

# JUNFENG ZHANG, Ph.D. & P.Eng.

Professor in Mechanics Engineering



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Science, Laurentian University  
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## Research Interests

- Blood Cell Flows
- Microscopic Biofluid Mechanics
- Microfluidics & Nanofluids
- Interfacial Phenomena
- Multiphase Flows
- Heat and Mass Transfer
- Particulate and Porous Flows
- Lattice Boltzmann Method
- Numerical Modeling
- Computational Physics

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## Education

- Ph.D., Mechanical Engineering, September 2005  
University of Alberta, Edmonton, Canada
- M.Sc., Applied Mechanics, March 1993  
Nanjing University of Science and Technology, Nanjing, China
- B.Sc., Mechanical Engineering, July 1990  
Zhejiang University, Hangzhou, China

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## Employment

- Full Professor (07/2016 - present); Associate Professor (07/2011 - 06/2016); Assistant Professor (07/2007 - 06/2011)  
Mechanical Engineering, School of Engineering, Laurentian University, Sudbury, Canada
- NSERC Postdoctoral Research Fellow (10/2005 – 06/2007)  
Biomedical Engineering, School of Medicine, Johns Hopkins University, Baltimore, USA
- Visiting Scientist (05 – 07/2003)  
Department of Surface Chemistry, Institute of Polymer Research, Dresden, Germany
- Mechanical/Software Engineer (04/1993 – 03/2001)  
Zhengzhou Research Institute of Electro-Mechanical Engineering, Zhengzhou, China

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## Scholar Activities

- Prospective Speaker/Session Chair, *The 27<sup>th</sup> Congress of the European Society of Biomechanics (ESB2022)*, Porto, Portugal, June 26-29, 2022.
- Guest Editor, *Micromachines – Special Issue on Heat and Mass Transfer in Micro-/Nano-Systems, 2021-2022*.
- Keynote Speaker/Scientific Committee Member/Session Chair, *The Eighth International Conference of Fluid Flow, Heat and Mass Transfer (FFHMT'21)*, Online, May 21-23, 2021.
- Session Chair, *The Third International Conference on Numerical Modelling in Engineering (NME 2020)*, Online, December 6-9, 2020.

- Session Chair, *The Second International Conference on Numerical Modelling in Engineering (NME 2019)*, Beijing, China, August 19-22, 2019.
- Technical Committee Member, *The 2018 International Conference on Mechanical Engineering and Materials (ICMEM2018)*, Suzhou, China, June 22-24, 2018.
- Symposium Organizer and Chair, *The 15th International Congress of Biorheology and the 8th International Conference on Clinical Hemorheology*, Seoul, Korea, May 24-28, 2015.
- International Advisory Committee Member, *The 8th International Conference on Computational Heat and Mass Transfer*, Istanbul, Turkey, May 25-28, 2015.
- Scientific Advisory Committee Member, *The International Symposium on Micro and Nano Technology*, Calgary, Canada, May 18-20, 2015.
- Technical Program Committee Member, *The 2nd International Conference on Biomedical Engineering and Biotechnology (iCBEB 2013)*, Wuhan, China, October 11-13, 2013.
- Session Chair: *The 2011 Congress of the Chinese Society of Theoretical and Applied Mechanics*, Harbin, China, August 21-24, 2011.
- Session Chair: *The 22nd Canadian Congress of Applied Mechanics*, Halifax, Canada, May 31 - June 4, 2009.
- Organizing Committee Member and Session Chair: *The 12th International Conference on Mechatronics Technology*, Sudbury, Canada, October 14-17, 2008.
- Session Chair: *The 2008 Forum of Canadian Society of Mechanical Engineering*, Ottawa, Canada, June 5-8, 2008.
- Session Chair: *The 16th International Conference on Discrete Simulation of Fluid Dynamics in Complex Systems*, Banff, Canada, July 22-27, 2007.
- Grant Reviewers: NSERC (Natural Sciences and Engineering Research Council of Canada); AHFMR (Alberta Heritage Foundation for Medical Research); DFG (Deutsche Forschungsgemeinschaft, German Research Foundation); The State Natural Science Award (P. R. China); ETH Zurich Grant; HFSP (Human Frontier Science Program, international); etc.
- Article Reviewers: *Biophysical Journal*, *Journal of Biomechanics*, *American Journal of Physiology - Heart and Circulatory Physiology*, *Microvascular Research*, *Mathematical Medicine and Biology*, *Canadian Journal of Physiology and Pharmacology*, *Microfluidics and Nanofluidics*, *Journal of Computational Physics*, *Computer & Fluids*, *Chemical Engineering Journal*, *IEEE Transactions on Nanotechnology*, *Physical Review Letters*, *Physical Review E*, *Computers and Mathematics with Applications*, *International Journal for Numerical Methods in Biomedical Engineering*, etc.

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## Honors/Awards

- CIHR (Canadian Institutes of Health Research) Young Investigator Travel Award (June 2009)
- Ontario Research and Innovation Postdoctoral Fellowship (declined, July 2007)
- NSERC Postdoctoral Fellowship (October 2005 – August 2007)
- Alberta Ingenuity Ph.D. Studentship (September 2002 – September 2005)
- Mary Imrie Graduate Student Award (May 2004)
- National Technology Advance Award (August 1994, China)
- Excellent Student Honor (November 1992, Nanjing University of Science and technology, China)
- Excellent Student Scholarship (October 1989, Zhejiang University, China)

### Journal Articles:

1. F. A. Amiri and **J. Zhang**, Oxygen Transport across Tank-Treading Red Blood Cell: Individual and Joint Roles of Flow Convection and Oxygen-Hemoglobin Reaction, submitted, 2022.
2. M. Jbeili and **J. Zhang**, Particle-Resolved Simulations for Nanofluid Thermal Enhancement in Channel Flows, submitted, 2022.
3. A. Rezghi and **J. Zhang**, Tank-Treading Dynamics of Red Blood Cell in Shear Flow: On the Membrane Viscosity Rheology, *Biophysical Journal*, revised, 2022.
4. M. Jbeili and **J. Zhang**, System-Dependent Behaviors of Nanofluids for Heat Transfer: A Particle-Resolved Computational Study, *Computational Particle Dynamics*, revised, 2022.
5. M. Jbeili and **J. Zhang**, Boundary and Interface Treatments for One-Unit Pore-Scale Simulations of Heat and Mass Transfer in Porous Materials, *Achieves of Computational Methods in Engineering*, in press (DOI: 10.1007/s11831-022-09777-w), 2022.
6. R. Wang and **J. Zhang**, Editorial for the Special Issue on Heat and Mass Transfer in Micro/Nanosystems, *Micromachines*, 13(7), 1151, 2022.
7. A. Rezghi, P. Li, and **J. Zhang**, Lateral Migration of Viscoelastic Capsules in Tube Flow, *Physics of Fluids*, 34(1), 011906, 2022.
8. M. Jbeili and **J. Zhang**, Effects of Microscopic Properties on Macroscopic Thermal Conductivity for Convective Heat Transfer in Porous Materials, *Micromachines*, 12(11), 1369, 2021.
9. F. A. Amiri and **J. Zhang**, An Immersed Membrane Method for Mass Transfer across Flexible Semipermeable Membranes in Flows, *International Communications in Heat and Mass Transfer*, 128, 105601, 2021.
10. A. Rezghi and **J. Zhang**, A Counter-Extrapolation Approach for the Boundary Velocity Calculation in Immersed Boundary Simulations, *International Journal of Computational Fluid Dynamics*, 35(4), 248-268, 2021.
11. M. Jbeili and **J. Zhang**, The Generalized Periodic Boundary Conditions for Microscopic Simulations of Heat Transfer in Heterogeneous Materials, *International Journal of Heat and Mass Transfer*, 173, 121200, 2021.
12. P. Li and **J. Zhang**, Similar but Distinct Roles of Membrane and Interior Fluid Viscosities in Capsule Dynamics in Shear Flows, *Cardiovascular Engineering and Technology*, 12(2), 232-249, 2021.
13. P. Li and **J. Zhang**, Finite-Difference and Integral Schemes for Maxwell Viscous Stress Calculation in Immersed Boundary Simulations of Viscoelastic Membranes, *Biomechanics and Modeling in Mechanobiology*, 19(6), 2667-2681, 2020.
14. F. A. Amiri, G. Le, Q. Chen, and **J. Zhang**, Accuracy Improvement for Immersed Boundary Method Using Lagrangian Velocity Interpolation, *Journal of Computational Physics*, 423, 109800, 2020.
15. M. Jbeili and **J. Zhang**, The Temperature Decomposition Method for Periodic Thermal Flows with Conjugate Heat Transfer, *International Journal of Heat and Mass Transfer*, 150, 119288, 2020.
16. J. He, **J. Zhang**, and H. Shang, Two-Phase Dynamic Modelling and Simulation of Transport and Reaction in Catalytic Sulfur Dioxide Converters, *Industrial & Engineering Chemistry Research*, 58(25), 10963-10974, 2019.
17. Z. Wang and **J. Zhang**, Simulating Anisotropic Flows with Isotropic Lattice Models via Coordinate and Velocity Transform, *International Journal of Modern Physics C*, 30(10), 1941001, 2019.
18. S. K. Das, M. Cenanovic, and **J. Zhang**, A Physics-Based Estimation of Mean Curvature Normal Vector for Triangulated Surfaces, *Proceedings of the International Geometry Center*, 12(1), 70-78, 2019.

19. P. Li and **J. Zhang**, A Finite Difference Method with Sub-Sampling for Immersed Boundary Simulations of the Capsule Dynamics with Viscoelastic Membranes, *International Journal of Numerical Methods for Biomedical Engineering*, 35(6), e3200, 2019.
20. J. He, **J. Zhang**, and H. Shang, Dynamic Modelling and Simulation of the Sulfur Dioxide Converter in an Industrial Smelter, *Canadian Journal of Chemical Engineering*, 97(6), 1838-1847, 2019.
21. P. Li and **J. Zhang**, The Temperature Decomposition Method for Periodic Thermal Flows with General Wall Conditions, *Numerical Heat Transfer B: Fundamentals*, 74(3), 559-577, 2018.
22. P. Li and **J. Zhang**, Simulating Heat Transfer through Periodic Structures with Different Wall Temperatures: A Temperature Decomposition Method, *Journal of Heat Transfer*, 140(11), 112002, 2018.
23. Z. Wang, F. Colin, G. Le, and **J. Zhang**, Counter-Extrapolation Method for Conjugate Heat and Mass Transfer with Interfacial Discontinuity, *International Journal of Numerical Methods for Heat and Fluid Flow*, 27(10), 2231-2258, 2017.
24. M. Jbeili, G. Wang, and **J. Zhang**, Evaluation of Thermal and Power Performances of Nanofluid Flows through Square In-Line Cylinder Arrays, *Journal of Thermal Analysis and Calorimetry*, 129(3), 1923-1934, 2017.
25. Z. Wang, H. Shang, and **J. Zhang**, Lattice Boltzmann Simulations of Heat Transfer in Fully Developed Periodic Flows, *Physical Review E*, 95(6), 063309, 2017.
26. J. He, **J. Zhang**, and H. Shang, A Soft Sensor for the Sulfur Dioxide Converter in an Industrial Smelter, *Canadian Journal of Chemical Engineering*, 95(6), 1093–1100, 2017.
27. G. Wang and **J. Zhang**, Thermal and Power Performance Analysis for Heat Transfer Applications of Nanofluids in Flows around Cylinder, *Applied Thermal Engineering*, 112(2), 61-72, 2017.
28. O. Oulaid, A. W. Saad, P. S. Aires, and **J. Zhang**, Effects of Shear Rate and Suspending Viscosity on Deformation and Frequency of Red Blood Cells Tank-Treading in Shear Flows, *Computer Methods in Biomechanics and Biomedical Engineering*, 19(6), 648-662, 2016.
29. O. Oulaid and **J. Zhang**, Cell Free Layer Development Process in the Entrance Region of Microvessels, *Biomechanics and Modeling in Mechanobiology*, 14(4), 783-794, 2015.
30. O. Oulaid and **J. Zhang**, On the Origin of Numerical Errors in the Bounce-Back Boundary Treatment of the Lattice Boltzmann Method: A Remedy for Artificial Boundary Slip and Mass Leakage, *European Journal of Mechanics - B/Fluids*, 53, 11-23, 2015.
31. Q. Chen, X. Zhang, and **J. Zhang**, Effects of Reynolds and Prandtl Numbers on Heat Transfer Around a Circular Cylinder by the Simplified Thermal Lattice Boltzmann Model, *Communications in Computational Physics*, 17(4), 937 - 959, 2015.
32. O. Oulaid and **J. Zhang**, Temporal and Spatial Variations of Wall Shear Stress in the Entrance Region of Microvessels, *Journal of Biomechanical Engineering*, 137(6), 061008, 2015.
33. G. Le, O. Oulaid, and **J. Zhang**, Counter-Extrapolation Method for Conjugate Interfaces in Computational Heat and Mass Transfer, *Physical Review E*, 91(3), 033306, 2015.
34. G. Le and **J. Zhang**, A Non-Iterative Mathematical Description of Three-Dimensional Bifurcation Geometry for Biofluid Simulations, *Applied Mathematical Modelling*, 39, 654-666, 2015.
35. Q. Chen, X. Zhang, and **J. Zhang**, Numerical Simulation of Neumann Boundary Condition in the Thermal Lattice Boltzmann Model, *International Journal of Modern Physics C*, 25(8), 1450027, 2014.
36. O. Oulaid, Q. Chen, and **J. Zhang**, Accurate Boundary Treatments in Lattice Boltzmann Method for Electric Field and Electro-Kinetic Applications, *Journal of Physics A: Mathematical and Theoretical*, 46(47), 475501, 2013.
37. Q. Chen, X. Zhang, and **J. Zhang**, Improved Treatments for General Boundary Conditions in Lattice Boltzmann Method for Convection-Diffusion and Heat Transfer Processes, *Physical Review E*, 88, 033304, 2013.



38. X. Yin, T. Tancred, and **J. Zhang**, Multiple Red Blood Cell Flows through Microvascular Bifurcations: Cell Free Layer, Cell Trajectory, and Hematocrit Separation, *Microvascular Research*, 89, 47-56, 2013.
39. M. Ju, S. Ye, H. T. Low, **J. Zhang**, P. Cabrales, H. L. Leo, and S. Kim, Effect of Deformability Difference between Two Erythrocytes on their Aggregation, *Physical Biology*, 10(3), 036001, 2013.
40. X. Yin and **J. Zhang**, Modeling the Dynamic Flow–Fiber Interaction for Microscopic Biofluid Systems, *Journal of Biomechanics*, 46(2), 314-318, 2013.
41. X. Yin, G. Le, and **J. Zhang**, Mass and Momentum Transfer across Solid-Fluid Boundaries in Lattice Boltzmann Method, *Physical Review E*, 86(2), 026701, 2012.
42. X. Yin and **J. Zhang**, Cell Free Layer and Wall Shear Stress Variation in Microvessels, *Biorheology*, 49(4), 261-270, 2012.
43. X. Yin and **J. Zhang**, An Improved Bounce-Back Scheme for Complex Boundary Conditions in Lattice Boltzmann Method, *Journal of Computational Physics*, 231(11), 4295-4303, 2012.
44. W. Xiong and **J. Zhang**, Two-Dimensional Lattice Boltzmann Study of Red Blood Cell Motion through Microvascular Bifurcation: Cell Deformability and Suspending Viscosity Effects, *Biomechanics and Modeling in Mechanobiology*, 11(3), 575-583, 2012.
45. **J. Zhang**, Effect of Suspending Viscosity on Red Blood Cell Dynamics and Blood Flows in Microvessels, *Microcirculation*, 18(7), 562-573, 2011.
46. W. Xiong and **J. Zhang**, A Two-Dimension Lattice Boltzmann Model for Uniform Channel Flows, *Computers and Mathematics with Applications*, 61(12), 3453-3460, 2011.
47. G. Le and **J. Zhang**, A General Poisson-Boltzmann Model with Position-Dependent Dielectric Permittivity for Electric Double Layer Analysis, *Langmuir*, 27(9), 5366-5370, 2011.
48. **J. Zhang**, Lattice Boltzmann Method for Microfluidics: Models and Applications (**Review Article**), *Microfluidics and Nanofluidics*, 10(1), 1-28, 2011.
49. **J. Zhang** and D. Y. Kwok, Roughness Effects on Continuous and Discrete Flows in Superhydrophobic Microchannels, *Communications in Computational Physics*, 9(5), 1094-1105, 2011.
50. W. Xiong and **J. Zhang**, Shear Stress Variation induced by Red Blood Cell Motion in Microvessel, *Annals of Biomedical Engineering*, 38(8), 2649-2659, 2010.
51. **J. Zhang**, An Easily Understandable Introduction of Surface Tension to Engineering Students, *International Journal of Mechanical Engineering Education*, 37(3), 238-240, 2009.
52. **J. Zhang**, P. C. Johnson, and A. S. Popel, Effects of Erythrocyte Deformability and Aggregation on the Cell Free Layer and Apparent Viscosity of Microscopic Blood Flows, *Microvascular Research*, 77(3), 265-272, 2009.
53. G. Le and **J. Zhang**, Boundary Slip from the Immersed Boundary Lattice Boltzmann Models, *Physical Review E*, 79(2), 026701, 2009.
54. **J. Zhang** and D. Y. Kwok, A Mean-Field Free Energy Lattice Boltzmann Model for Multicomponent Fluids, *European Physical Journal - Special Topics*, 171, 45-53, 2009.
55. **J. Zhang**, B. Li, and D. Y. Kwok, Metastable Contact Angles and Self-Propelled Drop Movement on Chemically Heterogeneous Surfaces by a Mean-Field Lattice Boltzmann Model, *European Physical Journal - Special Topics*, 171, 73-79, 2009.
56. J. Zhang, Y. Liu, **J. Zhang**, and J. Yang, Study of Force-Dependent and Time-Dependent Transition of Secondary Flow in a Rotating Straight Channel by the Lattice Boltzmann Method, *Physica A*, 388(4), 288-294, 2009.
57. **J. Zhang** and F. Tian, A Bottom-up Approach to Non-Ideal Fluids in the Lattice Boltzmann Method, *Europhysics Letters*, 81(6), 66005, 2008.
58. **J. Zhang**, P. C. Johnson, and A. S. Popel, Red Blood Cell Aggregation and Dissociation in Shear Flows Simulated by Lattice Boltzmann Method, *Journal of Biomechanics*, 41(1), 47-55, 2008.

59. X. Fu, B. Li, **J. Zhang**, F. Tian, and D. Y. Kwok, Electrokinetic Slip Flow of Microfluidics in Terms of Streaming Potential by a Lattice Boltzmann Method: a Bottom-up Approach, *International Journal of Modern Physics C*, 18(4), 693-700, 2007.
60. **J. Zhang**, P. C. Johnson, and A. S. Popel, An Immersed Boundary Lattice Boltzmann Approach to Simulate Deformable Liquid Capsules and its Application to Microscopic Blood Flows, *Physical Biology*, 4(3), 285-295, 2007.
61. **J. Zhang**, A. Drechsler, K. Grundke, and D. Y. Kwok, The Similarity of Electric Double-Layer Interaction from the General Poisson-Boltzmann Theory, *Journal of Colloid and Interface Science*, 300(1), 391-395, 2006.
62. **J. Zhang** and D. Y. Kwok, Contact Line and Contact Angle Dynamics in Superhydrophobic Channels, *Langmuir*, 22(11), 4998-5004, 2006.
63. **J. Zhang** and D. Y. Kwok, Pressure Boundary Condition of the Lattice Boltzmann Method for Fully Developed Periodic Flows, *Physical Review E*, 73, 047702, 2006.
64. **J. Zhang** and D. Y. Kwok, A 2D Lattice Boltzmann Study on Electrohydrodynamic Drop Deformation with the Leaky Dielectric Theory, *Journal of Computational Physics*, 206(1), 150-161, 2005.
65. **J. Zhang** and D. Y. Kwok, On the Validity of the Cassie Equation via a Mean-Field Free-Energy Lattice Boltzmann Approach, *Journal of Colloid & Interface Science*, 282(2), 434-438, 2005.
66. **J. Zhang** and D. Y. Kwok, Lattice Boltzmann Study on the Contact Angle and Contact Line Dynamics of Liquid-Vapor Interfaces, *Langmuir*, 20(19), 8137-8141, 2004.
67. **J. Zhang** and D. Y. Kwok, The Apparent Slip over a Solid-Liquid Interface with a No-Slip Boundary Condition, *Physical Review E*, 70, 056701, 2004.
68. **J. Zhang** and D. Y. Kwok, An Improved Combining Rule for Solid-Liquid Adhesion and Intermolecular Potentials: Formulation and Application, *Journal of Adhesion*, 80(8), 745-766, 2004.
69. A. Drechsler, N. Petong, **J. Zhang**, D. Y. Kwok, and K. Grundke, Force Measurements between Teflon AF and Colloidal Silica Particles in Electrolyte Solutions, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 250(1-3), 357-366, 2004.
70. **J. Zhang**, A. Drechsler, K. Grundke, and D. Y. Kwok, A Simple and Practical Method to Implement the General Poisson-Boltzmann Equation of Symmetric and Asymmetric Electrolytes for Electrical Double Layer Interaction, *Colloids and Surfaces A: Physicochemical and Engineering Aspects*, 242(1-3), 189-193, 2004.
71. **J. Zhang**, B. Li, and D. Y. Kwok, Mean-Field Free-Energy Approach to the Lattice Boltzmann Method for Liquid-Vapor and Solid-Fluid Interfaces, *Physical Review E*, 69, 032602, 2004.
72. **J. Zhang**, K. Grundke, and D. Y. Kwok, Comment on "Surface Characterization of Hydrosilylated Polypropylene: Contact Angle Measurement and Atomic Force Microscopy", *Langmuir*, 19(24), 10457-10458, 2003.
73. **J. Zhang** and D. Y. Kwok, Combining Rule for Molecular Interactions Derived from Macroscopic Contact Angles and Solid-Liquid Adhesion Patterns, *Langmuir*, 19(11), 4666-4672, 2003.
74. **J. Zhang** and D. Y. Kwok, Calculation of Solid-Liquid Work of Adhesion Patterns from Combining Rules for Intermolecular Potentials, *Journal of Physical Chemistry B*, 106(48), 12594-12599, 2002.

#### **Book Chapters:**

75. **J. Zhang** and D. Y. Kwok, Lattice Boltzmann Method for Microfluidics, in *Encyclopedia of Microfluidics and Nanofluidics* (D. Li Ed.), 1598-1604, Springer, 2015.

76. X. Yin and **J. Zhang**, Shear Stress Variation and Plasma Viscosity Effect in Microcirculation, in *Transport in Biological Media* (S. Becker and A. V. Kuznetsov Ed.), 349-390, Elsevier, 2013.
77. **J. Zhang**, Lattice Boltzmann Method and Applications in Microfluidics, in *Microfluidics and Nanofluidics Handbook: Fabrication, Implementation, and Application* (S. Mitra and S. Chakraborty Ed.), 215-228, CRC Press, 2011.
78. **J. Zhang**, Microscopic Hemodynamics and Hemorheology, in *Microfluidics and Nanofluidics Handbook: Chemistry, Physics, and Life Science Principles* (S. Mitra and S. Chakraborty Ed.), 1065-1074, CRC Press, 2011.
79. R. David, J. Spelt, **J. Zhang**, and D. Kwok, Contact Angles and Solid Surface Tensions, in *Applied Surface Thermodynamics* (A. W. Neumann Ed.), 2nd Ed., 491-554, CRC Press, 2010.
80. **J. Zhang**, P. C. Johnson, and A. S. Popel, Simulating Microscopic Hemodynamics and Hemorheology with the Immersed-Boundary Lattice Boltzmann Method, in *Computational Hydrodynamics of Capsules and Biological Cells* (C. Pozrikidis Ed.), 113-148, CRC Press, 2010.
81. **J. Zhang** and D. Y. Kwok, A Mesoscopic Approach to Fluid Interfacial Studies: the Mean-Field Free-Energy Lattice Boltzmann Model and its Applications, in *Contact Angle, Wettability and Adhesion* (K. L. Mittal Ed.), Vol. 4, 1-26, VSP, Utrecht, 2006.
82. **J. Zhang** and D. Y. Kwok, The Molecular Origin of Contact Angles in Terms of Different Combining Rules for Intermolecular Potentials, in *Contact Angle, Wettability and Adhesion* (K. L. Mittal Ed.), Vol. 3, 95-116, VSP, Utrecht, 2003.

#### Conference Presentations/Abstracts:

83. **J. Zhang (Perspective Talk)**, Computer Modelling and Investigations of Capsule Dynamics in Flows: Membrane Viscosity Effect, *The 27th Congress of the European Society of Biomechanics (ESB2022)*, Porto, Portugal, June 26-29, 2022.
84. F. A. Amiri and **J. Zhang**, An immersed membrane method for mass transfer across flexible semipermeable membranes in flows, *The 2022 CSME (Canadian Society of Mechanical Engineering) International Congress*, Edmonton, Canada, June 5-8, 2022.
85. M. Jbeili and **J. Zhang**, A Particle-Resolved Computational Study for Thermal Performance of Nanofluids, *The 2022 CSME (Canadian Society of Mechanical Engineering) International Congress*, Edmonton, Canada, June 5-8, 2022.
86. **J. Zhang (Keynote Speaker)**, The Temperature Decomposition Method for Simulating Periodic Thermal Flows, *The Eighth International Conference of Fluid Flow, Heat and Mass Transfer (FFHMT'21)*, Online, May 21-23, 2021.
87. P. Li and **J. Zhang**, Effects of Membrane Viscosity on Capsule Dynamics in Shear Flow, *The International Conference on Advances in Biological Science and Technology (ICABST2020)*, Online, October 28-30, 2020.
88. **J. Zhang** (Invited Speaker), Accuracy Improvement for Immersed Boundary Method Using Lagrangian Velocity Interpolation, *The 3rd International Conference on Numerical Modelling in Engineering (NME 2020)*, Online, December 6-9, 2020.
89. M. Jbeili and **J. Zhang**, Simulating Periodic Thermal Flows with Conjugate Heat Transfer Using the Temperature Decomposition Method, *The Second International Conference on Numerical Modelling in Engineering (NME 2019)*, Beijing, China, August 19-22, 2019.
90. **J. Zhang** (Invited Speaker), Computational Microscopic Blood Flows: Model Development and Applications, *The Second International Conference on Numerical Modelling in Engineering (NME 2019)*, Beijing, China, August 19-22, 2019.
91. P. Li and **J. Zhang**, Simulating Periodic Thermal Flows with General Boundary Conditions by the Temperature Decomposition Method, *The 2019 ASME/AIChE Summer Heat Transfer Conference (SHTC-2019)*, Bellevue, WA, USA, July 15-18, 2019.

92. Z. Wang and **J. Zhang**, A Rectangular Lattice Boltzmann Model Based on Linear Coordinate Transformation, *The 27th International Conference on Discrete Simulation of Fluid Dynamics (DSFD2018)*, Worcester, USA, June 25-29, 2018.
93. Z. Wang, P. Li, and **J. Zhang**, Lattice Boltzmann Simulations for Periodic Thermal Flows, *The 27th International Conference on Discrete Simulation of Fluid Dynamics (DSFD2018)*, Worcester, USA, June 25-29, 2018.
94. P. Li and **J. Zhang**, Temperature Decomposition Method for Simulating Heat Transfer in Periodic Structures with General Wall Temperature Conditions, *The 26th Annual Conference of the Computational Fluid Dynamics Society of Canada (CFD-2018)*, Winnipeg, Canada, June 10-12, 2018.
95. Z. Wang and **J. Zhang**, Lattice Boltzmann Method for Flow and Heat Transfer in Periodic Systems, *The 17th International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE-2017)*, Cádiz, Spain, July 4-8, 2017.
96. Z. Wang and **J. Zhang**, Counter-Extrapolation Method for Conjugate Interface in Computational Heat and Mass Transfer, *The 13th International Conference for Mesoscopic Methods in Engineering and Science (ICMMES 2016)*, Hamburg, Germany, July 18-22, 2016.
97. Q. Chen, H. Zhou, L. Xu, and **J. Zhang**, An Accurate Boundary Treatment for Electro-Osmotic Flow by Lattice Boltzmann Method, *The 25th International Conference on Discrete Simulation of Fluid Dynamics (DSFD 2016)*, Shenzhen, China, July 4-8, 2016.
98. G. Wang and **J. Zhang**, Efficiencies of Heat Transfer and Pumping Energy for Nanofluids in Crossflow Heat Exchangers, *The International Conference of Microfluidics, Nanofluidics, and Lab-on-a-Chip*, Dalian, China, June 10-12, 2016.
99. O. Oulaid and **J. Zhang**, Blood Cell Flows in the Entrance Region of Microvessels: Cell-Free Layer Development and Wall Shear Stress Variation, *The 15th International Congress of Biorheology and The 8th International Conference on Clinical Hemorheology*, Seoul, Korea, May 24-28, 2015.
100. Q. Chen and **J. Zhang** (Keynote Speaker), An Accurate Treatment of Complex Boundary Conditions for Lattice Boltzmann Simulations of Convection-Diffusion Processes, *2013 International Forum on Special Equipments and Engineering Mechanics*, Nanjing, China, July 10-12, 2013.
101. Q. Chen, X. Yin, and **J. Zhang**, The Improved Midpoint Bounce-Back Scheme for LBM Flow and Convection-Diffusion Simulations, *The 10th International Conference for Mesoscopic Methods in Engineering and Science (ICMMES-2013)*, Oxford, UK, July 22-26, 2013.
102. X. Yin, W. Xiong, and **J. Zhang**, Shear Stress Variation Induced by Red Blood Cell Flows in Microvessels, *The 14th International Congress of Biorheology and the 7th International Conference of Clinical Hemorheology*, Istanbul, Turkey, July 4-7, 2012.
103. X. Yin and **J. Zhang**, Mass Conservation across Moving Solid-Fluid Boundaries in Lattice Boltzmann Method, *The 20th Annual Conference of the CFD Society of Canada*, Canmore, Canada, May 9-11, 2012.
104. X. Yin, W. Xiong, and **J. Zhang**, Cell Free Layer and Shear Stress Variation in Microvessels, *ECI Conference on Computational Fluid Dynamics (CFD) in Medicine and Biology and the Seventh International Biofluid Mechanics Symposium*, Ein Bokek, Dead Sea, Israel, March 25-30, 2012.
105. **J. Zhang**, Effect of Plasma Viscosity on Blood Flow Behaviors in Microvessels, *The Third International Conference on Biomedical and Pharmaceutical Engineering (ICBPE-2011)*, Singapore, August 3-5, 2011.
106. **J. Zhang**, An Immersed-Boundary Lattice-Boltzmann Model for Microscopic Blood Flow Simulations, *The International Conference on Applied Mathematics, Modeling and Computational Science (AMMCS-2011)*, Waterloo, Canada, July 25 - 29, 2011.
107. **J. Zhang**, The Mean Field Free Energy Lattice Boltzmann Model And Its Applications In Microfluidics, *The CSME (Canadian Society of Mechanical Engineering) Forum 2010*,  
[Dr. Junfeng Zhang](mailto:jzhang@laurentian.ca) • (705) 675-1151 ext. 2248 • [jzhang@laurentian.ca](mailto:jzhang@laurentian.ca) • [laurentian.ca/faculty/jzhang](http://laurentian.ca/faculty/jzhang)



- Victoria, Canada, June 7-9, 2010.
108. **J. Zhang**, Red Blood Cell Behaviors in Microvessels Simulated by the Immersed Boundary Lattice Boltzmann Method, *The Third International Conference on Modelling and Simulation*, Wuxi, China, June 4–7, 2010.
  109. W. Xiong and **J. Zhang**, Lattice Boltzmann Simulations of Red Blood Cell Dynamics in Bifurcated Microvessels, *The 18th Annual Conference of the CFD Society of Canada*, London, Canada, May 17-19, 2010.
  110. **J. Zhang** and F. Tian, A Revised Shan-Chen Multiphase Model with the Exclusion Volume Effect, *The 18th International Conference on Discrete Simulation of Fluid Dynamics in Complex Systems*, Beijing, China, July 6-10, 2009.
  111. G. Le and **J. Zhang**, Artificial Slip from the Immersed Boundary Lattice Boltzmann Models for Moving Boundary, *The 18th International Conference on Discrete Simulation of Fluid Dynamics in Complex Systems*, Beijing, China, July 6-10, 2009.
  112. **J. Zhang**, P. C. Johnson, and A. S. Popel, Lattice Boltzmann Simulations of Red Blood Cell Flows in Microvessels, *The Sixth International Conference for Mesoscopic Methods in Engineering and Science*, Guangzhou, China, July 13-17, 2009.
  113. **J. Zhang**, P. C. Johnson, and A. S. Popel, How Blood Flows – A Computational Study, *The Young Investigator Forum of Institute of Circulatory and Respiratory Health, CIHR*, Ottawa, Canada, May 21 -23, 2009.
  114. **J. Zhang**, P. C. Johnson, and A. S. Popel, Lattice Boltzmann Simulations of Microscopic Blood Flows: Cell Free Layer Development and Cellular Property Effects, *The 22nd Canadian Congress of Applied Mechanics*, Halifax, Canada, May 31-June 4, 2009.
  115. **J. Zhang**, Interfacial Phenomena in Microfluidics and Lattice Boltzmann Simulations, *The 12th International Conference on Mechatronics Technology*, Sudbury, Canada, October 14-17, 2008.
  116. **J. Zhang**, P. C. Johnson, and A. S. Popel, Numerical Simulations of Microscopic Hemodynamics and Hemorheology with Intercellular Interactions, *The 13th International Congress of Biorheology*, University Park, USA, July 9-13, 2008.
  117. **J. Zhang** and D. Y. Kwok, Roughness Effects on Discrete and Continuous Flows in Superhydrophobic Microchannels, *The CSME (Canadian Society of Mechanical Engineering) Forum 2008*, Ottawa, Canada, June 5-8, 2008.
  118. **J. Zhang**, P. C. Johnson, and A. S. Popel, Lattice Boltzmann Simulations of Multiple Deformable Red Blood Cells with Intercellular Interactions, *The Eighth World Congress for Microcirculation*, Milwaukee, Wisconsin, USA, August 15-19, 2007.
  119. **J. Zhang**, P. C. Johnson, and A. S. Popel, An Immersed Lattice Boltzmann Approach for Deformable Liquid Capsules and its Application to Microscopic Blood Flows, *The 16th International Conference on Discrete Simulation of Fluid Dynamics in Complex Systems*, Banff, Canada, July 22-27, 2007.
  120. **J. Zhang** and D. Y. Kwok, A Modified Periodic Boundary Condition with Pressure Gradient for the Lattice Boltzmann Method, *The 15th International Conference on Discrete Simulation of Fluid Dynamics in Complex Systems*, University of Geneva, Switzerland, August 21-25, 2006.
  121. **J. Zhang** and D. Y. Kwok, Applications of the Mean-Field Lattice Boltzmann Method for Solid-Fluid Interfaces to Study Interfacial Phenomena, *The 3rd MIT Conference on Computational Fluid and Solid Mechanics*, Cambridge, USA, June 14-17, 2005.
  122. F. Tian, **J. Zhang**, and D. Y. Kwok, Effect of Fluid-Solid Energy Parameters on Streaming Potential and Flow Rate in Pressure-Driven Flow in Microchannels, *The 3rd International Conference on Microchannels and Minichannels*, ASME, Toronto, Canada, June 13-15, 2005.
  123. **J. Zhang** and D. Y. Kwok, Liquid Wettability and Micro-Droplet Self-Movements on Heterogeneous Solid Surfaces, *Proceedings of the 2004 International Conference on Mems, Nano, and Smart Systems*, IEEE, 121-126, Banff, Canada, August 24-27, 2004.

124. **J. Zhang** and D. Y. Kwok, Lattice Boltzmann Simulations of Bubble Dynamics in Microchannels, *Proceedings of the 2004 International Conference on MEMS, Nano, and Smart Systems*, IEEE, 78-83, Banff, Canada, August 24-27, 2004.
125. **J. Zhang** and D. Y. Kwok, Implementing the Lattice Boltzmann Method to Electrohydrodynamics with the Leaky Dielectric Theory, *Proceedings of the 12th Annual Conference of Computational Fluid Dynamics*, 197-198, Ottawa, Canada, May 9-11, 2004.
126. **J. Zhang** and D. Y. Kwok, Calculation of Solid-Liquid Work of Adhesion and Contact Angle Patterns from Combining Rules for Intermolecular Potentials, *ACS 77th Colloid and Surface Science Symposium*, Georgia Institute of Technology, USA, June 15-18, 2003.
127. **J. Zhang** and D. Y. Kwok, Contact Angle Interpretation and Combining Rule for Solid-Liquid Intermolecular Potential, *The 3rd International Symposium on Contact Angle, Wettability and Adhesion*, Rhode Island, USA, May 20-22, 2002.