdue Research Foundation International Travel Grant	**2017**
Sigma Xi Scientific Research Society Election to Membership	**2016**
Visiting Professorship, ESPCI	**2016**
National Research Council Postdoctoral Research Fellowship	**2013 - 2015**
Peebles Award for Graduate Student Research in Adhesion Science	**2011**
First Prize Poster, INM Gecko Workshop, Saarbrücken, Germany	**2010**
Excellent Poster Award, Adhesion Gordon Research Conference	**2009**
NSF Integrative Graduate Education and Research Traineeship (IGERT)	**2008 – 2010**
University of Massachusetts Graduate Student Fellowship	**2006 – 2007**
Phi Beta Kappa Honor Society Election to Membership	**2003 – 2005**
Phi Kappa Phi Honor Society Election to Membership	**2003 – 2005**
Centennial Scholars Full Undergraduate Scholarship	**2001 – 2005**

INTERNATIONAL EXPERIENCE

École Supérieure de Physique et de Chimie Industrielles (ESPCI)
Paris, France **2016**
Visiting Professorship
Collaborated on a peer-reviewed paper focused on wrinkle adhesion data.

Université Pierre et Marie Curie - Jussieu
Paris, France **2013**
Course: A3 – French language for beginners

Alliance Française
Paris, France **2012**
Courses: A1 and A2 – French language for beginners

École Supérieure de Physique et de Chimie Industrielles (ESPCI)
Paris, France **2011**
Researched adhesion of wrinkles on soft, viscoelastic films
Completed a peer-reviewed paper highlighting the results of this study

Institute of New Materials Gecko Workshop

Saarbrücken, Germany **2010**
Presented poster in student poster competition, won first prize.

Pohang Science and Technology University (POSTECH)
Pohang, South Korea **2008**
Researched adhesion of block copolymer films

PROFESSIONAL AFFILIATIONS

American Chemical Society, Member	**2018 – Present**
Adhesion Society, Secretary	**2016 – 2020**
Sigma Xi Scientific Research Society, Member	**2016 – Present**
American Association for the Advancement of Science, Member	**2016 – Present**
Technical Association of the Pulp and Paper Industry, Member	**2014 – 2016**
Adhesion Society, Member	**2009 – Present**
American Physical Society, Member	**2008 – Present**
Textile Engineering Society, Vice-President	**2004 – 2005**

ADVISING AND MENTORING

Ph.D. Students

1. Mitchell Rencheck – MSE (2016 – Present)
    - Received College of Engineering Dean's Teaching Fellowship (2020)
2. Hyeyoung Son – MSE (2016 – Present)
    - Interned at Tesla Motors (Sept. 2019 – Feb. 2020)
3. Hyungyung Jo – MSE (2016 – Present)
    - Co-advised with John Howarter
4. Naomi Deneke – MSE (2017 – Present)
    - Received George Washington Carver Fellowship (2017)
5. Jared Gohl – MSE (2019 – Present)
    - Received Air Force Research Lab Summer Graduate Research Fellowship (2020)

Undergraduate Students

1. Allison Chau – Class of 2019 MSE (2017-2019)
    - Received Purdue Office of Undergraduate Research Grant (2018)
    - Awarded 1st Place Purdue Undergraduate Research Conference (2018)
    - Received Purdue MSE Undergraduate Research Award (2019)
    - Pursuing Ph.D. in MSE at University of California, Santa Barbara (2019)
2. John Liu – Class of 2021 MSE (2017)
3. Michael Klingseisen – Class of 2020 MSE (2018-2020)
    - Pursuing Ph.D. in MSE at Texas A&M University (2020)
4. Nolan Miller – Class of 2020 MSE (2018- 2020)
    - Received Purdue Office of Undergraduate Research Grant (2019)
    - Third place award in Soy Innovation Challenge (2020)
    - Received Purdue MSE Undergraduate Research Award (2019)
    - Pursuing Ph.D. in Polymer Science at University of Massachusetts Amherst (2020)
5. Tara Goldberg – Class of 2020 MSE (2018)
6. Daniel Puckett – Class of 2021 MSE (2018)

7. Abigail Mitchell – Class of 2020 MSE (2018-2019)
8. Sabrina King – Class of 2020 MSE (2018-2019)
9. Riley Plotner – Class of 2021 MSE (2019- Present)
10. Andrew Weiss – Class of 2021 MSE (2019)
11. Valeria Tellez – Class of 2020 (2019)
    - Summer Undergraduate Research Fellow, ChE from Texas A&M Kingsville
12. Elina Ghimire – Class of 2020 (2019)
    - Summer Undergraduate Research Fellow, PSE from University of Southern Mississippi
13. Margaret Serewicz – Class of 2020 MSE (2019)
14. Arianna Harmon – Class of 2021 MSE (2019- 2020)
15. Trevor Thiele-Sardina – Class of 2022 MSE (2019- 2020)
16. Kiana McDonald – Class of 2022 MSE (2019)
17. Leah Alexander – Class of 2022 MSE (2020)
18. Hugh Grennan – Class of 2022 MSE (2020- Present)
19. Kate Jarvis – Class of 2022 MSE (2020- Present)
20. Nikole McPheron – Class of 2021 MSE (2020- Present)

Visiting Scientists

1. Amin Zareei – Purdue Polytechnic Institute, (2017-2018)
    - Accepted into Purdue MSE graduate program 2019
2. Juan Camilo Cardenas Valasco – National University of Columbia, (2018)
    - Participant in URep-C Purdue Exchange Program

High School Students

3. Ricardo Rodriguez – Class of 2018 Jefferson High School (2017-2018)
    - Accepted into Purdue Polytechnic Institute, 2018

Other Mentoring Experiences

- Mentored graduate student in Polymer Engineering at the University of Akron with Alamgir Karim and Jeffrey Gilman, 2014-2016.
- Mentored Summer Undergraduate Research Fellows (SURF) at NIST, 2014
- Supervised several French undergraduate and graduate students in collaborative research experiences while at the ESPCI, 2012-2013.
- Mentored visiting graduate student from Tsinghua University on continuation of wrinkle adhesion research project while at the ESPCI, 2013.
- Supervised three middle and high school teachers in research experience for teachers at UMass, 2008.
- Co-led PSE first-year graduate student Mentoring Program, 2007-2008.
- Supervised first two teams of high school seniors working on research projects in conjunction with the Crosby Research Group (program has since been formalized based on curriculum established in the first year), 2007-2008.

SERVICE AND OUTREACH

Service to the Scientific Community

- Served as Secretary of the Adhesion Society, 2016-2020.
- Reviewed manuscripts for the following journals: Nature Communications, Scientific Reports, Soft

Matter, International Journal of Adhesion, Tribology Letters, ACS MacroLetters, Langmuir, ACS Applied Polymer Materials, Advanced Materials Interfaces, RSC New Journal of Chemistry

- Chaired session on "Printing for Performance", Deformation, Yield, and Fracture of Polymers, 2018.
- Organized and co-chaired session on "Mechanochemistry in Polymers and Soft Materials", American Physical Society March Meeting, 2018.
- Led discussion for "Dynamic Bonds and Molecular Forces" Session, Science of Adhesion Gordon Research Conference, 2017.
- Organized and chaired sessions on characterization and metrology, Adhesion Society Annual Meetings, 2014-2019.
- Organized NIST Impact Mitigating Materials Workshop in conjunction with the Center for Hierarchical Materials Design at the University of Chicago, 2016.
- Led discussion for "Mechanical Adhesion, Surface Tension, and Friction" Session, Science of Adhesion Gordon Research Seminar, 2015.
- Organized NIST Workshop on Measurement Needs for Nanocellulose in conjunction with TAPPI Nanotechnology Conference, 2014.
- Participated in Outreach programs to increase diversity in the natural sciences by inspiring K-12 students with extracurricular science activities and hands-on demonstrations, 2006 - 2012.
- Developed and presented Nanotechnology Education Outreach Presentation for high school students, 2008-2010.

Service to Purdue University

- Participated in Exploring Engineering at Purdue high school recruiting events, 2017-Present.
- Frequent guest speaker for Purdue Graduate Women in Engineering Network and Purdue Society of Women Engineers All-Members Meeting, 2017-Present.

Service to School of Materials Engineering

- Organized Summer Polymer Symposium for MSE graduate students, 2018-Present.
- Faculty Advisor of MSE Graduate Student Association
- Currently serving on 21 graduate student thesis committees.
- Academic advisor for 30+ Purdue MSE undergraduate students.
- Member of MSE Safety Committee, 2017-2020.
- Member of MSE Undergraduate Curriculum Committee, 2017- Present.

TEACHING

Physical Properties of Engineering Systems (MSE 250 – UG)	Sp 2020
Materials Processing Lab (MSE 367 – UG)	Sp 2018, Sp 2019
Mechanical Behavior of Polymers (MSE 597 – Graduate)	Fa 2018, Fa 2019, Fa 2020
Undergraduate Independent Research (MSE 499 –UG)	Sp 2017-Present
Senior Engineering Design (Supervised Eli Lilly Team, MSE 430-440 – UG)	Fa 2017-Sp 2018
Introduction to Materials Engineering (MSE 190 –UG)	Sp 2017

COLLABORATORS

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Santanu Kundu	Mississippi State University
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POSTDOCTORAL RESEARCH ADVISORS

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Anke Lindner	École Supérieure de Physique et de Chimie Industrielles (ESPCI)

GRADUATE RESEARCH ADVISOR

Alfred Crosby	University of Massachusetts Amherst