

Jessica K. Shang

Associate Professor, Department of Mechanical Engineering
University of Rochester, Rochester, NY
j.k.shang@rochester.edu
<http://labsites.rochester.edu/shanglab>

Education

Princeton University <i>PhD, Mechanical & Aerospace Engineering</i>	Princeton, NJ 2015
University of Cambridge, Churchill College <i>MPhil, Engineering</i>	Cambridge, United Kingdom 2011
Harvard University <i>AB, Engineering Sciences, cum laude with highest honors</i>	Cambridge, MA 2008

Appointments

Associate Professor of Mechanical Engineering <i>University of Rochester</i>	July 2023 – present Rochester, NY
Staff Scientist <i>Laboratory for Laser Energetics</i>	July 2024 – present Rochester, NY
Assistant Professor of Mechanical Engineering <i>University of Rochester</i>	July 2016 – June 2023 Rochester, NY
Scientist <i>Laboratory for Laser Energetics</i>	October 2021 – July 2024 Rochester, NY
Postdoctoral Fellow <i>Stanford University School of Medicine</i>	July 2015 – June 2016 Stanford, CA

Honors and Awards

Rochester Engineering Society Kate Gleason Young Engineer of the Year, 2023
Montgomery Blair High School Magnet Alumni Foundation Distinguished Alumni, 2024
Rochester Engineering Society Kate Gleason Young Engineer of the Year – Finalist, 2022
NSF Faculty Early CAREER, 2021
Office of Naval Research Summer Faculty Research Fellow, 2017
NIH T32 Fellow, Stanford Cardiovascular Institute, 2015
Larisse Rosentweig Klein Memorial Award, Princeton University, 2013
Francis Upton Graduate Fellow, Princeton University, 2009
National Science Foundation Graduate Research Fellow, 2008
Gates Cambridge Scholar, Gates Foundation, 2008

Professional Affiliations

Rochester Engineering Society (RES)
American Physical Society: Division of Fluid Dynamics (DFD), Topical Group on the Compression of Condensed Matter (GCCM), Division of Plasma Physics (DPP)
Society of Women Engineers (SWE)
American Society of Mechanical Engineers (ASME)

33. Y. Gan, Y. Guo, J. H. Thomas, K. A. Boster, **J. K. Shang**, and D. H. Kelley, 2025. Antidispersion in Flows in Leaky Channels, *Physical Review Letters*, **135** 204001. <https://doi.org/10.1103/yt8f-xj4j>
32. C. Heaton, H. Yin, D. Khaghani, H. J. Lee, H. Poole, E. Blackman, N. Boiadjeva, X. M. Chen, C. Crépisson, G. W. Collins, A. Descamps, A. E. Gleason, C. Gutt, A. N. Petsch, L. Randolph, S. Nelson, P. McGehee, R. Plumley, C. Spindloe, T. Stevens, C. Stuart, J. J. Turner, H. Aluie, **J. K. Shang**, G. Gregori, 2025. Measurement of turbulent velocity and bounds for thermal diffusivity in laser shock compressed foams by x-ray photon correlation spectroscopy, *Physical Review E*, **112** 045218. <https://doi.org/10.1103/lff9-f3c1>
31. D. S. Hodge, A. F. T. Leong, K. Kurzer-Ogul, S. Pandolfi, D. S. Montgomery, **J. Shang**, H. Aluie, S. Marchesini, Y. Liu, K. Li, A. Sakdinawat, E. C. Galtier, B. Nagler, H. J. Lee, E. F. Cunningham, T. E. Carver, C. A. Bolme, K. J. Ramos, D. Khaghani, P. M. Kozlowski, A. E. Gleason, R. L. Sandberg, 2025. Single-shot in-line x-ray phase-contrast imaging of void-shockwave interactions in fusion energy materials, *Physics of Plasmas*, **32** 083903. <https://doi.org/10.1063/5.0272820>
30. H. Yin, C. Heaton, E. G. Blackman, A. E. Gleason, J. J. Turner, G. W. Collins, G. Gregori, **J. K. Shang**, H. Aluie, 2025. Theory of x-ray photon correlation spectroscopy for multiscale flows, *Physical Review Research*, **7** 023202.
29. B. Geng, Q. Xue, Z. Xu, W. Jiang, J. Sullo, C. Brunecz, **J. Shang**, X. Zheng, 2025. Biomimetic Seal Whisker Sensors for High-Sensitivity Wake Detection and Localization, *Bioinspiration & Biomimetics*, <http://iopscience.iop.org/article/10.1088/1748-3190/adcdff>.
28. N. Acharya, H. Pantell, D. N. Polsin, J. R. Rygg, G. W. Collins, P. M. Celliers, R. Betti, A. E. Gleason, H. Aluie, **J. K. Shang**, 2025. Rippled shock propagation in a laser-driven target at multimegabar pressures, *Journal of Applied Physics*, **137**(11) .
27. A. F. T. Leong, D. S. Hodge, K. Kurzer-Ogul, S. Marchesini, S. Pandolfi, Y. Liu, J. L. Barber, K. Li, A. Sakdinawat, E. C. Galtier, B. Nagler, H. J. Lee, E. F. Cunningham, T. E. Carver, H. Aluie, **J. K. Shang**, C. A. Bolme, K. J. Ramos, D. Khaghani, R. L. Sandberg, D. S. Montgomery, P. M. Kozlowski, A. E. Gleason, 2024. Combined speckle-and propagation-based single shot two-dimensional phase retrieval method, *Optics Express*, **32**(26) 46939-46957.
26. K. Kurzer-Ogul, B. M. Haines, D. S. Montgomery, S. Pandolfi, J. P. Sauppe, A. F. T. Leong, D. Hodge, P. M. Kozlowski, S. Marchesini, E. Cunningham, E. Galtier, D. Khaghani, H. J. Lee, B. Nagler, R. L. Sandberg, A. E. Gleason, H. Aluie, **J. K. Shang**, 2024. Radiation and heat transport in divergent shock-bubble interactions, *Physics of Plasmas*, **31**(3) 032304. <https://doi.org/10.1063/5.0185056>
25. K. A. S. Boster, J. Sun, **J. K. Shang**, D. H. Kelley, J. H. Thomas, 2024. Hydraulic resistance of three-dimensional pial perivascular spaces in the brain, *Fluids and Barriers of the CNS*, **21**(1) 7.
24. H. Yin, **J. K. Shang**, E. G. Blackman, G. W. Collins, H. Aluie, 2023. Energy transfer and scale dynamics in 2D and 3D laser-driven jets, *Physics of Plasmas*, **30**(9) 092309.
23. M. Chiatto, C. Cardinale, **J. K. Shang**, F. Grasso, 2023. Analysis of the wake flow behind concave curved cylinders with velocity measurements by particle image velocimetry and modal decomposition, *Physics of Fluids*, **35**(7) 075153.
22. D. S. Hodge, A. F. T. Leong, S. Pandolfi, P. Hart, E. Galtier, D. Khaghani, S. Vetter, C. B. Curry, F.-J. Decker, H. J. Lee, D. S. Montgomery, **J. K. Shang**, H. Aluie, K. Kurzer-Ogul, B. Nagler, R. L. Sandberg, A. E. Gleason, 2023. Multi-frame, ultrafast, x-ray microscope for imaging shockwave dynamics, *Optics Express*, **30** 38405-38422.
21. S. Pandolfi, T. Carver, D. S. Hodge, A. F. T. Leong, K. Kurzer-Ogul, K. Li, Y. Liu, A. Sakdinawat, S. Marchesini, P. Hart, E. Galtier, D. Khaghani, E. Cunningham, B. Nagler, H. J. Lee, C. Bolme, K. Ramos, P. M. Kozlowski, **J. K. Shang**, H. Aluie, D. S. Montgomery, R. L. Sandberg, A. E. Gleason, 2023. Novel fabrication tools for dynamic compression targets with engineered voids using photolithography methods, *Review of Scientific Instruments*, **93** 103502.

20. H. Aluie, S. Rai, H. Yin, A. Lees, D. Zhao, S. M. Griffies, A. Adcroft, **J. K. Shang**, 2022. Effective Drift Velocity from Turbulent Transport by Vorticity, *Physical Review Fluids*, **7** 10461.
19. N. Acharya, H. Aluie, and **J. K. Shang**, 2022. Numerical investigation of laser-driven shock interaction with a deformable particle, *Physics of Plasmas*, **29**(5) 052302. doi:10.1063/5.0083076
18. A. Ladrón-de-Guevara, **J. K. Shang**, M. Nedergaard, and D. H. Kelley, 2022. Perivascular pumping in the mouse brain: Improved boundary conditions reconcile theory, simulation, and experiment, *Journal of Theoretical Biology*, **542** 111103. doi:10.1016/j.jtbi.2022.111103
17. X. Bian, **J. K. Shang**, E. G. Blackman, G. W. Collins, H. Aluie, 2021. Scaling of Turbulent Viscosity and Resistivity: Extracting a Scale-dependent Turbulent Magnetic Prandtl Number, *The Astrophysical Journal Letters*, **917** (1) L3. doi:10.3847/2041-8213/ac0fe5
16. J. B. Carr, J. H. Thomas, J. Liu, and **J. K. Shang**, 2021. Peristaltic pumping in thin, non-axisymmetric, annular tubes, *Journal of Fluid Mechanics*, **917** A10. doi:10.1017/jfm.2021.277
15. M. Chiatto, **J. K. Shang**, L. de Luca, and F. Grasso, 2021. Insights into low Reynolds flow past finite curved cylinders, *Physics of Fluids*, **33**(3) 035150. doi:10.1063/5.0043222
14. I. Scherl, B. Strom, **J. K. Shang**, O. Williams, B. L. Polagye, and S. L. Brunton, 2020. Robust principal component analysis for modal decomposition of corrupt fluid flows, *Physical Review Fluids*, **5** (5) 054401. doi:10.1103/PhysRevFluids.5.054401 – Editors’ Suggestion
13. A. C. Quillen, R. C. Nelson, H. Askari, K. Chotkowski, E. Wright, and **J. K. Shang**, 2019. A Light-weight Vibrational Motor Powered Recoil Robot that Hops Rapidly Across Granular Media, *Journal of Mechanisms and Robotics*, **11**(6) 061001. doi:10.1115/1.4044333
12. J. H. Kim, R. Puranik, **J. K. Shang**, and D. M. Harris, 2019. Robust transferrable superhydrophobic surfaces, *Surface Engineering*, **36**(6) 614-620. doi:10.1080/02670844.2019.1669109
11. **J. K. Shang**, M. Esmaily, A. Verma, R. Figliola, O. Reinhartz, T. Y. Hsia, J. A. Feinstein, and A. L. Marsden, 2019. Patient-specific multiscale modeling of the assisted bidirectional Glenn, *Annals of Thoracic Surgery*, **107**(4) 1232-1239. doi:10.1016/j.athoracsur.2018.10.024
10. J. H. Kim, J. P. Rothstein, and **J. K. Shang**, 2018. Dynamics of a flexible superhydrophobic surface during a drop impact, *Physics of Fluids*, **30** 072102. doi:10.1063/1.5028127 – Selected as an *AIP SciLight*
9. **J. K. Shang**, H. A. Stone, and A. J. Smits, 2018. Flow past a concave cylinder of constant curvature, *Journal of Fluid Mechanics*, **837** 896-915. doi:10.1017/jfm.2017.884
8. A. Verma, M. Esmaily, **J. K. Shang**, R. Figliola, J. A. Feinstein, T. Y. Hsia, and A. L. Marsden, 2018. Optimization of the Assisted Bidirectional Glenn Procedure for First Stage Single Ventricle Repair, *World Journal for Pediatric & Congenital Heart Surgery*, **9** 157–170. doi:10.1177/2150135117745026
7. I. Jacobi, J. S. Wexler, M. A. Samaha, **J. K. Shang**, B. J. Rosenberg, M. Hultmark, and H. A. Stone, 2015. Stratified thin-film flow in a rheometer, *Physics of Fluids*, **27** 052102. doi:10.1063/1.4921189
6. **J. K. Shang**, H. A. Stone, and A. J. Smits, 2014. Vortex and structural dynamics of a flexible cylinder in cross-flow, *Physics of Fluids*, **26** 053605. doi:10.1063/1.4878341
5. J. H. Tu, C. W. Rowley, J. N. Kutz, and **J. K. Shang**, 2014. Spectral analysis of fluid flows using sub-Nyquist-rate PIV data, *Experiments in Fluids*, **55** 1805. doi:10.1007/s00348-014-1805-6
4. **J. K. Shang**, A. J. Smits, and H. A. Stone, 2013. The appearance of P+S modes in the wake of a freely vibrating, highly flexible cylinder, *Journal of Fluids & Structures*, **43** 481–486. doi:10.1016/j.jfluidstructs.2013.08.010
3. **J. K. Shang**, B. M. Finio, S. A. Combes, and R. J. Wood, 2009. Artificial insect wings of arbitrary morphology for flapping wing MAVs, *Bioinspiration & Biomimetics*, **4** 036002. doi:10.1088/1748-3182/4/3/036002

2. B. O. Mysen and **J. Shang**, 2005. Evidence from olivine/melt element partitioning that nonbridging oxygen in silicate melts are not equivalent, *Geochimica Cosmochimica Acta*, **69** 2861-2875. doi:10.1016/j.gca.2004.12.028
1. B. O. Mysen and **J. Shang**, 2003. Fractionation of major element between co-existing H_2O silicate melt and silicate-saturated aqueous fluid in aluminosilicate systems at 1-2 GPa, *Geochimica Cosmochimica Acta*, **67** 3925-3936. doi:10.1016/S0016-7037(03)00262-X

Refereed Conference Abstracts & Proceedings (students and postdocs underlined)

8. J. B. Carr, A. Sefkow, and **J. Shang**, 2022. A 1-D pulse wave model coupling arterial and perivascular flow, *World Congress of Biomechanics*, hybrid (COVID-19).
7. J. Tithof, J. B. Carr, J. Liu, H. Mestre, T. Du, M. Nedergaard, J. H. Thomas, **J. Shang**, and D. H. Kelley, 2021. Cerebrospinal fluid mechanics in the brain: modeling, *International Congress of Theoretical and Applied Mathematics (ICTAM)*, held virtually (COVID-19).
6. **J. Shang**, J. B. Carr, C. Cardinale, D. Zeng, 2021. Peristaltic Pumping in Sub-Wavelength Perivascular Models, *Summer Biomechanics, Bioengineering, and Biotransport Conference*, held virtually (COVID-19).
5. J. Carr, **J. Shang**, 2020. The Effect of Domain Length on Simulations of Peristaltic Pumping in the Perivascular Space, *Summer Biomechanics, Bioengineering, and Biotransport Conference*, held virtually (COVID-19).
4. J. Carr, J. Tithof, J. Thomas, D. Kelley, **J. Shang**, 2019. Perivascular Pumping In An Idealized Model Of The Glymphatic System, *Annual Meeting of the Biomedical Engineering Society*, Philadelphia, PA.
3. A. Verma, M. Esmaily, **J. K. Shang**, R. Figliola, T. Y. Hsia, and A. L. Marsden, 2017. Optimization of Systemic-to-Pulmonary Shunt Design in the Assisted Bi-directional Glenn, *Summer Biomechanics, Bioengineering, and Biotransport Conference*, Tuscon, AZ.
2. **J. Shang**, M. Esmaily-Moghadam, T. Khalapyan, R. Figliola, O. Reinhartz, T.-Y. Hsia, A. Marsden, 2016. Implementation of the Assisted Bidirectional Glenn in an Idealized Single Ventricle Model, *Summer Biomechanics, Bioengineering, and Biotransport Conference*, National Harbor, MD.
1. B. M. Finio, **J. K. Shang**, and R. J. Wood, May 2009. Body torque modulation of a microrobotic fly, *IEEE International Conference on Robotics and Automation*, Kobe, Japan.

Other Publications

1. **J. K. Shang**, H. Aluie, J. R. Rygg, R. Betti, A. E. Gleason, D. N. Polsin, D. H. Kelley, G. W. Collins, 2019. Probing High-Energy Density Flows with X-Ray Particle Image Velocimetry, *NNSA Stewardship Science Quarterly*, invited; limited circulation.

Invited Presentations

19. University of Virginia, Mechanical and Aerospace Engineering (March 2025)
18. Physics of Non-Ideal Plasmas (September 2024)
17. Rochester Institute of Technology, Dept of Mechanical Engineering (February 2023)
16. Dynamics Days US (January 2023)
15. University of Rochester, Biomedical Engineering Colloquium Series (November 2022)
14. Group on Shock Compression of Condensed Matter (GSCCM) Biennial Meeting (July 2022)
13. Sandia National Laboratory, HEDP Seminar Series (March 2022)

12. Cornell University, Fluid Mechanics Seminar Series (Sept 2021)
11. Penn State University, Dept of Mechanical Engineering (Sept 2021)
10. Syracuse University, Dept of Mechanical Engineering (Dec 2018)
9. George Washington University, Dept of Mechanical Engineering (Oct 2016)
8. Rochester Institute of Technology, Center for Applied and Computational Mathematics (Oct 2016)
7. University of Rochester, Physical Models of Biological Systems (Aug 2016)
6. University of Rochester, Dept of Mechanical Engineering (Feb 2015)
5. Georgia Tech, Woodruff School of Mechanical Engineering (Feb 2015)
4. UC Davis, Dept of Mechanical and Aerospace Engineering (Feb 2015)
3. UC Santa Barbara, Dept of Mechanical Engineering (May 2014)
2. University of Notre Dame, Dept of Aerospace and Mechanical Engineering (Apr 2014)
1. MIT, Women in Aerospace Symposium (Apr 2013)

Conference Presentations (non-refereed) (postdocs and students underlined)

42. Biao Geng, Mingkai Chen, Dongfang Liu, Qian Xue, Xudong Zheng, Sandhya Vaidyanathan, Jonathan Sullo, Jessica Shang, 2024. Understanding whisker array sensing using interpretable machine learning, *APS DFD*, Salt Lake City, UT.
41. Daniel Hodge, Andrew Leong, Silvia Pandolfi, Kelin Kurzer-Ogul, David Montgomery, Pawel Kozlowski, Stefano Marchesini, Philip Hart, Yanwei Liu, Kenan Li, Eric Galtier, Thomas Carver, Chandra Breanne Curry, Dimitry Khaghani, Sharon Vetter, Franz-Josef Decker, Hae Ja Lee, Eric Cunningham, Alex Halavanau, Agustin Romero, Cindy Bolme, Kyle Ramos, Bob Nagler, Mathew Dayton, Hussein Aluie, Jessica Shang, Richard Sandberg, Arianna Gleason, 2024. Single-Shot Imaging of Plasma Jet Dynamics and Laser Shockwave Propagation in Low-Density Voids, *APS DPP*, Atlanta, GA.
40. Charles Heaton, Hao Yin, Dimitri Khaghani, Hae Ja Lee, Hannah Poole, Eric Blackman, Nina Boiadjieva, Celine Creppison, Gilbert Collins, Adrien Descamps, Arianna Gleason, Christian Gutt, Alexander Petsch, Lisa Randolph, Motoaki Nakatsutsumi, Silke Nelson, Peregrine McGehee, Rajan Plumley, Christopher Spindloe, Thomas Stevens, Charlotte Stuart, Joshua Turner, Jessica Shang, Hussein Aluie, Gianluca Gregori, 2024. Towards diffusivity measurements in laser shocked material with X-Ray Photon Correlation Spectroscopy, *APS DPP*, Atlanta, GA.
39. Hao Yin, Charles Heaton, Eric Blackman, Gilbert Collins, Gianluca Gregori, Jessica Shang, Hussein Aluie, 2024. Retrieving Transport Properties from Multiscale HED Flows using X-ray Photon Correlation Spectroscopy (XPCS), *APS DPP*, Atlanta, GA.
38. A. Syeda, J. K. Shang, H. Aluie, N. Acharya, K. Kurzer-Ogul, H. Pantell, A. Chin, D. Polsin, J. R. Rygg, R. Betti, G. W. Collins, A. E. Gleason, J. J. Ruby, A. Estrada, 2024. Viscosity Measurements in Shock-compressed Epoxy, *APS DPP*, Atlanta, GA.
37. J. K. Shang (invited), 2024. Measuring shear viscosity at the macroscale, *18th International Conference on the Physics of Non-Ideal Plasmas*, Oxford, UK.
36. K. Kurzer-Ogul, 2024. Transport Properties in WDM Shock-Bubble Experiments, *18th International Conference on the Physics of Non-Ideal Plasmas*, Oxford, UK.
35. Nitish Acharya (invited), Danae Polsin, Hussein Aluie, Hadley Pantell, Gilbert Collins, Ryan Rygg, Peter Celliers, Jessica Shang, 2024. Measuring Viscosity at High Pressures and Temperatures Using Shock-Wave Perturbation Decay, *14th International Conference on HED Laboratory Astrophysics*, Tallahassee, FL.
34. K. Kurzer-Ogul, B. Haines, D. Montgomery, S. Pandolfi, A. Leong, A. Gleason, H. Aluie, J. Shang, 2024. Transport Properties in HED Shock-Bubble Interactions, *14th International Conference on HED Laboratory Astrophysics*, Tallahassee, FL.

33. Nitish Acharya, Danae Polsin, Hussein Aluie, Hadley Pantell, Gilbert Collins, Ryan Rygg, Peter Celliers, Jessica Shang, 2023. Experimental measurements of rippled shock evolution in laser-driven targets at extreme pressures using 1D VISAR, *APS DPP*, Denver, CO.
32. Afreen Syeda, Nitish Acharya, Danae Polsin, J Ryan Rygg, Riccardo Betti, Gilbert Collins, John Ruby, Alex Chin, Arianna Gleason, Hussein Aluie, Jessica Shang, 2023. Viscosity Measurements in Shock-compressed Epoxy, *APS DPP*, Denver, CO.
31. H Pantell, N Acharya, D Polsin, J Shang, H Aluie, G Collins, R Rygg, 2023. Measuring Viscosity in Materials At High Pressure and High Temperature, *APS DPP*, Denver, CO.
30. Jessica Shang, Kimberly Boster, Jiatong Sun, Douglas Kelley, John Thomas, 2023. Lubrication approximations for perivascular hydraulic resistance, *76th Annual Meeting, APS DFD*, Washington, DC.
29. Kelin Kurzer-Ogul, David Montgomery, Brian Haines, Silvia Pandolfi, Joshua Sauppe, Daniel Hodge, Andrew Leong, Richard Sandberg, Hussein Aluie, Jessica Shang, Arianna Gleason-Hohlbrook, 2023. Radiation and Heat Transport in Divergent Shock-Bubble Interactions, *65th Annual Meeting, APS DPP*, Denver, CO.
28. S Rai, H Yin, H Aluie, A Lees, D Zhao, S Griffies, J Shang, 2022. Effective Drift Velocity from Turbulent Transport by Vorticity in Compressible Turbulence, *75th Annual Meeting, APS DFD*, Indianapolis, IN.
27. **J. Shang**, N. Acharya, A. Syeda, D. Polsin, J Ryan Rygg, J. J. Ruby, D. Chin, H. Pantell, R. Betti, G. Collins, P. Celliers, A. Gleason, H. Aluie, 2022. Measuring viscosity at extreme pressures, *75th Annual Meeting, APS DFD*, Indianapolis, IN.
26. Hussein Aluie, Shikhar Rai, Hao Yin, Aarne Lees, Dongxiao Zhao, Stephen Griffies, **Jessica Shang**, 2022. Effective Drift Velocity from Turbulent Transport by Vorticity in HED Flows, *64th Annual Meeting, APS DPP*, Spokane, WA.
25. H. Yin, H. Aluie, and **J. Shang**, 2022. Energy transfer across scales in laser-driven turbulence, *64th Annual Meeting, APS DPP*, Spokane, WA.
24. N. Acharya, Danae Polsin, **J. Shang**, Hussein Aluie, Hadley Pantell, Afreen Syeda, Ryan Rygg, Gilbert Collins, Peter Celliers, 2022. Inferring viscosity from shock wave perturbation decay in laser-driven experiments, *64th Annual Meeting, APS DPP*, Spokane, WA.
23. **J. Shang**, N. Acharya, A. Syeda, D. Polsin, J Ryan Rygg, J. J. Ruby, D. Chin, H. Pantell, R. Betti, G. Collins, P. Celliers, A. Gleason, H. Aluie, 2022. Measuring the dynamic viscosity of HED fluids, *64th Annual Meeting, APS DPP*, Spokane, WA.
22. A. Syeda, **J. Shang**, H. Aluie, N. Acharya, A. Gleason, D. Polsin, R. Betti, R. Rygg, G. W. Collins, J. J. Ruby, H. Pantell, D. Chin, 2022. Viscous Effects in Shock-Particle Interaction, *22nd Biennial Conference of the APS Topical Group on Shock Compression of Condensed Matter*, Anaheim, CA.
21. D. S. Hodge, et al., 2022. Implementation of an Ultrafast X-Ray Imager with an XFEL Multi-Pulse Train to Measure Void Collapse during Laser Driven Shock Compression, *22nd Biennial Conference of the APS Topical Group on Shock Compression of Condensed Matter*, Anaheim, CA.
20. J. Carr, **J. Shang**, 2021. A 1-D Pulse Wave Model Coupling Arterial and Perivascular Flow, *74th Annual Meeting, APS DFD*, Phoenix, AZ.
19. J. Carr, C. Cardinale, D. Zeng, **J. Shang**, 2020. Effect of Channel Length on Peristaltic Pumping, *73rd Annual Meeting, APS DFD*, online.
18. N. Acharya, J. Shang, H. Aluie, 2020. Hydrodynamics of laser-driven shock interaction with a deformable particle, *62nd Annual Meeting, APS DPP*, online.
17. M. Chiatto, C. Cardinale, **J. K. Shang**, L. de Luca, F. Grasso, 2019. Spectral POD analysis of low Reynolds flow past finite cylinders, *72nd Annual Meeting, APS DFD*, Seattle, WA.

16. J. B. Carr, J. H. Thomas, **J. K. Shang**, 2019. Peristaltic Pumping in an Elliptical-Annulus Model of a Perivascular Space, *72nd Annual Meeting, APS DFD*, Seattle, WA.
15. J. H. Kim, W. Gorman, **J. Shang**, 2017. Droplet impact dynamics on flexible superhydrophobic surfaces, *70th Annual Meeting, APS DFD*, Boulder, CO.
14. A. Verma, **J. Shang**, M. Esmaily, K. Wong, A. Marsden, 2016. Shape Optimization of the Assisted Bi-directional Glenn surgery for stage-1 single ventricle palliation, *69th Annual Meeting, APS DFD*, Portland, OR.
13. **J. Shang**, M. Esmaily, R. Figliola, T.-Y. Hsia, A. Marsden, 2016. Patient-specific modeling of the Assisted Bidirectional Glenn (ABG), *69th Annual Meeting, APS DFD*, Portland, OR.
12. **J. Shang**, A. J. Smits, H. A. Stone, 2015. Flow past a finite cylinder of constant curvature, *68th Annual Meeting, APS DFD*, Boston, MA.
11. A. Marsden, **J. Shang**, M. Esmaily-Moghadam, R. Figliola, O. Reinhartz, T.-Y. Hsia, 2015. Optimization of the assisted bidirectional Glenn for single ventricle palliation, *68th Annual Meeting, APS DFD*, Boston, MA.
10. **J. Shang**, A. J. Smits, H. A. Stone, 2014. Drag on a liquid-infused superhydrophobic cylinder, *67th Annual Meeting, APS DFD*, San Francisco, CA.
9. M. Fu, H. A. Stone, A. J. Smits, I. Jacobi, M. Samaha, J. Wexler, **J. Shang**, B. Rosenberg, L. Hellström, Y. Fan, K. Wang, K. Lee, M. Hultmark, 2014. Liquid-infused surfaces in turbulent channel flow, *67th Annual Meeting, APS DFD*, San Francisco, CA.
8. M. Samaha, **J. Shang**, M. Fu, K. Wang, H. A. Stone, A. J. Smits, M. Hultmark, 2014. Measurements of drag reduction by SLIPS, *67th Annual Meeting, APS DFD*, San Francisco, CA.
7. **J. K. Shang**, B. Rosenberg, P. Dewey, H. A. Stone, and A. J. Smits, 2013. Flow around a superhydrophobic cylinder, *66th Annual Meeting, APS DFD*, Pittsburgh, PA.
6. M. Hultmark, H. A. Stone, A. J. Smits, I. Jacobi, M. Samaha, J. Wexler, **J. K. Shang**, B. Rosenberg, L. Hellstroem, Y. Fan, 2013. Drag reduction using slippery liquid infused surfaces, *66th Annual Meeting – APS DFD*, Pittsburgh, PA.
5. B. Rosenberg, M. A. Samaha, I. Jacobi, **J. K. Shang**, M. Hultmark, A. J. Smits, 2013. Longevity and drag reduction of omniphobic surfaces, *66th Annual Meeting, APS DFD*, Pittsburgh, PA.
4. **J. K. Shang**, H. A. Stone, and A. J. Smits, 2012. Characterization of vortex-induced vibration of a flexible cylinder, *65th Annual Meeting, APS DFD*, San Diego, CA.
3. B. Rosenberg, G. Arwatz, **J. K. Shang**, and A. J. Smits, 2012. Flow over slippery liquid-infused porous surfaces, *65th Annual Meeting, APS DFD*, San Diego, CA.
2. **J. K. Shang**, A. J. Smits, and H. A. Stone, 2011. A cantilevered flexible cylinder in cross-flow, *64th Annual Meeting, APS DFD*, Baltimore, MD.
1. **J. K. Shang** and H. Babinsky, 2010. Effect of low-amplitude vibrations on impulsively-started wings, *63rd Annual Meeting, APS DFD*, Long Beach, CA.

Video & Poster Presentations

15. Nitish Acharya, Hadley Pantell, Danae Polsin, Gilbert Collins, Ryan Rygg, Peter Celliers, Hussein Aluie, Jessica Shang, 2024. Dynamics of single-mode rippled shock in laser-irradiated targets using streaked optical pyrometry, *APS DPP*, Atlanta, GA.
14. A Porras Diaz, J Shang, N Acharya, H Aluie, 2023. Hydrodynamic simulations of perturbed shock propagation with viscosity, *APS DPP*, Denver, CO.
13. AP Estrada Alvarez, A Syeda, D Bober, M Kumar, H Aluie, J Shang, 2023. Viscous motion of particles in shock-compressed epoxy, *APS DPP*, Denver, CO.

12. Afreen Syeda, Nitish Acharya, Anjeli Estrada Alvarez, Arianna Gleason, Danae Polsin, James Ryan Rygg, Gilbert Collins, John Ruby, Alex Chin, Riccardo Betti, Hadley Pantell, Jessica Shang, Hussein Aluie, 2023. Viscosity measurements of shock-compressed epoxy, *23rd Biennial Conference of the APS Topical Group on Shock Compression of Condensed Matter*, Chicago, IL.
11. N Acharya, D Polsin, H Aluie, H Pantell, G Collins, JR Rygg, PM Celliers, J Shang, 2022. Measuring viscosity at extreme conditions using perturbed shock decay in laser-driven experiments, *American Geophysical Union Fall Meeting*, Chicago, IL.
10. J Carr, A Sefkow, J Shang, 2022. A 1-D Pulse Wave Model for Perivascular Flow, *Annual Meeting, APS DFD*, Indianapolis, IN.
9. K Kurzer-Ogul, D Montgomery, B Haines, A Gleason, H Aluie, J Shang, 2022. Hydrodynamics of Void Collapse, *Annual Meeting, APS DPP*, Spokane, WA.
8. Nitish Acharya, Danae Polsin, Jessica Shang, Hussein Aluie, Hadley Pantell, Afreen Syeda, Ryan Rygg, Gilbert Collins, Peter Celliers, 2022. Inferring viscosity from shock wave perturbation decay in laser-driven experiments, *APS GSCCM Biennial Meeting*, Anaheim, CA.
7. N. Acharya, D. Polsin, H. Aluie, R. Betti, G. W. Collins, J. R. Rygg, P. M. Celliers, **J. K. Shang**, 2022. Hydrodynamic simulations of rippled shock wave driven by laser ablation and initial pressure discontinuity, *22nd Biennial Conference of the APS Topical Group on Shock Compression of Condensed Matter*, Anaheim, CA.
6. N. Acharya, D. Polsin, H. Aluie, R. Betti, G. W. Collins, A. E. Gleason, J. R. Rygg, **J. K. Shang**, 2019. Hydrodynamic Design Simulations of XPIV-Compatible Targets using FLASH, *Annual Meeting, APS DPP*, Ft Lauderdale, FL.
5. C. Cardinale, K. Kindred, **J. Shang**, 2020. Effect of Curvature on Whisker-Wake Interactions, *73rd Annual Meeting, APS DFD*, online.
4. Y. Liu, W. Gorman, C. Muir, **J. Shang**, 2018. Surface swimming using high-frequency, low-amplitude motions, *71st Annual Meeting, APS DFD*, Atlanta, GA.
3. **J. K. Shang**, H. A. Stone, and A. J. Smits, 2014. Flow around a superhydrophobic cylinder, *Purdue Prospective Faculty Workshop*, Lafayette, IN.
2. **J. K. Shang**, A. J. Smits, and H. A. Stone, 2012. Wakes and trajectories of a flexible cantilevered cylinder, *Fluid and Elasticity Conference*, La Jolla, CA.
1. **J. Shang**, M. Sullivan, and H. A. Stone, 2007. Hydrodynamic Cavitation: A Demonstration Suitable for the Classroom, *60th Annual Meeting, APS DFD*, Salt Lake City, UT.

Exhibits

2. Robotic fly prototype displayed at “Ecological Urbanism: Alternative and Sustainable Cities of the Future” symposium and exhibition. Harvard University Graduate School of Design, 3/30/09-5/17/09.
1. Robert J. Wood, Flybot robotic fly, in “Design and the elastic mind,” New York Museum of Modern Art, 2/24/08-5/12/08.

Service: International and National

Boards

- Board of Directors, Executive Committee, Rochester Engineering Society (2024 - present)

Peer Review

- Journals: AIAA Journal, J. of Fluids and Structures, J. of Visualized Experiments, Ocean Engineering, Physics of Fluids, Physical Review Fluids, Physical Review E, Physical Review Letters, Biomechanics and Modeling in Mechanobiology, Cardiovascular Engineering and Technology, Royal Society Open Science, Naval Engineers Journal, Journal of Biomechanical Engineering, American Journal of Physics, Physica D
- Proposals and Panels: National Sciences and Engineering Research Council of Canada (NSERC), Department of Energy (DOE), National Science Foundation (NSF), MITACS

Committees

- Executive committee, member-at-large (Jan 2023 – Dec 2024): APS Topical Group on Compression of Condensed Matter
- National Academy of Sciences study committee on *National Naval Responsibility & Engineering* for the Office of Naval Research, 2018-2019. Contributed to the report [“Toward New Naval Platforms: A Strategic View of the Future of Naval Engineering”](#).

Conferences

- Program committee: Physics of Non-Ideal Plasmas 2024-2027
- Session co-organizer and co-chair: APS Division of Fluid Dynamics, Minisymposium of invited talks on “Fluids Next: Fluid Dynamics in Modern Medicine”; corresponding special collection of invited articles in *Physical Review Fluids*
- Program committee: APS Division of Plasma Physics 2023 meeting, HEDP subcommittee
- Meeting organizer, technical chair (2021 – present): Thousand Islands Fluid Dynamics Meeting. Brings together fluid dynamics research groups from the Northeast US and Canada.
- *Aneurysm biomechanics* session chair: Summer Biomechanics, Bioengineering, and Biotransport (SB3C) Meeting, 2016

University Service

- Faculty advisor for UR Yellowjacket Aero student organization, 2025-present
- Faculty Advisory Committee for Admissions & Financial Aid, 2025-present
- Experiential Learning Workgroup 2025-present
- Department of Mechanical Engineering Committees
 - Engagement and Enrichment 2025-present
 - Instructional Track Faculty Search (2), 2024, 2025
 - Diversity, Equity, and Inclusion, 2021-2025; chair, 2024-2025
 - Graduate Admissions, 2016-2020
 - Graduate Studies, 2016-2020, 2021-2023
 - Undergraduate Studies, 2023-present; chair, Nov 2025-present
- Faculty advisor for the University of Rochester chapter of the Society of Women Engineers (SWE), 2016-2021
- Undergraduate faculty advisor for the Mechanical Engineering Classes of 2021, 2025, 2029
- Reviewer for University Research Awards, 2022

Teaching

- ME 227/427: Intro to Aerodynamics Spring 2025
- ME 225: Intro to Fluid Dynamics Fall 2023
- ME 241: Mechanics Lab (formerly Fluids Lab) Spring 2017 – 2021, 2023
- ME 444: Continuum Mechanics Fall 2017
- ME 437: Incompressible Flow Fall 2018, 2020 – 2022, 2025

Princeton University

Princeton, NJ

- MAE 433: Automatic control systems, Assistant-in-instruction. Spring 2013
- MAE 335: Fluid dynamics, Assistant-in-instruction. Fall 2012
- MAE 222: Mechanics of fluids, Assistant-in-instruction. Spring 2012

Harvard University

Cambridge, MA

- ES 123: Introduction to fluid mechanics and transport processes, Teaching fellow. Spring 2008
- ES 51: Computer-aided machine design, Teaching fellow. Fall 2006