

# Stefan Zauscher

Professor of Mechanical Engineering and Materials Science  
Professor of Biomedical Engineering and of Chemistry

Duke University

Department of Mechanical Engineering and Materials Science

144 Hudson Hall, Box 90300, Durham, North Carolina 27708

Phone: (919) 660-5360; Fax: (919) 660-8963; e-mail: zauscher@duke.edu

Web: <http://zauscherlab.pratt.duke.edu/>

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## Curriculum Vitae

Citations 117210, h-index 48

(Google Scholar, January 2021)

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### A. Education

**Ph.D., Materials Science**, University of Wisconsin-Madison 2000  
**M.S., Materials Science (*Summa cum Laude*)**, Oregon State University–Corvallis 1992  
**Scholarship Exchange Graduate Student** 1989–1990  
University of Arizona, Tucson  
**Graduate Studies**, Bundesanstalt für Forst- und Holzwirtschaft (BFH) 1987–1989  
Universität Hamburg, Hamburg, Germany  
**Vordiplom, Holzwirtschaft (*Sehr Gut*)**, Universität Hamburg, Germany 1987

### B. Professional Experience

**Director**, Duke University Spring 2019 - present  
Duke Materials Initiative (DMI)  
**Director**, September 2015–2018  
NSF Triangle Materials Research Science and Engineering Center (MRSEC)  
**Sternberg Family Professor**, Duke University July 2012–June 2019  
Department of Mechanical Engineering and Materials Science  
**Professor**, Duke University July 2012–present  
Department of Mechanical Engineering and Materials Science  
**Professor**, Duke University July 2012–present  
Department of Chemistry  
**Professor**, Duke University July 2012–present  
Department of Biomedical Engineering  
**Education Director**, September 2011–August 2015  
NSF Triangle Materials Research Science and Engineering Center (MRSEC)  
**Associate Professor**, Duke University December 2011–June 2012  
Department of Chemistry  
**Associate Professor**, Duke University February 2009–June 2012  
Department of Biomedical Engineering

<b>Director of Graduate Studies</b> , Duke University Department of Mechanical Engineering and Materials Science	July 2008–June 2014
<b>Director of Undergraduate Studies</b> , Duke University Department of Mechanical Engineering and Materials Science	January 2007–June 2007
<b>Associate Professor</b> , Duke University Department of Mechanical Engineering and Materials Science	July 2007–June 2012
<b>Assistant Professor</b> , Duke University Department of Mechanical Engineering and Materials Science	September 2000–June 2007

### C. Other Experiences

<b>Visiting Professor</b> Universität Freiburg, Germany. Chemistry and Physics of Interfaces (Sabbatical)	August-December, 2009
<b>Visiting Professor</b> Eidgenössische Technische Hochschule (ETH), Zürich, Switzerland. Surface Science and Technology (Biointerfaces)	October, 2009
<b>Visiting Professor</b> University of Sheffield, UK. Department of Chemistry	April, 2005
<b>Visiting Professor</b> , Lund University, Lund, Sweden. Department of Physical Chemistry 1	August 2003
<b>Member, Steering Committee</b> , Center for Biomolecular and Tissue Engineering, Pratt School of Engineering, Duke University	Spring 2001–present
<b>Member</b> , Center for Biologically Inspired Materials and Materials Systems, Pratt School of Engineering, Duke University	September 2000–August 2012

### D. Honors and Awards

Fellow, American Vacuum Society (AVS)	2020
Duke University, Dean of the Graduate School Award for Inclusive Excellence in Graduate Education	2016
Chair, 5 <sup>th</sup> Gordon Research Conference in Biointerface Science	2014
Bass Professor, Duke University For Excellence in Research and Undergraduate Education	2012
Marion and Capers McDonald Award for Excellence in Teaching and Research Duke University, Pratt School of Engineering	2012
Co-Chair, 4 <sup>th</sup> Gordon Research Conference on Biointerface Science	2012
Division Chair, Biomaterial Interfaces Division of the AVS	2010
Program Chair, Biomaterial Interfaces Division of the AVS	2009
Bronze Award for Scientific Achievement, 26 <sup>th</sup> Army Science Conference, U.S. Army Research	2008
Young Investigator Award in Experimental Science International Conference on Computational & Experimental Engineering and Sciences	2008
The American Academy of Nanomedicine, Young Investigator Award	2005
National Science Foundation (NSF), Faculty Early Career Development Award	2003
Oak Ridge Associated Universities (ORAU) Ralph E. Powe Jr. Faculty Enhancement Award in Engineering	2001

Hunt Faculty Scholar (Pratt School of Engineering)	2001–present
Certificate of Appreciation for Research Accomplishments, United States Department of Agriculture	1995
Fellowship, Johnson Wax, Racine, Wisconsin	1994–1995
Fellowship, Arnold and Vera Meier Education Fund, Oregon State University	1991–1992
Student Exchange Scholarship, German-American Club, Germany	1989–1990

## E. Patents

“Systems and methods for analysis of liquids by covered fluidic channels integrated onto sensor platforms,” Provisional patent filed 2019, US Patent App. 16/335,874.

“Aptamer-Targeted Polynucleotide Drug Delivery Platforms and Methods of Using Same.” Provisional patent, filed July 2019, USPTO #62/873,306.

“Systems and Methods for a Therapeutic Coating of Tissue and/or Mineralized Surfaces.” Provisional patent, filed December 2018, USPTO #62/775,027.

“Microfluidics integrated shear acoustic wave based mass sensors for highly sensitive operation in liquid environment.” Provisional patent, filed September 2016, USPTO #62/399,694.

“Systems and Methods for Analysis of Liquids by Covered Fluidic Channels Integrated onto Sensor Platforms.” International Patent Application Number: PCT/US17/53461, published May 2018.

Several invention disclosures (associated with microfluidic QCM, biohybrid polymer bottle-brushes, and with DNA nanocarriers) filed with Duke Office of Licensing and Ventures (OLV).

## F. Popular Press Features

Our work on “Programmable assembly of pressure sensors using pattern-forming bacteria,” has been picked up by 19 news outlets.

*EurekAlert*, “Bacteria self-organize to build working sensors,” October 9th, 2017

*Duke Pratt School of Engineering News*, “Programmable assembly of pressure sensors using pattern-forming bacteria,” October 9, 2017.

*Duke Pratt School of Engineering News*, “Pushing Science and Engineering to Create New Soft Materials,” September 7, 2017.

*Duke Pratt School of Engineering News*, “Startup Aims to Qatch Blood Coagulation Data,” August 1, 2017.

*Duke Pratt School of Engineering News*, “Oddball Enzyme Provides Easy Path to Synthetic Biomaterials,” May 16, 2017.

<http://www.sciencedaily.com/>

<http://www.nsf.gov/news/>

*Science News*, “Lubricin molecule discovered to reduce cartilage wear” October 2010.

<http://www.molecularstation.com/science-news/>

<http://www.sciencedaily.com/releases/>

<http://articles.timesofindia.indiatimes.com/>

*Duke News*, “New Architectures for Nano Brushes,” 2010.

*Engineering Research @ Duke*, Progress Report Pratt School of Engineering, p.7 and featured faculty on p.15, 2006.

*Jerusalem Post*, “Health Scan: Joint lubricant prevents wear and tear,” April 15, 2006.

*Laser Focus World*, “Atomic-force microscopy finds new role in the nano world,” April 01, 2004.

*Nanobiotech News*, “Duke engineers fabricate polymer nanobrushes, smart structures,” 2(16), 7–8, 2004.

## G. List of Journal Publications

### Peer Reviewed Journal Contributions, Published, In Press, Accepted

116. Walkowiak, J., Gradzielski, M., Zauscher, S., Ballauff, M. “Interaction of Proteins with a Planar Poly (acrylic acid) Brush: Analysis by Quartz Crystal Microbalance with Dissipation Monitoring (QCM-D),” *Polymers*, 13(1), 122, 2021.
115. Fries, C.N., Wu, Y., Kelly, S.H., Wolf, M., Votaw, N.L., Zauscher, S., Collier, J.H. “Controlled Lengthwise Assembly of Helical Peptide Nanofibers to Modulate CD8+ T-Cell Responses,” *Advanced Materials*, 32(39), 2020. (**Impact Factor: 27.40**)
114. Noyce, S.G., Doherty, J.L., Zauscher, S., Franklin, A.D. “Understanding and Mapping Sensitivity in MoS<sub>2</sub> Field-Effect-Transistor-Based Sensors,” *ACS Nano*, 14(9), 2020, 11637-11647. (**Impact Factor: 14.59**)
113. Roberts, S., Miao, V., Costa, S., Simon, J., Kelly, G., Shah, T., Zauscher, S., Chilkoti, A., “Complex Microparticle Architectures from Stimuli-Responsive Intrinsically Disordered Proteins,” *Nature Communications*, 11(1), 2020. (**Impact Factor: 12.12**)
112. Navarro, L.A., Shah, T., Zauscher, S., “Grafting-To of Bottlebrush Polymers: Conformation and Kinetics,” *Langmuir*, 36(17), 4745-4756, 2020. (**Impact Factor: 3.56**)
111. Zhou, Y., Maleski, K., Anasori, B., Thostenson, J.O., Pang, Y., Feng, Y., Zeng, K., Parker, C. B., Zauscher, S., Gogotsi, Y., Glass, J.T., Cao, C. “Ti<sub>3</sub>C<sub>2</sub>T<sub>x</sub> MXene-Reduced Graphene Oxide Composite Electrodes for Stretchable Supercapacitors,” *ACS nano*, 14(3), 3576-3586, 2020. (**Impact Factor: 14.59**)
110. Kim, H.S., Brown, N., Zauscher, S., Yingling, Y. “Effect of octadecylamine surfactant on DNA interactions with graphene surfaces,” *Langmuir*, 36(4), 931-938, 2020. (**Impact Factor: 3.56**)
109. Walkowiak, J., Lu, Y., Gradzielski, M., Zauscher, S., Ballauff, M. “Thermodynamic Analysis of the Uptake of a Protein in a Spherical Polyelectrolyte Brush,” *Macromolecular Rapid Communications*, 41(1), 1900421, 2020. (**Impact Factor: 4.078**)
108. Deshpande, S., Yang, Y., Chilkoti, A., Zauscher, S. “Enzymatic synthesis and modification of high molecular weight DNA using terminal deoxynucleotidyl transferase,” *Methods in Enzymology*, 627, 163-188, 2019.
107. Eldridge, W.J., Ceballos, S., Shah, T., Park, H.S., Steelman, Z.A., Zauscher, S., Wax, A. “Shear Modulus Measurement by Quantitative Phase Imaging and Correlation with Atomic Force Microscopy,” *Biophysical Journal*, 117(4), 696-705, 2019.
106. Navarro, L.A., Enciso, A.E., Matyjaszewski, K., Zauscher, S. “Enzymatically Degassed Surface-Initiated Atom Transfer Radical Polymerization with Real-Time Monitoring,” *J. Am. Chem. Soc.*, 141(7), 31003109, 2019. (**Impact Factor: 14.357**)

105. Sokolowski, M., Parlak, Z., Bartsch, C., Zauscher, S., Gradzielski, M., “Interaction Between Soft Nanoparticles and Phospholipid Membranes Effect of The Polymer Grafting Density on Nanoparticle Adsorption,” *ACS Applied Nano Materials*, 2(4), 1808-1819, 2019.
104. Malmsten, M. and Zauscher, S., “Colloids and surfaces in biology,” *Current Opinion in Colloid & Interface Science*, editorial, 38, a1-a3, 2018. (**Impact Factor: 6.27**)
103. Navarro, L.A., French, D.L., Zauscher, S., “Advances in mucin mimic synthesis and applications in surface science.” *Current Opinion in Colloid & Interface Science*, 38, 122-134, 2018. (**Invited, Impact Factor: 5.785**)
102. Feng, Y., Marusak, K.E., You, L., Zauscher, S., “Biosynthetic Transition Metal Chalcogenide Semiconductor Nanoparticles: Progress in Synthesis, Property Control and Applications,” *Current Opinion in Colloid & Interface Science*, 38, 190-203, 2018. (**Invited, Impact Factor: 6.27**)
101. Tugba, Y., Gu, R., Zauscher, S., Betancourt, T. “Doxorubicin-Loaded Protease-Activated NIR Fluorescent Polymeric Nanoparticles for Imaging and Therapy of Cancer,” *International Journal of Nanomedicine*, 13, 6961-6986, 2018. (**Impact Factor: 4.818**)
100. Navarro, L.A., French, D.L., Zauscher, S., “Synthesis of Modular Brush Polymer-Protein Hybrids using Diazotransfer and Copper Click Chemistry”, *Bioconjugate Chemistry*, 29(8), 2594-2605, 2018. (**Impact Factor: 4.818**)
99. Gu, R., Chilkoti, A., Zauscher, S., “Effects of unnatural nucleobases on single-stranded DNA stability to nuclease degradation,” *Biomacromolecules*, 19(8), 3525-3535, 2018. (**Impact Factor: 5.246**)
98. Maskarinec, S.A., Parlak, Z., Tu, Q., Levering, V., Zauscher, S., López, G., Fowler, V.A., Perfect, J.R., “On-Demand Release of *Candida albicans* Biofilms From Urinary Catheters By Mechanical Surface Deformation,” *Biofouling*, 34, 2018. (**Impact Factor: 3.080**)
97. Shields IV, C.W., White, J.P., Osta, E.G., Patel, J., Rajkumar, S., Kirby, N., Therrien, J.P., Zauscher, S. “Encapsulation and Controlled Release of Retinol from Silicone Particles for Topical Delivery,” *Journal of Controlled Release*, 278, 37-48, 2018. (**Impact Factor: 7.705**)
96. Marusak, K.E., Krug, J.R., Feng, Y., You, L., Zauscher, S. “Bacterially driven cadmium sulfide precipitation on porous membranes: towards platforms for photocatalytic applications,” *BioInterphases*, 13(1), 011006, 2018. **Impact Factor: 2.677**)
95. Costa, S. A., Simon, J. R., Amiram, M., Tang, L., Zauscher, S., Brustad, E. M., Isaacs, F. J., Chilkoti, A. “Photo-Crosslinkable Unnatural Amino Acids Enable Facile Synthesis of Thermoresponsive Nano-to Microgels of Intrinsically Disordered Polypeptides,” *Advanced Materials*, 30(5), 1704878, 2017. (**Impact Factor: 19.791**)
94. Li, A.L., Li, N., Tu, Q., Im, O., Mo, CK., Han, W., Fuss, W.H., Carroll, N., Chilkoti, A., Yingling, Y.G., Zauscher, S., López, G. P., “Functional Modification of Silica through Enhanced Adsorption of Elastin-Like Polypeptide Block Copolymers,” *Biomacromolecules*, 19(2), 298-306, 2018. (**Impact Factor: 5.246**)
93. Cao, Y., Feng, Y., Ryser, M., Zhu, K., Herschlag, G., Marusak, K., Zauscher, S., You, L. “Programmed assembly of pressure sensors using patternforming bacteria.” *Nature Biotechnology*, 35, 10871093, 2017. (**Impact Factor: 43.113**)

92. Li, N.K., Kuang, H., Fuss, W.H., Zauscher, S., Kokkoli, E., Yingling, Y. "Salt responsive morphologies of ssDNA-based triblock polyelectrolytes in semi-dilute regime: effect of volume fractions and polyelectrolyte length," *Macromolecular Rapid Communications*, 38(20), 1700422, 2017. (**Impact Factor: 4.265**)
91. Tu, Q., Kim, H.S., Oweida, T.J., Parlak, Z., Yingling, Y.G., Zauscher, S. "Interfacial Mechanical Properties of Graphene on Self-Assembled Monolayers: Experiments and Simulations." *ACS Applied Materials & Interfaces*, 9(11), 10203-10213, 2017. (**Impact Factor: 7.504**)
90. Du, K.-Z., Tu, Q., Zhang, X., Han, Q., Liu, J., Zauscher, S., and Mitzi, D.B. "Two-Dimensional Lead(II) Halide-Based Hybrid Perovskites Templated by Acene Alkylamines: Crystal Structures, Optical Properties, and Piezoelectricity." *Inorganic Chemistry*, 56(15), 9291-9302, 2017. **Impact Factor: 4.857**
89. Tang, L., Navarro, L.A., Chilkoti, A., Zauscher, S. "High-Molecular-Weight Polynucleotides by Transferase-Catalyzed Living Chain-Growth Polycondensation." *Angewandte Chemie International Edition*, 56(24), 6778-6782, 2017. **Impact Factor: 11.994**
88. Rastogi, S., Anderson, H., Lamas, J., Barrett, S., Cantu, T., Zauscher, S., Brittain, W., Bétantcourt, T. "Enhanced Release of Molecules upon UV Light Irradiation from Photoresponsive Hydrogels Prepared from Bifunctional Azobenzene and Four-Arm Poly(ethylene glycol)." *ACS Applied Materials & Interfaces*, 10(36), 30071-30080, 2017. (**Impact Factor: 7.504**)
87. Feng, Y., Ngaboyamahina, E., Marusak, K.E., Cao, Y., You, L., Glass, J.T., Zauscher, S. "Hybrid (Organic/Inorganic) Electrodes From Bacterially Precipitated CdS for PEC/Storage Applications." *Journal of Physical Chemistry C*, 121(7), 3734-3743, 2017. (**Impact Factor: 4.509**)
86. Tkatchenko, A.V., Luo, X., Tkatchenko, T.V., Vaz, C., Tanavde, V.M., Maurer-Stroh, S., Zauscher, S., Gonzalez, P., and Young, T.L. "Large-Scale microRNA Expression Profiling Identifies Putative Retinal miRNA-mRNA Signaling Pathways Underlying Form-Deprivation Myopia in Mice." *PloS one*, 11(9), e0162541, 2016. (**Impact Factor: 3.23**)
85. Tu, Q., Lange, B., Parlak, Z., Lopes, J.M., Blum, V., and Zauscher, S. "Quantitative Subsurface Atomic Structure Fingerprint for 2D Materials and Heterostructures by First-Principles-Calibrated Contact-Resonance Atomic Force Microscopy." *ACS nano*, 10(7), 6491-6500, 2016. (**Impact Factor: 13.33**)
84. Yua, Q., Ista, L. K., Gu, R., Zauscher, S., Lopez, G. "Nanopatterned Polymer Brushes: Fabrication and Applications," *Nanoscale*, 8(2),680-700, 2016. (**Impact Factor: 7.76**)
83. Marusak, K., Feng, Y., Eben, C., Cao, Y., You, L., Zauscher, S. "Cadmium Sulphide Quantum Dots with Tunable Electronic Properties by Bacterial Precipitation," *RSC Advances*, 6(80), 76158-76166, 2016. (**Impact Factor: 3.29**)
82. Li, N.K., Fuss, W.H., Tang, L., Gu, R., Chilkoti, A., Zauscher, S., Yingling, Y.G. "Prediction of solvent-induced morphological changes of polyelectrolyte diblock copolymer micelles," *Soft Matter*, 11 (42), 8236-8245, 2015. (**Impact Factor: 4.029**)
81. Gu, R., Lamas, J., Rastogi, S. K., Li, X., Brittain, W., Zauscher, S. "Photocontrolled micellar aggregation of amphiphilic DNA-azobenzene conjugates," *Colloids and Surfaces B: Biointerfaces*, 135, 126-132, 2015. (**Impact Factor: 4.152**)

80. Lee, W., Leddy, H.A., Chen, Y., Lee, S.H., Zelenski, N.A., McNulty, A.L., Wu, J., Zauscher, S., Guilak, F., Liedtke, W. "Synergy between Piezo1 and Piezo2 channels confers high-strain mechanosensitivity to articular cartilage," *Proceedings of the National Academy of Sciences*, 111 (47), E5114-E5122, 2014. (**Impact Factor: 9.809**)
79. Parlak, Z., Tu, Q., Zauscher, S. "Liquid contact resonance AFM: analytical models, experiments, and limitations," *Nanotechnology*, 25 (44), 445703, 2014.
78. Hardy, G.J., Wong, G.C., Nayak, R., Anasti, K., Hirtz, M., Shapter, J.G., Alam, S.M., Zauscher, S. "HIV-1 antibodies and vaccine antigen selectively interact with lipid domains," *Biochimica et Biophysica Acta (BBA)-Biomembranes*, 1838 (10), 2662-2669, 2014.
77. Tang, L., Tjong, V., Li, N., Yingling, Y. G., Chilkoti, A., Zauscher, S. "Enzymatic Polymerization of High Molecular Weight DNA Amphiphiles that Self-Assemble into Star-like Micelles," *Advanced Materials*, 26 (19), 3050-3054, 2014. (**Impact Factor: 15.409**)
76. Tjong, V., Tang, L., Zauscher, S., Chilkoti, A. "'Smart' DNA Interfaces," *Chemical Society Reviews*, 43, 1612-1626, 2014. (**Invited, Impact Factor: 24.892**)
75. Chang, D.P., Guilak, F., Jay, G.D., Zauscher, S. "Interaction of Lubricin with Collagen II Surfaces: Adsorption, Friction, and Normal Forces," *Journal of Biomechanics*, 47(3), 659-666, 2014.
74. Wilusz, R., Zauscher, S., Guilak, F. "Micromechanical Mapping of Early Osteoarthritic Changes in the Pericellular Matrix of Human Articular Cartilage," *Osteoarthritis and Cartilage*, 21(12), 1895-1903, 2013.
73. Hardy, G. J., Nayak, R. Zauscher, S. "Model cell membranes: Techniques to form complex biomimetic supported lipid bilayers via vesicle fusion," *Current Opinion in Colloid & Interface Science*, 18(5), 448458, 2013. (**Invited, and recognized by Current Opinion in Colloid & Interface Science as one of the 5 most highly cited papers during 2014, 2015, and 2016**)
72. Parlak, Z., Biet, C., Zauscher, S. "Decoupling mass adsorption from fluid viscosity and density in QCM measurements using normalized conductance modeling," *Measurement Science and Technology*, 24(8), 085301, 2013. (**IOP Select**)
71. Ferris, R.J., Lin, S., Therezien, M., Yellen, B., Zauscher, S. "Electric Double Layer Formed by Polarized Ferroelectric Thin Films," *ACS Applied Materials & Interfaces*, 5 (7), 2610261, 2013.
70. Hardy, G. J., Nayak, R., Alam, S. M., Heinrich, F., Zauscher, S. "Formation of a high cholesterol-containing biomimetic supported lipid bilayer using alpha-helical peptide-induced vesicle fusion," *Journal of Materials Chemistry*, 22, 19506-19513, 2012. (**Invited**)
69. Zhang, J., Parlak, Z., Zauscher, S. Mapping mechanical properties of organic thin films by force modulation microscopy in aqueous media, *Beilstein Journal of Nanotechnology*, 3, 464474, 2012. (**Invited**)
68. Chen, T., Chang, D. P., Jordan, R., Zauscher, S. "Colloidal lithography for fabricating patterned polymer-brush microstructures," *Beilstein Journal of Nanotechnology*, 3, 397403, 2012. (**Invited**)
67. Ferris, R., Yellen, B., Zauscher, S. "Ferroelectric Thin Films in Fluidic Environments: A New Interface for Sensing and Manipulation of Matter," *Small*, 8(1), 28-35, 2012. (**Invited**)

66. Christensen, S. E., Coles, J. M., Zelenski, N. A., Furman, B. D., Leddy, H. A., Zauscher, S., Bonaldo, P., Guilak, F. “Altered Trabecular Bone Structure and Delayed Cartilage Degeneration in the Knees of Collagen VI Null Mice,” *PLoS one*, 7(3), e33397, 2012.
65. Hardy, G.J., Lam, Y., Stewart, S. M., Anasti, K., Alam, S. M., Zauscher, S. “Screening the interactions between HIV-1 neutralizing antibodies and model lipid surfaces,” *Journal of Immunological Methods*, 376(1-2), 13-19, 2012.
64. Chen, T., Chang, D.P., Zhang, J., Jordan, R., Zauscher, S. “Manipulating the Motion of Gold Aggregates Using Stimulus-Responsive Patterned Polymer Brushes as a Motor,” *Advanced Functional Materials*, 22(2), 429-434, 2012.
63. Ferris, R., Hucknall, A., Kwon, B.S., Chen, T., Chilkoti, A., Zauscher, S. “Field-Induced Nanolithography for Patterning of Non-Fouling Polymer Brush Surfaces,” *Small*, 7(21), 3032-3037, 2011.
62. Chen, T., Jordan, R., Zauscher, S. “Dynamic Microcontact Printing for Patterning Polymer-Brush Microstructures,” *Small*, 7(15), 2148-2152, 2011.
61. Chen, T., Jordan, R., Zauscher, S. “Extending micro-contact printing for patterning complex polymer brush microstructures,” *Polymer* 52(12), 2461-2467, 2011.
60. Chen, T., Jordan, R., Zauscher, S. “Polymer brush patterning using self-assembled microsphere monolayers as microcontact printing stamps,” *Soft Matter*, 7(12), 5532-5535, 2011.
59. Yang, Y., Erb, R.M., Wiley, B.J., Zauscher, S., Yellen, B.B. “Imaginary Magnetic Tweezers for Massively Parallel Surface Adhesion Spectroscopy,” *Nano Letters* 11(4), 1681-1684, 2011.
58. Coles, J.M., Chang, D.P., Zauscher, S. “Molecular mechanisms of aqueous boundary lubrication by mucinous glycoproteins,” *Current Opinion in Colloid and Interface Science*, 15(6), 406-416, 2010. **(Invited)**
57. Malmsten, M., Zauscher, S. “Colloids and surfaces in biology,” *Current Opinion in Colloid and Interface Science*, 15(6), 393-394, 2010.
56. Huang, X., Zauscher, S., Klitzman, B., Truskey, G.A., Reichert, W.M., Kenan, D.J., Grinstaff, M.W. “Peptide Interfacial Biomaterials Improve Endothelial Cell Adhesion and Spreading on Synthetic Polyglycolic Acid Materials,” *Annals of Biomedical Engineering*, 38(6), 1965-1976, 2010.
55. Chen, T., Chang, D. P., Liu, T., Desikan, R., Datar, R., Thundat, T., Berger, R., Zauscher, S. “Glucose-Responsive Polymer Brushes for Micro-cantilever Sensing,” *Journal of Materials Chemistry*, 20, 3391-3395, 2010.
54. Chen, T., Chang, D.P., Zauscher, S. “Fabrication of Patterned Polymer Brushes on Chemically Active Surfaces by in situ Hydrogen-Bond-Mediated Attachment of an Initiator,” *Small*, 6(14), 1504-1508, 2010.
53. Coles, J.M., Zhang, L., Blum, J.J., Warman, M.L., Jay G.D., Guilak, F., Zauscher, S. “Loss of Cartilage Structure, Stiffness, and Frictional Properties in Mice Lacking PRG4,” *Arthritis and Rheumatism*, 62(6), 1666-1674, 2010.
52. Darling, E.M., Wilusz, R.E., Bolognesi, M.P., Zauscher, S., Guilak, F. “Spatial Mapping of the Biomechanical Properties of the Pericellular Matrix of Articular Cartilage Measured In Situ via Atomic Force Microscopy,” *Biophysical Journal* 98(12), 2848-2856, 2010.
51. Cohen Stuart, M. A., Huck, W. T. S., Genzer, J., Müller, M., Ober, C., Stamm, M., Sukhorukov, G. B., Szleifer, I., Tsukruk, V. V., Urban, M., Winnik, F., Zauscher, S., Luzinov, I., Minko, S. “Emerging applications of stimuli-responsive polymer materials,” *Nature Materials*,

- 9, 101113, 2010. (**Invited, Impact Factor: 23.132**)
50. Chen, T., Ferris, R., Zhang, J., Ducker, R., Zauscher, S. “Stimulus-responsive polymer brushes on surfaces: Transduction mechanisms and applications,” *Progress in Polymer Science*, 35, (1-2), 94-112, 2010. (**Invited, Impact Factor: 16.819**)
  49. Chen, T., Zhang, J., Chang, D.P., Garcia, A., Zauscher, S. “Fabrication of Micro-Patterned Stimulus-Responsive Polymer Brush Anemone,” *Advanced Materials*,(21), 1825-1829, 2009.
  48. Chang, D. P., Abu-Lail, N. I., Coles, J. M., Guilak, F., Jay, G. D., Zauscher, S. “Friction Force Microscopy of Lubricin and Hyaluronic Acid between Hydrophobic and Hydrophilic Surfaces,” *Soft Matter*, 5(18), 3438, 2009.
  47. Darling, E. M., Pritchett, P. E., Evans, B. A., Superfine, R., Zauscher, S., and Guilak, F. “Mechanical Properties and Gene Expression of Chondrocytes on Micropatterned Substrates following Dedifferentiation in Monolayer,” *Cellular and Molecular Bioengineering*, 2(3), 395, 2009.
  46. Hucknall, A., Simnick, A. J., Hill, R. T., Chilkoti, A., Garcia, A., Johannes, M. S., Clark, R. L., Zauscher, S., and Ratner, B. D. “Versatile Synthesis and Micropatterning of Nonfouling Polymer Brushes on the Wafer Scale,” *Biointerphases*, 4(2), FA50, 2009. (**Invited**)
  45. Zauscher, S., Chilkoti, A., “Biological applications of polymer brushes,” *Biointerphases*, 4(2), FA1, 2009.
  44. Wong, V. N., Fernando, G., Wagner, A. R., Zhang, J., Kinsel, G. R., Zauscher, S. and Dyer, D. J., “Separation of Peptides with Polyionic Nanosponges for MALDI-MS Analysis,” *Langmuir*, 25(3), 1459, 2009.
  43. Standulescu, I., Dolbow, J. E., and Zauscher, S., “Computational Modeling of Surface Phenomena in Soft-Wet Materials,” *International Journal of Solids and Structures*, 46(6), 1334, 2009.
  42. Höök, F., Kasemo, B., Grunze, M., Zauscher, S. “Quantitative Biological Surface Science: Challenges and Recent Advances,” *ACS Nano*, 2(12), 2428-2436, 2008. (**Invited**)
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6. Kaholek, M., Lee, W., LaMattina, B., Caster, K.C., Zauscher, S. “Preparation and characterization of stimulus-responsive poly(N-isopropyl-acrylamide) brushes and nanopatterns,” *Polymer Preprints*, 45(1), 2004.
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3. Powers, J., Sanders, N., Zauscher, S. “Force Interactions between Calcium Carbonate and Chemically Functionalized Colloidal Probes: The Effect of Calcium Ion and Polyelectrolyte Addition,” *Proceedings of the International Paper and Coating Chemistry Symposium*, Montreal, Quebec, Canada, June 16-19, 2003.
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1. Caulfield, D. F. and Zauscher, S. “Relaxation Phenomena in Hydrogen-Bond-Dominated Solids,” *Third International Symposium on Moisture and Creep Effects on Paper, Board and Containers*. Rotorua, New Zealand, Feb. 20–21, 1997. PAPRO, Rotorua, New Zealand, 1997, pp. 17–29.

## J. Conference Papers and Presentations

214. “Breaking the Mass Resolution Limit of Shear Wave Resonators in Liquid through Integrated Microfluidic Channels,” AVS 66<sup>th</sup> International Symposium and Exhibition, Columbus, OH, October 20 - 25, 2019. (Podium, Zauscher presenting)

213. "Bio-inspired Peptide-polymer Hybrid Mucin Analogues: Applications in Osteoarthritis and Kidney Stone Disease," AVS 66<sup>th</sup> International Symposium and Exhibition, Columbus, OH, October 20 - 25, 2019. (Podium, French presenting)
212. "Shearing Liquids Confined in Microfluidic Channels at Acoustic Frequencies without Dissipation," Society of Rheology (SOR) Annual Meeting, Raleigh, NC, Oct. 21-24, 2019. (Podium, Zhao presenting)
211. "Stimulus-Responsive Microphase-Separation of Resilin/Elastin Block-Copolypeptides in Solution and in Thin Films," 93<sup>rd</sup> ACS Colloid & Surface Science Symposium, Georgia Institute of Technology, Atlanta, GA, June 16 - 19, 2019. (Podium, Zauscher presenting, **Invited**)
210. "Synthesis of modular brush polymer-protein hybrids using diazotransfer and copper click chemistry," American Chemical Society (ACS) 257<sup>th</sup> Annual Meeting, Orlando, FL, March 31-April 4, 2019. (Podium, Navarro presenting)
209. "Bio-inspired peptide-polymer hybrid mucin analogues: applications in osteoarthritis and kidney stone disease," American Chemical Society (ACS) 257<sup>th</sup> Annual Meeting, Orlando, FL, March 31-April 4, 2019. (Podium, French presenting)
208. "Enzymatic Synthesis of Aptamer-Targeted Polynucleotide Drugs for Cancer Therapy," American Chemical Society (ACS) 257<sup>th</sup> Annual Meeting, Orlando, FL, March 31-April 4, 2019. (Podium, Zauscher presenting)
207. "Modular Peptide-Polymer Conjugates: A Platform Technology for Mucin Analogues," Materials Research Society (MRS) Annual Meeting, November 25-30, 2018, Boston, MA. (Podium, French presenting)
206. "Harnessing Bacteria for Fabrication of Photoelectrodes and Pressure Sensors," American Institute of Physics (AIP) and the American Vacuum Society (AVS), AVS International Symposium and Exhibition, October 27-November 1, 2018, Long Beach, CA. (Invited Podium, Zauscher presenting)
205. "TdT Catalyzed Enzymatic Polymerization of ssDNA: A Novel Approach for Multifunctional DNA Materials," International Symposium on Stimulus-Responsive Materials, October 21-23, 2018, Santa Rosa, CA. (Invited Podium, Zauscher presenting)
204. "Organic ligands enhance the recombination lifetime and photoelectrochemical performance of biosynthesized CdS nanoparticle thin films," American Chemical Society (ACS) 256<sup>th</sup> Annual Meeting, August 19-23, 2018, Boston, MA. (Podium, Feng presenting)
203. "Enzymatic Synthesis of Aptamer-Targeted Polynucleotide Drugs for Cancer Therapy," AIP Horizons, University of Notre Dame, Notre Dame, IN, July 23-24, 2018. (Podium, Zauscher presenting)
202. "Biomolecular Synthesis of high MW ssDNA Block-co-Polynucleotides and their Application for Drug Delivery," Bioinspired Materials Gordon Research Conference (GRC), June 23-30, 2018, Les Diablerets, CH. (Poster, Zauscher presenting)
201. "Interface-Induced Piezoelectricity in Epitaxial Graphene on SiC," 2018 MRS Spring Meeting, April 2-6, 2018, Phoenix, AZ. (Podium, Zauscher presenting)
200. "Synthesis and Conformational Mechanics of Bioinspired Semisynthetic Mucin-Like Brush Polymer Lubricants," 2018 MRS Spring Meeting, April 2-6, 2018, Phoenix, AZ. (Poster, Navarro presenting)
199. "Biomolecular Synthesis of high MW ssDNA Block-co-Polynucleotides and their Application for Drug Delivery," Polyelectrolytes in Chemistry, Biology and Technology 2018, March 12-14,

- 2018, Singapore. (Invited Podium, Zauscher presenting)
198. "DNA and Graphene at Surfaces, IRTG 1524 Final Annual Meeting, December 13-16, 2017, Potsdam, Germany. (Invited Podium, Zauscher presenting)
  197. "Biomolecular Synthesis of ssDNA: Reaction Kinetics, Self-Assembly, and Applications," 4<sup>th</sup> US-Mexico Symposium on Advances in Polymer Science, MACROMEX 2017, Dec. 3 - 7, 2017, Los Cabos, MX. (Invited Podium, Zauscher presenting)
  196. "Synthesis and Adsorption of Semisynthetic Mucin-like Brush Polymers onto Collagen," 4<sup>th</sup> US-Mexico Symposium on Advances in Polymer Science, MACROMEX 2017, Dec. 3 - 7, 2017, Los Cabos, MX. (Poster, Navarro presenting)
  195. "Bacterially Precipitated Transition Metal Nanoparticles Synthesis, Properties and Applications," 2017 MRS Fall Meeting, Nov. 26 - Dec. 1, 2017, Boston, MA. (Podium, Zauscher presenting)
  194. "Interfacial Mechanical Properties of Graphene Experiments and Simulations," 2017 MRS Fall Meeting, Nov. 26 - Dec. 1, 2017, Boston, MA. (Poster, Tu presenting)
  193. "Hybrid (Organic/Inorganic) Electrode Design from Bacterially Precipitated CdS for PEC and Storage Applications," 2017 MRS Spring Meeting, April 17-21, 2017, Phoenix, AZ. (Poster, Tu presenting)
  192. "Enzymatic Polymerization of High Molecular Weight ssDNA," 2017 MRS Spring Meeting, April 17-21, 2017, Phoenix, AZ. (Poster, Tang presenting)
  191. "Interfacial Mechanical Properties of Graphene on Self Assembled Monolayers Experiments and Simulations," 2017 MRS Spring Meeting, April 17-21, 2017, Phoenix, AZ. (Poster, Tu presenting)
  190. "Synthesis and characterization of supported lipid bilayer membranes from complex lipid mixtures," 253<sup>rd</sup> ACS National Meeting, April 2-6, 2017, San Francisco, CA. (Podium, Zauscher presenting)
  189. "Subsurface structure fingerprint of 2D materials and heterostructures by their nanomechanical response," 253<sup>rd</sup> ACS National Meeting, April 2-6, 2017, San Francisco, CA. (Podium, Zauscher presenting)
  188. "Quantitative Subsurface Structure Fingerprint of 2D Materials and Heterostructures by their Nanomechanical Response." IRTG 1524 Annual Meeting, October 7-10, 2016, Neuruppin, Germany. (Invited Podium, Zauscher presenting)
  187. "Biomolecular synthesis of ssDNA and its interactions in solution and with surfaces." Biointerfaces International 2016, August 23-25, 2016, Zuerich, Switzerland. (Invited Podium, Zauscher presenting)
  186. "Molecular Mechanisms of Aqueous Boundary Lubrication by Mucinous Glycoproteins and their Engineered Mimics." Society of Tribologists and Lubrication Engineers (STLE) Annual Meeting, May 15-19, 2016, Las Vegas, NV, USA. (Invited Podium, Zauscher presenting)
  185. "Model Membranes to Study the Lipid-Reactivity of HIV-1 Antibodies and Vaccine Antigens." Spring Meeting of the European Materials Research Society (e-MRS), May 2-6, 2016, Lille, France. (Invited Podium, Zauscher presenting)
  184. "Quantitative Subsurface Structure Fingerprint of 2D Materials and Heterostructures by their Nanomechanical Response." Spring Meeting of the Materials Research Society (MRS), March 28 - April 2, 2016, Phoenix, AZ. (Podium, Zauscher presenting)

183. "Transition Metal Nanoparticles and Quantum Dots with Tunable Electronic Properties by Bacterial Precipitation." Spring Meeting of the Materials Research Society (MRS), March 28 - April 2, 2016, Phoenix, AZ. (Podium, Zauscher presenting)
182. "Biomolecular Synthesis of ssDNA and its Interactions in Solution and with Surfaces." Spring Meeting of the Materials Research Society (MRS), March 28 - April 2, 2016, Phoenix, AZ. (Invited Podium, Zauscher presenting)
181. "Ab Initio Based 2D Continuum Mechanics - Sensitivity Prediction for Contact Resonance Atomic Force Microscopy Based Structure Fingerprints." American Physical Society (APS) Meeting, March 14-18, 2016. Baltimore, MD. (Podium, Tu presenting)
180. "Non-Fluorescent DNA Sensing by Enzymatic Polymerization on Grating Structures," 2015 MRS Fall Meeting & Exhibit, Boston, MA, November 29-December 4, 2015. (Poster, Isao Aritome presenting)
179. "Catalytic and Optoelectronic Transition Metal Sulfide Nanoparticles by *E. coli* Bacterial Precipitation," 2015 MRS Fall Meeting & Exhibit, Boston, MA, November 29-December 4, 2015. (Podium, Kate Marusak presenting)
- 178 "Contact Resonance AFM Reveals Subsurface Graphene-Substrate Interfacial Mechanical Properties," 2015 MRS Fall Meeting & Exhibit, Boston, MA, November 29-December 4, 2015. (Podium, Qing Tu presenting)
177. "Subsurface Structure Fingerprint for Graphene/SiC Interfaces: First Principles Multiscale Model of Contact Resonance Atomic Force Microscopy," 2015 MRS Fall Meeting & Exhibit, Boston, MA, November 29-December 4, 2015. (Podium, Bjoern Lange presenting, collaboration with Blum group at Duke)
176. "Experiment and Theory on Contact Resonance AFM Reveal Subsurface Graphene-Substrate Interfacial Mechanical Properties," Gordon Research Conference on Nano-Mechanical Interfaces, The Hong Kong University of Science and Technology, Hong Kong, China, July 19-24, 2015. (Poster, Qing Tu presenting)
175. "Physisorption of Stimuli-Responsive Polypeptides with Genetically Programmable Aqueous Phase Behavior," 62<sup>nd</sup> AVS International Symposium & Exhibition, San Jose, CA, October 18 - October 23, 2015. (Podium, Alice Li presenting; collaboration with López group at Duke)
174. "Condensation-Mediated "Living" Chain Growth Polymerization: Towards New DNA Nanostructures," 62<sup>nd</sup> AVS International Symposium & Exhibition, San Jose, CA, October 18 - October 23, 2015. (Podium, Stefan Zauscher presenting)
173. "Biomolecular Synthesis of ssDNA and its Interactions in Solution and with Surfaces sDNA," Annual Meeting of the IGRTG 1524, Wrightsville Beach, NC, October 7-10, 2015. (Invited Podium, Stefan Zauscher presenting)
172. "Biomolecular Synthesis of ssDNA and its Interactions in Solution and with Surfaces," 12<sup>th</sup> International Symposium on Stimuli Responsive Materials, Santa Rosa, CA, October 25 -27, 2015. (Invited Podium, Stefan Zauscher presenting)
171. "Living' Enzymatic Chain Growth Polycondensation: Towards new ssDNA Nanostructures," MACROMEX, Puerto Vallarta, Mexico, December 3-6, 2014. (Invited podium, Zauscher presenting)
170. "Molecular Mechanisms of Aqueous Boundary Lubrication by Mucinous Glycoproteins," 61<sup>st</sup> AVS International Symposium and Exhibition, Baltimore, MD, November 9-14, 2014. (Invited podium, Zauscher presenting)

169. "Living' Enzymatic Polycondensation Polymerization: Towards new ssDNA Nanostructures," Mini Symposium on Nanostructured interfaces: Formation, Properties and Applications, Lund University, Sweden, September 25, 2014. (Invited podium, Zauscher presenting)
168. "Towards Engineered Biologically-Inspired Materials: Facile Synthesis of DNA Block Copolymers," 2014 MRS Fall Meeting & Exhibit, Boston, MA, November 30 - December 5, 2014. (Podium, Tang presenting)
167. "Synthesis of photo-responsive single-stranded DNA micelles via copper-free click chemistry," 248<sup>th</sup> ACS National Meeting and Exposition, San Francisco, CA, August 10-14, 2014. (Poster, Gu presenting)
166. "Synthesis of photo-responsive single-stranded DNA micelles via copper-free click chemistry," IRTG 1524/MRSEC Summer School 2014, Self-Assembly in Soft Matter Systems, Beverly, MA, August 30, 2014. (Poster, Gu presenting)
165. Chair, Gordon Research Conference on Biointerface Science, "Engineered Biomolecular Interfaces," Il Ciocco Resort, Lucca (Barga), Italy June 15-20, 2014.
- 164 "Living' Enzymatic Polycondensation Polymerizations: Towards new ssDNA Nanostructures," IGRTG 1524 Annual Meeting, Potsdam, Germany, June 6-8, 2014. (Invited podium, Zauscher presenting)
163. "HIV-1 Neutralizing Antibodies and Vaccine Antigen Selectively Interact with Phase-Separated Model Membranes," 58<sup>th</sup> Annual Meeting of the Biophysical Society, San Francisco, CA, Feb. 15-19, 2014. (Poster, Hardy presenting)
162. "Defects in the Graphene-Substrate Interface Detected by Atomic Force Acoustic Microscopy" 2013 MRS Fall Meeting & Exhibit, Boston, MA, Dec. 1-6, 2013. (Poster, Tu presenting)
161. "Contact Resonance AFM in Liquid: Modeling, Complications, and Solutions" 2013 MRS Fall Meeting & Exhibit, Boston, MA, Dec. 1-6, 2013. (Podium, Parlak presenting)
160. "Bacterial Precipitation of CdS: Towards Patterned Thin Films" 2013 MRS Fall Meeting & Exhibit, Boston, MA, Dec. 1-6, 2013. (Poster, Marusak presenting)
159. "Enzyme Catalyzed Polymerization of DNA Amphiphiles and Their Self-Assembly into Star-like Micelles" 2013 MRS Fall Meeting & Exhibit, Boston, MA, Dec. 1-6, 2013. (Invited Podium, Zauscher presenting)
158. "Atomic Force Acoustic Microscopy detecting defects in graphene-substrate interfaces" 2013 International Symposium and Exhibit of the American Vacuum Society, Long Beach, CA, Oct. 27 - Nov. 1. (Podium, Tu presenting)
157. "Cadmium Sulfide Nanoparticles and Thin Films by E. coli Bacterial Precipitation" 2013 International Symposium and Exhibit of the American Vacuum Society, Long Beach, CA, Oct. 27 - Nov.1. (Poster, Marusak presenting)
156. "Programming smart macromolecular and ferroelectric surfaces for (bio)sensing applications," Surfaces in Biomaterials Foundation, Biointerface Workshop 2013, Bloomington, MN, Oct 7-9, 2013. (Invited Podium, Zauscher presenting)
155. "'Smart' Biomacromolecules by Enzyme Catalyzed Polymerization of DNA," International Symposium on Stimuli-Responsive Materials, Santa Rosa, CA, Oct. 20-22, 2013. (Invited Podium, Zauscher presenting)
154. " $\alpha$ -Helical Peptide-Induced Vesicle Fusion to Form Complex Supported Lipid Bilayers for Biosensing Applications," Annual Meeting of the Biomedical Engineering Society, Seattle, WA, Oct. 22-25 2013. (Podium, Hardy presenting)

153. "Electric double layer formed by polarized ferroelectric thin films: Implications for sensing and colloidal manipulation in aqueous media," 246<sup>th</sup> ACS Annual Meeting, Indianapolis, IN, Sept. 8-12, 2013. (Invited Podium, Zauscher presenting)
152. "Enzyme catalyzed polymerization of DNA amphiphiles that self-assemble into star-like micelles," 246<sup>th</sup> ACS Annual Meeting, Indianapolis, IN, Sept. 8-12, 2013. (Podium, Tang presenting)
151. "Field-Induced Nanolithography for Patterning of Non-Fouling Polymer Brush Surfaces," 245<sup>th</sup> ACS Annual Meeting, New Orleans, LA, April 7-11, 2013. (Podium, Zauscher presenting)
150. "Biomimetic supported lipid bilayers with high cholesterol content formed by  $\alpha$ -helical peptide-induced vesicle fusion," Annual Meeting of the Institute of Biological Engineering, Raleigh, NC, March 7-9, 2013. (Poster, Hardy presenting)
149. "Visualizing lipid reactivity of HIV-1 antigen and neutralizing antibodies using atomic force microscopy," Annual Meeting of the Biophysical Society, Philadelphia, PA, Feb. 2-6, 2013. (Poster, Hardy presenting)
148. "Molecular mechanisms of aqueous boundary lubrication by mucinous glycoproteins," 244<sup>th</sup> ACS Annual Meeting, Philadelphia, PA, Aug. 19 - 23, 2012. (Invited Podium, Zauscher presenting)
147. "Field-Induced Nanolithography for Patterning of Non-Fouling Polymer Brush Surfaces," 243<sup>rd</sup> ACS Annual Meeting, San Diego, CA March 25-29, 2012. (Podium, Ferris presenting)
146. "Electric Field-Induced Nanolithography to Manipulate Soft Matter on Surfaces," 243<sup>rd</sup> ACS Annual Meeting, San Diego, CA March 25-29, 2012. (Invited Podium, Zauscher presenting)
145. "Visualizing Lipid Reactivity of Hiv-1 Antigen and Neutralizing Antibodies Using Atomic Force Microscopy," 56<sup>th</sup> Biophysical Society Annual Meeting, San Diego, Feb. 25 - 29, 2012. (Poster, Hardy presenting)
144. "Interactions Between HIV-1 Neutralizing Antibodies and Model Lipid Membranes," American Physical Society (APS) Meeting, Boston, MA Feb. 27-29, 2012.(Podium, Zauscher presenting)
143. "Quantitative Elasticity Mapping of Thin Films in Solution by Force Modulation Microscopy," American Physical Society (APS) Meeting, Boston, MA Feb. 27-29, 2012.(Poster, Zauscher presenting)
142. "Design and Use of Surface-Tethered (Bio)Macromolecular Nanostructures for Nanomechanical Sensing and Novel Detection and Amplification Platforms," Bio-Inspired Engineering, International Symposium 2012, Harvard University, Boston, MA Jan. 17, 2012. (Invited Podium, Zauscher presenting)
141. "Quantitative Force Modulation Microscopy in Liquid for Viscoelasticity Measurements of Monolayers," 2011 MRS Fall Meeting, Boston, MA, Nov. 28 - Dec. 2, 2011. (Podium, Parlak presenting)
140. "Fabrication of Ultra Smooth Lead Zirconium Titanate (US-PZT) Thin Films ," 2011 MRS Fall Meeting, Boston, MA, Nov. 28 - Dec. 2, 2011. (Poster, Ferris presenting)
139. "Stability of Ultra-Smooth Lead Zirconium Titanate in Aqueous Environments," 2011 MRS Fall Meeting, Boston, MA, Nov. 28 - Dec. 2, 2011. (Poster, Kwon presenting)
138. "Biomimetic Lipid Membrane Systems Applied to HIV-1 Neutralization," AVS 58<sup>th</sup> Annual International Symposium and Exhibition, Nashville, TN, Oct. 30 - Nov. 4, 2011. (Podium,

- Hardy presenting)
137. "In Situ Surface Initiated Enzymatic DNA Polymerization: Potential for Multiplexed Molecular Detection," AVS 58<sup>th</sup> Annual International Symposium and Exhibition, Nashville, TN, Oct. 30 - Nov. 4, 2011. (Poster, Tang presenting)
  136. "Surface-Tethered (Bio)Macromolecular Nanostructures Synthesis and Characterization," Symposium on New Frontiers in Fiber Materials Science, Charleston, SC, October 11-13, 2011. (Podium, Zauscher presenting, **Invited**)
  135. "Imaging Biomolecules in Liquid by Acoustic AFM Techniques," Seeing at the Nanoscale, Santa Barbara, CA, July 19-22, 2011. (Poster, Parlak presenting)
  134. "Surface-Tethered (Bio)Macromolecular Nanostructures for Nanomechanical Sensing and Novel Detection Platforms," European Science Foundation and European Molecular Biology Organization (ESF-EMBO) Symposium on Biological Surfaces and Interfaces, Sant Feliu de Guixols, Spain, June 26-July 01, 2011. (Podium, Zauscher presenting, **Invited**)
  133. "Novel approaches for patterning smart polymer nano- and microstructures: from field-induced nanolithography to colloidal lithography," 2<sup>nd</sup> International Conference on Smart Polymers, iSmithers Rapra Conferences, Mainz, Germany, May 26-27, 2011. (Podium, Zauscher presenting, **Invited**)
  132. "Enzymatic Polymerization of DNA Block Copolymers and their Programmed Selfassembly," NSF-DFG Workshop on Bioinspired Design and Engineering of Novel Functional Materials, New York City, NY, March 22 - 25, 2011. (Poster, Zauscher presenting, **Invited**)
  131. "Design and Use of Surface-Tethered (Bio)Macromolecular Nanostructures for Nanomechanical Sensing and Novel Detection and Amplification Platforms," IBE 2011 Annual Conference, Atlanta, GA, March 3-5, 2011. (Podium, Zauscher presenting, **Invited**)
  130. "Field Induced Nanolithography for Patterning Polymer Brushes," 2010 MRS Fall Meeting, Boston, MA, Nov. 29 - Dec.3, 2010. (Poster, Ferris presenting)
  129. "Smart Polymers and Biomacromolecular Legos: From Sensing Applications to Functional Protein Scaffolds" International Symposium on Stimuli-Responsive Materials, Hattiesburg, MS, Oct. 26 - 27, 2010. (Podium, Zauscher presenting, **Invited**)
  128. "Lubricin Reduces Microscale Cartilage Wear," 58<sup>nd</sup> International Symposium of the American Vacuum Society (AVS), Albuquerque, Oct 18-22, 2010. (Podium, Coles presenting)
  127. "Molecular Interactions between Lubricin and Type II Collagen Surfaces: Adsorption, Adhesion, Steric Repulsion, and Boundary Lubrication," 58<sup>nd</sup> International Symposium of the American Vacuum Society (AVS), Albuquerque, Oct. 18-22, 2010. (Poster, Coles presenting)
  126. "Smart Polymers and Biomacromolecular Legos: From Sensing Applications to Functional Protein Scaffolds," MRS Workshop on Functionalized Nanobiomaterials for Medical Applications, Denver, CO, Oct.4 - 7, 2010. (Podium, Zauscher presenting, **Invited**)
  125. "Dynamic Shear Force Microscopy: A New Approach to Studying Rapidly Unfolding/Folding Domain Proteins," Gordon Research Conference on Biointerface Science, Les Diablerets, Switzerland, Sept. 2010. (Poster, Zauscher presenting)
  124. "Biomacromolecular Legos: From Self-Assembly to Functional Protein Scaffolds," 14<sup>th</sup> Annual Meeting of the Swedish Neutron Scattering Society and International Workshop on Biointerfaces From molecular understanding to application. Lund University, Sweden, Aug. 2010. (Podium, Zauscher presenting, **Invited**)
  123. "Smart" (Bio)Polymeric Surfaces: Fabrication and Characterization , " 1<sup>st</sup> International

- Conference on Smart Polymers, iSmithers Rapra Conferences, Atlanta, May 2010. (Podium, Zauscher presenting, **Invited**)
122. "Activities with Responsive (Bio)Macromolecular Surfaces," Joint Seminar CPI-FZJ, IMTEK, University of Freiburg, Sept. 2009. (Podium, Zauscher presenting, **Invited**)
  121. "Nanomechanics of Joint Lubricants," Center for Biologically Inspired Materials and Material Systems (CBIMMS) Annual Retreat, Duke University, Beaufort, NC, May 2009 (Podium, Chang presenting)
  120. "Development of Electric-Field Nanolithography for Selective Surface Modification of Non Bio-Fouling Surface Coatings," 56<sup>th</sup> International Symposium of the American Vacuum Society, San Jose, CA, Nov. 2009. (Poster, Ferris presenting, Second Place Finisher Biomaterial Interfaces Poster Session II)
  119. "Degenerative Changes in Prg4 (-/-) Cartilage," 56<sup>th</sup> International Symposium of the American Vacuum Society, San Jose, CA, Nov. 2009. (Poster, Coles presenting, Second Place Finisher Biomaterial Interfaces Poster Session I)
  118. "Friction Force Microscopy of Lubricin and Hyaluronic Acid on Hydrophobic and Hydrophilic Surfaces," 55<sup>th</sup> Annual Meeting of the Orthopaedic Research Society (ORS), Las Vegas, NV, Feb. 2009 (Poster, Chang presenting)
  117. "Microscale surface properties of Prg4 knockout joints measured as a function of age," 55<sup>th</sup> Annual Meeting of the Orthopaedic Research Society (ORS), Las Vegas, NV, Feb. 2009 (Podium, Coles presenting)
  116. "Fabrication of Light-responsive Bacteriorhodopsin-Containing Polymer Brushes," 13<sup>th</sup> International Conference and Surface and Colloid Science (ICSCS), and 83<sup>rd</sup> ACS Colloid and Surface Science Symposium, New York City, NY, June, 2009 (Podium, Chen presenting)
  115. "Fabrication and Characterization of Patterned, Stimulus-Responsive Polymer Brushes: From Particle Capture to Glucose Sensing." International Symposium on Stimuli-Responsive Materials, Hattiesburg, MS, Oct. 28 - 30, 2008. (Podium, Zauscher presenting, **Invited**)
  114. "Towards a Localized pH Switch at the Solid-Liquid Interface: Synthesis and Characterization of PZT Thin Films." American Vacuum Society (AVS) 55<sup>th</sup> International Symposium, Boston, MA, Oct. 19 - 24, 2008. (Podium, Ducker presenting)
  113. "Glucose-Responsive Polymer Brushes for Microcantilever Sensing." American Vacuum Society (AVS) 55<sup>th</sup> International Symposium, Boston, MA, Oct. 19 - 24, 2008. (Poster, Zauscher presenting)
  112. "Polymeric and Biomacromolecular Brush Nanostructures: Synthesis, Patterning and Characterization." 2008 Joint CNMS-SHaRE User Meeting, Oak Ridge National Laboratory, Oak Ridge, TN, Sept. 25-26, 2008. (Podium, Zauscher presenting, **Invited**)
  111. "Conformational and Hydration Mechanics of Single Elastin-Like Polypeptides." Gordon Research Conference (GRC) on Biointerface Science, Aussois, France, Sept. 14-19, 2008. (Podium, Zauscher presenting)
  110. "Characterizing HIV-1 Neutralizing Antibody Interactions with Complex Lipid Surfaces." Gordon Research Conference (GRC) on Biointerface Science, Aussois, France, Sept. 14-19, 2008. (Poster, Zauscher presenting)
  109. "Fabrication of Patterned Polymer Brushes by In Situ Crosslinking of an Initiator Precursor by Micro-Contact Printing," 236<sup>th</sup> ACS National Meeting, Philadelphia, PA, Aug. 17-21, 2008. (Podium, Zauscher presenting, **Invited**)

108. "A Model for Studying the Physical and Biological Response of Adherent Cells Subjected to Shock Waves." JIEDDO/ARO - Traumatic Brain Injury Workshop and Project Review, MIT, Cambridge, MA, July 9-10, 2008. (Podium, Zauscher presenting, **Invited**)
107. "Formation of Self-Assembled Monolayers on Smooth PZT Thin Films and the Effect of Ferroelectric Polarization on Surface Properties." 82<sup>nd</sup> ACS Colloid & Surface Science Symposium, Raleigh, NC, June 15-18, 2008. (Podium, Ducker presenting)
106. "Characterizing Microscale Friction on Articular Cartilage." 82<sup>nd</sup> ACS Colloid & Surface Science Symposium, Raleigh, NC, June 15-18, 2008. (Podium, Coles presenting)
105. "Novel Evaluation Method of Neutron Reflectivity Data Successfully Applied to Grafted Stimulus Responsive Polymer Brushes." 82<sup>nd</sup> ACS Colloid & Surface Science Symposium, Raleigh, NC, June 15-18, 2008. (Podium, Zhang presenting)
104. "Micropatterned Stimulus-Responsive Polymer Brush Anemones for Particle Capture." 82<sup>nd</sup> ACS Colloid & Surface Science Symposium, Raleigh, NC, June 15-18, 2008. (Poster, Chen presenting)
103. "Functionalized Thiol Surfaces as Models for Lipid Bilayers: Interactions with HIV-1 Neutralizing Antibodies." 82<sup>nd</sup> ACS Colloid & Surface Science Symposium, Raleigh, NC, June 15-18, 2008. (Poster, Lam, presenting)
102. "Biochemical and Genetic Effects of Shock Waves Studied in Adipose Stem Cells." 82<sup>nd</sup> ACS Colloid & Surface Science Symposium, Raleigh, NC, June 15-18, 2008. (Podium, Konkar presenting)
101. "Adsorption, Conformation, and Surface Forces of Mucinous Glycoproteins on Surfaces." 82<sup>nd</sup> ACS Colloid & Surface Science Symposium, Raleigh, NC, June 15-18, 2008. (Poster, Chang presenting)
100. "Scanning Probe Microscopy for Soft Materials: From Single Molecule Elasticity to Surface Forces." Northeast Regional Meeting of the American Chemical Society (NERM), Burlington, VT, June 29 - July 2, 2008. (Podium, Zauscher presenting, **Invited**)
99. "Effect of Shockwaves on the Biomechanical and Biochemical Function of Cells." Society of Experimental Mechanics (SEM), XI International Congress and Exposition on Experimental and Applied Mechanics, Orlando, FL, June 2-5, 2008. (Podium, Cole Barthel, presenting)
98. "Glucose-Responsive Polymer Brushes for Microcantilever Sensing." International Workshop on Nanomechanical Cantilever Sensors, Max Planck Institute for Polymer Science, Mainz, Germany, May 19-21, 2008. (Poster, Zauscher presenting)
97. "Single Molecule Force Spectroscopy of Stimulus-Responsive Polypeptides: What Can We Learn from Pulling on Single Biomacromolecules?" International Conference on Computational and Experimental Engineering and Sciences (ICCES), Honolulu, HI, March 16-22, 2008. (**Award Lecture**, Zauscher presenting)
96. "NIRT: Hierarchical Bionanomanufacturing." NSF Nanoscale Science and Engineering Grantees Conference, Washington, DC, Dec. 3-6, 2007. (Poster, Zauscher presenting)
95. "Single Molecule Force Spectroscopy for Nanoscience and Technology: What Can We Learn from Pulling on Single Macromolecules?" Nanoscale Science and Engineering Forum, AIChE Annual Meeting, Salt Lake City, Utah, Nov. 4-9, 2007. (Podium, Zauscher presenting, **Invited**)
94. "In-situ Measurement of Boundary-Lubrication on Articular Cartilage Surfaces." 54th AVS International Symposium and Exhibition, Seattle, WA, Oct. 14-19, 2007. (Podium, Zauscher

- presenting)
93. "Effects of Chemistry and Fluidity on HIV-1 Neutralizing Antibody Binding to Membrane Surfaces." 54<sup>th</sup> AVS International Symposium and Exhibition, Seattle, WA, Oct. 14-19, 2007. (Podium, Lam presenting)
  92. "Mechanisms of Boundary-Lubrication of Articular Cartilage Surfaces: A Molecular View." Biosurf VII, Zurich, Switzerland, Aug. 29-31, 2007. (Podium, Zauscher presenting, **Invited**)
  91. "Neutron Reflectivity of Stimulus-Responsive Polymer Brushes in conjunction with Ellipsometry/ QCM-D Measurements." 4<sup>th</sup> European Conference On Neutron Scattering, Lund, Sweden, June 25-29, 2007. (Poster).
  90. "On the Evaluation of pNIPAAm Polymer Brush Structures from Neutron Reflectivity Measurements." 4<sup>th</sup> European Conference On Neutron Scattering, Lund, Sweden, June 25-29, 2007. (Poster)
  89. "Patterned Stimulus-Responsive Polymeric and Biomolecular Nanostructures: Mechano-chemistry, Conformational Mechanics and Applications." Gordon Research Conference on Organic Thin Films: Physical Chemistry and Biofunctionality, Centre Paul Langevin, Aussois, France, May 27 - June 1, 2007. (Podium, Zauscher presenting, **Invited**)
  89. "Fabrication, Characterization and Mechanics of Stimulus-Responsive (Bio)Polymeric Nanostructures." MRSEC Workshop focused on "Active Surfaces," U-Mass, Amherst, MA, May 16, 2007. (Podium, Zauscher presenting, **Invited**)
  88. "The Role of Prg4 in Joint Lubrication and Chondroprotection." Kewaunee Poster Series, Duke University, Durham, North Carolina, April 19, 2007. (Poster, Coles presenting, best poster by a junior graduate student)
  87. "Utilizing Nanoparticle Surface Plasmons for Surface-Initiated Polymerization and Conformational Switching of Polymers." Annual APS March Meeting, Denver Colorado, March 5-9, 2007. (Podium, Nunalee presenting)
  86. "Hydrophobic Hydration of Stimulus-Responsive Polyproteins Measured by Single Molecule Force Spectroscopy." Annual APS March Meeting, Denver Colorado, March 5-9, 2007. (Podium, Zauscher presenting, **Invited**)
  85. "A Nano-Mechanical Approach to Understanding Neutralizing Antibody Binding." Biophysical Society Meeting, Baltimore, MD, March 3-7, 2007. (Poster, Lam presenting)
  84. "Mechano-Chemistry and Conformational Mechanics of Stimulus-Responsive Macromolecules: from Single Molecules to Applications." Smart Coatings Symposium, Orlando, Florida, Feb. 21-23, 2007. (Podium, Zauscher presenting, **Invited**)
  83. "Age-dependent change in ex-vivo coefficient of friction of prg4 -/- mice joints and its relationship to articular cartilage surface layer integrity." 53<sup>rd</sup> Annual Meeting of the Orthopaedic Research Society, San Diego, California, Feb. 11 - 14, 2007. (Poster)
  82. "Frictional, mechanical, and morphological differences between PRG4 (+/+) and (-/-) mice measured by atomic force microscopy (AFM)." 53<sup>rd</sup> Annual Meeting of the Orthopaedic Research Society, San Diego, California, Feb. 11 - 14, 2007. (Podium, Coles presenting)
  81. "On the Evaluation of pNIPAAm Polymer Brush Structures from Neutron Reflectivity Measurements." Fourth Scandinavian Workshop on Scattering from Soft Matter, MAX-lab, Lund, Sweden, Feb. 1-2, 2007. (Poster)
  80. "Mechano-Chemistry and Conformational Mechanics of Stimulus-Responsive Macromolecules: from Single Molecules to Applications." Smart Coatings Symposium to be held in Orlando,

- FL, Feb. 21-23, 2007 (Podium, Zauscher presenting, **Invited**)
79. “Conformational Mechanics of Stimulus-Responsive Polypeptides on Surfaces.” 2006 MRS Fall Meeting, Boston, MA, Nov. 27 – Dec. 1, 2006. (Podium, Zauscher presenting, **Invited**)
  78. “Single-Molecule Force Spectroscopy of Stimulus-Responsive Polypeptides.” AVS 53rd International Symposium, San Francisco, CA, Nov. 12–17, 2006. (Podium, Zauscher presenting)
  77. “NanoTribological Studies on the Mechanisms of O-Linked Glycosylated Proteins in the Boundary-Lubrication of Articular Cartilage.” AVS 53<sup>rd</sup> International Symposium, San Francisco, CA, Nov. 12–17, 2006. (Podium, Chang presenting)
  76. International Symposium on Stimuli-Responsive Materials, Hattiesburg, MS, Oct. 31 – Nov. 02, 2006. (Podium, Zauscher presenting, **Invited**)
  75. “Fabrication of Surface-Confined Gold Nanostructures by using Electric Field-induced Scanning Probe Lithography and Gold Development.” 2006 Gordon Research Conference(GRC), Biointerface Science, Les Diablerets, Switzerland, Oct. 22–27, 2006. (Poster, Zauscher presenting)
  74. “Switchable Friction of Stimulus-Responsive Hydrogels.” 232<sup>nd</sup> ACS National Meeting, San Francisco, CA, Sept. 10–14, 2006. (Podium, Chang presenting)
  73. “Nano-tribological studies on the mechanisms of glycosylated proteins in the boundary-lubrication of articular cartilage” 2006 Gordon Research Conference (GRC), Tribology. Colby College, Watertown, ME, June18–23, 2006. (Podium, Zauscher presenting, **Invited**)
  72. “Patterning of Polymeric and Biomolecular Nanostructures: Approaches and Challenges.” EIPBN 50th Annual Meeting, Baltimore, MD, May 30–June 02, 2006. (Podium, Zauscher presenting, **Invited**)
  71. “Fabrication and Characterization of Nanopatterned Polymer Brushes” Society of Plastics Engineers Annual Meeting (ANTEC), Charlotte, NC, May 07–11, 2006. (Podium, Lee presenting, **Invited**)
  70. “Fabrication of bioconjugated polymeric nanostructures and metal nanowires by electric field-induced scanning probe lithography.” 231<sup>st</sup> ACS National Meeting, Atlanta, GA, March 26–30, 2006. (Poster, Lee presenting)
  69. “Micro-cantilevers decorated with tethered stimulus-responsive polymer brushes and polypeptides for actuation and sensing.” 231<sup>st</sup> ACS National Meeting, Atlanta, GA, March 26–30, 2006. (Podium, Zauscher presenting, **Invited**)
  68. “Effect of glycoproteins on friction in diarthroidal joints and between model surfaces measured with lateral force microscopy.” 231<sup>st</sup> ACS National Meeting, Atlanta, GA, March 26–30, 2006. (Podium, Zauscher presenting)
  67. “Fabrication of Patterned Biomolecular and Bioconjugated Polymeric Nanostructures Using Scanning Probe Lithography.” MRS Fall Meeting, Boston, MA, Nov. 27 - Dec. 1, 2005. (Poster, Lee presenting)
  66. “Polypeptide-Solvent Interactions Measured by Single Molecule Force Spectroscopy.” MRS Fall Meeting, Boston, MA, Nov. 27 – Dec. 1, 2005. (Podium, Valiaev presenting)
  65. “The Effect of Physisorbed Glycoproteins on Friction between Model Surfaces Measured with Lateral Force Microscopy.” MRS Fall Meeting, Boston, MA, Nov. 27 – Dec. 1, 2005. (Poster, Abu-Lail presenting)
  64. “A New Statistical Approach for the Quantitative Analysis of Single-Molecule Force Spec-

- troscopy Data.” MRS Fall Meeting, Boston, MA, Nov. 27 – Dec. 1, 2005. (Poster, Valiaev presenting)
63. “Understanding the Elasticity of Fibronectin Fibrils: A Single Molecule Force Spectroscopy Study.” American Vacuum Society (AVS) 52<sup>nd</sup> International Symposium and Exhibit, Boston, MA, Oct. 30–Nov.03, 2005. (Podium, Abu-Lail presenting)
  62. “Enzymatic Nanofabrication: Step-wise Synthesis of DNA Scaffolds on Nanopatterned Oligonucleotide.” Coauthor with D. Chow, W.-K. Lee, and A. Chilkoti. American Vacuum Society (AVS) 52<sup>nd</sup> International Symposium and Exhibit, Boston, MA, Oct. 30–Nov.03, 2005. (Podium, Chow presenting)
  61. “Interactions Between Membrane-Bound Receptors and Soluble Ligands Measured by AFM, QCM-D and SPR.” American Vacuum Society (AVS) 52<sup>nd</sup> International Symposium and Exhibit, Boston, MA, Oct. 30–Nov.03, 2005. (Podium, Yee presenting)
  60. “Fabrication of Bioconjugated Polymeric Nanostructures and Metal Nanowires by AFM Anodization Lithography.” American Vacuum Society (AVS) 52<sup>nd</sup> International Symposium and Exhibit, Boston, MA, Oct. 30–Nov.03, 2005. (Podium, Zauscher presenting)
  59. “Protein-Solvent Interactions in Surface- Grafted ELPs Measured by Single Molecule Force Spectroscopy.” American Vacuum Society (AVS) 52<sup>nd</sup> International Symposium and Exhibit, Boston, MA, Oct. 30–Nov.03, 2005. (Podium, Valiaev presenting)
  58. “Stimulus-Responsive Elastin-like Polypeptides as Coatings for Microcantilevers: Applications for Sensing and Actuation.” American Chemical Society, 230<sup>th</sup> ACS National Meeting, Washington, DC, Aug. 28 – Sept. 1, 2005. (Podium, Valiaev presenting)
  57. “pH, salt, and solvent sensitive polymer brush micro- and nanopatterns fabricated by electron-beam lithography.” American Chemical Society, 230<sup>th</sup> ACS National Meeting, Washington, DC, Aug. 28 – Sept. 1, 2005. (Poster, Kaholek presenting)
  56. “Atomic Force Microscopy Study of Reversibly Crosslinked Polymer Brushes.” American Chemical Society, 230<sup>th</sup> ACS National Meeting, Washington, DC, Aug. 28 – Sept. 1, 2005. (Poster, Abu-Lail presenting)
  55. “Progress in fabrication and characterization of nanopatterned polymer brushes.” American Chemical Society, 230<sup>th</sup> ACS National Meeting, Washington, DC, Aug. 28 - Sept. 1, 2005. (Podium, Zauscher presenting, **Invited**)
  54. “Fabrication of nanopatterned polymer structures by ring-opening metathesis polymerization in solution and vapor phase using AFM anodization lithography.” American Chemical Society, 230<sup>th</sup> ACS National Meeting, Washington, DC, Aug. 28 – Sept. 1, 2005. (Poster, Lee presenting)
  53. “Molecular-Recognition Force Spectroscopy of Induced-Fit Antibody Binding to HIV-1 Env gp120 and Detection of HIV-1 Using Micro-Cantilever Deflection Biosensors.” First Annual Scientific Meeting of the American Academy of Nanomedicine (AANM), Baltimore, MD, Aug. 15–16, 2005. (Podium, Lam presenting, YIA Finalist)
  52. “Understanding the Elasticity of Fibronectin Fibrils: A Single Molecule Force Spectroscopy Study.” First Annual Scientific Meeting of the American Academy of Nanomedicine (AANM), Baltimore, MD, Aug. 15–16, 2005. (Poster, Abu-Lail presenting)
  51. “Fabrication of Patterned Biomolecular and Bioconjugated Polymeric Nanostructures Using Scanning Probe Lithography.” (Podium, Zauscher presenting, AANM Young Investigator Award)

50. "Patterning of Polymeric and Biomolecular Nanostructures: Approaches and Challenges." 79<sup>th</sup> ACS Colloid and Surface Science Symposium, Potsdam NY, June 12–15, 2005. (Podium, Zauscher presenting, **Invited**)
49. "New Statistical Methods for the Quantitative Analysis of Single-Molecule Force Spectroscopy Data." International Symposium on Biointerface Science, New Bern, NC, May 12–14, 2005. (Poster, Valiaev presenting)
48. "Single-Molecule Force Spectroscopy of Elastin-like Polypeptides." International Symposium on Biointerface Science, New Bern, NC, May 12–14, 2005. (Podium, Zauscher presenting, **Invited**)
47. "Temperature-dependent friction response of poly-N-isopropylacrylamide (PNIPAAm) hydrogels." International Symposium on Biointerface Science, New Bern, NC, May 12–14, 2005. (Poster, Chang presenting)
46. "Stimulus-Responsive Elastin-like Polypeptides End-Grafted to Micro-Cantilevers." International Symposium on Biointerface Science, New Bern, NC, May 12–14, 2005. (Poster, Valiaev presenting)
45. "Single-Molecule force spectroscopy of Elastin-like polypeptides." 8<sup>th</sup> International Conference on Frontiers of Polymers and Advanced Materials (ICFPAM), Cancun, Quintana Roo, Mexico. April 22 – 28, 2005. (Podium, Zauscher presenting, **Invited**)
44. "Force-Induced Proline cis-trans Isomerization in Elastin-like Polypeptides." Biophysical Society 49<sup>th</sup> Annual Meeting, Long Beach, California, Feb. 12–16, 2005. (Poster, Valiaev presenting)
43. "Elasticity of Fibronectin Fibrils - Insights From the Relative Unfolding Strengths of FN-III Domains and GFP." Biophysical Society 49<sup>th</sup> Annual Meeting, Long Beach, California, Feb. 12–16, 2005. (Poster, Abu-Lail presenting)
42. "Polymer Brushes: Fabrication, Nanopatterning, Actuation and Sensing." 24<sup>th</sup> Army Science Conference, Orlando, FL, Nov. 29–Dec. 02, 2004. (Poster, Kaholek presenting)
41. "Nanopatterning surfaces with "smart" polymers and biomacromolecules." International Symposium on Surface and Colloid Chemistry Applied to Nanoscience, Lund, Sweden, 18–19 Nov. 2004. (Podium, Zauscher presenting, **Invited**)
40. "Conformational Mechanics of Surface Grafted Stimulus-Responsive Polypeptides." Presented at the 51<sup>st</sup> AVS International Symposium, Anaheim, CA, Nov. 14–19, 2004. (Podium, Valiaev presenting).
39. "Capture and Release of Proteins on the Nanoscale by Surface-Confined Biomolecular Switches." Presented at the 51<sup>st</sup> AVS International Symposium, Anaheim, CA, Nov. 14–19, 2004. (Podium, Zauscher presenting)
38. "Detection of Human Immunodeficiency Virus-1 Using Micro-Cantilever Deflection Biosensors." Presented at the 51<sup>st</sup> AVS International Symposium, Anaheim, CA, Nov. 14–19, 2004. (Podium, Lam presenting).
37. "Fabrication of Nanopatterned Polymer Brushes by Scanning-Probe and Electron-Beam Lithography." Presented at the 51<sup>st</sup> AVS International Symposium, Anaheim, CA, Nov. 14–19, 2004. (Podium, Lee presenting).
36. "Nanopatterned Polymer Brushes by Ring-Opening Metathesis Polymerization in Solution or Vapor Phase using AFM Anodization Lithography." Presented at the 2004 Southeastern Regional Meeting of the American Chemical Society, Research Triangle Park, NC, Nov. 10–

- 13, 2004. (Podium, Lee presenting).
35. "Micro-Cantilevers For Detecting Phase Transitions And Protein Binding In Elastin-Like Polypeptides." Presented at the BMES annual meeting in Philadelphia, PA, Oct. 13–16, 2004. (Podium, Abu-Lail presenting).
  34. "Micro-Cantilever Deflection for Microfluidic Sensing Applications and for Characterization of Polymer Brush Properties." Presented at the 228<sup>th</sup> American Chemical Society (ACS) National Meeting, Philadelphia, PA, Aug. 22–26, 2004. (Podium, Abu-Lail presenting).
  33. "Mechanics of Stimulus-Responsive Elastin-Like Polypeptides Studied by Force Spectroscopy." Presented at the 228<sup>th</sup> American Chemical Society (ACS) National Meeting, Philadelphia, PA, Aug. 22–26, 2004. (Podium, Valiaev presenting).
  32. "Nanoscale Stimuli-Responsive Elastin-Like Polypeptide "Switches" for Protein Capture: Fabrication and Mechanism." Presented at the 78<sup>th</sup> ACS Colloids and Surface Science Symposium, New Haven, CT, June 20–23, 2004. (Podium, Zauscher presenting)
  31. "Preparation and characterization of stimulus-responsive poly(N-isopropyl-acrylamide) brushes and nanopatterns." 227<sup>th</sup> American Chemical Society (ACS) National Meeting, Anaheim, CA, March 28–April 01, 2004 (Podium, Zauscher presenting, **Invited**).
  30. "Fabrication of "smart" biomolecular and polymeric nanostructures using molecular recognition, surface-initiated nanopolymerization and scanning probe lithography." 227<sup>th</sup> American Chemical Society (ACS) National Meeting, Anaheim, CA, March 28–April 01, 2004. (Podium, Zauscher presenting, **Invited**)
  29. "Investigation of nanoscale friction in poly(N-isopropylacrylamide) brushes by atomic force microscopy." 227<sup>th</sup> American Chemical Society (ACS) National Meeting, Anaheim, CA, March 28–April 01, 2004. (Podium, DeBellis presenting)
  28. "Fabrication of "Smart" Biomolecular and Polymeric Nanostructures using Dip-Pen Nanolithography." Presented at the 2004 AFOSR Dip-Pen Nanolithography Workshop held at Duck Key, FL, Jan. 26–27, 2004.
  27. "Force Spectroscopy Investigation of HIV Envelope Glycoprotein and Dual Antibody Complex using Atomic Force Microscopy." American Vacuum Society (AVS) 50<sup>th</sup> International Symposium, Baltimore, MD, Nov. 02–07, 2003. (Podium, Lam presenting)
  26. "Fabrication of "smart" protein nanostructures using molecular recognition and dip-pen nanolithography." 226<sup>th</sup> American Chemical Society (ACS) National Meeting, New York, NY, Sept. 7–11, 2003. (Podium, Zauscher presenting)
  25. "Force Spectroscopy and Conformational Mechanics of Stimulus-Responsive Polypeptides." SPMP-2003, Rolduc Abbey, The Netherlands, July 15–18, 2003. (Podium, Zauscher presenting)
  24. "Force Interactions between Calcium Carbonate and Chemically Functionalized Colloidal Probes: The Effect of Calcium Ion and Polyelectrolyte Addition." 77<sup>th</sup> ACS Colloids and Surface Science Symposium, Atlanta, GA, June 15–18, 2003. (Podium, Zauscher presenting) and 2003 International Paper and Coating Chemistry Symposium, Montreal, Quebec, Canada, June 16–19, 2003. (Podium, Sanders, presenting)
  23. "Fabrication of Surface Confined, Stimulus-Responsive Polymer Nanostructures using Dip-Pen Nanolithography." 225<sup>th</sup> American Chemical Society (ACS) National Meeting, New Orleans, LA, March 23–28, 2003. (Podium, Zauscher presenting, **Invited**)
  22. "Conformational Mechanics of Stimulus-Responsive Polypeptides." SPIE Meeting for Smart

- Structures and Materials, San Diego, CA, March 2–6, 2003. (Podium, Zauscher presenting)
21. “Fabrication of Stimulus-Responsive Polymeric Nanostructures by Proximal Probes.” 2002 MRS Fall Meeting, Boston, MA, Dec. 2–6, 2002. (Podium, Zauscher presenting)
  20. “Molecular Recognition Mediated Fabrication of Protein Nanostructures by Dip-Pen Lithography.” 49<sup>th</sup> International Meeting of the American Vacuum Society, Denver, CO, Nov. 3–8, 2002. (Podium, Zauscher presenting)
  19. “Fabrication of Polymeric Nanostructures by Proximal Probes.” 76<sup>th</sup> ACS Colloids and Surface Science Symposium, Ann Arbor, MI, June 23–26, 2002. (Podium, Zauscher presenting)
  18. “The Influence of Fatty Acids and Humidity on the Friction of Hydrophilic Polymer Surfaces.” 223<sup>rd</sup> American Chemical Society (ACS) National Meeting, Orlando, FL, April 7–11, 2002. (Podium, Zauscher presenting)
  17. “Determination of Adhesion Forces between Adhesives and Metal/Paper Surfaces using Atomic Force Microscopy.” (Co-Author with Uner, Kadla, Ramasubramanian, and Hubbe (all from NCSU)). 223<sup>rd</sup> American Chemical Society (ACS) National Meeting, Orlando, FL, April 7–11, 2002. (Poster, Uner presenting)
  16. “Interfacial phenomenon between adhesives and metal/paper surfaces: Role of acid-base interactions.” (Co-Author with Uner, Kadla, Ramasubramanian, and Hubbe (all from NCSU)). 222<sup>nd</sup> American Chemical Society (ACS) National Meeting, Chicago, IL, Aug. 26–30, 2001. (Poster, Uner presenting)
  15. “Optimal Control of a Piconewton-Sensitive Force Spectrometer.” (Coauthor with R. L. Clark) Defense Advanced Research Projects Agency (DARPA) Workshop on Molecular Observation, Spectroscopy and Imaging Using Cantilevers (MOSAIC), Greenbelt, MD, Aug. 21, 2001. (Podium, Clark presenting)
  14. “Friction of Hydrogel Surfaces.” 221<sup>st</sup> American Chemical Society (ACS) National Meeting, San Diego, CA, April 1–5, 2001. (Podium, Zauscher presenting)
  13. “Friction between Cellulosic Surfaces.” Workshop on Surface and Bulk Properties of Cellulose Fibres, Mid-Sweden University, Sundsvall, Sweden, Dec. 6, 2000. (Podium, Zauscher presenting, **Invited**)
  12. “Surface and Friction Forces between Cellulose Surfaces Measured with Colloidal Probe Microscopy.” Paper Coating and Chemistry Symposium at the Swedish Pulp and Paper Research Institute (STFI), Stockholm, Sweden, June 6–8, 2000. (Podium, Zauscher presenting)
  11. “Surface Forces and Friction Between Cellulose Surfaces in Aqueous Media.” First Nanotribology Workshop: Critical Assessments and Research Needs, National Institute of Standards and Technology (NIST), Gaithersburg, MD, March 13–15, 2000. (Poster, Zauscher presenting)
  10. “Friction Force Measurements on Cellulose Surfaces Using Colloidal Probe Microscopy.” Annual Meeting of the Society of Rheology (SOR), Monterey, CA, Oct. 4–8, 1998. (Podium, Klingenberg presenting)
  9. “Force Imaging Cellulose with Colloidal Probe Microscopy.” 216<sup>th</sup> American Chemical Society (ACS) National Meeting in Boston, MA, Aug. 23–28, 1998. (Podium, Zauscher presenting, **Invited**)
  8. “Direct Measurement of Interactions in Cellulosic Systems with Colloidal Probe Microscopy.” Progress in Paper Physics Seminar, Vancouver, BC, Aug. 9–14, 1998. (Podium, Zauscher presenting)

7. "Static and Dynamic Interactions in Pulp Fiber Suspensions: The Effect of Polymer Addition." American Institute of Chemical Engineers (AIChE) Annual Meeting, Los Angeles, CA, Nov. 16–21, 1997. (Podium, Zauscher presenting)
6. "Polymer-Modified Rheology of Pulp Fiber Suspensions." Annual Meeting of the Society of Rheology (SOR), Columbus, OH, Oct. 19–23, 1997. (Podium, Zauscher presenting)
5. "Static and Dynamic Interactions in Pulp Fiber Suspensions: The Effect of Polymer Addition." Annual Meeting of the Society of Wood Science and Technology, Vancouver, BC, June 22, 1997 (First place, student poster competition).
4. "Polymer-Modified Fiber Suspension Rheology." American Institute of Chemical Engineers (AIChE) Annual Meeting, Chicago, IL, Nov. 10–15, 1996. (Podium, Zauscher presenting)
3. "Pulp Extrusion: A New Processing Method for Recycling Wastepaper and Sludge and its Application for Building Materials." Conference: Use of Recycled Wood and Paper in Building Applications, Madison, WI, Sept. 9–11, 1996. (Podium, Zauscher presenting)
2. "Rheology and Extrusion Processability of Pulp Suspensions." Presented at the conference: Use of Recycled Wood and Paper in Building Applications, Madison, WI, Sept. 9–11, 1996. (Poster, Zauscher presenting)
1. "Fiber Composites by Extrusion of Pulps at Ultra-High Consistencies." Annual Meeting of the Forest Products Society, Minneapolis, MN, June 23–26, 1996. (Poster, Zauscher presenting)

## **K. Invited Lectures**

### **Academic Institutions and Government Laboratories**

52. University of Maine (Fall 2020)  
Department of Chemical and Biomedical Engineering
51. University of California-Merced (Fall 2020)  
Department of Materials Science
50. University of California-San Diego (UCSD) (Spring 2020)  
Department of Nanoengineering
49. Wake Forest University (Fall 2019)  
Department of Physics
48. Case Western Reserve University (Spring 2019)  
Department of Chemistry
47. Clemson University (Fall 2018)  
Department of Materials Science and Engineering
46. Virginia Tech, Blacksburg, VA (Spring 2017)  
Department of Chemical Engineering
45. University of California, Riverside, CA (Spring 2017)  
Department of Chemistry
44. Technical University, Berlin, Germany (Summer 2015)  
Department of Physical Chemistry
43. Texas State University, San Marcos, TX (Spring 2015)  
Department of Chemistry
42. Arizona State University, Tempe, AZ (Spring 2015)  
School for Engineering of Matter, Transport & Energy

41. Chinese Academy of Sciences, Ningbo, China (Fall 2014)  
Ningbo Institute of Materials Technology and Engineering
40. Emory University, Atlanta, GA (Fall 2014)  
Department of Chemistry
39. University of Basel, Basel, Switzerland (Fall 2014)  
Department of Physical Chemistry
38. Lund University, Lund, SE (Fall 2014)  
Department of Physical Chemistry
37. Leibnitz Institut fuer Polymerforschung, Dresden, Germany (Fall 2014)
36. University of Pennsylvania, Philadelphia, PA (Fall 2013)  
Department of Biomedical Engineering
35. Joint School of Nanoscience and Nanoengineering, Greensboro, NC (Fall 2013)
34. Clarkson University, Potsdam, NY (Fall 2012)  
Department of Mechanical Engineering
33. Technical University of Berlin (TU-Berlin), Berlin, Germany (Spring 2012)  
Department of Physical Chemistry
32. University of Rochester, Rochester, NY (Fall 2011)  
Department of Chemical Engineering
31. Georgia Tech, Atlanta, GA (Fall 2011)  
Department of Materials Science
30. Technical University Munich (TUM), Germany (2011)  
Walter Schottky Institute, Nanoscience
29. Max Planck Institute for Polymer Science (MPIP), Mainz, Germany(2011)
28. Rice University, Houston, TX (2011)  
Department of Physics
27. Illinois Institute of Technology, Chicago, IL (2010)  
Department of Chemical Engineering
26. University of Freiburg, Germany (2009)  
Department of Chemistry and Physics of Interfaces
25. Copenhagen University, Copenhagen, Denmark (2009)  
Centre for the Development and Implementation of Biotechnology for Bioenergy
24. ETH-Zürich, Switzerland (2009)  
Institute for Biomedical Engineering
23. ETH-Zürich, Switzerland (2009)  
Department of Materials
22. Max Planck Institute of Colloids and Interfaces, Golm, Germany(2009)
21. Universität of Heidelberg, Germany(2009)  
Angewandte Physikalische Chemie
20. Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany (2009)
19. Boston University, Boston, MA (2008)  
Department of Biomedical and Mechanical Engineering

18. Oak Ridge National Laboratories, Oak Ridge, TN (2008)
17. The Pennsylvania State University, College Park, PA (2007)  
Department of Materials Science
16. University of Massachusetts, Amherst, MA (2007)  
Department of Polymer Science and Engineering
15. Clarkson University, Chemistry, Potsdam, NY (2007)  
Department of Chemistry
14. Royal Institute of Technology (KTH), Stockholm, Sweden (2006)  
STFI
13. Johannes Gutenberg Universität, Mainz, Germany (2006)  
Institut für Chemie
12. University of Wisconsin, Madison, WI (2006)  
Department of Chemical Engineering  
Rheological Research Seminar, Moh's Lecture
11. U.S.D.A. Forest Products Laboratory, Madison, WI, (2006)
10. University of Illinois, Urbana-Champaign, Urbana, IL (2005)  
Department of Materials Science
9. University of Sheffield, Sheffield, UK (2005)  
Department of Chemistry
8. Southern Illinois University, Carbondale, IL (2005)  
Department of Chemistry and Biochemistry
7. Vanderbilt University, Nashville, TN (2005)  
Department of Chemical Engineering
6. U.S. Naval Research Laboratory, Washington, DC (2004)
5. Lund University, Lund, Sweden (2003)  
Department of Physical Chemistry I
4. Royal Institute of Technology (KTH), Stockholm, Sweden (2002)  
Institute of Surface Chemistry
3. Institute of Paper Science and Technology (IPST), Atlanta, GA (2002)
2. Wake Forest University, Winston-Salem, NC (2002)  
Department of Physics
1. Royal Institute of Technology (KTH), Stockholm, Sweden (2000)  
STFI

#### **Duke University**

9. Department of Chemistry (2011)
8. Structural Biology and Biophysics Program (2009)
7. Department of Biomedical Engineering (2009)
6. Structural Biology and Biophysics Program (2005)
5. Center for Biomolecular and Tissue Engineering (2004)
4. Department of Biomedical Engineering (2003)
3. Department of Mathematics (2002)

2. Department of Civil and Environmental Engineering (2000)
1. Department of Mechanical Engineering and Materials Science (2000)

## L. Major Conference/Symposium Organization

- Co-Chair and Organizer, First Triangle Hard Matter Workshop, Duke University, Durham, NC, Fall 2020.
- Organizer, Annual Triangle Soft Matter Workshop, Durham, NC, Spring 2016, Spring 2019.
- Co-Chair, Symposium B: Bioinspired Dynamic Materials Synthesis, Engineering, and Applications, 2016 MRS Spring Meeting & Exhibit, March 28 - April 1, Phoenix, AZ, 2016.
- Chair, First Joint Duke-ORNL Workshop on Neutron Sciences (September 18, 2015)
- Chair, 5<sup>th</sup> GRC on Biointerface Science, 2014.
- Co-Chair, 4<sup>th</sup> GRC on Biointerface Science, Les Diablerets, Switzerland, May 25-29, 2012.
- Co-Organizer, Annual Triangle Soft Matter Workshop, Durham, NC, Spring 2010, 2013.
- Program Chair, Biomaterial Interfaces Division (BID), American Vacuum Society (AVS), 56<sup>th</sup> AVS International Symposium and Exhibition, San Jose, CA, 2009
- Program Co-Chair, Biomaterial Interfaces Division (BID), American Vacuum Society (AVS), 55<sup>th</sup> AVS International Symposium and Exhibition, Boston, MA, 2008
- Co-Organizer and Chair of a week long, international symposium entitled: “Biomolecular and Polymeric Nanostructures and Interfaces: Fabrication, Characterization, Function, and Applications.” 231<sup>st</sup> Annual Meeting of the American Chemical Society (ACS), Atlanta, GA, March, 2006. 125 presentations (65 podium and 60 poster), 35 international and national invited speakers
- Co-Organizer and Co-Chair of symposium entitled “Smart Polymers on Surfaces and Colloids.” 227<sup>th</sup> National Meeting of the ACS, Anaheim, March 2004.

## M. Professional Service

- Participant, NSF Panel Review, “Biosensors” (2021)
- Member, Advisory Board for RSC Nanoscale Horizons (Impact Factor: 9.095) (2020).
- Member, DOE Site Visit Review Team, ORNL, CNMS (2019)
- Associate Editor, Biointerphases (2018 - present)
- Director, Research Triangle Materials Science and Engineering Center (RT-MRSEC) (2015-2018)
- Chair, Gordon Research Conference on Biointerface Science (2014)
- Member, Editorial Board, “Nanofabrication” (2013–present)

- Co-editor for “Handbook of Nanomaterials Properties” by Springer-Verlag (2012-14)
- Participant, NSF Panel Review, “Biomaterials” (2009, 2010, 2011, 2012, 2013, 2018)
- Co-Chair, Gordon Research Conference on Biointerface Science (2012)
- Member, Editorial Board, “BioResources” (2012–present)
- Nominations Chair, Biomaterial Interfaces Division (BID) of the American Vacuum Society (AVS) (2011)
- Co-editor for “Current Opinion in Colloid and Interface Science” for a topical edition on “Biological Colloids and Interfaces” (2010, 2013, 2018)
- Division Chair, Biomaterial Interfaces Division (BID) of the American Vacuum Society (AVS)(2010)
- Participant, NSF Panel Review, “IGERT” (2010)
- Section Editor, Biological Colloids and Interfaces, “Current Opinion in Colloid and Interface Science” (2009–present)
- Program Chair, Biomaterial Interfaces Division (BID) of the American Vacuum Society (AVS) (2009)
- Participant, NIH-NIBIB Panel Review (2009, 2014)
- Co-editor for “Biointerphases” for a Focus edition on “Biological Applications of Polymer Brushes” (2009)
- Member, Editorial Board for the journal *Biointerphases* (2008)
- Participant, NSF Panel Review, “DMR Polymer Division: Career Awards” (2008)
- Participant, NIH Panel Review, “Biomaterials and Biointerfaces (BMBI) Study Section” (2008)
- Participant, NSF Panel Review, “Nano and Biomechanics” (2008)
- Member, Editorial Board for *BioResources*, 2006.
- Participant, NSF Panel Review, “Nanomechanics - Nanomanufacturing” (2006)
- Elected to the Executive Committee of the Biomaterial Interfaces Division (BID) of the American Vacuum Society (AVS) (2005)
- Member, Program Committee, Biomaterial Interfaces Division (BID) of the American Vacuum Society (AVS) (2004–present)
- Chair, Colloid and Surface Chemistry of Advanced Materials Symposium, American Chemical Society, Colloid and Surface Science Division (2003–2007)

- Journals, *ad hoc* Reviewer for (among others):

ACS Nano	Colloids and Surfaces	Nano Letters
Advanced Materials	Current Opinion in Colloid and Interface Science	Nature Communications
Angewandte Chemie	European Polymer Journal	Nature Materials
Arthritis and Rheumatism	Journal of Biomechanics	Osteoarthritis and Cartilage
Biointerphases	Journal of Chemical Physics	Review of Scientific Instruments
Bio-Macromolecules	Journal of Colloids and Interface Science	Science
Biophysical Journal	Journal of Pulp and Paper Science	Sensors and Actuators
Biotechnology and Bioengineering	Journal of the American Chemical Society	Small
Chemical Communications	Langmuir	Soft Matter
Chemistry of Materials	Macromolecules	Thin Solid Films

- Grants, *ad hoc* Reviewer for (among others):

American Chemical Society Petroleum Research Fund	Department of Energy, SBIR	USDA National Research Initiative
Army Research Office	Israel Science Foundation	National Institutes of Health
Croucher Foundation Hong Kong	National Science Foundation	Department of Energy, CNMS
Alberta Heritage Foundation for Medical Research	Knut and Alice Wallenberg Foundation	

## N. Professional Societies

- American Chemical Society (ACS):
  - Division of Polymer Chemistry (POLY)
  - Division of Polymeric Materials: Science and Engineering (PMSE)
  - Division of Colloid and Surface Chemistry (COLL)
- American Vacuum Society (AVS)
  - Biomaterial Interfaces Division (BID)
- Materials Research Society (MRS)

## O. Major Academic Service Activities

- Director of the Duke University Materials Initiative (DMI) (Spring 2019 - present)
- Member of the Duke University Executive Committee of the Graduate Faculty (ECGF)(September 2019 – present)
- Member of the Duke University Academic Council (AC) (September 2018 – present)
- Member of the Duke University Priority Committee (UPC) (September 2017 – present)
- Director, NSF Research Triangle Materials Science and Engineering Center (RT-MRSEC) (September 2015 – 2018)

- Member of the Academic Programs Committee (Provost’s Advisory Committee at Duke University) (August 2012 – May 2015)
- Education and Outreach Director, NSF Research Triangle Materials Science and Engineering Center (RT-MRSEC) (September 2011 – August 2015)
- Chair, Search Committee for the Chair of Mechanical Engineering and Materials Science (July 2010 – Dec. 2011)
- Elected member of the Executive Committee of the Graduate School (ECGS) (September 2009 – July 2011)
- Director of Graduate Studies (DGS), MEMS (August 2008 – December 2014)
- Member, Search Committee for the Dean of Engineering (August 2007-March 2008)
- Director of Undergraduate Studies (DUS), MEMS (Spring 2007)
- Faculty Search Committee in Materials Science and Biomedical Engineering (Spring 2006)
- Committee on Staff Infrastructure, Pratt School of Engineering (PSE) Strategic Planning Initiative (2005)
- Director, Seminar Series, Center for Biologically Inspired Materials and Materials Systems (CBIMMS) (2004–present)
- Departmental Faculty Search Committee (MEMS) (Fall 2001–Spring 2002, Spring 2004)
- Admissions Committee, and Faculty Mentor, NSF-IGERT, CBIMMS (2004–2009)
- Elected Member, Academic Council, Duke University (2004–2006)
- Faculty Coordinator, MEMS Graduate Student Seminar Series (2003)
- Chair, PSE Curriculum Review Subcommittee (Cross-cutting ME-BME) (Spring 2002)
- Graduation with Distinction Committee (GWDC) (Spring 2002–present)
- Undergraduate Program Committee (UPC) (Spring 2002)
- Steering Committee for the Center for Biomolecular and Tissue Engineering (CBTE) at Duke University (Spring 2001–present)

## P. Education Activities

- Classes Taught as Principal Instructor:
  - **ME211/514 BME208/529** “Theoretical and Applied Polymer Science,” Duke University, Fall: 2001, 2002, 2003, 2004, 2005, 2006, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2020 Spring: 2008, 2011
  - **ME265** “Probing Nanoscale Structures Using Small-Angle Neutron Scattering (SANS),” Duke University, Fall 2011 (Duke Advisor, distance learning course by Dr. Boualem Hammouda, NIST)

- **ME265** “Physical Chemistry of Surfaces and Interfaces: From Self-Assembly to Nanomaterials,” Duke University, Fall 2008
  - **ME265/515** “Intermediate Materials Science,” Duke University, Spring 2010, 2013, 2014, 2015
  - **ME/BME301 and ME/BME302** “Biological Engineering Seminar Series,” Duke University, Fall: 2004, 2005, 2006, 2007, 2008, 2009, 2010 Spring: 2005, 2006, 2007, 2008, 2009, 2010, 2011
  - **ME172, ME173, ME 174** Engineering Undergraduate Fellows Projects, Duke University, 2003, 2004, 2005, 2006
  - **ME399** “Intra-, Intermolecular and Surface Forces,” Duke University, Summer 2002 (Pilot Class, with Prof. Steven Craig, Department of Chemistry)
  - **ME83/ME221** “Structure and Properties of Solids,” Duke University, Spring: 2001, 2002, 2003, 2004, 2006, 2007, 2009, 2012, 2017, 2018, 2021 Fall: 2010, 2011, 2019
  - **ME165** Special Topics in Mechanical Engineering, Duke University, Summer 2002, 2006
  - **APM485** “Differential Equations for Scientists and Engineers,” SUNY-ESF, Spring 2000
- Classes Taught as Team Participant:
    - **BME215** “Biomedical Materials and Artificial Organs,” Duke University, Fall 2008
    - **EGR10** “Introduction to Engineering,” Duke University, Spring 2004
    - **CBIMMS320** “Nanoscience Instrumentation Design,” Duke University, Spring 2005

## Q. Thesis Advisor, Postgraduate-Scholar Sponsor

### Visiting Scientists

1. **Aritome**, Isao, Ph.D. Visiting scientist, JSR Corp, Japan (September 2014 – August 2016)
2. **Parlak**, Zehra, Ph.D. Visiting scientist, (September 2016 – present)

### Postdoctoral Associates

12. **Navarro**, Luis. Postdoctoral Associate (Spring 2020 – present)
  - Ph.D., Mechanical Engineering and Materials Science, Duke University, Durham, NC (2020)
  - B.S., Chemistry, California Institute of Technology, Pasadena, CA (2013)
11. **Ryan**, Justin. Postdoctoral Associate (Summer 2018–Fall 2018)
  - New Position:** Postdoc, Naval Research Lab (2019–present)
  - Ph.D., Chemical Engineering, North Carolina State University, Raleigh, NC (2018)
10. **Shields**, Wyatt C. Postdoctoral Associate (Fall 2016–Fall 2017)
  - New Position:** Postdoc, Harvard University (2018)
  - Ph.D., Biomedical Engineering, Duke University (2016)
  - M.S., Biomedical Engineering, Duke University (2013)
  - B.S., Biomedical Engineering, University of Virginia (2011)

9. **Tu, Qing.** Postdoctoral Associate (Summer 2017–Fall 2017)  
**New Position:** Assistant Professor, Texas A&M University, College Station (2020–present)  
 Ph.D., Mechanical Engineering and Materials Science, Duke University (2017)  
 NSF MRSEC Fellowship (2013–2017)  
 B.S., Theoretical and Applied Mechanics, Peking University, China (2011)
8. **Tang, Lei.** Postdoctoral Associate (Fall 2016–Fall 2018)  
**New Position:** Editor, Nature Methods, Shanghai, China (2018)  
 Ph.D., Mechanical Engineering and Materials Science, Duke University (2016)  
 NSF MRSEC Fellowship (2011–2014)  
 M.S., Chemical Engineering, Tianjin University, China (2010)  
 B.S., Chemical Engineering, Tianjin University, China (2008)
7. **Parlak, Zehra.** Postdoctoral Associate (Spring 2011 – October 2014)  
**New Position:** CEO QATCH Technologies, LLC., Durham (2017)  
 Ph.D., Electrical Engineering, Georgia Institute of Technology, GA (2010).  
 M.S., Electrical Engineering, Georgia Institute of Technology, GA (2006).  
 B.S., Electrical and Electronics Engineering, Bilkent University, Ankara, Turkey (2004).
6. **Chen, Tao.** Postdoctoral Associate (Fall 2007–2010)  
**New Position:** Professor at Ningbo Institute of Materials Technology and Engineering, China (2012)  
 Humboldt Postdoctoral Fellow, Technical University of Dresden, Department of Chemistry (2011)  
 Ph.D., Polymer Chemistry and Physics, College of Material Science and Chemical Engineering Zhejiang University, China (2006).  
 M.S., Chemical Engineering, Wuhan University of Science & Technology, China (2003)  
 B.S., Chemical Engineering, Wuhan University of Science & Technology, China (2000)
5. **Ducker, Robert.** Postdoctoral Associate (Spring 2007–2010)  
**New Position:** Postdoc at University of Sheffield, UK.  
 Ph.D., Physical Chemistry, University of Sheffield, UK (2007)  
 M.Sc., Nanoscale Science and Technology, University of Leeds and University of Sheffield, UK (2003)
4. **Nunalee, Nelson.** Postdoctoral Associate (Fall 2006–Summer 2007)  
**New Position:** Physics teacher, Ravenscroft Highschool , Raleigh, NC  
 Ph.D., Materials Science and Engineering, Northwestern University, Evanston, IL (2005)  
 B.S., Textile Chemistry, Minor in Physics (Valedictorian), North Carolina State University, Raleigh, NC (2000)
3. **Abu-Lail, Nehal.,** Postdoctoral Associate (Spring 2004–Summer 2006)

**New Position:** Associate Professor, University of Texas, San Antonio, Chemical Engineering (Fall 2006)

Ph.D., Chemical Engineering, Worcester Polytechnic, Worcester, MA (1999–2003)

M.S., Chemical Engineering, Jordan University of Science and Technology, Irbid, Jordan (1998)

B.S., Chemical Engineering, Jordan University of Science and Technology, Irbid, Jordan (1996)

2. **Kaholek**, Marian. Postdoctoral Associate (Spring 2003–Spring 2006)

**New Position:** Director Research and Development Laboratory, VISCOFAN CZ, Czech Republic

Postdoctoral Fellow, Polytechnic University, Brooklyn, NY (2000–2002)

Ph.D., Macromolecular Chemistry, Slovak Academy of Sciences, Bratislava, Slovakia (1996–1999)

M.S., Physical Chemistry, Comenius University, Bratislava, Slovakia (1991–1995)

1. **Ahn**, Sang-Jung. Postdoctoral Associate (Fall 2001–Spring 2004)

**New Position:** Research Scientist, Korea Research Institute of Standards and Science, Daejeon, S. Korea

Postdoctoral Associate, Hanyang University, Seoul, S. Korea (1999–2001)

Postdoctoral Associate, Yonsei University, Seoul, S. Korea (1999)

Ph.D., Chemistry, Seoul National University, Seoul, S. Korea (1994–1999)

M.S., Chemistry, Seoul National University, Seoul, S. Korea (1990–1994)

B.S., Chemistry, Seoul National University, Seoul, S. Korea (1986–1990)

### Graduate Students (Ph.D. and M.S.)

27. **Quian**, Hongji. M.S. Student (Fall 2019 –)

B.S., Pharmaceutical Science, China Pharmaceutical University, Nanjing, China (2019)

26. **Gonzales**, Gavin. Ph.D. Student (Fall 2019 –)

B.S., Physics, University of New Mexico, Albuquerque, NM (2019)

25. **Qian**, Qihong. M.S. Student (Fall 2019–)

B.S., Composite Materials and Engineering, East China University of Science and Technology (ECUST) (2019)

24. **Huang**, Salena. M.S. Student (Fall 2018– Spring 2019)

B.S., Mechanical Engineering, Duke University, NC (2018)

23. **Zhao**, Yicheng. Ph.D. Student (Fall 2018 –)

M.S., Mechanical Engineering, Washington University, St. Louis, MO (2018)

B.S., Mechanical Engineering, Washington University, St. Louis, MO (2018)

B.S., Engineering Mechanics, Dalian Institute of Science and Technology, Dalian City, CN (2015)

22. **Yang**, Junqi. Ph.D. Student (Fall 2018 –)

B.S., Chemistry, Shanghai Jiaotong University, Shanghai, CN (2018)

21. **Shah**, Tejank. Ph.D. Student (Spring 2016 – present)  
B.S., Materials Science, Carnegie Mellon University, Pittsburgh, PA (2014)
20. **Feng**, Yaying. M.S./Ph.D. Student (Fall 2014 – present)  
M.S., Materials Science and Engineering, Duke University (2015)
19. **French**, Daniel. Ph.D. Student (Fall 2014 – present)  
B.S., Chemistry and Biomedical Engineering, Purdue University, West Lafayette, IN (2014)
18. **Navarro**, Luis. Ph.D. Student (Fall 2014 – present)  
B.S., Chemistry, California Institute of Technology, Pasadena, CA (2013)
17. **Tu**, Qing. Ph.D. Student (Spring 2013 – Spring 2017)  
NSF MRSEC Fellowship (2013–2017)  
B.S., Theoretical and Applied Mechanics, Peking University, China (2011)
16. **Vardhan**, Madhurima. M.S. Student (Spring 2014–Spring 2015)
15. **Marusak**, Katherine. Ph.D. Student (Fall 2012–Fall 2017)  
NIH Training Grant Fellowship (2013–2015)  
B.S., Materials Science, North Carolina State University, Raleigh (2012)
14. **Gu**, Rengeng. Ph.D. Student (Fall 2012–Spring 2018)  
NSF MRSEC Fellowship (2013–2016)  
M.S., Chemistry, University of Western Ontario, Canada (2012)  
B.S., Chemistry, Zhejiang University, China (2010)
13. **Greenley**, Michael. M.S. Student (Spring 2011–Spring 2012)  
B.S., Mechanical Engineering, Pennsylvania State University, State College (2010)
12. **Tang**, Lei. Ph.D. Student (Fall 2010–Summer 2016)  
NSF MRSEC Fellowship (2011–2014)  
Postdoctoral researcher, Zauscher lab, Duke University (2016–present)  
M.S., Chemical Engineering, Tianjin University, China (2010)  
B.S., Chemical Engineering, Tianjin University, China (2008)
11. **Hardy**, Gregory. Ph.D. Student (Fall 2009–Spring 2014)  
NIH Training Grant Fellowship (2009–2012)  
B.S., Biomedical Engineering, University of Rochester, NY (2007)
10. **Ferris**, Robert. Ph.D. Student (Fall 2008–Spring 2013)  
**New Position:** CEO at Adama Materials  
Fellowship, Graduate Program in Nanoscience (GP-NANO) (2009–2010)  
M.S., Chemical Engineering, Cornell University, Ithaca, NY (2006)  
B.S., Chemical Engineering, Cornell University, Ithaca, NY (2005)
9. **Barthel**, James. M.S. Student (Fall 2007–May 2008)  
B.S., Mechanical Engineering, California Polytechnic State University, San Luis Obispo, CA (2007)
8. **Garcia**, Andres. M.S. Student (Spring 2006–August 2008)

- New Position:** Research Engineer, Liquidia, RTP, North Carolina  
 B.S., Mechanical Engineering, Lafayette College, Easton, PA (2005)
7. **Zhang**, “Eric”, Jianming. Ph.D Student (Fall 2005–Summer 2014)  
 Marie Curie Fellowship, European Union (2007)  
 Fellowship, Graduate Program in Nanoscience (GP-NANO) (2006)  
 Fellowship, Department of Mechanical Engineering and Materials Science (2005)  
 M.S., Chemistry, Rutgers University, Newark, NJ (2005)  
 B.S., Applied Chemistry and Polymer Engineering, University of Science and Technology of China (2002)
6. **Coles**, Jeff. Ph.D Student (Fall 2004–2010)  
**New Position:** Research Scientist, Becton-Dickinson, RTP, North Carolina  
 NSF-IGERT Training Grant, Duke University Supplement (2007–present)  
 NIH Training Grant Scholarship (2005–2007)  
 B.S., Mechanical Engineering, SUNY Buffalo, Buffalo, NY (2004)
5. **Chang**, Debby. Ph.D Student (Fall 2004–2009)  
**New Position:** Senior Scientist at Genentech, San Francisco, US  
 Postdoctoral researcher, Nylander lab, Lund University (2010–2012)  
 Postdoctoral researcher, Zauscher lab, Duke University (2009–2010)  
 Medtronic Fellowship (2009)  
 NSF-IGERT Training Grant, Duke University Supplement (2005–2006)  
 B.S., Mechanical Engineering, University of California, Berkeley, CA (2004)
4. **DeBellis**, Alice. M.S. Student (Fall 2002–Summer 2007)  
 M.S., Mechanical Engineering and Materials Science, Duke University, (2007)  
 M.S., Mechanical Engineering, The University of Pittsburgh, Department of Mechanical Engineering, Pittsburgh, PA (2002)  
 B.S., Engineering Mechanics, The Johns Hopkins University, Department of Mechanical Engineering, Baltimore, MD (1989)
3. **Lam**, Yee. Ph.D. Student (Fall 2002–August 2008)  
**New Position:** MD, UNC Hospital, Chapel Hill, NC  
 NIH Training Grant Scholarship (2002–2004)  
 S.M., Materials Science, Massachusetts Institute of Technology (MIT), Department of Materials Science and Engineering, Cambridge, MA (2002)  
 S.B., Materials Science, Massachusetts Institute of Technology (MIT), Department of Materials Science and Engineering, Cambridge, MA (2001)
2. **Lee**, Woo-Kyung. Ph.D Student (Spring 2002–Summer 2006)  
**New Position:** Staff Scientist, Naval Research Laboratory, Washington, DC  
 Ph.D., Mechanical Engineering and Materials Science, Duke University (Summer 2006)  
 Graduate Student, Materials Science, Stevens Institute of Technology, Department of Chemical, Biochemical, and Materials Engineering, Hoboken, NJ (2000–2001)

M.S., Metallurgical Engineering, Yonsei University, Seoul, Korea (1999)

B.S., Materials Science and Engineering, Korea Advanced Institute of Science and Technology (KAIST), Taejon, Korea (1996)

1. **Valiaev**, Alexei. Ph.D Student (Spring 2002–Fall 2006)

**New Position:** Sydnovate Tech Transfer, University of Sydney, Australia

Ph.D., Mechanical Engineering and Materials Science, Duke University (Summer 2006)

M.S., Mechanical Engineering and Materials Science, Duke University (2005)

M.S. Diploma, Moscow State Institute of Electronics Engineering, Department of Electronics and Computer Technology, Moscow, Russia (2001)

B.S. Diploma, Moscow State Institute of Electronics Engineering, Department of Electronics and Computer Technology, Moscow, Russia

#### **Mentor for Visiting Graduate Students in Zauscher Lab**

13. **Walkowiak**, Jazek. Ph.D. Student (Fall 2017)

Helmholtz Zentrum Berlin, Berlin, Germany

12. **Kamoka**, Rauf. Ph.D. Student (Spring/Summer 2017)

Humboldt University, Berlin, Germany

11. **Sokolowski**, Marek. Ph.D. Student (Fall 2016/Spring 2017)

TU-Berlin, Berlin, Germany

10. **Oberle**, Michael. Ph.D. Student (Spring/Summer 2015)

Helmholtz Zentrum Berlin, Berlin, Germany

9. **Falk**, Caroline. Ph.D. Student (Fall/Spring 2014/15)

Humboldt University, Berlin, Germany

8. **Simon**, Miriam. M.S. Student (Summer/Fall 2014)

Technical University Berlin, Berlin, Germany

7. **Brinkmann**, Falko. Ph.D. Student (Fall 2013)

Karlsruhe Institute of Technology (KIT), Karlsruhe, Germany

6. **Biet**, Clemens. M.S. Student (Fall 2010–Spring 2011)

Technical University, Berlin, Germany

Mr. Biet performed the research for his MS Thesis under my guidance, working on a NSF sponsored project.

5. **Hutter**, Naima. Ph.D. Student (Fall 2010)

Prof. Rainer Jordan Group, Technical University, Munich, Germany

4. **Gruber**, Cynthia. M.S. Student (Fall 2010)

ETH-Zürich, Switzerland (2010)

3. **Hansen**, Mads Anders. Ph.D. Student (Summer 2009)

Prof. Claus Felby Group, Copenhagen University, Denmark

2. **Schuck**, Florian. M.S. Student (Fall 2008)

Johannes Gutenberg Universität in Mainz, Germany

1. **Garoff**, Niklas. Ph.D. Student (Fall 2001– Summer 2002)

KTH, Stockholm, Sweden

Dr. Garoff performed part of his Ph.D. research under my guidance at Duke.

## **R. Undergraduate Mentoring at Duke University**

All students worked in my laboratory

### **Principal advisor and mentor for NSF-REU students**

24. **Cadena**, Melissa. University of Michigan, Summer 2017
19. **Dienar**, Ananda. Texas State University, Summer 2016
18. **Perales**, Andrea. Texas State University, Summer 2016
17. **Osta**, Erica. Texas State University, Summer 2016
16. **Ross**, Keeana. Virginia Tech, Summer 2016
15. **Morgan**, Travis. Texas State University, Summer 2015
14. **Ogunmula**, Ogunfolake. Yale, Summer 2012, 2013, 2014
13. **McAlpin**, Chelsea. Arizona State University, Summer 2013
12. **Padilla**, Crystal, Gallaudet University, Summer 2013
11. **Lamas**, Joseph. Texas State University, Summer 2013, 2014
10. **Qing**, Bo. UC-Berkeley, Summer 2012
9. **Streckfuss**, Stefan. Duke University, Summer 2011
8. **Kwan**, Byung-Seok. Duke University, Summer 2010, 2011
7. **Gembero**, Moges. Deaf student from Rochester Institute of Technology, Summer 2010
6. **Fuller**, Jesse. Deaf student from Gallaudet University, Summer 2009
5. **Doudt**, Joshua. Deaf student from Gallaudet University, Summer 2008
4. **Matsche**, Alexander. Deaf student from Gallaudet University, Summer 2006/2007
3. **Paulone**, Pia Marie. Deaf student from Gallaudet University, Summer 2005
2. **Thuahnai**, John. Deaf student from Gallaudet University, Summer 2004
1. **Barrett**, Lucas. Deaf student from Gallaudet University, Summer 2003

### **Principal advisor and mentor for Pratt Fellows (undergraduate research assistants)**

17. **Huang**, Salena. 2017–2018
16. **Wang**, Drew. 2016–2017
15. **Aubin**, Cameron. 2013–2014
14. **Eben**, Cooper. 2013–2014
13. **Tailor**, Hiral. 2012–2013
12. **Nayak**, Rahul. 2012–2013
11. **Kahlil**, Karim. 2011–2012
10. **Sullivan**, Barrett. 2009–2010

9. **Goldstein**, Jordy. 2009–2010
8. **Nissar**, Ahmed. 2009–2010
7. **Cheng**, Alex. 2008–2009
6. **Goo**, Werapong. 2007–2008
5. **Blum**, Jason. 2007–2008
4. **Bieber**, Justin. 2005–2006
3. **Bowen**, Andrew. 2005–2006
2. **Mullen**, Douglas. 2004–2005
1. **Albergo**, Andrea. 2003–2004

**Principal research advisor for Duke and visiting undergraduate students**

16. **Raman**, Ashutosh. Duke University, 2018–2019
15. **Pandehare**, Sameer. Duke University, 2018–2019
14. **Mahendra**, Ashwin. Duke University, 2018–2019
13. **Yao**, Edward. Duke University, 2018–2019
12. **Gupta**, Neil. Duke University, 2018–2019
11. **Patel**, Jerishma. Duke University, 2017–2018
10. **Kirby**, Nicholas. Duke University, 2017–2017
9. **Rajkumar**, Shashank. Duke University, 2017–2018
8. **White**, Jack. Duke University, 2016–2017
7. **Wong**, Gene. Duke University, 2013–2016
6. **Tailor**, Hiral. Duke University, 2010–2011
5. **Wilkinson**, Andrew. Duke University, 2005–2006
4. **Huffman**, Nic. North Carolina State University, Raleigh, NC, 2004
3. **Abu-Lail**, Areej. Jordan University of Science and Technology, Irbid, Jordan, Summer 2004
2. **Bertini**, Tim. Cal Poly, San Luis Obispo, CA, Summer 2002
1. **Powers**, John. Duke University, 2001–2002