Comprehensive Curriculum Vitae of M. Gregory Forest
April 1, 2020

Present Positions:
Grant Dahlstrom Distinguished Professor of Mathematics
Joint Appointments: Applied Physical Sciences & Biomedical Engineering
Director, Carolina Center for Interdisciplinary Applied Mathematics
The University of North Carolina at Chapel Hill (UNC-CH)
Associate Director, NSF Statistical and Applied Mathematical Sciences Institute

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Major Fields: Mathematics of Complex Fluids; Diffusive & Hydrodynamic Transport Phenomena in Passive and Active Soft Matter; Lung Biology; Virology & Immunology; Molecular Cell Biology; Nano-Composite Processing, Flows, and Material Property Characterization

Educational History:
B.S., Mathematics, University of New Orleans, May 1972
M.S., Mathematics, University of New Orleans, December 1973
Ph.D., Mathematics, University of Arizona, August 1979
Ph.D. Adviser: David W. McLaughlin

Tenure-Track Faculty Positions:
University of North Carolina at Chapel Hill, 1996-present
Ohio State University, 1979-1996

Visiting Academic Positions:
- Department of Mathematics, University of California-Berkeley: March-May 1983
- Center for Nonlinear Studies, Los Alamos National Laboratory: January 1985; January-March 1986, 1989 & 1990; January-May 1987; February 1991-1993
- Department of Mathematics, Princeton University: September-December 1986
- Mathematical Sciences Research Institute, Berkeley: January '91, March '93 & '94
- Program in Applied Mathematics, University of Colorado-Boulder: August 1990
- Department of Mathematics, University of Utah: January-June 1995
- Institute for Mathematics & Its Applications, Univ. of Minnesota: Sept-Nov 2009

Administrative Positions Held (at UNC-CH):
Associate Chair of Applied Mathematics: 1996-1998, 2000-2004
Senior Associate Dean for the Sciences, College of Arts and Sciences: 1998-2000
Co-Director, Institute for Advanced Materials, 2002-2013
Director, Carolina Center for Interdisciplinary Applied Mathematics, 2012-present
Associate Chair, Department of Applied Physical Sciences, 2016-2017

Administrative Position:
Associate Director, NSF Statistical and Applied Mathematical Sciences Institute, 2018-

Scholarly Recognition:
Fellow of the Society for Industrial and Applied Mathematics, 2012

Mentoring Recognition:
UNC Chapel Hill Junior Faculty Mentoring Award, conferred by the Carolina Women's Leadership Council, February 24, 2017

Consulting Experience:
Los Alamos National Laboratory; Hoechst-Celanese Corp., Charlotte, NC; Corning, Inc., Corning, NY; Liquidia Technologies, Durham, NC; Kimberly Clark Corp., Appleton, WI

Startup Companies: Path BioAnalytics (Scientific Founder, no longer associated); Carolina Modeling & Simulation LLC (Founder); Artificial Intelligence Tracking Solutions (AITS) (Co-Founders, Jay Newby, Sam Lai)

Patents: Australia patent number 2014209378, issued 09/08/2016; U.S. patent application 14/762,657, pending; Canada patent application 2,899,197, pending; Europe patent application 14743797.4, pending; all applications and awards with founders Forest, Hill, McKinley, Mellnik, Vasquez

Publications

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2. Spectral theory for the periodic sine-Gordon equation: a concrete viewpoint (with D.W. McLaughlin), J. Math. Phys., Vol. 23(7), 1248-1277 (1982)
3. Modulations of sinh-Gordon and sine-Gordon wavetrains (with D.W. McLaughlin), Studies in Appl. Mathematics, Vol. 68, 11-59 (1983)
4. On the modulational stability of two-phase sine-Gordon wavetrains (with N. Ercolani and D.W. McLaughlin), Studies in Applied Math., Vol. 71(2), 91-101 (1985)
5. Modulations of perturbed sine-Gordon wavetrains (with D.W. McLaughlin), SIAM J. Applied Math., Vol. 44(2), 287-300 (1984)
6. The geometry of real sine-Gordon wavetrains (with N. Ercolani), Comm. Math. Physics, Vol. 99, 1-49 (1985)
7. Modulational instabilities of periodic sine-Gordon waves: a geometric analysis (with N. Ercolani and D.W. McLaughlin), Lectures in Appl. Math., Vol. 23, 149-166 (1985)
8. Oscillations and instabilities in near integrable pde's (with N. Ercolani and D.W. McLaughlin), Lectures in Applied Mathematics, Vol. 23, 3-46 (1985)
9. The origin and saturation of modulational instabilities (with N. Ercolani and D. W. McLaughlin), Physica D, Vol. 18, 472-474 (1986)
10. Geometry and modulation theory for the periodic nonlinear Schrödinger equation (with J. E. Lee), IMA Volumes in Mathematics and Its Applications, Vol. 2, 35-70, Springer-Verlag (1986)
11. A one-dimensional theory for viscoelastic fluid jets, with application to extrudate swell and draw-down under gravity (with S. Bechtel and D. Bogy), Journal of Non-Newtonian Fluid Mechanics, Vol. 21, 273-308 (1986)
12. A quasi-periodic route to chaos in a near-integrable PDE (with A. Bishop, D. W. McLaughlin and E. Overman), Physica D, Vol. 23, 293-328 (1986)
13. Hamiltonian structure for the modulation equations of a sine-Gordon wavetrain (with N. Ercolani, D.W. McLaughlin, and R. Montgomery), Duke Mathematical Journal Vol. 55(4), 949-983 (1987)
14. Effective stress rates of viscoelastic free jets (with S. Bechtel and K. Lin), J. Non-Newtonian Fluid Mechanics, Vol. 26, 1-41 (1987)
15. On the behavior of viscoelastic free jets with elliptical cross-section (with S. Bechtel and K. Lin), J. Non-Newtonian Fluid Mechanics, Vol. 27, 87-126 (1988)
16. Correlations between chaos in the perturbed sine-Gordon equation and finite modal equations, Proceedings of 4th Int'l Conference on Nonlinear Evolution Equations and Dynamical Systems, Montpellier, France, June 1987, J. Leon, Editor, World Scientific

17. Geometry of the modulational instability III. Homoclinic orbits (with N. Ercolani and D.W. McLaughlin), Physica D, Vol. 43, 349-384 (1990)
18. 1-D closure models for 3-D incompressible viscoelastic free jets: von Kármán flow geometry and elliptical cross-section (with S. Bechtel, D. Holm, and K. Lin), J. Fluid Mechanics, Vol. 196, 241-262 (1988)
19. A quasiperiodic route to chaos in a near-integrable p.d.e.: homoclinic crossings (with A.R. Bishop, D.W. McLaughlin, and E.A. Overman), Physics Letters A, Vol. 127, 335-340 (1988)
20. Geometry of the modulational instability, Part I: Local analysis (with N. Ercolani and D.W. McLaughlin), Memoirs of the A.M.S., unpublished.
21. Geometry of the modulational instability, Part II: Global analysis (with N. Ercolani and D.W. McLaughlin), Memoirs of the A.M.S., unpublished.
22. Modal representations of chaotic attractors for the driven, damped pendulum chain (with A.R. Bishop, D.W. McLaughlin, and E.A. Overman), Phys. Lett. A, Vol. 144, 17-25 (1990)
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27. Modeling fiber-spinning processes with a comprehensive perturbation theory, (with S. E. Bechtel and J. Cao), FED - Vol. 124, refereed proceedings of symposium on Recent Developments in Non-Newtonian Flows and Industrial Applications, ASME Press (1991)
28. Frequency and phase locking of spatially periodic perturbed sine-Gordon breather trains, (with S. P. Sheu and A. Sinha), SIAM J. Applied Mathematics, Vol. 52(3), 746-761 (1992)
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34. Illustration of an optimization procedure for fiber-spinning operating conditions: Maximum draw ratio under a Maxwell thin-filament model, (with S. Bechtel, J. Cao), Journal of Rheology, Vol. 37 (2), 237-287 (1993)
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97. Kinetic structure simulations of nematic polymers in plane Couette cells, I: The algorithm and benchmarks, (with R. Zhou, Q. Wang), SIAM Multiscale Modeling and Simulation, Vol. 3(4), 853-870 (2005)
98. Extension-enhanced conductivity of liquid crystalline polymer nano-composites, (with H. Zhou, X. Zheng, Q. Wang, R. Lipton), Macromolecular Symposia, Vol. 28, 81-85 (2005)
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100. Connections between stability, convexity of internal energy, and the second law for compressible Newtonian fluids, (with S.E. Bechtel, F. Rooney, and Q. Wang), ASME J. Applied Mechanics, Vol. 72, 299 (2005)
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Non-research scholarly articles

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Federal, State, and UNC Grant Support (current):

- Co-PI, NIH 1T32 CA201159-01, Big Data to Knowledge in Biomedicine Graduate Training Program, 5/1/15-4/30/20, Co-PI: Michael Kosorok, UNC
- PI, Army Research Office W911NF-16-1-0356, "A Network-Science-Integrated Feedback Loop for Design of Multifunctional Polymeric Rod-Like Nanocomposites", co-PIs: T. Dingemans, D. Klotsa, P. Mucha, 06/10/16 – 08/09/20
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- PI, NSF DMS-1816630, "Collaborative Research: Computational modeling of how living cells utilize liquid-liquid phase separation to organize chemical compartments", Co-PIs Wang, U. So. Carolina, Zhao, Utah State, 06/01/18 – 05/31/21
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- Co-PI and Associate Director, NSF Statistical and Applied Mathematical Sciences Institute, RTP, NC, 07/01/2018-08/01/2021, PI: D. Banks, Duke, co-PI M. Haider, NCSU
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Teaching Recognition:

Meritorious Teaching Award, Liberal Arts College, University of Arizona, 1979

Ph.D. Students Advised, Year of Degree, Current Affiliation

- Jong-Eao Lee, "Geometry and modulation theory for the periodic nonlinear Schrödinger equation", 1986, National Chiao Tung University, Taiwan
- Karen Bolinger, "Pointwise closure models for slender, non-Newtonian free jets", 1990, Clarion University, Clarion, PA
- Qi Wang, "Dynamics of slender viscoelastic free jets", 1991, University of South Carolina, Columbia, SC
- Jian-Zhong Cao, "Higher Order Perturbation Theory for Slender Viscoelastic Jets and Fibers with Torsion", 1992, deceased
- S. P. Sheu, "Homoclinic Orbits for a System of Coupled Nonlinear Schrodinger Equations", 1992, National Chung-Hsing University, Taiwan
- C. D. Carlson, "An analysis of the Rayleigh capillary instability in slender jets", 1996, Mitsubishi Polyester Film, Columbus, NC
- Xiaoyu Zheng, "On the effective properties of nematic polymer nano-composites", 2006, Kent State University, Kent, OH
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- Joohee Lee, "Mathematical descriptions of nematic polymers in the monolayer limit", 2007, Ewha Women's College, S. Korea
- Lingxing Yao, "Viscoelasticity at Microscopic and Macroscopic Scales: Characterization and Prediction", 2007, Case Western Reserve Univ., Cleveland, OH
- Brandon Lindley, "Linear and Nonlinear Shear Wave Propagation in Viscoelastic Fluids", 2008, data analyst at Daniel H. Wagner Associates, Vienna, Virginia

- Ke Xu, “Mathematics of microrheology with applications to pulmonary liquids”, 2009, Simulations Plus, Lancaster, CA
- Feng (Bill) Shi, “Modeling networks and dynamics in complex systems”, 2013, co-adviser Peter Mucha, Amazon, Inc., Seattle, WA
- Simi Wang, “Modeling Networks in Nanorod Composites and Power Grids”, 2014, co-adviser Peter Mucha, Amazon, Inc., Seattle, WA
- Yuan Jin, “Computational modeling of complex fluids and human bronchial epithelial cell cultures”, May 2015, Google, Inc.
- John Mellnik, “Stochastic modeling of biological fluids”, May 2015, CEO of Path BioAnalytics, Inc., Chapel Hill, NC
- Caitlin Hult, “Modeling of chromosomes in living yeast nuclei”, co-adviser D. Adalsteinsson, May 2017, postdoc, U. Michigan
- Tim Wessler, “Modeling of mammalian cell mechanics, antibody-based strategies for viral immunity and protection”, May 2017, postdoc, U. Michigan
- Samuel Heroy, Network analyses of nano-rod composites and genome organization in yeast, co-adviser P. Mucha, May 2018, postdoc, U. Oxford
- Aaron Barrett, The immersed boundary method for complex fluids with applications to flagellar locomotion, co-adviser B. Griffith, May 2019, postdoc, U. Utah

Current Ph.D. Students, Topic, Tentative Degree Date

- Fuhui Fang, Stochastic immersed boundaries and cellular motility, co-adviser B. Griffith, 2020
- Ryan Fox, Enhanced mechanical reinforcement from shear-directed assembly of a liquid crystal polymer with liquid crystal graphene oxide, adviser T. Dingemans, 2020
- Yunyan He, Chromosomal dynamics and structure in mitosis, co-advisers D. Adalsteinsson, K. Bloom, 2020
- Sam Bubnovich, Crystallization kinetics in carbon nanotube – polymer composites, co-advisers T. Dingemans, P. Mucha, 2021
- Andrew Ford, Molecular dynamics modeling of heterogeneous structure and rheology induced by transient binding interactions of human lung mucus and yeast chromosomes, co-advisers R. Freeman, K. Bloom, 2021
- Ben Walker, Methods for detecting dynamic and multiscale structure and self-organization in biological systems, from experimental and simulated data; energy landscape representations of chromosomes, co-adviser K. Newhall, 2021
- Anne Talkington, Physiologically-Based Pharmacokinetic (PBPK) modeling and experiments of drug delivery to tumors based on an anti-PEG, bi-specific antibody strategy, co-adviser Sam Lai, 2022
- Neall Caughman, Data analysis and material property inferences from passive microscopic probe experiments in heterogeneous biological systems, 2022
- Kate Daftari, Data analysis of particle tracking experiments, modeling of granular systems, co-adviser K. Newhall, 2023
- Micah Papanikolas, Synthetic reconstruction of mucus heterogeneous structures (flakes and strands), primary adviser Ronit Freeman, 2023

M.S. Students at UNC-CH, advised or co-advised

- Greg Robbins, 2002
- Alison Hall, 2003

- John Bakken, 2005
- Jessica Wehner, 2010
- Caitlin Hult, 2015
- Susan Kolim, 2017

Postdoctoral Scholars Supervised & Co-Supervised, Current Position

- B. Maulik, Battelle Postdoctoral Fellowship, 1988-1990, unknown
- D. Muraki, AFOSR funding, 1990, Simon Fraser U.
- O. Wright, AFOSR funding 1991-1993, Cedarville U.
- B. Umarov, funded by Uzbek Academy of Science, 1990, Uzbekistan
- C. Goedde, Battelle Fellowship, NSF, 1990-1994, Depaul University
- J. Cao, AFOSR funding, 1992-1995, deceased
- H. Zhou, UNC and AFOSR funding, 1996-1999, Naval Postgraduate School
- T. Ueda, UNC and AFOSR funding, 1996-1997, private sector
- D. Anderson, UNC and AFOSR funding, 1997-1999, George Mason U.
- R. Zhou, UNC and AFOSR funding, 2001-2004, Old Dominion U.
- L. Lee, UNC Virtual Lung Project funding, 2003-2005, U. Wyoming
- Z. Cui, UNC and AFOSR funding, 2005-2007, Fayetteville State U.
- X. Zheng, NASA funding, 2006, Kent State U.
- C. Hohenneger, ARO funding, w/ P. Mucha, 2006-2007, U. Utah
- L. Yao, NIH and NSF funding, 2007-2008, Case Western Reserve U.
- J. Lee, ARO and UNC funding, 2007-2009, S. Korea
- X. Yang, AFOSR funding, 2007-2009, U. So. Carolina
- B. Lindley, NSF funding, summer of 2008, Daniel H. Wagner Associates
- E. Choate, NSF funding, 2009-2010, Radford U.
- P. Vasquez, NSF and DOE funding, 2010-2013, U. So. Carolina
- A. Chen, SAMSI and NIH funding, 2011-2015, Cal State, Dominguez Hills
- J. Zhao, NSF-NIH funding, w/ Q. Wang, U. So. Carolina, 2015-2017, Utah St.
- J. Newby, NSF, NC General Assembly, NIH funding, 2015-2018, U. Alberta
- F. Xu, NSF-NIGMS & NC General Assembly funding, 2016-2017, Google, Inc.
- K. Gasior, NSF and NIH, 2017-2019, w/ A. Gladfelter, Florida St.
- X. Cao, NSF and NIGMS, 2018-2019, Xiamen University, China
- S. Qadeer, NSF-FRG, 2018-present, co-advised by B. Griffith

Undergraduate Honors Theses Advised

- R. Waters, with E. T. Samulski, Electrospinning of Liquid Crystals, 2005
- B. Smith, Stress Filtering in Sheared Viscoelastic Layers and Hypotheses for Biological Relevance, 2007
- K. Patel, Optimization of Crosslinker Efficiencies Through Asymptotic Approximation and Simulation of Fick's Law Systems, 2019

Selected Presentations (2015 - present)

- 2015, Modeling mucus flow, Gordon Research Conference on Mucus and Cilia, Galveston, TX, Feb 10, plus 5 posters supporting the lecture
- 2015, Computational challenges in complex biological fluids, Tulane University, Scientific Computing around Louisiana workshop, plenary, March 21

- 2015, Mathematics of Living Fluids, American Mathematical Society Regional Meeting, plenary, Huntsville, AL, March 28
- 2015, Data-Driven Modeling of Living Fluids, Department of Mathematics, Applied Mathematics & Statistics, Case Western Reserve, Cleveland, OH, April 13
- 2015, The Virtual Lung Project at UNC, Origins Institute, Case Western Reserve University, Cleveland, OH, evening public lecture, April 14
- 2015, Mathematics of Complex Fluids either Living or Critical to Life, NYU Shanghai, International Conference on Mathematics of Nonlinearity in Neural and Physical Science, NYU Shanghai University, Shanghai, China, June 10
- 2015, Dynamic Organization of the Yeast Genome, Institute for Nonlinear Science, Shanghai Xiao Tong University, Shanghai, China, June 12
- 2015, Diffusion in Mucus is not Normal, even in Normals, Society for Mathematical Biology Annual Meeting, Atlanta, GA, July 2
- 2015, Quantification of anomalous diffusion in mucus: the miner's canary of human health, Workshop on Advances in Scientific Computing and Applied Mathematics, 70th Birthday Celebration of Max Gunzburger, Las Vegas, NV, Oct 10
- 2015, Diffusive transport of particles in mucus, in sickness and in health, Daniel Inouye School of Pharmacy, Hilo, Hawaii, Dec 9
- 2015, Modeling the physical structure and function of living biological soft matter, PacifiChem 2015, Session on The Physical Structure & Function of Biological and Bioinspired Soft Matter, Honolulu, Hawaii, Dec 16
- 2016, Anomalous diffusion in mucus: signatures of health and disease, UC-Boulder, Computational Math Group, February 23, 2016
- 2016, Anomalous diffusion in mucus: signatures of health and disease, Colorado School of Mines, Applied Mathematics and Statistics, February 26, 2016
- 2016, Dynamic Organization of DNA in Living Yeast, Lecture 1 (Colloquium) of the Magnus Lectures, Department of Mathematics, Colorado State University, April 4
- 2016, The Virtual Lung Project at UNC, Lecture 2 (Public) of the Magnus Lectures, Department of Mathematics, Colorado State University, April 5
- 2016, Transient Anomalous Diffusion in Mucus Gels and Other Biological Fluids, Lecture 3 (Technical) of the Magnus Lectures, Department of Mathematics, Colorado State University, April 6
- 2016, Mucus Microrheology as an Assay for Disease Progression & Drug Treatment, Minisymposium on Modeling, Analysis, and Simulations of Biological Complex Fluids, Philadelphia, PA, May 8
- 2016, Human Lung Mucus Rheology at Microscopic and Macroscopic Scales: Implications for Flow Modeling & Simulations, SIAM Mathematical Aspects of Material Sciences, Minisymposium on Soft Matter & Complex Biological Systems, Philadelphia, PA, May 9
- 2016, Microscale Heterogeneity and Equilibrium Viscoelasticity of Biological Hydrogels, Kimberly Clark Corporation, Appleton, WI, December 8
- 2017, Molecular-to-micron scale experiments and the role of mathematics in "big data to knowledge" in biology and biomedicine, SIAM Southeastern Regional Conference, Florida State University, Tallahassee, FL, plenary lecture, March 18
- 2017, Mathematics exploits in experimental biology & personalized medicine, BAMM (Biology and Medicine Through Mathematics) Conference, Virginia Commonwealth University, Richmond, VA, plenary lecture, May 18
- 2017, "If I give you a bucket of mucus, what experiments would you perform to characterize and model it?", Recent Advances in Nonlinear Waves, A conference in honor of Harvey Segur's 75th birthday, U. Washington, Seattle, WA, August 2
- 2018, Lecture Series at the International School on Computational Principles to Organize Complexity: Success Stories in Quantitative Biology, Lecture 1: "Mucus is hot": micro and macro rheology of mucus are bellwethers of pulmonary health; Lecture 2: "Weak

beats strong": a paradigm of molecular kinetics in biology; Lecture 3: "A happy collaboration": when experimental data analytics & model selection yield model recovery of experimental data, Organizers: A. Seminara, C. Rycroft, T. Fai, M. Neri, Nice, France, June 25-29

- 2018, "A mechanistic paradigm for biological self-organization and functional properties: the power of weak binding", SIAM Conference on Mathematical Aspects of Materials Science, Portland, OR, plenary lecture, July 12
- 2018, "An emerging mechanistic paradigm for self-organization and functional properties of biological materials: the power of weak binding", the Householder lecture, Oak Ridge National Laboratory, Computational & Applied Mathematics Group, and University of Tennessee, Knoxville, Department of Mathematics, November 16
- 2019, "The power of weak binding in biological systems", NSF-Simons Southeast Center for Mathematics and Biology, Workshop on Particle Tracking Techniques and Live Cell Imaging, Tulane University, New Orleans, LA, Organizers: Christine Payne (Duke) and Scott McKinley (Tulane), February 9
- 2019, "An emerging paradigm in biology: the power of weak binding", Richard DiPrima lecture, Rensselaer Polytechnic Institute, Troy, NY, April 15
- 2019, "An emerging paradigm in biology: the power of weak binding", plenary lecture, the Alberta Mathematics Dialogue, University of Alberta, Augustana Campus, May 2
- 2019, "An emerging paradigm in biology: the power of weak binding", minisymposium at the International Congress of Industrial and Applied Mathematics, Valencia, Spain, Mini-symposium on Stochastic Dynamics of Biological Cells and Fluids, Organizers: Pete Kramer (RPI) and Scott McKinley (Tulane), July 17
- 2019, "An emerging paradigm in biology: the power of weak binding", 2019 International Graduate Summer School on Soft Matter and Non-Equilibrium Physics, Xiamen University, Xiamen, China, August 12
- 2019, "Beyond mapping the genome: how do genes function?", Department of Mathematical Sciences, Zhejiang University, Hangzhou, China, August 14

Professional Activities and Service (Recent)

- Associate Director, Statistical and Applied Mathematical Sciences Institute (SAMSI), an NSF-DMS Research Institute awarded jointly to Duke, NC State, and UNC, 2018-present
- Chair, External Advisory Board, UC-Irvine NSF-Simons Center for Multiscale Cell Fate Research, August 2019 – present
- Co-PI and Co-Director (with Michael Kosorok, UNC Biostatistics) of NIH Big Data to Knowledge in Biomedicine Graduate Training Program, 2015 - present
- Co-Chair with Layna Mosley (Political Science), Data Science Working Group, UNC Chapel Hill, College of Arts & Sciences, Sep 2018 - present
- Chair, External Advisory and Review Board, Materials Assembly and Design Excellence in South Carolina (MADE in SC), NSF-funded, 09/01/17 – present
- External Advisory and Review Board, South Carolina Project on Organ Biofabrication, NSF-NIH funded, 2009-2016; Chair, 2010-2016
- Co-Director, UNC Institute for Advanced Materials, Nanoscience & Technology, 2002-2012; Interim Director, Sep 2012 - Jan 2013
- Chair, SIAM Activity Group on the Life Sciences, Jan 2013 - Dec 2014
- Steering Committee, UNC Center Cancer Nanotechnology Excellence, 2010-2014
- Scientific Advisory Committee, NSF-Mathematical Biosciences Institute (MBI), The Ohio State University, Columbus, OH, 2011-2013
- External Advisory Committee, Institute for Applied Mathematics and Computational Science, Texas A&M University, 2009-2012

- Scientific Advisory Board, Interdisciplinary Mathematics Institute, the University of South Carolina, College of Arts and Sciences, 2010-2014
- Associate Editor for SIAM Journal on Applied Mathematics, 2000-2015
- Associate Editor for Continuum Mechanics & Thermodynamics, 2003-2018
- Editorial Board of Communications in Applied Mathematics and Computational Science, 2007-2018
- Editorial Board of Journal of Non-Newtonian Fluid Mechanics, 2010-2018
- Editorial Board of Advances in Computational Mathematics, 2014-2016
- Organizing Committee, SIAM Conference on the Life Sciences, San Diego, CA, August 7-11, 2012
- Co-Chair, Organizing Committee, Workshop on Cilia- and Flagella-Induced Fluid Mechanics, Mathematical Biosciences Institute, Ohio State, Oct 15-18, 2012
- Scientific Advisory Board for the Mathematics of Liquid Crystals research programme (http://www.newton.ac.uk/programmes/MLC/index.html) at the Isaac Newton Institute, University of Cambridge, Jan 7 – July 5, 2013
- Co-Chair (with Felix Otto), SIAM Conference on Mathematical Aspects of Materials Science, June 9-12, 2013
- Chair, Organizing Committee, Mathematics of Nonlinearity in Neural and Physical Science, NYU Shanghai University, Shanghai, China, June 8-10, 2015
- SIAM Nominating Committee for elected officers, 2017-2018