Qi Wang

RESEARCH AREAS

Refined and interdisciplinary areas in applied and computational mathematics:

- Data Science and Machine Learning with applications in geophysical, life, and materials science
- Digital Twins in Healthcare
- Modeling and Computational Analysis of Soft Matter and Complex Biological Systems
- Fluid Mechanics of Complex Flows and Rheology of Complex Fluids
- Non-equilibrium Theories for Complex Systems (Kinetic and Continuum Mechanics Theories)
- Advanced Numerical Approaches for Partial Differential Equations
- Applied Analysis of Dynamical Systems and PDEs

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-Present: Professor, Department of Mathematics, University of South Carolina (USC), Columbia, SC
- 2013-2019: College of Arts & Sciences Distinguished Professor, Department of Mathematics, USC
- 2003-2009: Professor, Department of Mathematics, Florida State University (FSU), Tallahassee, FL
- 2001-2003: Associate Professor, Department of Mathematics, FSU
- 1991-2001: Assistant, Associate Professor, Department of Mathematical Sciences, Indiana University-Purdue University Indianapolis (IUPUI), Indiana
- 1/1990-4/1990: Research Associate, CNLS, Los Alamos National Lab (LANL), New Mexico

OTHER POSITIONS & AFFILIATIONS

- 2023-Present: Thrust Leaders of Biomedical AI core and Thrust 3 on Digital Twins in Healthcare, South Carolina's NSF EPSCOR Project on "Artificial Intelligence-enabled Devices for the Advancement of Personalized and Transformative Healthcare in South Carolina (ADAPT in SC) "
- 2017-2023: Thrust Leader of Modeling and Computational Core, South Carolina's NSF EPSCOR Project on "Materials Assembly and Design Excellence in South Carolina (MADE in SC)"
- 2008-Present: Adjunct Professor, Department of Chemistry and Biochemistry, USC
- 2008-2018: Theory, Modeling, and Simulation Thrust Leader, NanoCenter at USC
- 2009-2015: Thrust Leader of the Thrust in Modeling and Simulation of Biofabrication, South Carolina's NSF EPSCOR Project on "Biofabrication"
- 2004-2007: Director of Applied and Computational Mathematics Program, Florida State University
- 2/2005-4/2005: Visiting Professor, IMA**,** University of Minnesota, Minneapolis, NM
- 1/1999-5/1999: Visiting Associate Professor, Department of Mathematics, the University of North Carolina at Chapel Hill (UNC-CH), Chapel Hill, NC

AWARDS and HONORS

- 2020, USC Educational Foundation Research Award for Science, Mathematics, and Engineering

RESEARCH GRANTS & CONTRACTS

Current:

1. 8/1/2023-7/31/2028, **NSF** (OIA-2242812). "RII Track-1: ADAPT in SC: AI-enabled Devices for the Advancement of Personalized and Transformative Healthcare in South", Co-**PI (PI:** Tanju Karanfil, Clemson U**)**: **$20,000,000.**
2. 8/1/2021-7/31/2026, **NSF** (DMS-2038080). "RTG: Mathematical Foundation of Data Science at University of South Carolina." **Co-PI**: **$1,996,609**
3. 8/1/2020-7/31/2024, **NSF** (DMS--1954532), "Excellence in Research: Cutting-Edge Research in Machine Learning and Its Application", **Co-PI: $466,200.**
4. 2/1/2023-7/31/2024, **SC GEAR**, "AI-enabled Mechanical Modeling of Cardiac Tissues", **Co-PI: $60,000.**
5. 2/1/2023-5/31/2024, SPARC Graduate Research Grant, "Investigation of Dynamic Boundary Conditions and Surface Curvature Effects for Thermodynamically Consistent Phase Field Models in Arbitrarily Shaped Domains," **PI**: **$5,000**.

Past:

6. 9/15/2019-9/14/2023, **DOE** (DE-SC0020272), "Data-science enabled investigation of the mechanisms for multiscale ion transport in functional electrolytes"**, PI**: **$750,000**.
7. 9/15/2017-9/14/2023, **NSF** (OIA--1655740), "RII Track-1: Materials Assembly and Design Excellence in South Carolina: MADE in SC", Co-**PI (PI:** Prakash Nagarkatti, USC**)**: **$20,000,000.**
8. 6/1/2021-8/31/2022, **EPSCOR/IDEA GEAR-CRP**, "Confined Blue Phase Soft Crystals with Tunable Photonic Bandgap", Co-**PI**: **$60,000**.
9. 1/1/2021-5/31/2022, NCI via Leidos Biomedical Research, Inc. (21X130F), "Dynamic Multiscale Digital Twin for a Lung Cancer Patient." PI: **$50,000**.
10. 5/1/2021-5/31/2022, DOE (DE-SC0021655), "Dynamic Multiscale Digital Twin for a Lung Cancer Patient." PI: $50,000.
11. 6/1/2018-5/31/2022, NSF (DMS--1815921), "Collaborative Research: Computational modeling of how living cells utilize liquid-liquid phase separation to organize chemical compartments", PI: $150,000.
12. 5/1/2020-4/30/2021, **EPSCOR/IDEA GEAR-CRP**, "A Hybrid Multiscale Model with Machine Learning for Sprouting Angiogenesis in Biofabrication", Co-**PI**: **$60,000**.
13. 6/15/2018-6/16/2019, **GEAR-CRP, "**A Hybrid Discrete-Continuum Model for Simulating Sprouting Angiogenesis in 30 Biofabrication**", PI: $60,000**
14. 9/15/2015-8/31/2018, **NSF** (DMS-1517347), "Collaborative Research: Kinetic to Continuum Modeling of Active Anisotropic Fluids", **PI**: **$174,300.**
15. 9/1/2012-8/31/2017, **NSF** (DMS-1200487), "Collaborative Research: Experimentally guided mathematics for the mechanochemistry of cell shape dynamics", **PI**: **$591,000.**
16. 10/1/2012-9/30/2016, **NIH** (R01GM078994-05A1), "Cytoskeletal Oscillations: Mathematical Modeling Integrated with Experiments", **USC PI**: **$150,000**. (Subcontract to University of South Carolina, **PI: Tim Elston**, UNC-Chapel Hill)
17. 5/1/2012-4/30/2016, **AFOSR (**FA9550-12-1-0178), "Multiscale Mathematics for Nano-Particle-Endowed Active Membranes and Films", **PI**: **$810,000.**
18. 5/16/2014-5/15/2016, USC ASPIRE II, "From Genome to Novel Materials: Developing the Beta (β) Keratin Monomer as a Nanofiber for Fabrication of New Products with new Properties", **Co-PI: $99,633.**
19. 11/1/2014-6/30/2016**, SC EPSCOR/IDEA, "**A 3D Hybrid Discrete-Continuum Model for Cellular Aggregate Fusion**," PI: $27,000.**

20. 5/16/2013-6/30/2014, **SC, EPSCOR/IDEA GEAR-CRP**, "Experimentally guided in-silico analysis of cellular aggregate fusion in bioprinting", **PI**: **$100,000.**
21. 5/16/2013-6/30/2014, **SC, EPSCOR/IDEA GEAR-CRP**, "Investigating Cellular Spheroid Fusion Using Boundary Element Methods", **PI**: **$50,000.**
22. 5/16/2013-6/30/2014, **SC, EPSCOR/IDEA GEAR-CI**, "Computational Investigation of Cell-Substrate Interaction Guided by Experiments", **PI**: **$72,278.**
23. 9/1/2012-6/30/2013, **SC, EPSCOR/IDEA-GEAR**, "Thrust Leader Fund for Thrust I: In Silico Study of Cellular Aggregate Fusion", **PI**: $50,000.
24. 7/1/2012-6/30/2013, **USC**, "Summer School in Network Science at USC", **Co-PI**: $21,000.
25. 7/1/2009-6/30/2013, **NSF-DMS** (DMS-0908330), "Collaborative Research on Mathematical Constructs for Multiphase Complex Fluids," **PI**: $175,882.
26. 10/1/2012-6/30/2013, **SC EPSCOR/IDEA**, "SAN Proposal to Support Recruitment of Women into Mathematics," **PI**: $6,000.
27. 8/16/2008-7/31/2012, **NSF-CMMI** (CMMI-0849317), "Collaborative Research: Investigating Bacteria-Surface Interactions by Surface Engineering and Mathematical Modeling," **PI**: $99,999
28. 7/1/2011-6/30/2012, **SC EPSCOR/IDEA**, "Modeling and Simulation of Organ Biofabrication Processes," **PI**: $85,000
29. 8/4/2008-8/31/2010, **NSF-DMS** (DMS-0819051), "An integrated approach to modeling and simulations of complex fluids of microstructures, Supplemental," **PI**: $40,000
30. 9/1/2006-8/31/2010, **NSF-DMS** (DMS-0605029), "An integrated approach to modeling and simulations of complex fluids of microstructures**," PI:** $152,197
31. 9/1/2006-8/31/2010, **NSF-DMS** (DMS-0626180), "MSPA-MCS: Data-Driven Parallelization of Time in Molecular Dynamics Simulations," **Co-PI**: $ 392,890
32. 8/15/2007-7/31/2009**, NSF-DMS, SCREMS** (DMS-0724273)**, "**SCREMS: High-Performance Computing and Visualization," **PI,** $114,678
33. 9/1/2008-6/30/2009, **NSF RII** (EPS-0447660), "Bridge for biofabrication Institute," **Institutional PI for Mathematics**: $375,000
34. 12/1/2007-11/30/2010, **AFOSR (**FA9550-08-1-0107**), "**Modeling of high-performance polymer-nanoparticle composites and their effective material properties," **PI**; ($222,464, 1st year $86,464)
35. 12/1/2004-11/30/2007, **AFOSR, PI**; $148,400
36. 8/1/2002-7/31/2005, **NSF-DMS, PI**; $177,004
37. 1/1/2002-12/31/2004, **AFOSR, PI**; $137,907
38. 10/15/1998-10/14/2001, **AFOSR, PI**; $99,000
39. 10/1/1995-9/30/1998, **AFOSR, PI**, $95,000
40. 6/1/1992-5/31/1995, **AFOSR, PI**, $89,000

PUBLICATIONS

Refereed Journal Papers:

1. Wickramasinghe, Sachith; Hoehn, Alexandria; Wetthasinghe, Shehani; Lin, Huina; Wang, Qi; Jakowski, Jacek; Rassolov, Vitaly; Tang, Chuanbing; Garashchuk, Sophya. "Theoretical examination of the hydroxide transport in cobaltocenium-containing polyelectrolytes". The Journal of Physical Chemistry. Part: Part B: Biophysics, Biomaterials, Liquids, Soft Matter. In press, 2023.
2. Lin, Huina; Ramos, Luis; Hwang, JiHyeon; Zhu, Tianyu; Hossain, Md Waliullah; Wang, Qi; Garashchuk, Sophya; Tang, Chuanbing. "Main-Chain Cobaltocenium-Containing Ionomers for Alkaline Anion-Exchange Membranes". Macromolecules, 2023, 56 (16), 6375–6384.
3. Zhifang Liu, Baocheng Sun, Xue-Cheng Tai, Qi Wang, and Huibin Chang."A Fast Minimization Algorithm for the Euler-Elastic Model Based on a Bilinear Decomposition." Siam J Sci Comp. 2023.
4. Qi Hong, Qi Wang, and Yuzheng Gong. "Efficient High-Order Supplementary Variable Methods for Thermodynamically Consistent Partial Differential Equations." CMAME, 2023.

5. Meirou Sun, Yunhan Wang, Han-yang Yue, Jianguo Hou, Jun Li, Qiyu Wu, Hua Jiang, and Qi Wang. "Dynamical Monitoring and Causal Inference for Respiratory Metabolic Indicators of Septic Patients." Precision Nutrition. 2(3): p e00042, September 2023. *DOI:* 10.1097/PN9.0000000000000042.
6.Di Wang and Qi Wang. Accelerated numerical algorithms for steady states of Gross-Pitaevskii equations coupled with microwaves. Communication of Computational Physics, 2023.
7.Jingwei Sun, Jun Li, Yonghong Hao, Chunmei Ma, Huazhi Sun, Negash Begashaw, Gurcan Comet, Yi Sun, and Qi Wang. "Approximation of the Boundary-to-Solution Operator for the Groundwater Transport Equation in a Toth Basin." Advances in Water Resources, Volume 176, June 2023, 104448.
8. Kaiyan Wang, Jun Li, Wenke Wang, Zaiyong Zhang, Xusheng Wang, Qi Wang, and Yonghong Hao. "Calibrating a model of depth to water table using Fourier series and Simpson numerical integration." Journal of Hydrology, 620 (2023), 129516.
9. Yu Wang, Charles Damien Lu, Wei Chen, Qi Wang, Hua Jiang. "Digital Twin-Enabled Personalized Nutrition." Precision Nutrition, 2(1), March, 2023, e00030.
10. Yakun Li and Qi Wang, "Quasi-incompressible Models for Binary Fluid Flow in Porous Media." Applied Mathematics Letters, 136, Feb 2023. https://doi.org/10.1016/j.aml.2022.108450.
11. Xiaobo Jing and Qi Wang, "Thermodynamically Consistent Dynamical Boundary Conditions of Phase Field Models". Communications in Mathematical Sciences. 21 (3), 859 – 883. 2023. DOI: https://dx.doi.org/10.4310/CMS.2023.v21.n3.a10.
12. Eric Stahlberg, Mohamed Abdel-Rahman, Boris Aguilar, Alireza Asadpoure, Robert A. Beckman, Lynn Borkon, Colleen Cebulla, Young Hwan Chang, Ansu Chatterjee, Jun Deng, Sepidah Dolatshahi, Olivier Gevaert, Emily Greenspan, Wenrui Hao, Tina Hernandez-Boussard, Pamela Jackson, Marieke Kuijjer, Adrian Lee, Paul Macklin, Subha Madhavan, Matthew D. McCoy, Navid Mohammad Mirzaei, Talayeh Razzaghi, Heber Rocha, Leili Shahriyari, Ilya Shmulevich, Daniel G. Stover, Yi Sun, Tanveer Syeda-Mahmood, Qi Wang, Jinhua Wang, Ioannis Zervantonakis. "Exploring Approaches for Predictive Cancer Patient Digital Twins: Opportunities for Collaboration and Innovation." Frontiers in Digital Health, 06 October, 2022. https://doi.org/10.3389/fdgth.2022.1007784.
13. Xiaobo Jing and Qi Wang, "Coupling of Bulk and Surface Dynamics in Thermodynamically Consistent Models." Entropy, 2022, 24 (11), 1683. https://doi.org/10.3390/e24111683.
14. Lu Guanyu, Liu Wenqiang, HAO Huiqing, Wang Qi, and Hao Yonghong. "Application of the combined LSTM-GRU model to hydrological simulations". Journal of Hydrology (Chinese), in press, 2022.
15. Maosheng Jiang, Jia Zhao, and Qi Wang. "Linear Energy Stable Numerical Schemes for a General Chemo-Repulsive Model". Journal of Computational and Applied Mathematics, 415: 114436 (2022).
16. Huiqing Hao; Yonghong Hao; Yan Liu; Yan Jim Yeh; Ming Zhang; Qi Wang; Yonghui Fan. "Anomaly of glacier mass balance in different vertical zones and responses to climate models: Urumqi Glacier No. 1, China Climate Dynamics" Climate Dynamics. May 2022, 60(3), 493-509. DOI: 10.1007/s00382-022-06318-w.
17. Jianguo Hou, Jun Deng, Chunyan Li, and Qi Wang. "Tracing and Forecasting Metabolic Indices of Cancer Patients Using Patient-Specific Deep Learning Models". Journal of Personalized Medicine, 12 (2022), 742.
18. Xiehui Song, HuiqingHao, Wenqiang Liu, Qi Wang, Lixing An, Tian-Chyi Jim Yeh, Yonghong Hao. "Spatial-temporal behavior of precipitation driving karst spring discharge in a mountain terrain." Journal of Hydrology 612 (2022), 128116.
19. Chunyan Li, Shehani T. Wetthasinghe, Huina Lin, Tianyu Zhu, Chuanbing Tang, Vitaly Rassolov, Qi Wang, Sophya Garashchuk. "Stability analysis of substituted cobaltocenium [bis(cyclopentadienyl)cobalt(III)] employing chemistry-informed neural networks." Journal of Chemical Theory and Computation, April 11, 2022, https://doi.org/10.1021/acs.jctc.1c01201.
20. Shehani T. Wetthasinghe, Chunyan Li, Huina Lin, Tianyu Zhu, Chuanbing Tang, Vitaly Rassolov, Qi Wang, Sophya Garashchuk. "Investigating the stability of substituted cobaltocenium using deep neural network: Correlation between the Stability of Substituted Cobaltocenium and Molecular Descriptors." Journal of Physical Chemistry A, 126(1) (2022), 80-87.
21. Hong-Fei Deng, Ming-Wei Sun,Yu Wang, Jun Zeng, Ting Yuan, Ting Li, Di-Huan Li, Wei Chen, Ping Zhou, Qi Wang, Hua Jiang. "Evaluating Machine Learning Models for Sepsis Prediction: A

Systematic Review of Methodologies," iScience, 2022, 25, 103651. https://doi.org/10.1016/j.isci.2021.103651
22. Xiaowen Shen and Qi Wang. "Thermodynamically Consistent Models for Diblock Copolymer Systems Coupled with an Electric Field". Chinese Phys. B, 31(4), 2022.
23. Lin Lu, Qi Wang, Yongzhong Song, and Yushun Wang, "Local structure-preserving algorithms for phase field models of graphene growth." Journal of Scientific Computing, 90(1) (2022).
24. Xin Guo, Xu-sheng Wang, Jun Li, Tongke Wang, Zhixue Zhao, Huiqing Hao, Hongbin Zhan, Qi Wang, Yonghong Hao. An approximate analytical solution of depth to water table driven by periodical precipitation and evapotranspiration in shallow groundwater zones. Advances in Water Resources, 155 (2021), 104012.
25. Qi Hong, Yuezheng Gong, Jia Zhao and Qi Wang, "Arbitrarily High Order Structure-Preserving Algorithms for the Allen-Cahn Model with a Nonlocal Constraint." Applied Numerical Mathematics, Volume 170, December 2021, 321-339.
26. Yakun Li, Wenkai Yu, Jia Zhao, and Qi Wang. "Second Order Decoupled Energy Dissipation Rate Preserving Schemes for an extended Cahn-Hilliard-Darcy Model." Journal of Computational Physics, Volume 444, 1 November 2021, 110561.
27. Wenkai Yu, Jia Zhao, Yakun Li and Qi Wang. "Second-Order Linear Thermodynamically Consistent Approximations to the Nonlocal Allen-Cahn-Brinkman Model." Computer Methods in Applied Mechanics and Engineering, Volume 386, 1 December 2021.
28. Xiaowen Shen and Qi Wang, "Thermodynamically Consistent Numerical Algorithms for Models of Diblock Copolymer Solutions with Variable Mobility", Journal of Computational and Applied Mathematics, Volume 395, 15 October 2021, 113573.
29. Xiaowen Shen and Qi Wang, "Thermodynamically Consistent Algorithms for Models of Block Copolymer Solutions Interacting with Electric and Magnetic Fields", Journal of Scientific Computing, **88,** 43 (2021).
30. Yuezheng Gong, Qi Hong and Qi Wang, "Supplementary Variable Method for Thermodynamically Consistent Partial Differential Equations." Computer Methods in Applied Mechanics and Engineering, 2021, 381, 113746.
31. Di Wang, Yongyong Cai and Qi Wang, "Central Vortex Steady States and Dynamics of Bose-Einstein Condensates Interacting with Magnetic Fields." Physica D, Volume 419, May 2021, 132852.
32. Lin Lu, Qi Wang, Yongzhong Song, Yushun Wang, "Local structure-preserving algorithms for the molecular beam epitaxy model with slope selection." Discrete and Continuous Dynamical System-B, September 2021, 26(9): 4745-4765. doi: 10.3934/dcdsb.2020311
33. Qi Hong, Jia Zhao and Qi Wang, "Structure-preserving Numerical Approximations to Network Generating Partial Differential Equation Models," *Computers and Mathematics with Applications*, 81 (2021), 148-165.
34. Qi Hong, Jun Li and Qi Wang, "Supplementary Variable Method for Structure-Preserving Approximations to Partial Differential Equations with Deduced Equations." Applied Mathematics Letter, 110 (2020), 106576.
35. Cheng Lei, Yu Wang, Jia Zhao, Kexun Li, Hua Jiang and Qi Wang. "A Patient-Specific Predictive Model for Human Albumin Based on Deep Neural Networks." Computer Methods and Programs in Biomedicine, 196 (2020), 105555.
36. Shouwen Sun, Jun Li, Jia Zhao, and Qi Wang, "Structure-Preserving Numerical Approximations to Thermodynamically Consistent Non-isothermal Models of Binary Viscous Fluid Flows." *Journal of Scientific Computing*, 83 (2020), 50.
37. Yuezheng Gong, Jia Zhao, and Qi Wang. "Arbitrarily high-order linear unconditionally energy stable schemes for gradient ow models." *Journal of Computational Physics*, 419 (2020), 109610.
38. Yuezheng Gong, Jia Zhao, Qi Wang, "Arbitrarily high-order unconditionally energy stable SAV schemes for gradient flow models." *Computer Physics Communications*, 249 (2020), 107033.
39. Xueping Zhao, Tiezheng Qian, and Qi Wang, "Thermodynamically Consistent Hydrodynamic Models of Multi-component Fluid Flows," *Communications in Mathematical Sciences*, Vol. 18, No. 5 (2020), 1441–1468.

40. Xiaobo Jing and Qi Wang, "Linear Second-Order Energy Stable Schemes of Phase Field Models with Nonlocal Constraints for Crystal Growth." *Computers & Mathematics with Applications*, 79(3) (2020), 764-788.
41. Yuezheng Gong and Qi Wang and Jia Zhao. "Arbitrarily High-Order Unconditionally Energy Stable Schemes for Thermodynamically Consistent Gradient Flow Models." Siam *Journal on Scientific Computing.* 42(1) (2020), B135-B156.
42. Yucan Zhao, Jun Li, Jia Zhao, and Qi Wang, "A Linear Energy and Entropy-production-rate Preserving Scheme for Thermodynamically Consistent Crystal Growth Models." *Applied Mathematics Letters*, 98, (2019), pp. 142-147.
43. Xueping Zhao and Qi Wang. "A Second Order Fully-discrete Linear Unconditionally Energy Stable Numerical Scheme for Phase Field Models of Binary Compressible Fluid Flows." *Journal of Computational Physics*, 395 (2019), 382-409.
44. Xiaobo Jing, Jun Li, Xueping Zhao, and Qi Wang. "Second Order Linear Energy Stable Schemes for Allen-Cahn Equations with Nonlocal Constraints." *Journal of Scientific Computing*, 80 (1) (2019), 500-537.
45. Jun Li, Jia Zhao, and Qi Wang. "Structure Preserving Numerical Approximations of Thermodynamically Consistent Crystal Growth Models." *Journal of Computational Physics*, 382 (2019), pp. 202-220.
46. Xiaobo Jing, Xiangya Huang, Markus Haapasalo, Ya Shen and Qi Wang, "Modeling Oral Multispecies Biofilm Recovery after Antibacterial Treatment", *Scientific Reports.* 9 (2019), pp. 804.
47. Shouwen Sun, Xiaobo Jing and Qi Wang, "Error Estimates of Energy Stable Numerical Schemes for Allen-Cahn Equations with Nonlocal Constraints." *Journal of Scientific Computing*, Volume 79(1) (2019), pp. 593–623.
48. Xiaogang Yang, Jun Li, Yuezheng Gong, Robert S. Eisenberg, Qi Wang, "Quasi-compressible Ionic Fluid Models", *Journal of Molecular Liquids,* 273 (2019), pp. 677-691.
49. Yuezheng gong, Jia Zhao, and Qi Wang, "Second Order Fully-Discrete Energy Stable Methods on Staggered Grids for Hydrodynamic Phase Field Models of Binary Viscous Fluids", *Siam Journal on Scientific Computing*, 40:2, (2018), pp. B528-B553.
50. Jia Zhao, Xiaofeng Yang, Yuezheng Gong, Xueping Zhao, Jun Li, Xiaogang Yang, and Qi Wang, "A General Strategy for Numerical Approximations of Thermodynamically Consistent Nonequilibrium Models--Part I: Thermodynamical Systems", *International Journal of Numerical Analysis and Modeling*, 15(16) (2018), pp 884-918.
51. Xiaogang Yang, Yuezheng Gong, Jun Li, Jia Zhao, and Qi Wang, "Comparison of Hydrodynamic Phase Field Models for Binary Fluid Mixtures", *Theoretical and Computational Fluid Dynamics*, 32(5) (2018), pp 537-560.
52. Yuezheng Gong, Jia Zhao, and Qi Wang, "Linear Second Order in Time Energy Stable Schemes for Hydrodynamic Models of Binary Mixtures Based on a Spatially Pseudospectral Approximation", *Advances in Computational Mathematics*, 44 (5) (2018), pp.1573-1600.
53. Yuezheng Gong, Jia Zhao, Xiaogang Yang, and Qi Wang, "Second-order Linear Schemes for Hydrodynamic Phase Field Models of Binary Viscous Fluids with Variable Densities," *Siam Journal on Scientific Computing*, 40-1 (2018), pp. B138-B167.
54. Jia Zhao and Qi Wang, "3-D Numerical Simulations of Biofilm Dynamics with Quorum Sensing in a Flow Cell," *Bulletin of Mathematical Biology*, 79(4) (2017), pp. 884-919.
55. Yi Sun and Qi Wang, "In-Silico Analysis on 3D Biofabrication using Kinetic Monte Carlo Simulations," Advances in Tissue Engineering and Regenerative Medicine**,** 2(5) (2017), pp. 00045.
56. E. A. Bulanova, E. V. Koudan, J. Degosserie, C. Heymans, F. D. Pereira, V. A. Parfenov, Yi Sun, Qi Wang, S. A. Akhmedova , N. S. Sergeeva, G. A. Frank, Y. D. Khesuani, C. E. Pierreux, V. A. Mironov. "Bioprinting of functional vascularized mouse thyroid gland construct," *Biofabrication*, 2017, 9(3), 034105.
57. Yuezheng Gong, Jia Zhao, and Qi Wang, "An Energy Stable Algorithm for the Quasi-incompressible Hydrodynamic Model of Viscous Fluid Mixtures," *Computer Physics Communications*, 219 (2017), pp. 20-34.

58. Xiaofeng Yang, Jia Zhao, and Qi Wang, "Linear and Unconditionally Energy Stable Schemes for Molecular Beam Epitaxial Growth Model Based on Invariant Energy Quadratization Methods," *Journal of Computational Physics*, 333 (2017), pp. 104-127.
59. Jia Zhao, Xiaofeng Yang, Yuezheng Gong, and Qi Wang, "A Novel Linear Second Order Unconditionally Energy-stable Scheme for a Hydrodynamic Q-tensor Model of Liquid Crystals," *Computer Methods in Applied Mechanics and Engineering,* 318 (2017), pp. 803-825.
60. Xiaogang Yang and Qi Wang, "Structures and basic patterns in cavity flows of active liquid crystals". *Computers and Fluids*, 155 (2017), pp. 33-49.
61. Xiaofeng Yang, Jia Zhao, Qi Wang, Jie Shen, "Numerical Approximations for a three-component Cahn-Hilliard phase-field Model based on the Invariant Energy Quadratization method", *Mathematical Models and Methods in Applied Sciences*, 27(11) (2017), pp. 1993-2030.
62. Yuezheng Gong, Qi Wang, and Zhu Wang, "Structure-Preserving Galerkin POD Reduced-Order Modeling of Hamiltonian Systems", *Computer Methods in Applied Mechanics and Engineering*, 315 (2017), pp. 780-798.
63. Xiaofeng Yang, Jia Zhao, and Qi Wang, "Numerical Approximations for a phase field dendritic Growth Model Based on the Invariant Energy Quadratization Approach," *International journal for Numerical Methods in Engineering*, 110(3) (2017), pp. 279–300.
64. Jia Zhao, Huiyuan Li, Qi Wang, and Xiaofeng Yang, "A Linearly Decoupled Energy Stable Scheme for Phase Field Models of Three-phase Incompressible Viscous Fluid Flows", *Journal of Scientific Computing,* 70(3) (2017), 1367-1389.
65. Jia Zhao, Tianyu Zhang, and Qi Wang, "Treatment of Biofilms by Nanotechnology and Applications to Food Science," NANOTECHNOLOGY IN AGRICULTURE AND FOOD SCIENCES, edited by, Monique A. V. Axelos and Marcel Van de Voorde, Wiley-VCH, 2017.
66. Yuezheng Gong, Qi Wang, Yushun Wang, Jiaxiang Cai, "A conservative Fourier pseudospectral method for the nonlinear Schrodinger equation", *Journal of Computational Physics*, 328 (2017), pp. 354–370.
67. Yuezheng Gong, Xinfeng Liu, and Qi Wang, "Fully Discretized Energy Stable Schemes for Hydrodynamic Models of Two-phase Viscous Fluid Flows", *Journal of Scientific Computing,* 69(3) (2016), 921-945.
68. Norazaliza mohd Jamil and Qi Wang, "CFD-PBE Modelling and Simulation of Enzymatic Hydrolysis of Cellulose in a Stirred Tank", *Journal of Mathematics and Statistics*, 12(4) (2016), pp. 225-237.
69. Jia Zhao, Qi Wang, and Xiaofeng Yang, "Numerical Approximations to a New Phase Field Model for Immiscible Mixtures of Nematic Liquid Crystals and Viscous Fluids", *Computer Methods in Applied Mechanics and Engineering*, 310 (2016), pp. 77-97.
70. Jia Zhao, P. Seeluangsawat , and Qi Wang, "A hydrodynamic model for biofilms accounting for persisters and susceptibles", *Mathematics of Biosciences*, 282 (2016), pp. 1-15.
71. Xiaogang Yang and Qi Wang, "Role of Active Viscosity and Self-propelling Speed on Channel Flows of Active Polar Liquid Crystals", *Soft Matter*, 12 (2016), pp. 1262 - 1278.
72. Jia Zhao, Ya Shen, Markus Haapasalo, Zhejun Wang, and Qi Wang, "A 3D Numerical Study of Antimicrobial Persistence in Heterogeneous Multi-species Biofilms", *Journal of Theoretical Biology*, 392 (2016), pp. 83–98.
73. Jia Zhao and Qi Wang, "Semi-Discrete Energy-Stable Schemes for a Tensor-Based Hydrodynamic Model of Nematic Liquid Crystal Flows", *Journal of Scientific Computing,* 68(3) (2016), pp. 1241-1266.
74. Jia Zhao and Qi Wang, "A 3D Hydrodynamic Model for Cytokinesis of Eukaryotic Cells", *Communication in Computational Physics*, 19(3) (2016), pp. 663-681.
75. Jia Zhao and Qi Wang, "Modeling and Simulations of Cytokinesis of Eukaryotic Cells," *International Journal for Numerical Methods in Biomedical Engineering*, 32 (12) (2016), pp. e2774.
76. Xiaogang Yang, Jun Li, M. G. Forest, and Qi Wang, "Hydrodynamic Theories for Flows of Active Liquid Crystals and the Generalized Onsager Principle", *Entropy*, 18 (2016), pp. 202.
77. Kapustina, M., Tsygankov, J., Zhao, J., Yang, X., Chen, A., Roach, N., Wessler, T., Elston, T.C., Wang, Q., Jacobson, K., Forest, G., "Modeling the excess cell surface stored in a complex morphology of bleb-like protrusions". *PLOS Computational Biology*, 12(3) (2016), pp. e1004841.

78.Jia Zhao, Xiaofeng Yang, Jun Li, and Qi Wang, "Energy stable numerical schemes for a hydrodynamic model of nematic liquid crystals", *Siam J. Sci. Comp.,* 38(5) (2016), pp. 3264-3290.
79.Ya Shen, Jia Zhao, César de la Fuente-Núñez, Zhejun Wang, Robert E. W. Hancock, Clive R. Roberts, Jingzhi Ma, Jun Li, Markus Haapasalo and Qi Wang, "Development and Experimental Validation of a Model for Oral Multispecies Biofilm Recovery after Chlorhexidine Treatment", *Scientific Reports*, 6 (2016), pp. 27537.
80. Noraza liza Mohd Jamil and Qi Wang, "One-Dimensional Simulation of Diffusion and Advection Effects in Enzymatic Hydrolysis of Cellulose", *American Journal of Applied Sciences.* 13(7) (2016), pp. 870-876.
81.Jia Zhao, Xiaofeng Yang, Jie Shen, Qi Wang, "A Decoupled Energy Stable Scheme for a Hydrodynamic Phase-field Model of Mixtures of Nematic Liquid Crystals and Viscous Fluids", *Journal of Computational Physics*, 305 (2016), pp. 539-556.
82. Guanghua Ji, M. G. Forest, and Qi Wang, "Formation in Sheared Polymer-Rod Nanocomposites", *Discrete and Continuous Dynamical Systems-Series D,* 8(2) (2015), pp. 341-379.
83. M. G. Forest, Qi Wang, and Ruhai Zhou, "Kinetic attractor phase diagrams of active nematic suspensions: the dilute regime", *Soft Matter*, 11 (2015), pp. 6393 – 6402.
84. Hua Jiang, Hao Yang, Jun Zeng, Zhiyuan Zhou, Jin Peng, Qi Wang, "Analytic Oncology*", Electron J Metab Nutr Cancer*， 2 (2) (2015), pp. 26-30.
85. Chen Chen, Dacheng Ren, Mingming Ren and Qi Wang, "3-D Spatial-Temporal Structures of Biofilms in A Water Channel," *Mathematical Methods in the Applied Sciences*, 38 (18) (2015), pp. 4461-4478.
86. M. G. Forest, Panon Phuworawong, Qi Wang, and Ruhai Zhou, "Rheology of active polar and apolar liquid crystalline suspensions" *Philo Trans of Royal Society A,* 372 (2014), pp. 20130362.
87. Xiaogang Yang and Qi Wang, "Capillary Instability of an Active Liquid Crystal Jet", *Soft Matter*, 10 (2014), pp. 6758-6776.
88. Xiaogang Yang, M. G. Forest, and Qi Wang, "Near Equilibrium Dynamics and 1-D Spatial-Temporal Structures of Polar Active Liquid Crystals", *Chinese Phys. B*, 23 (11) (2014), pp. 117502.
89.Yi Sun, Xiaofeng Yang, and Qi Wang, "In-Silico Analysis on Biofabricating Vascular Networks using Kinetic Monte Carlo Simulations", *Biofabrication*, 6 (2014), pp. 015008.
90. Jie Shen, Xiaofeng Yang, and Qi Wang, "Mass Conserved Phase Field Model for Binary Fluids", *Communication in Computational Physics*, 13 (2013), pp. 1045-1065.
91. M. Gregory Forest, Q. Wang, and X. Yang, "LCP droplet dispersions: a two-phase diffuse-interface kinetic theory and global droplet defect predictions, *Soft Matter*, 8(37) (2013), pp. 9642-9660.
92. Xiaofeng Yang, M. Gregory Forest, Huiyuan Li, Chun Liu, Jie Shen, Qi Wang, and Falai Chen, "Numerical Investigation of the Dynamics of drop formation and pitch-off using a phase-field model for two-phase complex fluids," *Journal of Computational Physics*, 236 (2013), pp. 1-14.
93. Chen Chen and Qi Wang, "3-D Pattern Formation in Biofilms," *Contemporary Mathematics* (586), (2013), pp. 105-116.
94. Yi Sun and Qi Wang, "Modeling and Simulations of Multicellular Aggregate Self-assembly in Biofabrication Using Kinetic Monte Carlo Methods," *Soft Matter*, 9 (2013), pp. 2172-2186.
95. M. G. Forest, R. Zhou, and Q. Wang, "Kinetic theory and simulations of active polar liquid crystalline polymers," *Soft Matter,* 9 (21) (2013), pp. 5207 – 5222.
96. Xiaofeng Yang, Yi Sun, and Qi Wang, "Phase Field Approach for Multicellular Aggregate Fusion in Biofabrication", *Journal of Biomedical Engineering*, 135(7) (2013), pp. 071005.
97.Jun Li and Qi Wang, "Mass Conservation and Energy Dissipation Issue in a Class of Phase Field Models for Multiphase Fluids", *Journal of Applied Mechanics*, 81(2) (2014), pp. 021004.
98.Xinfeng Liu, Sara Johnson, Shou Liu, Deepak Kanojia, Wei Yue, Udai Singn, Qian Wang, Qi Wang, Qing Nie, and Hexin Chen, "Nonlinear Growth Kinetics of Breast Cancer Stem Cells: Implications for Cancer Stem Cell Targeted Therapy," *Scientific Reports*, 3 (2013), pp. 2473.
99.Brandon Lindley, Qi Wang and Tianyu Zhang, "A Multicomponent Hydrodynamic Models for Biofilm: 2-D Numerical Simulations of Growth and Interaction with Flows", *Physical Review E*, 85 (2012), pp. 031908.
100.Q. Wang and X. Yang, David Adalsteinsson, T. Elston, K. Jacobson, Maria Maryna, M. G. Forest, "Computational and Modeling Strategies for Cell Motility," COMPUTATIONAL MODELING of BIOLOGICAL SYSTEMS, edited by Nikolay Dokholyan, Springer, New York, pp. 257-296, 2012.

101. George G P Xiang, Jianyang Liu, and Q. Wang, "A Variational Derivation of Risk-Adjusted Performance Measures," *Journal of Risk,* 15 (2) (2012), pp. 45-58.
102. Xiaofeng Yang, Vladimir Mironov, and Qi Wang, "Modeling Fusion of Cellular Aggregates in Biofabrication Using Phase Field Theories," *J. Theoretical Biology*, 303 (21) (2012), pp. 110-118.
103. Q. Wang and T. Y. Zhang, "Kinetic theories for Biofilms", *Discrete and Continuous Dynamic Systems – Series B* 17 (3) (2012), pp. 1027-1059.
104. Brandon Lindley, Qi Wang, and Tianyu Zhang, "A Multicomponent model for Biofilm-Drug Interaction", *Discrete and Continuous Dynamic Systems- Series B*, 15(2) (2011), pp. 417-456.
105. Jun Li, M. G. Forest, Qi Wang, and R. Zhou, "A Kinetic Theory and Benchmark Predictions for Polymer Dispersed, Semi-Flexible Nanorods and Nanoplatelets," *Physica D*, 240(2) (2011), pp. 114-130.
106. Zhenlu Cui and Qi Wang, "Permeation flows in cholesteric liquid crystal polymers under oscillatory shear," *Discrete and Continuous Dynamic Systems- Series B*, 15(1) (2011), pp. 45-60.
107. 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", *Journal of Computational Physics,* 230 (19) (2011), pp. 7115-7131.
108. Chen Chen, Mingming Ren, Ashok Srinivasan, and Qi Wang, "3-D simulations of biofilm-solvent interaction," *East Asian Journal on Applied Mathematics*, 1 (2011), pp. 197-214.
109. T S Little, V Mironov, A Nagy-Mehesz, R Markwald, Y Sugi, S M Lessner, M A Sutton, X Liu, Q Wang, X Yang, J O Blanchette, and M Skiles, "Engineering a 3D, biological construct: representative research in the South Carolina Project for Organ Biofabrication", *Biofabrication,* 3 (2011), pp. 030202 .
110. M. G. Forest, Qingqing Liao, and Qi Wang, "2-D Kinetic Theory for Polymer Particulate Nanocomposites," *Communications in Computational Physics*, 7(2) (2010), pp. 250-282.
111. Jun Li and Qi Wang, "Flow Driven Dynamics of Sheared Flowing Polymer-Particulate Nanocomposites," *Discrete and Continuous Dynamical Systems-Series A*, 26 (4) (2010), pp. 1359-1382, 2010.
112. T. Y. Zhang and Q. Wang, "Cahn-Hilliard vs Singular Cahn-Hilliard Equations in Phase Field Modeling", *Communications in Computational Physics*, 7(2) (2010), pp. 362-382.
113. Sarthok Sircar, Jun Li, and Qi Wang, "Biaxial Phases of Bent-core Liquid Crystal Polymers in Shear Flows", Communications in Mathematical Sciences, 8(3) (2010), pp. 697-720.
114. Sarthok Sircar and Qi Wang, "Transient rheological responses in sheared biaxial liquid crystals", *Rheological Acta*, 49(7) (2010), pp. 699-717.
115. Xiaofeng Yang, M. Gregory Forest, William Mullins, and Qi Wang, "2-D Lid-driven Cavity Flow of Nematic Polymers: An unsteady Sea of Defects", *Soft Matter*, 6 (2010), pp. 1138-1156.
116. Q. Wang and T. Y. Zhang, "Mathematical models for biofilms", *Communication in Solid State Physics*, 150 (21-22) (2010), pp. 1009-1022.
117. X. Yang, M. G. Forest, W. Mullins, and Q. Wang, "Dynamic defect morphology and hydrodynamics of sheared nematic polymers in two space dimensions", *Journal of Rheology*, 53 (2009), pp. 592.
118. X. Yang, M. G. Forest, Q. Wang, W. Mullins, "Quench sensitivity to defects and shear banding in nematic polymer film flows", *Journal Non-Newtonain Fluid Mechanics*, 159 (1-3) (2009), pp. 115-129.
119. Q. Wang, "Introduction to kinetic theory for complex fluids", MULTI-SCALE PHENOMENA IN COMPLEX FLUIDS: Modeling, Analysis and Numerical Simulation, Series in Contemporary Applied Mathematics (CAM)-vol 12, edited by Thomas Y Hou, Chun Liu, Jian-guo Liu, World Scientific, Singapore, 2009.
120. 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 (eLC),* (2009), pp. 1-12.
121. Sarthok Sircar and Qi Wang, "Dynamics and rheology of ellipsoidal suspensions in shear flows", *Journal of Rheology*, 53 (4) (2009), pp. 819-859.
122. 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*, 5 (2009), pp. 2033-2036.

123. 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.
124. Xiaofeng Yang, Zhenlu Cui, M. G. Forest, Qi Wang, and Jie Shen, "Dimensional Robustness & Instability of Sheared Semi-dilute, Nano-rod Dispersions", *Siam Journal on Multiscale Modeling and Simulation*, 7 (2008), pp. 622-654.
125. 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), pp. 641-669.
126. J. Lee, M. G. Forest, Q. Wang, and R. Zhou, "Dipole-induced bi-stability and hysteresis in nanorod monolayers," *Physics Letters A*, 372 (2008), pp. 3484-3487.
127. Sarthok Sircar and Qi Wang, "Shear induced mesostructures in biaxial liquid crystal polymers", *Physical Review E,* 78 (2008), pp. 061702.
128. 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.
129. 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.
130. M. G. Forest, Q. Wang, and R. Zhou, "Monodomain dynamics for rigid rod & platelet suspensions in strongly coupled coplanar linear flow and magnetic," *Journal of Rheology*, 51 (2007), pp. 1-21.
131. 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.
132. 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.
133. H. Zhou, M. G. forest, and Q. Wang, "Anchoring-induced texture & flow feedback of nematic polymers in shear cells," *Discrete and Continuous Dynamical Systems-Series B*, 8 (3) (2007), pp. 707-733.
134. 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*, 6 (3) (2007), pp. 858-878.
135. 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," *Communications in Mathematical Sciences,* 5(4) (2007), pp. 917-950.
136. 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 Mathematics,* 66(4) (2006), pp. 1227-1260.
137. 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.
138. Z. Cui and Q. Wang, "A continuum mechanics model for flows of chiral nematic polymers and permeation flows," *Journal of Non-Newtonian Fluid Mechanics*, 128 (1) (2006), pp. 44-61.
139. 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).
140. 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).
141. X. Zheng, M. G. Forest, R. Zhou, and Q. Wang, "Likelohood and expected -time statistica of monodomain attractors in sheared discotic and rodlike nematic polymers," *Rheological Acta*, 44 (3) (2005), pp. 219-234.
142. 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.

143.R. Zhou, M. G. Forest, and Q. Wang, “Kinetic structure simulations of nematic polymers in plane Couette cells, I: The algorithm and benchmarks,” *Siam Journal on Multiscale Modeling and Simulation*,, 3 (4) (2005), pp. 853-870.
144.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.
145.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, Modeling of Soft Matter, ed. M. C. T. Claderer and E. M. Terenjev, Springer, pp. 85-98, 2005.
146.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.
147.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.
148.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.
149.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.
150.M. G. Forest and Q. Wang, “Hydrodynamic theories for blends of flexible polymer and nematic polymers”, *Physical Review E*, 72 (2005), pp. 041805.
151.Q. Wang, M. G. Forest and R. Zhou, ``A hydrodynamic theory for solutions of nonhomogeneous nematic liquid crystalline polymers with density variations,'' *Journal of Fluid Engineering,* 126 (2004), pp180-188.
152.M. G. Forest, Q. Wang, and R. Zhou, ``Weak shear phase diagram for nematic polymers,'' *Rheological Acta*, 43(1) (2004), pp. 17-37.
153.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.
154.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,'' *Journal of Rheology*, 48(1) (2004), pp.175-192.
155.M. C. Calderer, M. G. Forest, and Q. Wang, "Kinetic Theories and Mesoscopic Models for Solutions of Nonhomogeneous Liquid Crystal Polymers," Journal*. Non-Newtonian Fluid Mechanics,* 120 (2004), pp. 69-78.
156.M. G. Forest, Q. Wang, R. Zhou, and E. Coate, "Monodomain response of arbitrary aspect ratio nematic polymers in general linear planar flows,'' *Journal of Non-Newtonian Fluid Mechanics,* 118(1) (2004), pp. 17-31.
157.S. E. Bechtel, F. Rooney, and Q. Wang, "A thermodynamic definition of pressure for incompressible viscous fluids," *International Journal of Engineering Science*, 42 (19-20) (2004), pp. 1987-1994.
158.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.
159.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 Poisuille flows," *Physics of Fluids*, 16 (11) (2004), pp. 3955-3974.
160.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.
161.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.
162.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. Bakhatiyarov, ASME, New York, 2002.
163.M. G. Forest, Q. Wang, and R. Zhou, ``Full tensor alignment criteria for sheared nematic polymers'', *Journal of Rheology*, 47(1) (2003), pp. 105-127.
164.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), pp. 2681-2693.

165.Q. Wang, ``A hydrodynamic theory of nematic liquid crystalline polymers of different configurations'', *Journal of Chemical Physics*, 116 (2002) pp. 9120-9136,
166.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) (2002), pp. P031712.
167. 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.
168.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.
169.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.
170.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.
171.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.
172.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.
173.M. G. Forest, H. Zhou and Q. Wang, ``Thermotropic liquid crystalline polymer fibers'', *Siam Journal on Applied Math*ematics, 60(4) (2000), pp. 1177-1204.
174.Q. Wang, "Illposedness in thermomechanically consistent constrained theory for materials with prescribed temperature-dependent density", *Journal of Applied Mechanics*, 67 (2000), pp. 29-32.
175.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.
176.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.
177.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.
178.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.
179.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.
180.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.
181.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.
182.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.
183.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.
184.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.
185.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.
186.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.
187.Q. Wang, ``Biaxial Steady States and Their Stability in Shear Flows of Liquid Crystal Polymers'', *Journal of Rheology*, 41 (1997), pp. 943-970.

188. 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.
189. 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.
190. 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.
191. M. G. Forest and Q. Wang, ``Dynamics of Viscoelastic Slender Jets'', *Siam Journal on Applied Math*ematics, 54 (4) (1994), pp. 996-1033.
192. 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.
193. 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.
194. 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.
195. 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. Siginer, AMD-Vol. 153, FED-Vol. 141, ASME, New York, 1992, pp. 37-48.
196. 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.

Book Chapters:

197. Qi Wang, "Generalized Onsager Principle and its Applications," Frontiers and Progress of Current Soft Matter Research, edited by Xiang-you Liu, Springer Nature, 2020, Chapter 3, pp. 101-132.
198. Qi Wang, Xiangrong Xu, Tianyu Zhang, and Hao Xu, Biofilms in Bioengineering, Manuel Simoes and Filipe Mergulhao edited, Nova Science Publishers, Inc. New York, 2013.
199. Q. Wang, "Introduction to Constitutive Modeling of Macromolecules," DYNAMICS IN MODELS OF COARSENING, COAGULATION, CONDENSATION AND QUANTIZATION, Lecture Notes Series, Institute for Mathematical Sciences, National University of Singapore, edited by Weizhu Bao and Jian-guo Liu, World Scientific, Singapore, 2007.
200. 江华，杨浩，彭谨，周志远，曾俊，王奇，“第 7 章 分析医学：数据科学、物理学和临床医学的心综合，”临床系统生物医学研究-从理论到实践，曾俊，江华，杨浩主编，科学出版社， 2017 年 6 月。

Conference Proceedings:

201. 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.
202. Q. Wang, ``Stability of Thin Filament Flows of Polymeric Liquid Crystals'', *Proceedings of ICIAM 95*, Hamburg, Germany, July 4-7, 1995.
203. Q. Wang, M. G. Forest and H Zhou, "A Hydrodynamic Theory for Solutions of Nonhomogeneous Nematic Liquid Crystalline Polymers with Density Variations." ASME 2002 International Mechanical Engineering Congress and Exhibition, 2009-2019, 2002.
204. S. Heidenreich, S. Hess, R. Zhou, S. H. L. Klapp, Q. Wang, H. Zhou, X. Yang and M. G. Forest, "Orientational dynamics driven oscillatory hydrodynamical jets in the flow of nano-rods", *Proceedings of the XV-th International Congress of Rheology*, 2008.
205. Dacheng Ren, Qi Wang, and Yan-Yeung Luk, "Collaborative Research: Investigating Bacteria-Surface Interactions by Surface Engineering and Mathematical Modeling", *Proceedings of 2010 NSF Engineering Research and Innovation Conference*, Hawaii, 2010.

206. Dacheng Ren, Qi Wang, and Yan-Yeung Luk, "Collaborative Research: Investigating Bacteria-Surface Interactions by Surface Engineering and Mathematical Modeling", *Proceedings of 2011 NSF Engineering Research and Innovation Conference*, Atlanta, Georgia, 2011.
207. Zhenlu Cui, Qi Wang, and Jianbin Su, "Oscillatory shear rheology of chiral liquid crystal polymers", *SPIE*, 2009.
208. Norazaliza Mohd Jamil and Qi Wang. "A mathematical model for the effects of volume fraction and fiber aspect ratio of biomass mixture during enzymatic hydrolysis." Journal of Physics: Conference Series, Volume 890, 1st International Conference on Applied & Industrial Mathematics and Statistics 2017 (ICoAIMS 2017) 8–10 August 2017, Kuantan, Pahang, Malaysia.
209. Norazaliza Mohd Jamil and Qi Wang. "Multi-scale modeling for cellulosic biomass mixture during enzymatic hydrolysis." Proceedings of 2017 4th International Conference on Industrial Engineering and Applications (ICIEA), 21-23 April 2017, Nagoya Japan. DOI: 10.1109/IEA.2017.7939220.
210. Reece Fratus, Thomas Fair, Adam Baker, Lucas Schmidt, Tong Ye, Qi Wang, Taixing Cui, Thomas K. Borg, Arman Kilic, and Bruce Z. Gao "Evaluating vessel mechanics with optical coherence tomography based digital image correlation", Proc. SPIE 12367, Optical Coherence Tomography and Coherence Domain Optical Methods in Biomedicine XXVII, 1236712 (8 March 2023); https://doi.org/10.1117/12.2650491.

Papers Submitted:

211. Jun Li, Chang Liu, and Qi Wang, "Collective Motion of Active Particle Systems on Surfaces," *Soft Matter*, 2023.
212. Qi Hong and Qi Wang, "A Hybrid Computational Framework for Fluid-Solid Structure Interaction", Journal of Computational Physics, 2023.
213. Wenqiang Liu, Juan Zhang, Yonghong Hao, Qi Wang, Xiaonong Hu, Xin Huang. "Interpretable deep learning models for surface hydrological processes at three-time scales." Journal of Hydrometeorology, 2022.
214. Chunyan Li, Lu Wang, Xiang Cao, Kai Wang, Jianguo Hou, Hua Jiang, and Qi Wang, "Building Prognostic Models for Septic Patients Using a Small Dataset." Intelligence-based medicine, 2023.
215. Lu Wang, Chunyan Li, Xiang Cao, Kai Wang, Hua Jiang, and Qi Wang, "Prognostic Models for Sepsis Based on Limited Data." Critical Care Medicine, 2023.
216. Huiqing Hao, Yonghong Hao, Zhongqin Li, Cuiting Qi, Qi Wang, Ming Zhang, and Tian-Chyi Jim Yeh. "Insight into glacio-hydrological processes using explainable machine-learning (XAI) Models." Journal of Hydrology, 2023.
217. Shouwen Sun, Liangliang Lei, and Qi Wang, "Volume and Entropy-Production-Rate-Preserving Algorithms for A Hydrodynamical Model of Incompressible Binary Fluids." 2023.
218. Sachith Wickramasinghe, Alexandria Hoehn, Shehani T. Wetthasinghe, Qi Wang, Jacek Jakowski, Vitaly Rassolov, Chuanbing Tang, and Sophya Garashchuk. "Theoretical examination of the hydroxide transport in cobaltocenium-containing polyelectrolytes." 2023.
219. Evangelia Katsoulakis, Qi Wang, Jun Deng, et al. "Digital Twin for Health: A Review". NPJ Digital Medicine. 2023.
220. Chunmei Ma, Xiping Yan, Yonghong Hao, Qi Wang, Junfeng Zhu, Huiqing Hao, Jinqi Zhu and Cuiting Qi, "A hybrid deep learning model for studying spatiotemporal mechanisms of karst spring discharge processes." Water Resources, 2023.
221. Wenkai Yu and Qi Wang. "Multi-species Ion Transport in Channels of Arbitrary Geometries". 2023.

Special Issues and Books Edited:

222. W. Kang, K. Liang, Q. Wang, *Special Issue for Discrete and Continuous Dynamical System-Series B*, 8 (3), 2007.
223. An Chang Shi, Qi Wang, and Pingwen Zhang, "Structure Formation and Evolution in Soft Matter/Complex Fluid Systems", *Communications in Computational Physics*, 2009.
224. Qi Wang and Xiaofeng Yang, "Theoretical and Computational Modeling of Complex Fluids/Soft Matter", *Discrete and Continuous Dynamical System-Series B*, 2011.

225. Qi Wang, "Trends in Applied Mathematics", *Mathematical Methods in the Applied Sciences*, 2015, 38(18).

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 and Linear Algebra
- Ordinary differential equations
- Discrete Mathematics
- Engineering Mathematics I, II
- Elementary Partial Differential Equations I, II
- Linear Algebra with Applications
- Vector Calculus
- Mathematical Foundation on Data Science and Machine Learning

Graduate Courses:

- Numerical Partial Differential Equations I
- 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 for Partial Differential Equations
- Qualitative Theory of Ordinary Differential Equations
- Mathematical Modeling
- Numerical Linear Algebra
- Wave propagation (linear and nonlinear waves)
- Modeling of Complex Fluids
- Advanced Topics in Applied and Computational Mathematics I & II
- Modeling and Computation of Complex Biological systems I & II
- Numerical Methods for Differential Equations I, II

Curriculum Development:

- Developed a new master's degree program in industrial and applied mathematics at IUPUI

- Developed a yearlong sequence of courses on computational mathematics for the new master's 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 by restructuring the applied and computational mathematics courses and the qualifying examination system at FSU
- Developed a Ph.D. track in Applied and Computational Mathematics at the University of South Carolina by developing and designing the applied and computational mathematics graduate program.
- Developed a new undergraduate course on "mathematical foundation of data science and machine learning" at USC in 2019, which has been offered annually.

Student Advising:

MS students advised: 18

Ph. D. students advised: 18

Postdocs mentored: 15

INVITED PRESENTATIONS (since 2000)

Seminar and colloquium

1. Physics Colloquium, University of South Carolina, April 13, 2023
2. Mathematics Colloquium, WPI, March 22, 2023
3. Mathematics Colloquium, University of Kansas, March 7, 2023
4. Mathematics Colloquium, University at Buffalo, Feb 28, 2023
5. MUSC, Department of Hematology and Oncology, Medical University of South Carolina, August 12, 2022
6. Yale Smart Medicine Lab, Feb. 15, 2022
7. School of Computational Science, Michigan State University, Feb. 7, 2022
8. South Eastern University, Nanjing, China, Oct. 17, 2021
9. George Mason University, Oct. 15, 2021
10. Beijing University of Technology, June 16, 2021
11. Tianjin Normal University, June 9, 2021
12. Hong Kong Polytechnic University, Feb. 22, 2021
13. University of Maryland, Maryland, Feb. 11, 2020
14. Nanjing University of Aeronautics and Astronautics, Nanjing, China, Jan. 8, 2020
15. Missouri University of Science and Technology, Rolla, Missouri, Nov. 22, 2019
16. University of Michigan Technology, Sep. 27, 2019
17. Tianjin Math Day, Tianjin, May 29, 2019
18. Beijing University of Technology, China, Oct. 18, 2018
19. Nanjing Normal University, Nanjing, China, June 19, 2018
20. Nanjing University of Aeronautics and astronautics, Nanjing, China, June 18, 2018
21. Fudan University, June 14, 2018

22. Jinan University, Jan. 12, 2018
23. Tianjin Normal University, Dec. 22, 2017, China
24. Rutgers University, NJ, Sept. 22, 2017
25. Renming University, Beijing, China, June 9, 2017.
26. University of Electronic Science and Technology of China, Chengdu, Nov. 25, 2016
27. Tianjin University of Technology, Tianjin, China, Nov. 15, 2016
28. Institute of Computational Mathematics, CAS, Sept. 26, 2016
29. Peking University, Beijing, Sep. 21, 2016
30. Kavli Institute of Theoretical Physics, CAS, Beijing, August 24, 2016
31. Nankai University, July 13, 2016
32. Anhui University of Science and Technology, July 7, 2016
33. Nanjing Normal University, July 6, 2016
34. UC Santa Barbara, April 8, 2016
35. Rutgers University, March 25, 2016
36. University of North Carolina at Greensboro, Feb. 4, 2016
37. IAPCM, Jan. 8, 2016
38. Renmin University, Beijing, China, Dec. 25, 2015
39. North Carolina State University, Nov. 18, 2015.
40. HKUST, Oct. 28, 2015
41. Tianjin Normal University, Oct. 26, 2015
42. University of Maryland, Sept. 23, 2015
43. Shangdong University, School of Mathematics, Dec. 26, 2014
44. Tsinghua University,Chou Peiyuan Center for Applied Mathematics, Dec. 25, 2014
45. Beijing Normal University, School of Mathematics, Dec. 22, 2014
46. Nankai University, School of Mathematics, Nov. 28, 2014.
47. University of North Carolina at Chapel Hill, Sept. 18, 2014
48. University of Kansas, Laurence, KS, April3, 2014.
49. SiChuan Medical Science Academy, ChengDu, China, Dec. 22, 2013.
50. Ohio State University, Columbus, OH, Nov. 6-7, 2013.
51. Anhui University of Science and Technology, Ma An Shan, China, August 4, 2013.
52. Microbiology Institute of Chinese Academy of Sciences, Beijing, China, July 12, 2013.
53. Beijing University of Science and Technology, China, June 28, 2013.
54. Montana State University, Department of Mathematical Sciences, April 26, 2013.
55. University of Georgia, Physics Department, Athens, GA, February 5, 2013
56. Georgia State University, Department of Mathematics, Atlanta, GA, April 19, 2013
57. University of Alabama, Department of Mathematics, Tuscaloosa, Nov. 14, 2012
58. University of California, Irvine, Department of Mathematics, Nov. 5, 2012
59. Nankai University, School of Mathematics, June 13, 2012
60. Voorhees College, High School Science Fair Lecture, April 21, 2012
61. Voorhees College, Science Day Lecture, Feb 23, 2012
62. University of North Carolina at Chapel Hill, October, 2011
63. 2nd Annual EPSCOR Workshop, Tennessee-South Carolina-Oakridge National Lab, October, 2011
64. Illinois Institute of Technology, November, 2010
65. University of Utah, November, 2010
66. George Mason University, October, 2010
67. Michigan State University, East Lansing, MI, May 4, 2010
68. Indiana University-Purdue University Indianapolis, IN, Jan. 31, 2010
69. University of North Carolina at Chapel Hill, Nov. 13, 2009
70. University of North Carolina at Charlotte, April 15, 2009
71. Wilfrid Laurier University, April 8, 2009
72. Indiana University-Purdue University Indianapolis, Oct. 2, 2008
73. University of South Carolina, Jan., 2008
74. Peking University, Dec. 2007
75. Old Dominion University, Colloquium, Oct 2007

76. Old Dominion University, Public Lecture, Oct. 2007
77. University of Central Florida, Nov. 2007
78. Beijing Normal University, Sep. 2007
79. Purdue University, November 2006
80. UC Santa Barbara, May 2006
81. University of Akron, March, 2006
82. Nankai University, School of Mathematics, Tianjin, July 2005
83. Peking University, School of Mathematics, Beijing, June 2005
84. IMA, University of Minnesota, April 2005
85. Peking University, School of Mathematics, Beijing, 2004
86. Fudan University, Department of Mathematics, Shanghai, 2004
87. University of Texas Arlington, Arlington, Texas, 2004
88. University of Central Florida, Orlando, FL, 2004
89. The University of California, Irvine, CA, 2003
90. Temple University, Philadelphia, PA, 2003
91. University of Minnesota, Minneapolis, MN, 2002
92. Carnegie-Mellon University, Pittsburgh, PA, 2002
93. Penn State University, State College, PA, 2002
94. Morningside center, Academia Sinica, Beijing, PRC, 2001
95. Center for computational mathematics, Academia Sinica, Beijing, PRC, 2001
96. Clemson University, Clemson, SC, 2001
97. Louisiana State University, Baton Rouge, LA, 2000
98. University of California, Davis, CA, 2000
99. The University of Delaware, Newark, DE, 2000

National and international meetings

1. International Workshop on Digital Twins for Smart Health, THE WEB CONFERENCE 2023, Austin, Texas, May 1, 2023
2. Workshop on AI in medicine (Online), Chengdu, December 19-23, 2022
3. Workshop on Informatics in Translating Scientific Discoveries into Action (I2A) as a part of the 10th International Conference on Intelligent Biology and Medicine (ICIBM 2022), August 7-8, Philadelphia, PA, 2022
4. Workshop on interface problems: modeling, theory and numerics (online). July 3-5, 2022
5. Virtual NCI-DOE Collaboration Cancer Patient Digital Twin Project Teams Final Updates Meeting, March 4, 2022
6. Mini-symposium on Artificial Intelligence in Biomedical Device Research, Online workshop, Feb. 18, 2022
7. Hybrid Workshop on Education Initiatives in ML and AI in Biomedicine (virtual), Jan. 11, 2022.
8. AI and its Applications in Medicine Workshop, Chengdu, Dec. 18, 2021
9. Forum in Soft Matter, Xiamen University, Dec. 13, 2021
10. Workshop on numerical methods for interface problems, Beijing, July 7-9, 2021
11. Forum on Frontiers of Computational Mathematics, Xiamen University, May, 27-30, 2021
12. Workshop on Modeling and Numerical Methods for Interface Problems, Jan. 28-30, 2021
13. The Third Conference on Computational and Mathematical Bioinformatics and Biophysics, Tsinghua Sanya International Mathematics Forum, Dec. 20-24, 2020
14. International Conference on Phase Field Models, July 27-30, 2020, Xiamen University
15. Workshop on Numerical Methods and New Perspectives for Extended Liquid Crystalline Systems, ICERM, Brown University, Dec 9 - 13, 2019
16. ICIAM 2019, Valencia, Spain, July 15-19, 2019
17. International Conference on Scientific Computing at Tianjin Normal University, July 5-July 7, 2019

18. International Conference on Interface Problem in Fluid and Solid at China Southern Normal University, June 18-June21, 2019
19. Advanced Numerical Methods for Scientific Computation (ANMSC2019) at Southern University of Science and Technology of China, June 15-18, 2019
20. International Conference on Mathematical Modeling and Numerical Methods， Qingdao, May30-June 2, 2019
21. Emergency Medicine and AI, Chengdu, March 12, 2019
22. Workshop on Phase field problem: recent development and applications, University of Science and Technology of China, January 10-12, 2019
23. Modeling and Numerical Methods for Interfacial Dynamics, China Southern University of Science and Technology, Shenzhen, China December 15-18, 2018.
24. Workshop on Phase Field Methods, Xiamen University, Nov. 15-16, 2018
25. Collective motion of active particles on surfaces, Kavli Inst, Chinese Academic of Sciences, Beijing, China, August 16, 2018.
26. Symposium on Recent Advances on Structure and Property-Preserving Numerical Approximations to PDEs, The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications July 5 - July 9, 2018, Taipei, Taiwan
27. Mathematics in action: Modeling and Analysis in Molecular Biology and Electrophysiology, Suzhou University, June 16-18
28. Energy and entropy production rate preserving schemes for thermodynamically consistent phase-field models, AMS joint meeting, Fudan University, Shanghai, June 10-14, 2018
29. Modeling, Analysis Simulations and Applications of Interfacial Dynamics and FSI problems, TSIMF, Sanya, Hainan, June 4-8, 2018
30. The Third International Conference on Cardiac Hydrodynamics, Northwest Polytechnic University, Xian, May 31-June 3, 2018
31. 2018 International Forum on Nutrition and Artificial Intelligence in Medicine, Cheng Du, Sichuan, May 26, 2018
32. Workshop on Microorganisms and Biofilms, Fields Institute, Toronto, CA, May 8-12, 2018
33. Modeling and Simulation of Interface Dynamics in Fluids/Solids and Their Applications, Singapore, May 15-18, 2018
34. IMA Workshop on Active Matter, University of Minnesota, MM, Jan. 16-19, 2018
35. Hongkong Polytechnic University, Workshop on Computational Mathematics, December 9-11, 2017
36. 18th Conference on Numerical Methods for Fluid Dynamics, Huaihua, Hunan, China, August 12-15, 2017
37. 2017 Systems Biology and Medicine Workshop, Chengdu, Sichuan, July 26-July 30, 2017
38. Focus Activity on Mathematical and Computational Methods for Quantum and Kinetic Problems, CSRC, Beijing, June 11-15, 2017
39. 3rd International Conference on Computational Mathematics and Engineering, Hong Kong Polytechnic University, May 31-June 2, 2017
40. Siam Southeastern Regional Meeting, FSU, Tallahassee FL, March 18-19, 2017
41. Tianjin-Beijing Computational Mathematics meeting, Dec. 26, 2016
42. Mathematics Biophysics and Molecular Bioscience Workshop, Sanya, China, Dec. 19-23, 2016
43. 2016 NCTS Workshop on Complex and Biological fluid dynamics with applications, Taiwan, Dec. 18-20, 2016
44. Workshop for mathematical medicine, Chengdu, China, Nov. 23-26, 2016
45. Workshop for Computational Methods in Materials Science, Beijing, Oct. 22-23, 2016
46. Chinese Chemical Society 2016 Conference on Soft Matter Theories, Computation and Simulations, Tianjin, China, August 25-August 28, 2016
47. 2016 International Workshop on Interdisciplinary Research between Mathematics and Biology, Peking University, July 16-17, 2016.
48. International Workshop on Nonlinear Partial Differential Equations and Scientific Computing, July 5-8, 2016.
49. The 5th CAM-ICCM Workshop: Multiscale and Large-scale Scientific Computing Chinese University of Hong Kong, June 18-20, 2016.

50. Siam Conference on Materials Science, Philadelphia, PA, USA, May12-15, 2016.
51. Numerical Analysis for Nonlinear Phenomena, Tsinghua Math, Forum, Sanya, China, Jan. 11-15, 2016.
52. Siam PDE 2015, Scottsdale AZ, Dec. 8, 2015
53. Workshop on Collective Dynamics of Active Systems, Duke University, Nov. 15, 2015
54. AMS Eastern Regional Meeting, New Brunswick, NJ, Nov, 2015
55. IWNM, Beijing, August 14-16, Beijing, 2015.
56. Workshop on the numerical methods for PDEs, Nankai University, Tianjin, August 7-9, 2015.
57. ICMMES, Beijing, July 20-25, 2015.
58. International Conference on Computational & Mathematical Biomedical Engineering （CBME）, Paris, France, June 29-July 2, 2015.
59. Workshop on complex materials, University of Oslo, Norway, June 9-12, 2015.
60. Multiscale Modeling workshop, HKUST, Dec. 15-19, 2014.
61. SCPDE14, Baptist University, HongKong, Dec. 8-12, 2014.
62. MRS symposium on mathematical aspect of materials sciences, Boston, MA, Dec 1, 2014.
63. Siam Conference on Life Sciences, Charlotte, NC, August 4-7, 2014.
64. 2014 Annual Meeting of the Society of Biomathematics, Osaka, Japan, July 28-August 1, 2014
65. Sino-French conference on Computational and Applied Mathematics, Xiamen University, China, June 2-6, 2014.
66. Liquid Crystals, Suzhou, June 4-6, 2014
67. 2014 International on Modeling and Computation of Complex Biological Systems, Nankai University, May 26-29, 2014.
68. SIAM Southeastern Regional Meeting, March 29-30, 2014.
69. Newton Institute Workshop on Complex Fluids in Evolving Domains, Leeds, UK, August 19, - 21, 2013.
70. Siam Annual Meeting, San Diego, July 8-12, 2013.
71. International Conference on Applied and Computational Mathematics, Yellow Mountain, June 20-24, 2013.
72. International Conference on Mathematical Modeling and Computation, Wuhan University, May 15-19, 2013.
73. Ki-net workshop on Transport models for collective dynamics in biological systems, NCSU Jan. 15-Jan. 18, 2013.
74. Siam Conference on Materials Sciences, Philadelphia, June 8-12, 2013
75. Siam Conference on Computational Science and Engineering, Boston, Feb 25-29, 2013
76. International Workshop on Frontiers of Computational Mathematics, BCSRC, Beijing, October 20-21, 2012
77. International Conference in Applied and Computational Mathematics, Xiamen University, July 25-29, 2012
78. Frontier Conference in Applied and Computational Mathematics, NJIT, May 18-20, 2012.
79. MBI Workshop on Tissue Engineering and Regenerative Medicine, Columbus, OH, April 30-May 4, 2012
80. International Conference on Scientific Computing and Applications, UNLV, April 1-4, 2012
81. Siam Southeastern Region Meeting, University of Alabama, Huntsville, March 24-25, 2012
82. Workshop on Mathematical Models of Electrolytes with Application to Molecular Biology, Taipei, Taiwan, Jan. 5-7, 2012
83. Workshop on Complex Fluids, Beijing Normal University, Beijing, China, June 24, 2011
84. International Conference on Interdisciplinary Applied and Computational Mathematics, Zhejiang University, Hangzhou, China, June 17-21, 2011.
85. Forum on Scientific and Engineering Computing 2011, Beijing, China, June 2-3, 2011.
86. MBI, Workshop on Computational Biology, Ohio State University, April 2011.
87. High Performance Computing Workshop, University of South Carolina, Columbia, SC, April, 14, 2011
88. Siam Conference on Computational Science and Engineering, Reno, Nevada, March 5, 2011

89. Workshop on Mathematical Modeling and Computer Simulations for Soft Materials, Colorado State University campus (Fort Collins, CO), September 13-17, 2010
90. Siam Conference on Nonlinear Waves and Coherent Structures, Philadelphia, PA, August 16-19, 2010
91. Taiwan Strait Workshop on Computational Mathematics, Xiamen, China, August 11-12, 2010
92. Workshop on Computational Problems in Materials Sciences, Suzhou, China, August 2-5, 2010
93. Symposium on Computational PDEs and modeling of complex biological systems, Pittsburg, PA, July 12-15, 2010
94. Symposium on fluids with dynamic microstructure, Pittsburgh, PA, July 12-16, 2010
95. International Workshop on Scientific Computing and Nonlinear PDEs, Jiuzhaigou, China, June 7-11, 2010
96. Emerging Topics in Dynamical Systems and Nonlinear PDEs, Barcelona, Spain, May 31-June 4, 2010
97. Cha Cha Days, UCF, Orlando, FL, Nov. 7, 2009
98. Flowing Complex Fluids: Fluid Mechanics-Interaction of Microstructure and Flow, IMA, University of Minnesota, Oct. 16, 2009
99. The Sixth International Conference for Mesoscopic Methods in Engineering and Science (ICMMES-2009), Guangzhou, China, July 13-17, 2009
100. Workshop on Dynamical Systems and Modern Applied Mathematics, HuaZhong Science and Technology University, Wuhan, China, June 20, 2009
101. Symposium on modeling and computation of soft matter materials, Siam Southeastern Regional Meeting, April 4, 2009
102. Special Topic Session on complex fluids, IMACS, Athens, GA, March, 2009
103. Minisymposium on theoretical and computational modeling of soft matter and complex fluids, Siam CSE, Miami, March 2-6, 2009
104. IMA Special Workshop: Scientific Challenges in Solar Energy Conversion and Storage, University of Minnesota, November 1, 2008
105. MMM2009, Tallahassee, FL, Oct. 28-31, 2008
106. Minisymposium, Siam Annual Meeting, San Diego, CA, July 7-11, 2008
107. World Congress of Nonlinear Analysts, Orlando, FL, July 2-9, 2008
108. Kavli Institute, Institute of Physics, Chinese Academy of Science, Beijing, P. R. China, May19-25, 2008
109. Ferroelectric phenomenon, AIMS, Stanford, CA, May 12-16, 2008
110. Workshop on structure formation in soft matter/complex fluids, BICMR, Peking University, Dec. 2007
111. Symposium on Modeling and Simulation of Complex Fluids, ASME, Nov., 2007
112. Minisymposium on advances in advanced materials, ICIAM07, Zurich, Switzerland, July, 2007
113. Workshop on Multiscale modeling in complex fluids, CSCAMM, University of Maryland, April, 2007
114. Minisymposium on Recent Advances in Soft Matter and Complex Fluids, Siam Conference on Computational Science and Engineering, Costa Mesa, CA, Feb. 2007
115. AMS-SIAM joint symposium on materials, New Orleans, LA, Jan. 2007
116. Symposium on complex fluids, SES2006, Penn State University, PA, 2006
117. 2006 International Conference on Applied Mathematics and Interdisciplinary Research-Nankai, Tianjin, P. R. China
118. Workshop on Complex Fluids, Peking University, Beijing, 2006
119. Interfacial Dynamics in Complex Fluids, May, Banff, Canada, 2006
120. Workshop on Stochastic Differential Equations, FSU, February 2006
121. New Challenges in composite materials, AFOSR/AFL, Dayton, 2005
122. Effective theories for nanocomposite materials, IMA workshop, 2005
123. Nanoscale Material Interfaces: Experiment, Theory, and Simulation, Singapore, Jan. 11-15, 2005
124. CRM Workshop on Multiscale Rheological Models for Fluids, University of Montreal, Canada, 2004
125. Workshop on Complex Fluids, Peking University, Beijing, 2004

126. Department of Energy Workshop on Multiscale Challenges, Denver, Co, 2004
127. Special Session on soft matters, AMS southeastern sectional meeting, Chapel Hill, NC, 2003
128. Symposium on Modeling and Simulation of Multiscale Fluids, International Congress on Industrial and Applied Mathematics, Sydney, Australia, 2003
129. International Workshop on non-equilibrium thermodynamics, Princeton, NJ, 2003
130. Special Session on PDE and Its Applications, AMS Annual Meeting, San Diego, 2002
131. The Second Siam Meeting on Mathematical Issues in Materials Science, Philadelphia, PA, 2000

Tutorial Lectures (since 2000)

1. AI and machine learning in medicine, Chengdu, December19-23, 2022.
2. Soft Matter Lecture, International summer School of Soft Matter, Xiamen University, August 5-16, 2019.
3. AI tutorial, Chengdu, July 23-24, 2019.
4. Basics of Machine Learning and Deep Learning, Summer School, Sichuan People's Hospital, Cheng Du, Sichuan, China, August 8, 2018.
5. Machine Learning and Deep Learning-- Theory, Numerics, and Applications, Summer School, School of Mathematics, Nankai University, Tianjin, China, July 2-July 27, 2018.
6. Complex Fluids Summer School, Fudan University, Shanghai, China, June –July, 2006
7. Workshop II, Nanoscale Material Interfaces: Experiment, Theory, and Simulation, Singapore, Jan. 3-8, 2005
8. Complex Fluids, Fudan University, June, 2004

CONFERENCE, SYMPOSIA & WORKSHOPS ORGANIZED RECENTLY (since 2000)

1. Workshop on Numerical Methods for Multiphysics Problems (Virtual), Beijing, April 22, 2022
2. Forum on interfacial phenomena, CSRC, Beijing, June 8, 2019.
3. Symposium on Recent Advances on Structure and Property-Preserving Numerical Approximations to PDEs, The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications July 5 - July 9, 2018 Taipei, Taiwan
4. Forum on Nonequilibrium Phenomena, Beijing, China, Dec. 20-21, 2015.
5. International Conference on Applied Mathematics and Interdisciplinary Studies, Chern Institute of Mathematics, Nankai University, Tianjin, China, May 24-27, 2013.
6. Summer School on Network Science, University of South Carolina, May 20-31, 2013.
7. CTW: Tissue Engineering and Regenerative Medicine, MBI, Ohio State University, April 30 - May 4, 2012
8. International Conference on Applied Mathematics and Interdisciplinary Studies, Chern Institute of Mathematics, Nankai University, Tianjin, China, June 13-16, 2011
9. Symposium on Modeling of complex fluids: From passive to active systems, Siam meeting on materials sciences, Philadelphia, May 23-26, 2010
10. Symposium on modeling and computation of soft matter materials, Siam South Eastern Regional Meeting, Columbia, SC, April 4-5, 2009
11. Special Topics Session, IMACS, Athens, GA, March 23-26, 2009
12. Minisymposium, Siam CSE, Miami, March 2-6, 2009
13. Wave Propagation in Nonlinear Materials, 7th AIMS Dynamical System Meeting, Arlington, Texas, May, 2008
14. 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
15. Minisymposium on Recent Advances in Soft Matter and Complex Fluids, Siam Conference on Computational Science and Engineering, Costa Mesa, CA, 2007
16. Symposium on complex fluids, SES2006, Penn State University, PA, 2006
17. Workshop on Complex Fluids, Peking University, Beijing, P. R. China, 2006

18. International conference on applied mathematics and interdisciplinary research—Nankai, Tianjin, P. R. China, 2006
19. Workshop on multiscale challenges in soft matter materials, SAMSI, NC, 2004.
20. AMS Special Session on Multiscale modeling of complex fluids, Tallahassee, FL, 2004
21. Symposium on Multiscale modeling and simulation of complex fluids, Siam MS04, Los Angeles, CA, 2004
22. AMS Special Session on Multiscale Challenges in Soft Matters, Chapel Hill, NC, 2003
23. Mathematical Problems in Liquid Crystal Polymer, 4th Dynamical System Conference, Snow Bird, 2000

SERVICE TO THE PROFESSIONAL SOCIETY

Editorial Board Membership:

- Discrete and Continuous Dynamical Systems- Series B, 2004-Present.
- Mathematical Methods in the Applied Sciences, 2009-Present.
- Nanoscale Systems: Mathematical Modelling, Theory and Applications, 2012-Present.
- Computational and Mathematical Biophysics, 2018-Present.
- Molecular Based Mathematical Biology, 2012-2018.
- Mathematics, 2022-Present.

Referee for Journals:

- Siam J. Applied Mathematics,
- Liquid Crystal and Molecular Crystal,
- Journal of Biophysics,
- 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,
- J. of Applied and Computational Mathematics
- Journal of Theoretical Biology
- Biofuel
- Science China

- Urgent Care
- Siam Journal on Multiscale Modeling and Simulation
- Journal of Scientific Computing
- Journal of Computational Physics
- Computers Methods in Applied Mechanics and Engineering
- J. R. Soc. Interface
- Applied Mathematics and Mechanics
- Journal of Colloid and Interface
- International Journal for Numerical Methods in Engineering
- Biomedical and Environmental Sciences
- Multiscale Modeling and Simulation: A SIAM Interdisciplinary Journal
- ACS Applied Materials & Interfaces
- NPJ Biofilms and Microbiomes
- Biofabrication
- Journal of Biophysics

Referee for funding agencies:

- Grant proposals of DOE, NIH, NSF, AFOSR, NIH BEP panel, National Academy of Science for Ohio State R&D projects, Petroleum Fund, Mississippi State EPSCOR grant, Fields Institute, Canada, Natural Science Foundation of China etc.

SERVICE ON NATIONAL COMMITTEES

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

SERVICE TO THE UNIVERSITY (since 2000)

- University High Performance Computing Committee, VPR's Office (USC)
- University Diversity Committee (USC)
- Member of Management Team, Nanocenter at USC
- University-wide hiring committee on biofabrication (USC)
- Chair of Applied and Computational Mathematics Committee
- Chair of Hiring Committee (USC)
- Chair of Tenured Full Professor Committee (USC)
- Advisor Committee, Committee on Applied and Computational Mathematics, Computer Committee, and Hiring Committee (USC)
- Member of Departmental Award, Graduate, Executive, Faculty evaluation, Professional degree, and 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)
- Thrust Leader for SC Biofabrication Project on Biomathematics at USC
- PI for shared high performance computing facilities at USC
- First-year Scholar Mentor, 2012-2013
- Mentor for undergraduate student research
- Office of Research Awards Committee

PROFESSIONAL MEMBERSHIPS

Society for Industrial and Applied Mathematics (SIAM), American Association for the Advancement of Science (AAAS)

REFERENCES

Available upon request