

CURRICULUM VITAE

Qi Wang

CONTACT INFORMATION

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RESEARCH AREAS

- Applied and Computational Mathematics
- Multi-scale Modeling and Computation of Soft Matter/Complex Fluids and Polymer-Particulate Nanocomposites
- Kinetic Theory and Continuum Mechanics Theory
- Computation and Modeling of Cell Dynamics, Biofilms and Actin Filament Dynamics
- High Performance and Parallel Computing

EDUCATION

- Ph. D., Mathematics, The Ohio State University, Columbus, Ohio, 1991
- M. S., Mathematics, The Ohio State University, Columbus, Ohio, 1988
- B. S., Mathematics, Nankai University, Tianjin, P. R. China, 1982

PROFESSIONAL EMPLOYMENT

2008- **Professor**, Department of Mathematics, University of South Carolina
2003-2009 **Professor**, Department of Mathematics, Florida State University (FSU)
2001-2003 **Associate Professor**, Department of Mathematics, FSU
1991-2001 **Assistant, Associate Professor**, Department of Mathematical Sciences,
Indiana University-Purdue University Indianapolis (IUPUI)
1/1999-5/1999 **Visiting Associate Professor**, Department of Mathematics, University of
North Carolina at Chapel Hill (UNC-CH)
1/1990-4/1990 **Research Associate**, CNLS, Los Alamos National Lab, New Mexico

OTHER POSITIONS

2008- **Theory, Modeling, and Simulation Thrust Leader**, NanoCenter at USC, University of
South Carolina
2008- **Founding Member**, Interdisciplinary Mathematics Institute, University of South Carolina
2008-2011 **Adjunct Professor**, Department of Chemistry and Biochemistry,
University of South Carolina
2005-2010 **S. S. Chern Professor of Applied Mathematics**, School of
Mathematics and Chern Institute of Mathematics, Nankai University, Tianjin, P. R. China
2004-2007 **Director of Applied and Computational Mathematics Program**, FSU
2/2005-4/2005 **Visiting Professor**, IMA, University of Minnesota, Minneapolis, MN
9-10/2009 **Visiting Professor**, IMA, University of Minnesota, Minneapolis, MN

RESEARCH GRANTS & CONTRACTS

Current:

- 8/4/2008-8/31/2009, **NSF-DMS** (DMS-0819051), "An integrated approach to modeling and simulations of complex fluids of microstructures, Supplemental," **PI:** \$40,000
- 9/1/2008-8/31/2011, **NSF-CMMI** (CMMI-0825630), "Collaborative Research: Investigating Bacteria-Surface Interactions by Surface Engineering and Mathematical Modeling," **PI:** \$99,999
- 8/15/2007-7/31/2009, **NSF-DMS, SCREMS** (DMS-0724273), "SCREMS: High Performance Computing and Visualization," **PI,** \$114,678
- 9/1/2006-8/31/2009, **NSF-DMS** (DMS-0605029), "An integrated approach to modeling and simulations of complex fluids of microstructures," **PI:** \$152,197
- 9/1/2006-8/31/2009, **NSF-DMS** (DMS-0626180), "MSPA-MCS: Data-Driven Parallelization of Time in Molecular Dynamics Simulations," **Co-PI:** \$ 392,890

Past:

- 12/1/2007-11/30/2008, **AFOSR** (FA9550-08-1-0107), "Modeling of high-performance polymer-nanoparticle composites and their effective material properties," **PI;** \$86,464
- 12/1/2004-11/30/2007, **AFOSR, PI;** \$148,400
- 8/1/2002-7/31/2005, **NSF-DMS, PI;** \$177,004
- 1/1/2002-12/31/2004, **AFOSR, PI;** \$137,907
- 10/15/1998-10/14/2001, **AFOSR, PI;** \$99,000
- 10/1/1995-9/30/1998, **AFOSR, PI,** \$95,000
- 6/1/1992-5/31/1995, **AFOSR, PI,** \$89,000
- International travel grants from NSF, Purdue University Foundation and Indiana University Foundation, 1995, 1996, 1998, 2000.

PUBLICATIONS

1. M. G. Forest and Q. Wang, "Change-of-Type Behavior in Viscoelastic Slender Jet Models", *Theoretical and Computational Fluid Dynamics*, **2** (1990), pp. 1-25.
2. S. E. Bechtel, M. G. Forest, and Q. Wang, "Non-isothermal Modeling of Fiber Spinning", *Recent Advances in Non-Newtonian Flows*, edited by D. A. Signer, AMD-Vol. 153, FED-Vol. **141**, ASME, New York, 1992, pp. 37-48.
3. M. G. Forest and Q. Wang, "Dynamics of Viscoelastic Slender Jets", *Siam Journal on Applied Math*, **54** (4) (1994), pp. 996-1033.
4. M. G. Forest and Q. Wang, "Numerical Simulation of Nonisothermal Fiber Spinning Processes", *Recent Advances In Non-Newtonian Flows*, edited by G. C. Vradis and D. A. Signer, FED-Vol **179**, ASME, New York, 1994, pp. 11-21.
5. Q. Wang, M. G. Forest, and S. E. Bechtel, "1-D models of Thin Filaments of Polymeric Liquid Crystals", *Developments in Non-Newtonian Flows*, edited by D. A. Signer and S. E. Bechtel, AMD-Vol **191**, FED-Vol 206, ASME, New York, 1994, pp. 109-118.
6. Q. Wang, M. G. Forest, and S. E. Bechtel, "Modeling Onset of Failure in Polymeric Liquid Filaments", *Developments in Non-Newtonian Flows*, edited by D. A. Signer and S. E. Bechtel, AMD-Vol **191**, FED-Vol 206, ASME, New York, 1994, pp. 97-108.
7. Q. Wang, "On a 1-D Thin Filament Model for Liquid Crystal Polymers", *Proceedings of the 14th Imacs World Congress*, edited by W. F. Ames, Georgia Tech, July 11-15, 1994, pp. 986-988.
8. Q. Wang, "Interfacial Instability in Core-Annular Johnson-Segalman Flows", *Developments in Non-Newtonian Flows*, edited by D. A. Signer and H. P. Wang, FED-Vol 231 AMD-Vol **66**, ASME, New York, 1995, pp. 53-63.
9. Q. Wang, S. E. Bechtel and M. G. Forest, "Modeling and Computation of the Onset of Failure in Polymeric Liquid Filaments", *Journal of Non-Newtonian Fluid Mechanics*, **58** (1995), pp. 97-129.

10. Q. Wang, "Stability of Thin Filament Flows of Polymeric Liquid Crystals", Proceedings of ICIAM 95, Hamburg, Germany, July 4-7, 1995.
11. Q. Wang, "Couette Flows of Liquid Crystal Polymers", Rheology and Fluid Mechanics of Nonlinear Materials, edited by D. A. Siginer and S. G. Advani, AMD-Vol. **217**, ASME, New York, 1996, pp. 109-122.
12. M. G. Forest, Q. Wang, and S. E. Bechtel, "1-D Models for Thin Filaments of Liquid Crystalline Polymers: Coupling of Orientation and Flow in the Stability of Simple Solutions", Physica D **99** (4) (1997), pp. 527-554.
13. M. G. Forest, Q. Wang, and S. E. Bechtel, "1 Dimensional Isothermal Spinning Models for Liquid Crystalline Polymer Fibers", Journal of Rheology **41** (1997), pp. 821-850.
14. Q. Wang, "Comparative Studies on Closure Approximations in Flows of Liquid Crystal Polymers. I. Elongational Flows", Journal of Non-Newtonian Fluid Mechanics, **72** (1997), pp. 141-162.
15. Q. Wang, "Comparative Studies on Closure Approximations in Flows of Liquid Crystal Polymers. II. Fiber Flows", Journal of Non-Newtonian Fluid Mechanics, **72** (1997), pp. 163-185.
16. Q. Wang, "Biaxial Steady States and Their Stability in Shear Flows of Liquid Crystal Polymers", Journal of Rheology, **41** (1997), pp. 943-970.
17. M. G. Forest and Q. Wang, "The Role of Microstructure in Taming the Raleigh Instability of Cylindrical Jets", Physica D, **123** (1998), pp. 161-182.
18. M. G. Forest and Q. Wang, "Anisotropic microstructure-induced reduction of the Raleigh instability for liquid crystalline polymers", Physics Letters A, **245** (1998), pp. 518-526.
19. Q. Wang, M. G. Forest and H. Zhou, "Dynamics of free surface and pure elongational flows of liquid crystalline polymers", Rheology and Fluid Mechanics of Nonlinear Materials, edited by D. A. Siginer and D. DeKee, FED-Vol 246, MD-Vol **81**, ASME, New York, 1998, pp. 101-114.
20. S. E. Bechtel, M. G. Forest, Q. Wang and Hong Zhou, "Free Surface Viscoelastic Fibers and Jets", Advances in the Flow and Rheology of Non-Newtonian Fluids Parts A and B, Elsevier Science, 1999, pp. 1069-1116.
21. Q. Wang and M. G. Forest, "Near-equilibrium dynamics of Doi models for liquid crystal polymer flows: catastrophic and regularized behavior", Journal of Non-Newtonian Fluid Mechanics, **83** (1999), pp. 131-150.
22. M. G. Forest, H. Zhou and Q. Wang, "A model study of the spinning of thermotropic liquid crystalline polymers: fiber performance predictions and bounds on throughput", Advances in Polymer Technology, **18** (4) (1999), pp. 314-335.
23. M. G. Forest, Q. Wang and H. Zhou, "Nonhomogeneous patterns and core defects in elongational flows of liquid crystalline polymers", Journal of Rheology, **43** (6) (1999), pp. 1573-1583.
24. M. G. Forest, Q. Wang and H. Zhou, "Homogeneous pattern selection and director instabilities of nematic liquid crystal polymers induced by elongational flows", Physics of Fluids, **12** (3) (2000), pp. 490-498.
25. Q. Wang, "Special cylindrical free surface jets of liquid crystalline polymers and their stability", Journal of Non-Newtonian Fluid Mechanics, **90** (2000), pp. 25-45.
26. M. G. Forest, H. Zhou and Q. Wang, "Thermotropic liquid crystalline polymer fibers", Siam Journal on Applied Math, **60**(4) (2000), pp. 1177-1204.
27. Q. Wang, "Illposedness in thermomechanically consistent constrained theory for materials with prescribed temperature-dependent density" Journal of Applied Mechanics, **67** (2000), pp. 29-32.
28. M. G. Forest, Q. Wang and H. Zhou, "Exact banded patterns from a Doi-Marrucci-Greco model of nematic liquid crystal polymers", Physical Review E, **61** (6) (2000), pp. 6655-6662.
29. M. G. Forest, Q. Wang and H. Zhou, "Methods for the exact construction of mesoscale spatial structures in liquid crystal polymers", Physica D **152** (2001), pp. 288-309.
30. M. G. Forest, Q. Wang and H. Zhou, "On the phase diagram for discotic liquid crystals in simple elongational flows", Liquid Crystals, **28** (5) (2001), pp. 717-720.
31. Q. Wang, "The role of Surface Elasticity in Capillary Instability of Cylindrical Jets of Liquid Crystalline Polymers", Journal of Non-Newtonian Fluid Mechanics, **100** (1-3) (2001), pp. 97-114.
32. Q. Wang, "A hydrodynamic theory of nematic liquid crystalline polymers of different configurations", Journal of Chemical Physics, **116** (2002) pp. 9120-9136,

33. Qi Wang, Weinan E, Chun Liu, and Pingwen Zhang, "Kinetic theories for flows of nonhomogeneous rodlike liquid crystalline polymers with a nonlocal intermolecular potential", *Physical Review E*, **65**(5) (2002), pp. 0515041-0515047.
34. M. G. Forest and Q. Wang, "Monodomain response of finite-aspect-ratio macromolecules in shear and related linear flows", *Rheological Acta*, **42** (2003), pp. 20-46.
35. M. G. Forest, Q. Wang, and R. Zhou, "Symmetries of the Doi kinetic theory for nematic polymers of finite and infinite aspect ratio: at rest and in linear flows," *Physical Review E*, **66**(3) (2003), P031712.
36. M. G. Forest, Q. Wang, and R. Zhou, "Explicit flow-aligned orientational distribution function for dilute nematic polymers in weak shear," *RHEOLOGY AND FLUID MECHANICS OF NONLINEAR MATERIALS*, edited by D. A. Siginer, D. DeKee, and S. Bakhtiyarov, ASME, New York, 2002.
37. M. G. Forest, Q. Wang, and R. Zhou, "Full tensor alignment criteria for sheared nematic polymers", *J. of Rheology*, **47**(1) (2003), pp. 105-127.
38. S. E. Bechtel, M. G. Forest, F. J. Rooney, and Q. Wang, "Thermal Expansion Models of Viscous Fluids Based on Limits of Free Energy", *Physics of Fluids*, **15**(9) (2003), 00. 2681-2693.
39. Q. Wang, M. G. Forest and R. Zhou, "A hydrodynamic theory for solutions of nonhomogeneous nematic liquid crystalline polymers with density variations," *J. of Fluid Engineering*, **126** (2004), pp180-188.
40. M. G. Forest, Q. Wang, and R. Zhou, "The weak shear phase diagram for nematic polymers," *Rheological Acta*, **43**(1) (2004), pp. 17-37.
41. M. G. Forest, R. Zhou, and Q. Wang, "Scaling behavior of kinetic orientational distributions for dilute nematic polymers in weak shear," *J. Non-Newtonian Fluid Mechanics*, **116** (2004), pp. 183-204.
42. M. G. Forest, Q. Wang, H. Zhou, and R. Zhou, "Scaling Structure scaling properties of confined nematic polymers in plane Couette cells: the weak flow limit," *J. Rheology*, **48**(1) (2004), pp.175-192.
43. M. C. Calderer, M. G. Forest, and Q. Wang, "Kinetic Theories and Mesoscopic Models for Solutions of Nonhomogeneous Liquid Crystal Polymers," *J. Non-Newtonian Fluid Mechanics*, **120** (2004), pp. 69-78.
44. M. G. Forest, Q. Wang, R. Zhou, and E. Coate, "Monodomain response of arbitrary aspect ratio nematic polymers in general linear planar flows," *J of Non-Newtonian Fluid Mechanics*, **118**(1) (2004), pp. 17-31.
45. S. E. Bechtel, F. Rooney, and Q. Wang, "A thermodynamic definition of pressure for incompressible viscous fluids," *International J. of Engineering Science*, **42** (19-20) (2004), pp. 1987-1994.
46. M. G. Forest, Q. Wang, and R. Zhou, "The flow-phase diagram of Doi-Hess theory for sheared nematic polymers II: finite shear rates," *Rheological Acta*, **44** (1) (2004), pp. 80-93.
47. S. E. Bechtel, M. G. Forest, F. Rooney, and Q. Wang, "Investigation of simplified thermal expansion models compressible Newtonian Fluids applied to nonisothermal plane Couette and Poiseuille flows," *Physics of Fluids*, **16** (11) (2004), pp. 3955-3974.
48. M. G. Forest, R. Zhou, and Q. Wang, "Chaotic boundaries of nematic polymers in mixed shear and extensional flows," *Physical Review Letters*, **93** (8) (2004), pp. 088301-088305.
49. X. Zheng, M. G. Forest, R. Zhou, and Q. Wang, "Likelihood and expected -time statistica of monodomain attractors in sheared discotic and rodlike nematic polymers," *Rheological Acta*, **44** (3) (2005), pp. 219-234.
50. X. Zheng, M. G. Forest, R. Lipton, R Zhou, and Q. Wang, "Exact scaling laws for electrical conductivity properties of nematic polymer nano-composite monodomains," *Advanced Functional Materials*, **15** (4) (2005), pp. 627-638.
51. R. Zhou, M. G. Forest, and Q. Wang, "Kinetic structure simulations of nematic polymers in plane Couette cells, I: The algorithm and benchmarks," *SIAM MMS*, **3** (4) (2005), pp. 853-870.
52. H. Zhou, M. G. Forest, X. Zheng, Q. Wang, and R. Lipton, "Extension-enhanced conductivity of liquid crystalline polymer nano-composites," *Macromolecular Symposia*, **228** (2005), pp. 81-89.

53. M. G. Forest, R. Zhou, Qi Wang, X. Zheng, and R. Lipton, "Anisotropy and Heterogeneity of Nematic Polymer Nano-Composite Film Properties," IMA Volume **141**, *Molding of Soft Matter*, ed. M. C. T. Claderer and E. M. Terenjev, Springer, pp. 85-98, 2005.
54. H. Zhou, H. Wang, M. G. Forest, and Q. Wang, "A new proof on uniaxial equilibria of Smoluchowski equation for rodlike nematic polymers," *Nonlinearity*, **18** (2005), pp. 2815-2825.
55. M. G. Forest, R. Zhou, and Q. Wang, Kinetic structure simulations of nematic polymers in plane Couette cells, II. *SIAM MMS*, **4** (2005), pp. 1280-1304.
56. M. G. Forest, R. Zhou, Qi Wang, X. Zheng, and R. Lipton, "Anisotropy and dynamics ranges in effective properties of sheared nematic polymer nano-composites," *Advanced Functional Materials*, **15** (2005), pp. 2029-2035.
57. Q. Wang, S. Sircar, and H. Zhou, "Steady state solutions of the Smoluchowski equation for nematic polymers under imposed fields," *Communications in Mathematical Sciences*, **4** (3) (2005), 605-620.
58. M. G. Forest and Q. Wang, Hydrodynamic theories for blends of flexible polymer and nematic polymers, *Physical Review E*, **72** (2005), pp. 041805.
59. Z. Cui, M. G. Forest, and Q. Wang, "On weak plane Couette and Poiseuille flows of rigid rod and platelet ensembles," *Siam Journal on Applied Math*, **66**(4) (2006), pp. 1227-1260.
60. Z. Cui, M. C. Calderer, Q. Wang, "A kinetic theory for flows of cholesteric liquid crystal polymers," *Discrete and Continuous Dynamical Systems-Series B*, **6** (2) (2006), pp 291-310.
61. Z. Cui and Q. Wang, "A continuum mechanics model for flows of chiral nematic polymers and permeation flows," *J. of Non-Newtonian Fluid Mechanics*, **128** (1) (2006), pp. 44-61.
62. G. Ji, Q. Wang, P. Zhang, H. Zhou, "Study of phase transition in homogeneous, rigid extended nematics and magnetic suspensions using an order-reduction method," *Physics of Fluids*, **18** (2006), pp. 123103 (1-17).
63. M. G. Forest, S. Sircar, Q. Wang, and R. Zhou, "Monodomain dynamics for rigid rod & platelet suspensions in strongly coupled coplanar linear flow and magnetic fields II: Kinetic theory ", *Physics of Fluids*, **18** (10) 2006, pp. 103102 (1-14).
64. A. Kataoka, B. C. W. Tanner, J. M. Macpherson, X. Xu, Q. Wang, M. Reginier, T. Daniel and P. B. Chase, "Spatially explicit, nanomechanical models of the muscle half sarcomere: Implications for mechanical tuning in atrophy and fatigue," *Acta Astronautica*, **60** (2) (2007), pp 111-118.
65. H. Zhou, H. Wang, Q. Wang, and M. G. Forest, "Characterization of stable kinetic equilibria of rigid, dipolar rod ensembles for coupled dipole-dipole and excluded-volume potentials," *Nonlinearity*, **20** (2007), 27-297.
66. M. G. Forest, Q. Wang, and R. Zhou, "Monodomain dynamics for rigid rod & platelet suspensions in strongly coupled coplanar linear flow and magnetic," *J. Rheology*, **51** (2007), pp. 1-21.
67. M. G. Forest, R. Zhou, and Q. Wang, "Nano-rod suspension flows: a 2D Smoluchowski-Navier-Stokes solver", *International Journal of Numerical Analysis and modeling*, **4** (3-4) (2007), pp. 478-488.
68. H. Zhou, H. Wang, and Q. Wang, "Nonparallel solutions of extended nematic polymers under an external field," *Discrete and Continuous Dynamical Systems-Series B*, **7** (4) (2007), pp. 907-929.
69. H. Zhou, M. G. forest, and Q. Wang, "Anchoring-induced texture & flow feedback of nematic polymers in shear cells," to appear *Discrete Dynamical Systems Series B*, **8** (3) (2007), pp. 707-733.
70. M. G. Forest, R. Zhou, and Q. Wang, "Microscopic-Macroscopic Simulations of Rigid-Rod Polymer Hydrodynamics: Heterogeneity and Rheochaos," *Siam Journal on Multiscale Modeling and Simulation*, *MMS*, **6** (3) (2007), pp. 858-878.
71. G Ji, Q. Wang, P. Zhang, H. Wang, and H. Zhou, "Steady states of homogeneous, rigid, extended nematic polymers under imposed magnetic fields and their stability," *Communication in Mathematical Sciences*, **5**(4) (2007), pp. 917-950.
72. T. Y. Zhang, N. Cogan, and Q. Wang, "Phase Field Models for Biofilms. II. 2-D Numerical Simulations of Biofilm-Flow Interaction," *Communications in Computational Physics*, **4** (2008), pp. 72-101.

73. Xiaofeng Yang, Zhenlu Cui, M. G. Forest, Qi Wang, and Ruhai Zhou, Dimensional Robustness & Instability of Sheared Semi-dilute, Nano-rod Dispersions, *Siam Journal on Multiscale Modeling and Simulation*, 7 (2008), 622-654.
74. T. Y. Zhang, N. Cogan, and Q. Wang, "Phase Field Models for Biofilms. I. Theory and 1-D simulations," *Siam Journal on Applied Math*, 69 (3) (2008), 641-669.
75. J. Lee, M. G. Forest, Q. Wang, and R. Zhou, "Dipole-induced bi-stability and hysteresis in nanorod monolayers," *Physics Letters A*, 372 (2008), 3484-3487.
76. Sarthok Sircar and Qi Wang, Shear induced mesostructures in biaxial liquid crystal polymers, *Phys. Rev. E.*, 78 (2008), 061702.
77. X. Yang, M. G. Forest, W. Mullins and Q. Wang, Dynamic defect morphology and hydrodynamics of sheared nematic polymers in two space dimensions, *J. of Rheology*, to appear 2009.
78. Qingqing Liao, M. G. Forest, and Qi Wang, "2-D Kinetic Theory for Polymer Particulate Nanocomposites," *Communication in Computational Physics*, to appear 2009.
79. X. Yang, M. G. Forest, Q. Wang, W. Mullins, Quench sensitivity to defects and shear banding in nematic polymer film flows, *Journal. Non-Newtonian Fluid Mechanics*, to appear 2009.
80. Jun Li, Sarthok Sircar, and Qi Wang, A Note on the Kinematics of Rigid Molecules in Linear Flow Fields and Kinetic Theory for Biaxial Liquid Crystal Polymers, *Electronic-Liquid Crystal Communications, International Journal of Emerging Multidisciplinary Fluid Mechanics*, 1(2) (2009), 115-126.
81. Jun Li and Qi Wang, "Flow Driven Dynamics of Sheared Flowing Polymer-Particulate Nanocomposites," *Discrete and Continuous Dynamical Systems-Series B*, to appear 2009.
82. T. Y. Zhang and Q. Wang, Cahn-Hilliard vs Singular Cahn-Hilliard Equations in Phase Field Modeling, *CICP*, to appear, 2009.
83. L. Nguyen, W. Yang, Q. Wang, and L. Hirst, Molecular dynamics simulation of F-actin reveals the role of cross-linkers in semi-flexible filament, *Soft Matter*, 2009.
84. Sarthok Sircar and Qi Wang, Dynamics and rheology of ellipsoidal suspensions in shear flows, *Journal of Rheology*, to appear 2009.
85. Sarthok Sircar and Qi Wang, Biaxial Phases of Bent-core Liquid Crystal Polymers in Shear Flows, *Communications in Mathematical Sciences*, to appear 2009.

PAPERS SUBMITTED

86. Q. Wang and T. Y. Zhang, "Kinetic theories for Biofilms", submitted to *DCDS-B*, 2008.
87. Jun Li, M. G. Forest, Qi Wang and R. Zhou, "Flows of polymer-particulate nanocomposites: weakly semiflexible limit," submitted to *Journal of Computational and Theoretical Nanotechnology*, 2008.
88. Jinsong Hua, Ping Lin, Chun, Liu, Qi Wang, Energy Law Preserving C^0 Finite Element Schemes for Phase Field Models in Two-phase Flow Computations, submitted to *Siam J. Sci. Comp.*, 2008.
89. Xiaofeng Yang, M. Greg Forest, William Mullins, and Qi Wang, Tensorial defect diagnostics for nematic polymers, submitted to *Nature Materials*, 2008.
90. Jianyang Liu, George G P Xiang, Q. Wang, "Variational approach to risk-adjusted performance measures," Submitted to *Journal of Risk*, 2008.
91. Xiaofeng Yang, M. Gregory Forest, William Mullins, and Qi Wang, 2-D Lid-driven Cavity Flow of Nematic Polymers: An unsteady Sea of Defects, submitted to *Soft Matter*, 2009.
92. Sarthok Sircar and Qi Wang, Oscillatory shear rheology of biaxial liquid crystal polymers, submitted to *Rheological Acta*, 2009.
93. Brandon Lindley and Qi Wang, Multicomponent models for biofilm flows, submitted to *DCDS-B*, 2009.
94. Jun Li and Qi Wang, Polymer-particulate nanocomposites in monodomains, 2009
95. Guanghua Ji and Qi Wang, Inhomogeneous flows of polymer-particulate nanocomposites, submitted to *DCDS-B*, 2009.
96. M. G. Forest, J. Li, Q. Wang, and R. Zhou, Stability of the steady state in flows of polymer-particulate nanocomposites in the regime of low volume fraction, submitted to *Soft Matter*, 2009.

REVIEW ARTICLES

97. Q. Wang and T. Y. Zhang, Mathematical models for biofilms, Communication in Solid State Physics, 2009.
98. M. G. Forest and Q. Wang, Mathematical problems in complex fluids, Nonlinearity, 2009.

BOOK CHAPTERS

99. Q. Wang, "Introduction to Constitutive Modeling of Macromolecular," DYNAMICS IN MODELS OF COARSENING, COAGULATION, CONDENSATION AND QUANTIZATION, Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore, edited by W. Bao and J. Liu, World Scientific, Singapore, 2007.
100. Q. Wang, "Introduction to kinetic theory for complex fluids", in a book on Complex Fluids, in the Contemporary Applied Mathematics (CAM) series, edited by P. G. Ciarlet and Tatsien Li, Higher Education Press and World Scientific, 2008.

SPECIAL ISSUES and BOOKS EDITED

101. W. Kang, K. Liang, Q. Wang, Special Issue for Discrete and Continuous Dynamical System Series B, 8 (3), 2007.
102. An Chang Shi, Qi Wang, and Pingwen Zhang, Structure Formation and Evolution in Soft Matter/Complex Fluid Systems, CICP, 2009.

CONFERENCE PROCEEDINGS

103. Dacheng Ren, Qi Wang, and Yan-Yeung Luk, Collaborative Research: Investigating Bacteria-Surface Interactions by Surface Engineering and Mathematical Modeling, 2009.

TEACHING EXPERIENCE, CURRICULAR DEVELOPMENT, & STUDENT ADVISING

Undergraduate Courses:

- Algebra, Finite Mathematics, Brief Survey of Calculus I, Algebra & Trigonometry I, II, Calculus for Technology I, II, Integrated Calculus & Analytical Geometry I, II, Calculus I & II, Multivariate Calculus, Linear Algebra & Differential Equations, Ordinary differential equations, Discrete Mathematics, Engineering Mathematics I, II, Elementary Partial Differential Equations I, II

Graduate Courses:

- Linear Algebra with Applications, Vector Calculus, Partial Differential Equations I, II, Applied Mathematics Methods I, II, Computational Methods I, II, Computational Methods for Partial Differential Equations I, II, Boundary Value Problems, Qualitative Theory of Ordinary Differential Equations, Mathematical Modeling, Numerical Linear Algebra, Wave propagation (linear and nonlinear waves), Modeling of Complex Fluids

Curriculum Development:

- Developed a new masters degree program in industrial and applied mathematics.
- Developed a yearlong sequence of courses on computational mathematics for the new masters degree program in industrial and applied mathematics and another sequence on computational methods for partial differential equations for advanced graduate students.

- Was the program coordinator from 2000-2001 for the Industrial and Applied Mathematics program at IUPUI.
- Renovated the applied mathematics curriculum at FSU.

Graduate Student Advising:

Current Ph. D. students:

Xiangrong Xu, expected graduation date, August, 2009,
 Jun Li, expected graduation date, August, 2010,
 Kanadpriya Basu, expected graduation date, August, 2011,
 Paisa Seeluangsawat, expected graduation date, May, 2012,
 Xiaogang Yang, expected graduation date, May, 2013.

Current MS students:

Ying Liu, expected graduation date, July, 2010.

Past Ph. D. students:

Sarthok Sircar (Ph.D., 2009), Postdoctoral Associate, Department of Mathematics, University of Utah,
 Zhenlu Cui (Ph.D, 2005), Assistant Professor, Department of Mathematics, Fayetteville State University,
 North Carolina.

Past MS students:

8 MS graduates currently work in insurance, financial, and computer industries.

Postdoctoral Mentoring:

Current Postdocs:

Dr. Brandon Lindley,
 Dr. Guanghua Ji, Lecturer, Beijing Normal University.

Past Postdocs:

Dr. Tianyu Zhang, tenure-track Assistant Professor, Montana State University, Bozeman, Montana.

INVITED PRESENTATIONS (since 2000)

Applied math seminar and colloquium (since 1999)

- University of North Carolina at Charlotte, April 15, 2009
- Wilfrid Laurier University, April 8, 2009
- Indiana University-Purdue University Indianapolis, Oct. 2, 2008
- University of South Carolina, Jan., 2008
- Peking University, Dec. 2007
- Old Dominion University, Colloquium, Oct, 2007
- Old Dominion University, Public Lecture, Oct., 2007
- University of Central Florida, Nov. 2007
- Beijing Normal University, Sep. 2007
- Purdue University, November, 2006
- UC Santa Barbara, May, 2006
- University of Akron, March, 2006
- Nankai University, School of Mathematics, Tianjin, July, 2005
- Peking University, School of Mathematics, Beijing, June, 2005
- IMA, University of Minnesota, April, 2005

- Peking University, School of Mathematics, Beijing, 2004
- Fudan University, Department of Mathematics, Shanghai, 2004
- University of Texas Arlington, Arlington, Texas, 2004
- University of Central Florida, Orlando, FL, 2004
- University of California, Irvine, CA, 2003
- Temple University, Philadelphia, PA, 2003
- University of Minnesota, Minneapolis, MN, 2002
- Carnegie-Mellon University, Pittsburgh, PA, 2002
- Penn State University, State College, PA, 2002
- Morningside center, Academia Sinica, Beijing, PRC, 2001
- Center for computational mathematics, Academic Sinica, Beijing, PRC, 2001
- Clemson University, Clemson, SC, 2001
- Louisiana State University, Baton Rouge, LA, 2000
- University of California, Davis, CA, 2000
- University of Delaware, Newark, DE, 2000
- University of Michigan, Ann Arbor, MI, 1999
- Purdue University, West Lafayette, IN, 1999

National and international meetings (since 2000)

- The Sixth International Conference for Mesoscopic Methods in Engineering and Science (ICMMES-2009), Guangzhou, China, July 13-17, 2009
- Workshop on Dynamical Systems and Modern Applied Mathematics, HuaZhong Science and Technology University, Wuhan, China, June 20, 2009.
- Symposium on modeling and computation of soft matter materials, Siam Southeastern Regional Meeting, April 4, 2009
- Special Topic Session on complex fluids, IMACS, Athens, GA, March, 2009
- Minisymposium on theoretical and computational modeling of soft matter and complex fluids, Siam CSE, Miami, March 2-6, 2009
- IMA Special Workshop: Scientific Challenges in Solar Energy Conversion and Storage, University of Minnesota, November 1, 2008
- MMM2009, Tallahassee, FL, Oct. 28-31, 2008
- Minisymposium, Siam Annual Meeting, San Diego, CA, July 7-11, 2008.
- World Congress of Nonlinear Analysts, Orlando, FL, July 2-9, 2008.
- Kavli Institute, Institute of Physics, Chinese Academy of Science, Beijing, P. R. China, May19-25, 2008.
- Ferroelectric phenomenon, AIMS, Stanford, CA, May 12-16, 2008.
- Workshop on structure formation in soft matter/complex fluids, BICMR, Peking University, Dec. 2007.
- Symposium on Modeling and Simulation of Complex Fluids, ASME, Nov., 2007
- Minisymposium on advances in advanced materials, ICIAM07, Zurich, Switzerland, July, 2007.
- Workshop on Multiscale modeling in complex fluids, CSCAMM, University of Maryland, April, 2007.
- Minisymposium on Recent Advances in Soft Matter and Complex Fluids, Siam Conference on Computational Science and Engineering, Costa Mesa, CA, Feb. 2007.
- AMS-SIAM joint symposium on materials, New Orleans, LA, Jan. 2007
- Symposium on complex fluids, SES2006, Penn State University, PA, 2006.
- 2006 International Conference on Applied Mathematics and Interdisciplinary Research-Nankai, Tianjin, P. R. China
- Workshop on Complex Fluids, Peking University, Beijing, 2006
- Interfacial Dynamics in Complex Fluids, May, Banff, Canada, 2006
- Workshop on Stochastic Differential Equations, FSU, February, 2006
- New Challenges in composite materials, AFOSR/AFL, Dayton, 2005

- Effective theories for nanocomposite materials, IMA workshop, 2005
- Nanoscale Material Interfaces: Experiment, Theory, and Simulation, Singapore, Jan. 11-15, 2005.
- CRM Workshop on Multiscale Rheological Models for Fluids, University of Montreal, Canada, 2004.
- Workshop on Complex Fluids, Peking University, Beijing, 2004.
- Department of Energy Workshop on Multiscale Challenges, Denver, Co, 2004.
- Special Session on soft matters, AMS southeastern sectional meeting, Chapel Hill, NC, 2003.
- Symposium on Modeling and Simulation of Multiscale Fluids, International Congress on Industrial and Applied Mathematics, Sydney, Australia, 2003.
- International Workshop on non-equilibrium thermodynamics, Princeton, NJ, 2003.
- Special Session on PDE and Its Applications, AMS Annual Meeting, San Diego, 2002
- The Second Siam Meeting on Mathematical Issues in Materials Science, Philadelphia, PA, 2000.

Tutorial Lectures (since 2000)

- Complex Fluids Summer School, Fudan University, June –July, 2006
- Workshop II, Nanoscale Material Interfaces: Experiment, Theory, and Simulation, Singapore, Jan. 3-8, 2005
- Complex Fluids, Fudan University, June, 2004.

SYMPOSIA & WORKSHOPS ORGANIZED RECENTLY (since 2000)

- Symposium on modeling and computation of soft matter materials, Siam South Eastern Regional Meeting, Columbia, SC, April 4-5, 2009
- Special Topics Session, IMACS, Athens, GA, March 23-26, 2009
- Minisymposium, Siam CSE, Miami, March 2-6, 2009
- Wave Propagation in Nonlinear Materials, 7th AIMS Dynamical System Meeting, Arlington, Texas, May, 2008
- Multiscale Modeling and Computation Workshops on Soft Matter and Complex Fluids, International Center of Mathematics, Peking University, Beijing, P. R. China, September, 2007-May, 2008
- Minisymposium on Recent Advances in Soft Matter and Complex Fluids, Siam Conference on Computational Science and Engineering, Costa Mesa, CA, 2007.
- Symposium on complex fluids, SES2006, Penn State University, PA, 2006.
- Workshop on Complex Fluids, Peking University, Beijing, P. R. China, 2006.
- International conference on applied mathematics and interdisciplinary research—Nankai, Tianjin, P. R. China, 2006.
- Workshop on multiscale challenges in soft matter materials, SAMSI, NC, 2004.
- AMS Special Session on Multiscale modeling of complex fluids, Tallahassee, FL, 2004.
- Symposium on Multiscale modeling and simulation of complex fluids, Siam MS04, Los Angeles, CA, 2004.
- AMS Special Session on Multiscale Challenges in Soft Matters, Chapel Hill, NC, 2003
- Mathematical Problems in Liquid Crystal Polymer, 4th Dynamical System Conference, Snow Bird, 2000

SERVICE TO THE PROFESSIONAL SOCIETY

Editorial Board:

- Discrete and Continuous Dynamical Systems- Series B, 2004-Present.
- Mathematical Methods in the Applied Sciences, 2009-.

Referee for Journals:

- Siam J. Applied Mathematics,
- Liquid Crystal and Molecular Crystal,
- Journal of Rheology,
- Journal of Non-Newtonian fluid Mechanics,
- Journal of Applied Mechanics,
- Journal of Chemical Physics,
- Rheological Acta,
- Physical Review E,
- Macromolecules,
- Journal of Physics A,
- Theoretical and Computational Fluid Dynamics,
- Communications in Mathematical Sciences,
- Communications in Computational Physics,
- Journal of Mathematical Physics,
- Polymers, Nonlinearity,
- Discrete and Continuous Dynamical systems Series B,
- Microfluidics and Nanofluidics,
- Physica D,
- Journal of Physics D,
- Nanoletters,
- Modelling and Simulation in Materials Science and Engineering,
- Abstract and Applied Analysis,
- Siam Journal on MMS,
- etc.

Referee for funding agencies:

- Grant proposals of NIH, NSF, AFOSR, NIH BEP panel, and Petroleum Fund.

SERVICE ON NATIONAL COMMITTEES

- Ohio BRCP Committee, National Academy of Arts and Sciences, 2008

SERVICE TO THE UNIVERSITY (since 2000)

- Member of Management Team, USC Nanocenter
- Committee on Computational Mathematics, Computer Committee, and Hiring Committee (USC).
- Member of departmental award, graduate, executive, faculty evaluation, professional degree, preliminary examination committees (FSU).
- Chair of the departmental hiring committee (FSU).
- Chair of the technology committee and Student Grievance Committee (IUPUI).
- Departmental representative to the university faculty senate (FSU).
- Member of the Science Area Promotion and Tenure committee in College of Arts and Sciences (FSU).

PROFESSIONAL MEMBERSHIPS

Society for Industrial and Applied Mathematics (SIAM), Society of Rheology (SOR), Material Research Society (MRS), American Physical Society (APS)

REFERENCES

Available upon request