Jesse T. Ault, Ph.D.

Assistant Professor of Engineering
Brown University

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Experience

- **Assistant Professor of Engineering, Brown University (9/19–Present)**
  Fluids and Thermal Sciences Group, School of Engineering
- **Alvin M. Weinberg Distinguished Fellow, Oak Ridge National Laboratory (7/17–8/19)**
  Biomedical Sciences and Engineering Group, Computational Sciences and Engineering Division

Education

- **Ph.D., Mechanical and Aerospace Engineering**
  Princeton University, June 2017
  - Thesis: Vortex Dynamics in Swirling Flows with Applications to Energy and Biology
  - Advisor: Howard A. Stone
  - Graduate Certificate in Computational and Information Science
- **M.A., Mechanical and Aerospace Engineering**
  Princeton University, September 2014
- **B.S.M.E., Mechanical Engineering with Math and Physics minors, University Honors Program**
  Purdue University, June 2012

Awards

- **OVPR Seed Award** - Brown University School of Engn. and Applied Science (2022).
- **Salomon Junior Faculty Award** - Brown University School of Engn. and Applied Science (2020).
- **Alvin M. Weinberg Distinguished Fellowship** - Awarded to early career scientists who have demonstrated both "outstanding scientific ability" as well as "potential for technical and scientific leadership at the highest levels", Oak Ridge National Laboratory (2017-2020).
- **Harold W. Dodds Honorific Fellowship** - Awarded to senior graduate students "displaying the highest scholarly excellence in graduate work" at Princeton University (2016).
- **Best Presentation Award** - MAE Research Day Competition, Princeton University (2016).
- **Mary and Randall Hack '69 Graduate Award** - Awarded by the Princeton Environmental Institute to support innovative research on water-related research with implications for the environment (2015).
- **Excellence in Teaching Award** - Awarded by the Princeton Engineering Council and Graduate Engineering Council on behalf of the students in MAE 335 (2014).
- **Crocco Award for Teaching Excellence** - Awarded by the Faculty of the MAE Department in recognition of outstanding performance as an Assistant in Instruction for MAE 222 (2014).

- **Gordon Y. S. Wu Fellowship** - "Princeton's most prestigious award for graduate study in engineering" for incoming graduate students (2012).
- **Larry L. & Mary Alice McDonald Scholarship** - Purdue University (2011).
- **Arcelor Mittal Industrial Roundtable Scholarship** - Purdue University (2010).
- **Stephen D., Yvonne D., and Robert D. Miles Memorial Mechanical Engineering Scholarship** - Purdue University (2009).
- **John McClean Memorial Fund Scholarship** - Purdue University (2008).
- **Purdue Trustees Scholarship** - Purdue University (2008 - 2012).

Publications

1. Z. Yang, B. Ji, **J. T. Ault**, and J. Feng. Enhanced singular jets in oil-coated bubble bursting. Accepted for publication in *Nature Physics*.
2. S. Katsanoulis, F. Kogelbauer, R. Kaundinya, **J. T. Ault**, and G. Haller. Approximate streamsurfaces for flow visualization. *J. Fluid Mech.*, 954:A28, 2023
3. S. Lee, J. Lee, and **J. T. Ault**. The role of variable zeta potential on diffusiophoretic and diffusioosmotic transport. *Colloids and Surfaces A*, 659:130775, 2023
4. J. Teng, B. Rallabandi, H. A. Stone, and **J. T. Ault**. Coupling of translation and rotation in the motion of finite-length rods near solid boundaries. *J. Fluid Mech.*, 938, 2022
5. R. E. Migacz and **J. T. Ault**. Diffusiophoresis in a Taylor-dispersing solute. *Phys. Rev. Fluids*, 7(3):034202, 2022
6. *L. Martínez, P. Merino, G. Santoro, J. I. Martínez, S. Katsanoulis, **J. T. Ault**, Á. Mayoral, L. Vázquez, M. Accolla, A. Dazzi, et al. Metal-catalyst-free gas-phase synthesis of long-chain hydrocarbons. *Nature Comm.*, 12(1):1–8, 2021. *Featured as Editor's Suggestion.
7. S. Shim, S. Khodaparast, C.-Y. Lai, J. Yan, **J. T. Ault**, B. Rallabandi, O. Shardt, and H. A. Stone. CO_2-driven diffusiophoresis for maintaining a bacteria-free surface. *Soft Matter*, 17(9):2568–2576, 2021
8. H. Ghossein, A. A. Hassen, S. Kim, **J. T. Ault**, and U. K. Vaidya. Characterization of Mechanical Performance of Composites Fabricated Using Innovative Carbon Fiber Wet Laid Process. *J. Compos. Sci.*, 4(3):124, 2020
9. B. Saintyves, B. Rallabandi, T. Jules, **J. T. Ault**, T. Salez, C. Schönecker, H. A. Stone, and L. Mahadevan. Rotation of a submerged finite cylinder moving down a soft incline. *Soft Matter*, 16(16):4000–4007, 2020
10. S. Shin, **J. T. Ault**, K. Toda-Peters, and A. Q. Shen. Particle trapping in merging flow junctions by fluid-solute-colloid-boundary interactions. *Phys. Rev. Fluids*, 5(2):024304, 2020
11. T. J. Shimokusu, V. G. Maybruck, **J. T. Ault**, and Sangwoo Shin. Colloid Separation by CO2-Induced Diffusiophoresis. *Langmuir*, 36(25):7032–7038, 2019
12. S. T. Chan*, **J. T. Ault***, S. J. Haward, E. Meiburg, and A. Q. Shen. Coupling of vortex breakdown and stability in a swirling flow. *Phys. Rev. Fluids*, 4(8):084701, 2019. *The authors contributed equally to this work
13. S. Battat, **J. T. Ault**, S. Shin, S. Khodaparast, and H. A. Stone. Particle entrainment in dead-end pores by diffusiophoresis. *Soft Matter*, 15(19):3879–3885, 2019

14. **J. T. Ault**, S. Shin, and H. A. Stone. Characterization of surface–solute interactions by diffusioosmosis. *Soft Matter*, 15(7):1582–1596, 2019

15. **J. T. Ault**, S. Shin, and H. A. Stone. Diffusiophoresis in narrow channel flows. *J. Fluid Mech.*, 854:420–448, Sept. 2018

16. *D. Oettinger, **J. T. Ault**, H. A. Stone, and G. Haller. Invisible anchors trap particles in branching junctions. *Phys. Rev. Lett.*, 121(5):054502, Aug. 2018. *Featured as Editor's Suggestion.

17. **J. T. Ault**, P. B. Warren, S. Shin, and H. A. Stone. Diffusiophoresis in one-dimensional solute gradients. *Soft Matter*, 13(47):9015–9023, Nov. 2017

18. S. Shin, **J. T. Ault**, P. B. Warren, and H. A. Stone. Accumulation of colloidal particles in flow junctions induced by fluid flow and diffusiophoresis. *Phys. Rev. X*, 7(4), Nov. 2017

19. S. Shin, **J. T. Ault**, J. Feng, P. B. Warren, and H. A. Stone. Low-cost zeta potentiometry using solute gradients. *Adv. Mater.*, 29(30):1701516, June 2017

20. T.-H. Chen, **J. T. Ault**, H. A. Stone, and C. B. Arnold. High-speed axial-scanning wide-field microscopy for volumetric particle tracking velocimetry. *Exp. Fluids*, 58(5), Apr. 2017

21. **J. T. Ault**, B. Rallabandi, O. Shardt, K. K. Chen, and H. A. Stone. Entry and exit flows in curved pipes. *J. Fluid Mech.*, 815:570–591, Feb. 2017

22. J. Feng, M. Muradoglu, H. Kim, **J. T. Ault**, and H. A. Stone. Dynamics of a bubble bouncing at a liquid/liquid/gas interface. *J. Fluid Mech.*, 807:324–352, Oct. 2016

23. **J. T. Ault**, A. Fani, K. K. Chen, S. Shin, F. Gallaire, and H. A. Stone. Vortex-breakdown-induced particle capture in branching junctions. *Phys. Rev. Lett.*, 117(8), Aug. 2016

24. R. Mensire, **J. T. Ault**, E. Lorenceau, and H. A. Stone. Point-source imbibition into dry aqueous foams. *EPL (Europhys. Lett.)*, 113(4):44002, Feb. 2016

25. S. Shin, E. Um, B. Sabass, **J. T. Ault**, M. Rahimi, P. B. Warren, and H. A. Stone. Size-dependent control of colloid transport via solute gradients in dead-end channels. *P. Natl. Acad. Sci. USA*, 113(2):257–261, Dec. 2015

26. **J. T. Ault**, K. K. Chen, and H. A. Stone. Downstream decay of fully developed Dean flow. *J. Fluid Mech.*, 777:219–244, July 2015

27. S. Shin*, **J. T. Ault***, and H. A. Stone. Flow-driven rapid vesicle fusion via vortex trapping. *Langmuir*, 31(26):7178–7182, June 2015. *The authors contributed equally to this work

28. N. A. Marine, P. M. Wheat, **J. T. Ault**, and J. D. Posner. Diffusive behaviors of circle-swimming motors. *Phys. Rev. E*, 87(5), May 2013

Publications (Under Review/In Revision)

1. **J. T. Ault**, S. Shin, A. Garcia, A. Perazzo, and H. A. Stone. **Viscosity measurements of glycerol in a parallel-plate rheometer exposed to atmosphere**. *Under review for publication in J. Fluid Mech.*

Publications (In Preparation)

1. H. Wang, X. Yu and **J. T. Ault**. **Vortex breakdown in cavity flows**. *In preparation for submission to Physical Review Fluids.*

2. M. Baskaran, **J. T. Ault**, and H. A. Stone. **Flow over a backward-facing step in the Brinkman limit**. *In preparation for submission to Physical Review Fluids.*

3. G. Durey and **J. T. Ault**. **Light-activated diffusiophoresis via photocatalytic hydrogel walls**. *In preparation for submission to Physical Review Letters.*

Funded Grant Proposals (Total Value: $676,800 + 2,000,000 core hours)

1. "Membraneless desalination and urine purification via CO_2-induced cross diffusion," NASA Rhode Island EPSCoR Seed Grant, PI: **J. T. Ault**, $27,000, 2022.
2. "High-Intensity Water-Assisted Laser Desorption-Ionization," Office of the Vice President for Research Seed Award, Brown University, PI: **J. T. Ault**, $50,000, 2022.
3. "Non-equilibrium molecular dynamics simulations of protein diffusiophoresis for biomedicine," Salomon Faculty Research Fund, PI: **J. T. Ault**, $15,000, 2020.
4. "High-fidelity cardiovascular simulation for personalized medicine," Oak Ridge National Laboratory LDRD, PI: **J. T. Ault**, $550,800, 2017–2020.
5. "Using parallel computation to improve blood cell simulations in cardiovascular flows," Oak Ridge National Laboratory Titan supercomputer allocation, PI: **J. T. Ault**, 2,000,000 core hours, 2018–2019.
6. "The Blockchain Initiative at ORNL," Oak Ridge National Laboratory Program Development Funds, PI: Sean Oesch, Co-PI: **J. T. Ault**, $30,000, 2018.
7. "Large-surface-area continuous-flow evaporative water purification," Princeton Environmental Institute, PI: **J. T. Ault**, Co-PI: H. A. Stone, $4000, 2015.

Teaching Experience

- **Fluid Mechanics I: ENGN 2810**, Brown University (Fall 2021, Fall 2020, Fall 2019)
- **Advanced Fluid Mechanics: ENGN 1860**, Brown University (Spring 2022)
- **Dynamics and Vibrations: ENGN 0040** Brown University (Summer 2021)
- **Numerical Methods in Engineering: ENGN 1840** Brown University (Spring 2020)
- **Junior Faculty Teaching Fellows Program:** "Year-long, cohort-based learning community that provides the opportunity for a small group of junior faculty from across the disciplines to come together to reflect upon and discuss their teaching and their students' learning." Brown University (2019-2020)
- **Teagle Teaching Seminar:** Year-long collaboration between graduate students and faculty to engage current research in teaching and learning in higher education, Princeton University, McGraw Center for Teaching and Learning (2014-2015)
- **Mechanics of Fluids: MAE 222**, Assistant in instruction, Princeton Univ. (Spring 2014, Spring 2016)
  - Received Crocco Award for Teaching Excellence
- **Simulation and Modeling of Fluid Flows: MAE 557**, Assistant in instruction, Princeton University (Fall 2015)
- **Aircraft Design: MAE 332**, Assistant in instruction, Princeton University (Spring 2015)
- **Fluid Dynamics: MAE 335**, Assistant in instruction, Princeton University (Fall 2014)
  - Received Excellence in Teaching Award
- **Select Student Comments:**

- "Professor Ault was very enthusiastic about the material and was readily available to help outside of class. His teaching style was simple and made effective use of the blackboard."
- "He is always willing to meet and help, even outside of office hours."
- "He cares a lot about the class and the students."
- "He sets up a friendly environment that students can communicate with him well and gain help effectively."
- "Jesse made the class feel very comfortable. He was willing to go out and learn about any subject to help the students."

Advising and Mentoring

Postdoctoral researchers

- **Guillaume Durey:** (1/21 – 12/21). Brown University.

Visiting researchers

- **Zhong Zheng:** (3/20 – 3/21). Brown University.
- **Saebom Lee:** Effects of variable zeta potential on diffusiophoresis. (1/20 – Present). Visiting PhD student from Sungkyunkwan University, South Korea.

PhD student advising

- **Jian Teng:** Dynamics of finite rods near solid boundaries. (7/20 – Present). Brown University.
- **Robben Migacz:** Diffusiophoresis in a Taylor-dispersing solute. (8/20 – Present). Brown University.
- **Morgan Castleberry:** Enhanced particle diffusiophoresis with time-varying solute strategies. (9/22 – Present). Brown University.

Master's student advising

- **Haoyi Wang:** Computational simulations of light-activated diffusiophoresis. (9/21 – Present). Brown University.
- **Sichen Liang:** Flow past a cylinder in the Brinkman limit. (9/20 – 5/22). Brown University.
- **Xinyi Yu:** Vortex breakdown in cavity channels and bends. (9/19 – 5/21). Brown University.
- **Bryan Hong:** OpenFOAM simulations of heated flow over an airfoil. (9/19 – 6/20). Brown University.

Undergraduate student advising:

- **John McDonough:** Diffusioosmosis-driven particle transport under a 3D solute gradient in a dead-end pore geometry. (9/22 – Present). Brown University.
- **Kyra Howard:** The mysterious fluid dynamics in a seal's nose. (Fall 2022 UTRA Project). Brown University.
- **Daniel Marella:** Fluid-structure interactions via OpenFOAM with dynamic meshing. (3/22 – Present). Brown University
- **Kento Abeywardane:** Protein diffusiophoresis via atomistic molecular dynamics simulations. (12/21 – 8/22). Brown University.
- **Liam Storan:** Diffusiophoresis in dead-end pores with hydrogel obstacles. (8/21 – Present). Brown University.

- **Anya Schmitz:** Cardiovascular engineering: Fluid dynamic analysis and the cardiovascular system. (Fall 2021 Independent Study). Brown University.
- **Gabby Shieh:** SBUDNIC structures subsystem design. (Fall 2021 Independent study). Brown University.
- **Theo Fernandez:** Designing and implementing cube satellite communications. (Fall 2021 Independent study). Brown University.
- **Benjamin Schornstein:** Exploring topics in OpenFOAM simulations. (6/21 – Present). Brown University.
- **Sungwon La:** Desalination via CO_2-induced cross-diffusion. (5/20 – Present). Brown University.
- **Jordan Stout:** Lift and drag coefficients of airfoils. (6/20 – 5/21). Brown University.
- **Vanessa Maybruck:** Colloid separation by CO_2-induced diffusiophoresis. (5/19 – 9/19). Oak Ridge National Laboratory.
- **Dawn Wang:** Vortex-breakdown in Y-, T-, and arrow-shaped junctions. (9/14 – 5/15). Princeton University.
- **John Davis:** Growth and decay of fully developed Dean flow. (6/13 – 8/13). Princeton University.
- **Kevin Lee:** Enhancement of solar still productivity using thin-film, continuous flows. (12/15 – 4/16). Princeton University.
- **Sarah Battat:** Diffusiophoretic particle motions in dead-end pores. (9/16 – 6/17). Princeton University.
- **Andre Douglas:** Particle capture in swirling flows. (6/15 – 3/16). Princeton University.

Invention Disclosures

1. **A novel method for ablation of liquid surfaces**. Invention disclosure at Brown University with P. Weber (2020).
2. **Measuring the zeta potential of surfaces using pressure measurements in flow**. Invention disclosure at Oak Ridge National Laboratory with S. Shin and H. A. Stone (2018).
3. **Measurement and manipulation of particles and biomaterials using solute gradients**. Invention disclosure at Oak Ridge National Laboratory with S. Shin and H. A. Stone (2018).
4. **Rapid preconcentrator using flow-driven diffusiophoretic accumulation**. Invention disclosure at Princeton University with H. A. Stone, S. Shin, and P. B. Warren (2017).
5. **Zeta potentiometer using diffusiophoresis and diffusioosmosis**. Invention disclosure at Princeton University with H. A. Stone, S. Shin, J. Feng, and P. B. Warren (2017).
6. **A method for producing large lipid vesicles**. Invention disclosure at Princeton University with H. A. Stone and S. Shin (2015).

Invited Talks

1. University at Buffalo, Department of Mechanical and Aerospace Engineering. (Sept. 2022).
2. U.S. National Congress on Theoretical and Applied Mechanics. **Diffusiophoretic and diffusioosmotic dispersion in channel flows**, (June 2022).
3. Cornell University, Sibley School of Mechanical and Aerospace Engineering. (Apr. 2022).
4. 90th New England Complex Fluids Workshop, Northeastern University. **Diffusiophoresis in a Taylor-dispersing solute**, (Mar. 2022).
5. University of Illinois, Department of Mechanical Science and Engineering. (Oct. 2021).
6. Sungkyunkwan University, School of Mechanical Engineering. **Coupled fluid/solute/particle dynamics in confined systems**, (May 2021).
7. Princeton University, Seeking Simplicity in Complex Fluids Seminar, (Jan. 2020).
8. Brown University, Fluids and Thermal Sciences Group, School of Engineering, (Mar. 2019).
9. Yale University, Department of Mechanical Engineering and Materials Science, (Jan. 2019).
10. Okinawa Institute of Science and Technology, Micro/Bio/Nanofluidics Unit, (Dec. 2018).
11. **J. T. Ault**, S. Shin, and H. A. Stone. **Bioseparation in microflows by diffusiophoresis**. In *IEEE 12th International Conference on Nano/Molecular Medicine and Engineering*, Honolulu, HI, USA, December 2018.
12. Oak Ridge Institute for Continued Learning, Roane State, (Oct. 2018).
13. Oak Ridge National Laboratory, Computational Sciences and Engineering Division, (Mar. 2017).
14. Harvard University, Department of Applied Mathematics (Jan. 2017).
15. University of North Texas, Department of Mechanical and Energy Engineering (Jan. 2017).
16. Princeton University, Department of Mechanical and Aerospace Engineering and the Princeton Institute for Computational Science and Engineering, (Sept. 2016).

Conference Presentations

1. **J. T. Ault**. **Time-varying solute strategies to maximize diffusiophoretic extraction from confined geometries.** In *American Physical Society 75th Annual Meeting of the Division of Fluid Dynamics*, Indianapolis, IN, USA, November 2022.
2. R. Migacz, G. Durey, and **J. T. Ault**. **Convection rolls and 3D particle dynamics in merging solute streams.** In *American Physical Society 75th Annual Meeting of the Division of Fluid Dynamics*, Indianapolis, IN, USA, November 2022.
3. J. Teng, B. Rallabandi, and **J. T. Ault**. **Diffusioosmotic dispersion in a long, narrow channel.** In *American Physical Society 75th Annual Meeting of the Division of Fluid Dynamics*, Indianapolis, IN, USA, November 2022.
4. S. Lee, J. Lee, and **J. T. Ault**. **Diffusiophoretic and diffusioosmotic dynamics under a variable zeta potential model.** In *American Physical Society 75th Annual Meeting of the Division of Fluid Dynamics*, Indianapolis, IN, USA, November 2022.

5. Z. Yang, B. Ji, **J. T. Ault**, and J. Feng. **Singular jets produced by oil-coated bubble bursting.** In *American Physical Society 75th Annual Meeting of the Division of Fluid Dynamics*, Indianapolis, IN, USA, November 2022.

6. H. Wang, X. Yu, G. Durey, and **J. T. Ault**. **Vortex breakdown in shear-driven flow over a rectangular cavity.** In *American Physical Society 75th Annual Meeting of the Division of Fluid Dynamics*, Indianapolis, IN, USA, November 2022.

7. **J. T. Ault**, S. Shin, A. Garcia, A. Perazzo, and H. A. Stone. **Viscosity measurements of glycerol reveal the misalignment in parallel-plate rheometers.** In *American Physical Society 74th Annual Meeting of the Division of Fluid Dynamics*, Chicago, IL, USA, November 2021.

8. R. Migacz and **J. T. Ault**. **Diffusiophoresis in a Taylor-dispersing solute.** In *American Physical Society 74th Annual Meeting of the Division of Fluid Dynamics*, Chicago, IL, USA, November 2021.

9. S. Liang, G. Durey, M. Baskaran, and **J. T. Ault**. **Flow past a cylinder in the Brinkman limit.** In *American Physical Society 74th Annual Meeting of the Division of Fluid Dynamics*, Chicago, IL, USA, November 2021.

10. J. Teng, B. Rallabandi, H. A. Stone, and **J. T. Ault**. **Dynamics of finite-length rods near solid boundaries.** In *American Physical Society 74th Annual Meeting of the Division of Fluid Dynamics*, Chicago, IL, USA, November 2021.

11. Z. Yang, B. Ji, **J. T. Ault**, and J. Feng. **Dynamics of an oil jet produced by an oil-coated bubble bursting at a free surface.** In *American Physical Society 74th Annual Meeting of the Division of Fluid Dynamics*, Chicago, IL, USA, November 2021.

12. B. Saintyves, B. Rallabandi, T. Jules, **J. T. Ault**, T. Salez, C. Schonecker, H. A. Stone, and L. Mahadevan. **Rotation of a submerged finite cylinder moving down a soft incline**. In *American Physical Society 73rd Annual Meeting of the Division of Fluid Dynamics*, Chicago, IL, USA, November 2020.

13. R. Migacz and **J. T. Ault**. **Diffusiophoresis in a Taylor-dispersing solute**. In *82nd New England Complex Fluids Workshop*, Brown University, Providence, RI, USA, March 2020.

14. J. Teng, B. Rallabandi, and **J. T. Ault**. **Dynamics of finite rods near solid boundaries**. In *82nd New England Complex Fluids Workshop*, Brown University, Providence, RI, USA, March 2020.

15. X. Yu and **J. T. Ault**. **Numerical simulations of vortex breakdown structure transition in cavity channel**. In *82nd New England Complex Fluids Workshop*, Brown University, Providence, RI, USA, March 2020.

16. M. Baskaran, **J. T. Ault**, C. Rowley, and H. A. Stone. **A study of flow separation in microfluidic channels**. In *American Physical Society 72nd Annual Meeting of the Division of Fluid Dynamics*, Seattle, WA, USA, November 2019.

17. S. T. Chan, **J. T. Ault**, S. Haward, E. Meiburg, and A. Shen. **Coupling of vortex breakdown and stability in a vortex T-mixer flow**. In *American Physical Society 72nd Annual Meeting of the Division of Fluid Dynamics*, Seattle, WA, USA, November 2019.

18. S. Shin, **J. T. Ault**, and A. Shen. **Particle trapping in merging flow junctions by fluid-solute-colloid-boundary interactions**. In *American Physical Society 72nd Annual Meeting of the Division of Fluid Dynamics*, Seattle, WA, USA, November 2019.

19. S. Shim, O. Shardt, S. Khodaparast, C.-Y. Lai, **J. T. Ault**, B. Rallabandi, and H. A. Stone. **CO_2-driven diffusiophoresis: motion of charged particles near CO_2 dissolving boundaries**. In *American Physical Society 72nd Annual Meeting of the Division of Fluid Dynamics*, Seattle, WA, USA, November 2019.

20. **J. T. Ault**, S. Shin, and H. A. Stone. **Characterization of surface-solute interactions by diffusioosmosis**. In *American Physical Society 72nd Annual Meeting of the Division of Fluid Dynamics*, Seattle, WA, USA, November 2019.

21. S. Shin, **J. T. Ault**, P. B. Warren, and H. A. Stone. **Colloidal accumulation in flow junctions induced by fluid flow and dissolved solutes**. In *American Physical Society 71st Annual Meeting of the Division of Fluid Dynamics*, Atlanta, GA, USA, November 2018.

22. S. Shin, **J. T. Ault**, P. B. Warren, and H. A. Stone. **Accumulation of colloidal particles in flow junctions induced by fluid flow and diffusiophoresis**. In *ACS Colloid & Surface Science Symposium*, State College, PA, USA, June 2018.

23. **J. T. Ault**, S. Shin, and H. A. Stone. **Diffusiophoresis in confined geometries**. In *American Physical Society March Meeting*, Los Angeles, CA, USA, March 2018.

24. **J. T. Ault**, S. Shin, P. B. Warren, and H. A. Stone. **Diffusiophoresis in one-dimensional solute gradients**. In *American Physical Society 70th Annual Meeting of the Division of Fluid Dynamics*, Denver, CO, USA, November 2017.

25. **J. T. Ault**, S. Shin, and H. A. Stone. **Vortex breakdown in simple pipe bends**. In *American Physical Society 69th Annual Meeting of the Division of Fluid Dynamics*, Portland, OR, USA, November 2016.

26. D. Vigolo, M. Riccomi, F. Alberini, E. Brunazzi, **J. T. Ault**, and H. A. Stone. **Flow visualization of the trapping induced by vortex breakdown at a junction**. In *American Physical Society 69th Annual Meeting of the Division of Fluid Dynamics*, Portland, OR, USA, November 2016.

27. R. Mensire, **J. T. Ault**, K. Piroird, H. A. Stone, and E. Lorenceau. **Imbibition of dry aqueous foams by oil**. In *24th International Congress of Theoretical and Applied Mechanics*, Montreal, Canada, August 2016.

28. T.-H. Chen, **J. T. Ault**, and C. B. Arnold. **Volumetric real-time wide-field microscopy with tunable acoustic gradient lens**. In *SPIE Photonics West*, San Francisco, CA, USA, February 2016.

29. **J. T. Ault**, K. K. Chen, and H. A. Stone. **Asymptotic scalings of developing curved pipe flow**. In *American Physical Society 68th Annual Meeting of the Division of Fluid Dynamics*, Boston, MA, USA, November 2015.

30. T.-H. Chen, **J. T. Ault**, and C. B. Arnold. **Volumetric real-time wide field microscopy with tunable acoustic lens: a new tool for micro PIV.** In *American Physical Society 68th Annual Meeting of the Division of Fluid Dynamics*, Boston, MA, USA, November 2015.

31. **J. T. Ault**, D. Vigolo, S. Radl, and H. A. Stone. **Critical Reynolds Numbers for Particle Capture in Y-, T-, and Arrow-Shaped Junctions**. In *American Physical Society 67th Annual Meeting of the Division of Fluid Dynamics*, San Francisco, CA, USA, November 2014.

32. **J. T. Ault**, J. Davis, and H. A. Stone. **Development and Decay Lengths of Fully-Developed Curved Pipe Flow**. In *American Physical Society 66th Annual Meeting of the Division of Fluid Dynamics*, Pittsburgh, PA, USA, November 2013.

Professional Development

1. Advanced Scientific Computing Research (ASCR) Early Career Proposal Workshop, Oak Ridge National Laboratory (Nov. 2018).

2. Deep Learning Fundamentals, NVIDIA's Deep Learning Institute, Oak Ridge National Laboratory (Feb. 2018).

3. Introduction to Machine Learning in Python, *The Data Incubator*, Oak Ridge National Laboratory (Sept. 2017).

4. Graduate certificate in Computational and Information Science, Princeton University (2017).

5. Prospective Faculty Seminar, Purdue University, College of Engineering (Feb. 2017).

6. Teagle Teaching Seminar, McGraw Center for Teaching and Learning, Princeton University (2014–2015).

Responsibilities and Professional Service

1. **Professional Society Memberships:** American Physical Society, American Society of Mechanical Engineers, Institute of Electrical and Electronics Engineers

2. **Peer reviewer:** (48+ papers total) Soft Matter, Physics of Fluids, Chemical Science, Journal of Fluid Mechanics, European Physical Journal Special Topics, International Journal of Multiphase Flow, Engineering Computations, Physical Review Fluids, Journal of Manufacturing Processes, Physical Review Letters, Micromachines, Journal of Composites Science, Physical Review Applied, Physical Review E, Nano Letters, Materials

3. **NSF Panel Reviewer:** Chemical, Bioengineering, Environmental, and Transport Systems (2021, 2022)

4. **American Chemical Society Reviewer:** Petroleum Research Fund (2022)

5. **Brown University Honors Program Advisor:** 2019–2020

6. **Mechanical Engineering Undergraduate Concentration Advisor:** 2020–Present