

# Curriculum Vitae

**Z. Leonardo Liu**

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## General Information

University address: Department of Chemical and Biomedical Engineering  
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## Professional Preparation

2020            PhD, Georgia Institute of Technology. Major: Mechanical Engineering.  
2013            MS, University of Florida. Major: Aerospace Engineering.  
2012            BE, Beihang University. Major: Aeronautical Science and Engineering.

## Professional Experience

2022–present    Assistant Professor, Department of Chemical and Biomedical Engineering,  
Florida State University.  
2022–present    Assistant Professor, Department of Chemical and Biomedical Engineering,  
Florida A&M University.  
2021–2022        Postdoctoral Fellow, Division of Applied Mathematics, Brown University.

## Honors, Awards, and Prizes

George P. Burdell Fellowship, Georgia Institute of Technology (2020). (\$5,000).  
Achievement Award, University of Florida (2013). (\$12,000).

Outstanding Graduate of Year 2012, Beihang University (2012).

## Teaching

### Courses Taught

Biocomputations (BME3702)

## Research and Original Creative Work

### Publications

#### Refereed Journal Articles

- Liu, Z. L., Bresette, C., Aidun, C. K., & Ku, D. N. (2022). SIPA in 10 milliseconds: VWF tentacles agglomerate and capture platelets under high shear. *Blood Advances*. Retrieved from <https://publons.com/publon/50684234/> doi:10.1182/BLOODADVANCES.2021005692
- Liu, Z. L., Li, H., Qiang, Y., Buffet, P., Dao, M., & Karniadakis, G. E. (2021). Computational modeling of biomechanics and biorheology of heated red blood cells. *Biophysical Journal*, 120(21), 4663-4671. Retrieved from <https://doi.org/10.1016%2Fj.bpj.2021.09.038> doi:10.1016/j.bpj.2021.09.038
- Wang, N., Korba, D., Liu, Z., Prabhu, R., Priddy, M. W., Yang, S., Chen, L., & Li, L. (2021). Phase-field-lattice Boltzmann method for dendritic growth with melt flow and thermosolutal convection\textendashdiffusion. *Computer Methods in Applied Mechanics and Engineering*, 385, 114026. Retrieved from <https://doi.org/10.1016%2Fj.cma.2021.114026> doi:10.1016/j.cma.2021.114026
- Liu, Z. L., Ku, D. N., & Aidun, C. K. (2021). Mechanobiology of shear-induced platelet aggregation leading to occlusive arterial thrombosis: a multiscale in silico analysis. *Journal of Biomechanics*, 110349. Retrieved from <https://doi.org/10.1016%2Fj.jbiomech.2021.110349> doi:10.1016/j.jbiomech.2021.110349
- Li, H., & Liu, Z. L. (2021). How the spleen reshapes and retains young and old red blood cells: A computational investigation. *PLOS Computational Biology*, 17, 11. doi:10.1182/bloodadvances.2021005692
- Liu, Z. L., Bresette, C., Aidun, C., & Ku, D. (2021). ISTH 2021 Congress Abstract: Agglomeration and then Capture within 10 ms Creates Shear-induced Platelet Aggregation Controlled by von Willebrand Factor Concentration. *Research and Practice in Thrombosis and Haemostasis*. Retrieved from <https://publons.com/publon/50586650/>

doi:10.1002/RTH2.12589

- Ku, D., Ku, B., Leong, T., & Liu, Z. L. (2021). Prevalence Estimates of COVID-19 by Web Survey Compared to Inadequate Testing. *Clinical Cases in Medicine*, 1, 1007. Retrieved from <https://publons.com/publon/34444003/> doi:10.21203/RS.3.RS-65536/V1
- Liu, Z. L., Clausen, J., Wagner, J., Butler, K., Bolintineanu, D., Lechman, J., Rao, R., & Aidun, C. (2020). Heterogeneous partition of cellular blood-borne nanoparticles through microvascular bifurcations. *Physical Review E*, 102, 013310. Retrieved from <http://dx.doi.org/10.1103/physreve.102.013310> doi:10.1103/physreve.102.013310
- Kim, D., Bresette, C., Liu, Z., & Ku, D. N. (2019). Occlusive thrombosis in arteries. *APL Bioengineering*, 3(4), 041502. Retrieved from <https://doi.org/10.1063%2F1.5115554> doi:10.1063/1.5115554
- Liu, Z., Clausen, J. R., Rao, R. R., & Aidun, C. K. (2019). Publisher's Note: "A unified analysis of nano-to-microscale particle dispersion in tubular blood flow" [Phys. Fluids 31, 081903 (2019)]. *Physics of Fluids*, 31(11), 119901. Retrieved from <https://doi.org/10.1063%2F1.5132559> doi:10.1063/1.5132559
- Liu, Z., Zhu, Y., Clausen, J. R., Lechman, J. B., Rao, R. R., & Aidun, C. K. (2019). Cover Image. *International Journal for Numerical Methods in Fluids*, 91(5). Retrieved from <https://doi.org/10.1002%2Ffld.4597> doi:10.1002/fld.4597
- Liu, Z., Clausen, J. R., Rekha, R. R., & Aidun, C. K. (2019). A unified analysis of nano-to-microscale particle dispersion in tubular blood flow. *Physics of Fluids*, 31(8), 081903. Retrieved from <https://doi.org/10.1063%2F1.5110604> doi:10.1063/1.5110604
- Liu, Z., Zhu, Y., Clausen, J. R., Lechman, J. B., Rao, R. R., & Aidun, C. K. (2019). Multiscale method based on coupled lattice-Boltzmann and Langevin-dynamics for direct simulation of nanoscale particle/polymer suspensions in complex flows. *International Journal for Numerical Methods in Fluids*, 91(5), 228-246.
- Liu, Z., Clausen, J. R., Rao, R. R., & Aidun, C. K. (2019). Nanoparticle diffusion in sheared cellular blood flow. *Journal of Fluid Mechanics*, 636-667.
- Aljaghtham, M. S., Liu, Z. L., Guo, J. J., He, J., & Celik, E. (2019). Numerical simulations of cell flow and trapping within microfluidic channels for stiffness based cell isolation. *Journal of Biomechanics*, 85, 43-49.
- Kumar, R., Richardson, R., Gustavsson, J., Cattafesta, L., Kumar, R., Liu, Z., & Zha, G. (2018). Characterization of RAE 2822 transonic airfoil in FSU polysonic wind tunnel facility. *AIAA Aerospace Sciences Meeting, 2018, 210059*.
- Zhu, Y., Liu, Z., & Aidun, C. K. (2018). Crystal particle adhesion to ht surfaces in falling film

flow: A computational study. *Paper Conference and Trade Show, PaperCon 2018, 1*, 423-429.

Griffin, M. T., Zhu, Y., Liu, Z., Aidun, C. K., & Ku, D. N. (2018). Inhibition of high shear arterial thrombosis by charged nanoparticles. *Biomicrofluidics, 12*(4).

Ahmed, F., Mehrabadi, M., Liu, Z., Barabino, G. A., & Aidun, C. K. (2018). Internal Viscosity-Dependent Margination of Red Blood Cells in Microfluidic Channels. *Journal of Biomechanical Engineering, 140*(6).

Liu, Z., Zhu, Y., Rao, R. R., Clausen, J. R., & Aidun, C. K. (2018). Nanoparticle transport in cellular blood flow. *Computers and Fluids*.

### **Refereed Proceedings**

Kumar, R., Richardson, R., Gustavsson, J., Cattafesta, L. N., Kumar, R., Liu, Z., & Zha, G. (2018). Correction: Characterization of RAE 2822 Transonic Airfoil in FSU Polysonic Wind Tunnel Facility. In *2018 AIAA Aerospace Sciences Meeting*. American Institute of Aeronautics and Astronautics. Retrieved from <http://dx.doi.org/10.2514/6.2018-0328.c1>

Liu, Z., & Zha, G. (2016). Transonic Airfoil Performance Enhancement Using Co-Flow Jet Active Flow Control. In *8th AIAA Flow Control Conference*. American Institute of Aeronautics and Astronautics. Retrieved from <http://dx.doi.org/10.2514/6.2016-3472>

## **Service**

### **Florida State University**

#### **FSU Department Service**

Member, Qualifying Examination Committee (2022–present).

Member, Graduate Program (2022–present).

#### **FSU Program Service**

Faculty Advisor, Faculty Advisor for FSU Society of Asian Scientists and Engineers (SASE) (2022–present).

## **The Profession**

### **Guest Editing for Refereed Journals**

Liu, Z. L., Mao, W., Bark, D., & Clavería, V. (Eds.). (2022, August). Biomechanics and Mechanobiology in Cardiovascular and Hematologic Diseases [Special Issue]. *Frontiers in Mechanical Engineering*.

### **Guest Reviewer for Refereed Journals**

*Annals of Biomedical Engineering* (2022–present).

*Biophysical Journal* (2022–present).

*Computer Methods in Applied Mechanics and Engineering* (2022–present).

*Journal of Rheology* (2021–present).

*PLOS Computational Biology* (2020–present).

*Journal of Biomechanics* (2019–present).

*Physics of Fluid* (2019–present).

*Physics Review E* (2019–present).

### **Chair of a Symposium**

Liu, Z., Karniadakis, G., Bark, D., & Ku, D. (Chair). (2022). *Biofluid Mechanics in Thrombosis and Hemostasis*. Symposium conducted at the meeting of U.S. National Congress on Theoretical and Applied Mechanics, Austin, TX.