

CURRICULUM VITAE

Yang Liu

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Awards

- 2010 Faculty Award for Outstanding Performance/Achievement in Research and Scholarly Activities, HKPolyU.
- 2007 Faculty Research Grant Achievement Award, HKPolyU.
- 2003 Faculty Research Grant Achievement Award, HKPolyU.

External Research Grants

PI	GRF	Effect of vasomotion on efficient flow delivery in microvascular network (2013 ~ 2017). \$500k.
PI	GRF	Investigating Mechanical Mechanisms of Tumor Cell Adhesion in Micro Circulation through Lattice Boltzmann Simulation (2008 ~ 2011). \$347k.
PI	GRF	Numerical Simulation of Mixing in Micro-fluidics (2006 ~ 2009). \$356k.
PI	GRF	Moving Boundary Conditions for Vibrating Structures in a Cross Flow Using a Generalized Lattice Boltzmann Method (2005 ~ 2008). \$359k.
PI	GRF	Particle Deposition and Flow Distribution in Obstructive Human Lung Airways (2004 ~ 2007). \$338k.
PI	GRF	Control of Flow-Induced Vibration Using MEMS Transducers (2003 ~ 2006). \$324k.
PI	GRF	Development of a Meshfree Lattice Boltzmann Method for Fluid-Structure Interaction Problems (2002 ~ 2006). \$611k.
PI	GRF	Three-dimensional Wake Effects on the Free Vibration of a Circular Cylinder in a Cross Flow (2001 ~ 2004). \$387k.
Co-PI	GRF	Active drag reduction of a 3D generic car model using a combination of steady and unsteady actuations (2012 ~ 2015). \$905k.
Co-PI	GRF	Closed-loop-controlled turbulent boundary layer based on local surface oscillation (2011 ~ 2015). \$898k.

RESEARCH PUBLICATIONS

Editor of Book and Special Issues

1. Zhou Y., Lucey A.D., Liu Y. and Huang L.X. 2016 Fluid-Structure-Sound Interactions and Control, Springer Berlin Heidelberg. DOI: 10.1007/978-3-662-48868-3.
2. Zhou, Y., Liu, Y., Huang, L.X. and Hodges, D.H. 2014 Fluid-Structure-Sound Interactions and Control, Springer Berlin Heidelberg. Book DOI: 10.1007/978-3-642-40371-2. ISBN: 978-3-642-40370-5 (Print) 978-3-642-40371-2 (Online)
3. Luo, L.-S., Krafczyk, M. and Liu, Y. 2008 Guest Editor, special issue on Mesoscopic Methods in Engineering and Science, *Computers and Mathematics with Applications*, No. 7, Vol. 55. ISSN 0898-1221.
4. Liu, Y. 2007 Guest Editor, special issue of Symposium on Flow Control, The 5th Asian-Pacific Conference on Aerospace Technology and Science, *Journal of Mechanical Science and Technology*, No. 9, Vol. 21. ISSN 1738-494X.
5. Luo, L.-S., Krafczyk, M. and Liu, Y. 2006 Guest Editor, special issue on Mesoscopic Methods in Engineering and Science, *International Journal of Computational Fluid Dynamics*, No. 6, Vol. 20 ISSN 1061-8562.

Invited Book Chapter

1. Fu BM and Liu Y, Chapter 4: Transport of Water and Solutes Across Endothelial Barriers and Tumor Cell Adhesion in the Microcirculation, in the book edited by Becker & Kuznetsov: Transport in Biological Media, pp. 119 – 180. 1st Edition, Elsevier 2013. ISBN: 9780124158245. (**Invited**)

Journal papers

1. Yang X.L., Yang L., Huang Z.W. & Liu Y. (2017) Development of a $k - \omega - \phi - \alpha$ turbulence model based on elliptic blending and applications for near-wall and separated flows. *Journal of Turbulence*. <http://dx.doi.org/10.1080/14685248.2016.1244336>
2. Xiao, L. L., Liu, Y., Chen, S., & Fu, B. M. (2017). Numerical simulation of a single cell passing through a narrow slit. *Biomechanics and modeling in mechanobiology*. DOI: 10.1007/s10237-016-0789-y
3. Xiao, L. L., Liu, Y., Chen, S., & Fu, B. M. (2017). Effects of Flowing RBCs on Adhesion of a Circulating Tumor Cell in Microvessels. *Biomechanics and modeling in mechanobiology*, DOI: 10.1007/s10237-016-0839-5.
4. Lin, Y., Jin, W., Yang, F., Ma, J., Wang, C., Ho, H.L. and Liu, Y., 2017. Pulsed photothermal interferometry for spectroscopic gas detection with hollow-core optical fibre. *Scientific Reports*, 6:39410. DOI: 10.1038/srep39410
5. Zhao J.Y., Chen S. and Liu Y. (2017) Dynamical Behaviors of Droplet Impingement and Spreading on Chemically Heterogeneous Surfaces, *Applied Surface Science*. <http://dx.doi.org/10.1016/j.apsusc.2016.12.209>
6. Xiao, L. L., Liu, Y., Chen, S., & Fu, B. M. (2016). Simulation of Deformation and Aggregation of Two Red Blood Cells in a Stenosed Microvessel by Dissipative Particle Dynamics. *Cell Biochemistry and Biophysics*. 74(4), 513-525. DOI: 10.1007/s12013-016-0765-2.
7. Yan, W., Liu, Y., & Fu, B. (2016). LBM simulations on the influence of endothelial SGL

- structure on cell adhesion in the micro-vessels. *Computers & Mathematics with Applications*.
<http://dx.doi.org/10.1016/j.camwa.2016.07.005>
8. Liu XL, Yan WW, Liu Y, Choy YS and Wei YK (2016) Numerical Investigation of Flow Characteristics in the Obstructed Realistic Human Upper Airway, *Computational and Mathematical Methods in Medicine*, Volume 2016, Article ID 3181654.
<http://dx.doi.org/10.1155/2016/3181654>
 9. Yang H., Zhou Y., So R. M. C. & Liu, Y. (2016, July). Turbulent jet manipulation using two unsteady azimuthally separated radial minijets. *Proceedings of The Royal Society A*, 472(2191), 20160417. <http://dx.doi.org/10.1098/rspa.2016.0417>.
 10. Zhao, J.Y., Chen, S., & Liu, Y. (2016) Droplets Motion on Chemically/Topographically Heterogeneous Surfaces. *Molecular Simulation*.
<http://dx.doi.org/10.1080/08927022.2016.1198478>.
 11. Wang, Y., Chen, S., & Liu, Y. (2016). Spontaneous uptake of droplets into non-wetting capillaries. *Computers & Fluids*. 134, 190-195.
 12. Xu, Y., Fan, S., Liu, Y., Zhou, X., Liu, X., Yang, Z., Liu, L. and Liu, J., 2016. Analysis of silt interaction with water in an estuary. *Journal of Natural Gas Science and Engineering*. DOI: 10.1016/j.jngse.2016.09.035
 13. Zhou, X., Wu, F., Liu, Y., Kou, J., Lu, H., & Lu, H. (2015). Current inversions induced by resonant coupling to surface waves in a nanosized water pump. *Physical Review E*, 92(5), 053017.
 14. Zhou X.Y., Kou J.L., Nie X.C., Wu F.M., Liu Y. and Lu H.J. 2015 Nano watermill driven by revolving charge. *Chinese Physics B*, 24(7), 074702.
 15. Xiao, L. L., Chen, S., Lin, C. S., & Liu, Y. 2014 Simulation of a Single Red Blood Cell Flowing Through a Microvessel Stenosis Using Dissipative Particle Dynamics. *Molecular & cellular biomechanics: MCB*, 11, 67-85.
 16. Guo, P., Cai, B., Lei, M., Liu, Y., & Fu, B. M. 2014 Differential arrest and adhesion of tumor cells and microbeads in the microvasculature. *Biomechanics and modeling in mechanobiology*, 13, 537–550. DOI 10.1007/s10237-013-0515-y
 17. Zhou X.Y., Wu F.M., Kou J.L., Nie X.C., Liu Y. and Lu H.J. 2013 Vibrating-Charge-Driven Water Pump Controlled by the Deformation of the Carbon Nanotube. *The Journal of Physical Chemistry B*, 117(39), 11681-11686.
 18. Lu M.Z., Liu Y., Ye J.Y. and Luo H.Y. Large Eddy Simulation of Flow in Realistic Human Upper Airways with Obstructive Sleep. *Procedia Computer Science*, 2014, 29: 557-564. DOI: 10.1016/j.procs.2014.05.050.
 19. Liu, Z.G., Liu, Y. and Lu, J. 2013 Numerical simulation of the fluid–structure interaction for two simple fuel assemblies. *Nuclear Engineering and Design* 258, 1-12.
 20. Lin, Y.F., Lam, K., Zou, L. and Liu Y. 2013 Numerical study of flows past airfoils with wavy surfaces, *Journal of Fluids and Structures*, 36, 136-148.
 21. Yan WW, Liu Y, Fu BM, Xu YS and Su ZD 2012 Adhesive Dynamics Model for Cancer Cell Adhesion in Curved Post-capillary Venules, *Journal of Biomechanics*, 45, Supplement 1, S415.
 22. Liu Y, Ye JY, Liu ZG, Huang LX, Luo HY and Li YR 2012 The Quantification of Breathing Quality to Predict the Outcome of OSA Surgery, *Journal of Biomechanics*, 45, Supplement 1, S1.
 23. Liu Y, Ye JY, Liu ZG, Huang LX, Luo HY and Li YR 2012 Flow oscillation – a measure to predict the surgery outcome for obstructed sleep apnea (OSA) subject, *J. Biomechanics*, 45, 2284-2288. DOI: 10.1016/j.jbiomech.2012.05.050.
 24. Liu, Z.G., Liu, Y. and Lu, J. 2012 Numerical Simulation of the Fluid-Structure Interaction for an Elastic Cylinder Subjected to Tubular Fluid Flow, *Computers & Fluids*, 68, 192-202.

25. Lu HJ, Nie XC, Wu FM, Zhou XY, Kou JL, Xu YS and Liu Y 2012 Controllable transport of water through nanochannel by ratchet-like mechanism, *The Journal of Chemical Physics*, 136, 174511.
26. Fu B.M. and Liu Y. 2012 Microvascular Transport and Tumor Cell Adhesion in the Microcirculation, *Annals of Biomedical Engineering*, 40, 2442-2455. DOI: 10.1007/s10439-012-0561-0.
27. Yan, WW, Cai, B., Liu, Y and Fu, BM 2012 Effects of wall shear stress and its gradient on tumor cell adhesion in curved microvessels, *Biomechanics and Modeling in Mechanobiology*, 11:641-653. DOI 10.1007/s10237-011-0339-6.
28. Liu, Z.G., Liu, Y. and Lu, J. 2012 Fluid–structure interaction of single flexible cylinder in axial flow, *Computers & Fluids*, 56, 143-151.
29. Lam, K., Lin, Y.F., Zou, L. and Liu Y. 2012 Numerical simulation of flows around two unyawed and yawed wavy cylinders in tandem arrangement, *Journal of Fluids and Structures*, 28, 135-151.
30. Lam, K., Lin, Y.F., Zou, L. and Liu Y. 2012 Numerical study of flow patterns and force characteristics for square and rectangular cylinders with wavy surfaces, *Journal of Fluids and Structures*, 28, 359-377.
31. Lam, K., Lin, Y.F., Liu Y. and Zou, L. 2012 Numerical investigation of flow Past a Wavy Airfoil. *Applied Mechanics and Materials* Vols.110-116 (2012) pp 4269-4275.
32. Liu, Y.X., Liu, Y., Luo, H.Y. and Wong M.C.M. 2011 The effect of unsteadiness on particle deposition in human upper and lung airways, *Notes on Numerical Fluid Mechanics and Multidisciplinary Design*, 116, 155-166, 2011.
33. Kou, JL, Qian, H.G., Lu, H.J., Liu, Y., Xu, Y.S., Wu, FM, and Fan, J.T. 2011 Optimizing the Design of Nanostructures for Improved Thermal Conduction within Confined Spaces, *Nanoscale Research Letters*, 6:422..
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35. Yan, WW, Liu Y and Fu BM Effects of divalent cations on cell adhesion between human neutrophil and endothelial ligand VCAM-1: a lattice Boltzmann analysis. *Procedia Computer Science* (2011), 4, 1039-1047.
36. Kou, JL, Fan, JT, Liu, Y, Wu, FM, Xu, YS and Lu, H.J. 2010 Optimizing permeability in fractal tree-like branched networks, *International Journal of Nonlinear Science and Numerical Simulation*, 11, 47-55.
37. Lam, K., Lin, Y.F., Zou, L. and Liu Y. 2010 Investigation of turbulent flow past a yawed wavy cylinder, *Journal of Fluids and Structures*, 26, 1078-1097.
38. Lam, K., Lin, Y.F., Zou, L. and Liu Y. 2010 Experimental study and large eddy simulation of turbulent flow around tube bundles composed of wavy and circular cylinders. *International Journal of Heat and Fluid Flow*, 31, 32-44.
39. Yan, WW, Liu, Y and Fu, BM 2010 Effects of curvature and cell-cell interaction on cell adhesion in microvessels, *Biomechanics and Modeling in Mechanobiology*, 9, 629-640. DOI: 10.1007/s10237-010-0202-1.
40. Yang, H.B., Liu, Y., Xu, Y.S. and Kou, J.L. 2010 Numerical Simulation of Two-Dimensional Flow over Three Cylinders by Lattice Boltzmann Method, *Communications in theoretical Physics*, 54, 886-892.
41. Hua, S., Liu, Y. and Xu, Y.S. 2010 Effect of Viscosities on Mixing in A Patterned Micro Mixer, *Communications in theoretical Physics*, 53, 952-956.
42. Kou, J.L., Liu, Y., Wu, F.M., Fan, J.T., Lu, H.J. and Xu, Y.S. 2009 Fractal analysis of effective thermal conductivity for three-phase (unsaturated) porous media, *Journal of Applied Physics*, 106, 054905.

43. Lam, K., Lin, Y. F., Zou, L., and Liu, Y. 2009 The Effect of Wavy Surface on Vortex Shedding from an Inclined Cylinder in Turbulent Flow. *Int J Offshore and Polar Eng*, 1343-1350.
44. Yang, X.L., Liu, Y. and Yang, J.M. 2009 Expiratory Flow in a Rigid Three-Generation Airway with One Collapsible Segment, *Communications in Numerical Methods in Engineering*, 25, 553-563.
45. Luo, H.Y. and Liu, Y. 2009 Particle deposition in a CT-scanned human lung airway, *Journal of Biomechanics*, 42, 1869 – 1876.
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51. Xia, Y., Lu, D.T., Liu, Y. and Xu, Y.S. 2009 Lattice Boltzmann Simulation of the Cross Flow Over a Cantilevered and Longitudinally Vibrating Circular Cylinder, *Chinese Physical Letters*, 26, 034702.
52. Chen, X.Y., Liu, Y., Fu, B.M., Fan, J.T. and Yang, J.M. 2008 MD simulation of colloidal particles transportation in a fiber matrix, *MCB: Molecular & Cellular Biomechanics*, 5, 275-284.
53. Xu Y.S., Liu Y., Xia Y. and Wu FM 2008 Lattice Boltzmann simulation of two dimensional flow over two vibrating side-by-side circular cylinders, *Physical Review E*, 78, 046314.
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56. Xu, CH, Yang, XL, Shi, SQ, Liu, Y, Surya, C and Woo, CH 2008 Effects of Local Gas-Flow Field on Synthesis of Oxide Nanowires during Thermal Oxidation, *Applied Physics Letters*, 92, 253117.
57. Du, N., Fan, JT, Chen, S. and Liu Y. 2008 A hydraulic-photosynthetic model based on extended HLH and its application to Coast redwood (*Sequoia Sempervirens*), *Journal of Theoretical Biology*, 253, 393-400.
58. Liu, Y. 2008 Bifurcation Phenomenon in the Wake of a 3D Cylinder, *Computers and Fluids*, 37, 724-732.
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62. Lam, K., Cai, T., Lin, Y.F. and Liu, Y. 2007 Flow Characteristics around a Row of Circular and Wavy Cylinders, *Journal of Mechanical Science and Technology*, 21, 1910-1917.

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64. Yang, X.L., Liu, Y. and Yang, J.M. 2007 Fluid-Structure Interaction in a Pulmonary Arterial Bifurcation, *J. Biomechanics*, 40, 2694-2699.
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70. Luo, H.Y., Liu, Y., Zhang, C.N. and Wong, C.M. 2007 Flow Characteristics in a CT-Scanned Human Lung Airway, *J. Biomechanics*, 40, Supplement 2, S224.
71. Li, B.Q., Liu, Y. and Chu, J.R. 2007 Wake suppression behind two slightly non-coplanar cylinders, *Journal of Mechanical Science and Technology*, 21, 1383-1387.
72. Lam, K., Jiang, G.D., Liu, Y. and So, R.M.C. 2006 Simulation of cross-flow-induced vibration of cylinder arrays by surface vorticity method, *Journal of Fluids and Structures*, 22, 1113 – 1131.
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97. Wang, X.Q., So, R.M.C. and Liu, Y. 2001 Flow-Induced Vibration of an Euler-Bernoulli Beam, *Journal of Sound and Vibration*, 243, 241-268.
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