

# NICOLE SHARP

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<http://nicolsharp.com>

**Education**     **Texas A&M University**     Jan. 2009 to Mar. 2014  
*Ph.D. in Aerospace Engineering*  
Thesis: “Hypersonic Measurements of Roughness-Induced Transient Growth.”  
Advisor: Dr. Edward B. White

**Cornell University**     Aug. 2006 to Dec. 2008  
*M.S. in Aerospace Engineering*  
Thesis: “Effects of Large-Scale Free Stream Turbulence on a Turbulent Boundary Layer.”  
Advisor: Dr. Zellman Warhaft

**Case Western Reserve University**     Aug. 2002 to May 2006  
*B.S.E. in Aerospace Engineering, magna cum laude*

**Experience**     **FYFD (Formerly Fuck Yeah Fluid Dynamics)**     Jul. 2010 to present  
*Founder and Editor, <http://fyfluidynamics.com>*

- Created, researched, wrote, and maintained a popular science blog with new posts 3-5 days/week.
- Built an audience of over 266,000+ Tumblr followers, 5200+ Twitter followers, 1000+ Feedly subscribers, and 6200+ YouTube subscribers.
- Studied the physics of the Boston Molasses Flood with collaborators at Harvard University and received national and international press coverage from The New York Times, the Associated Press, New Scientist, Smithsonian Magazine, CBC (Canada), Cosmos Magazine (Australia), Die Welt (Germany), and many others.
- FYFD featured on Wired, Physics World, Science, io9/Gizmodo, NPR, BoingBoing, Mashable, APS News, Tumblr and others.

**Harvard University**     Feb. 2016 to Jun. 2016  
*Visiting Science Communication Expert*

- Mentored 80 undergraduates on communicating science in an introductory fluid dynamics course.
- Met weekly with students during the semester to provide feedback and advice on their final video projects.

**MIT Lincoln Laboratory, Lexington, Massachusetts**     Mar. 2014 to Jan. 2016  
*Technical Staff*

- Created and disseminated models for aerodynamics, aerothermal heating, and re-entry physics of gliding hypersonic vehicles.
- Analyzed and modeled complex sensor architectures used for national defense.
- Created technical materials presented internally and externally, including in the Department of Defense and on Capitol Hill.

**Texas A&M University, College Station, Texas**     Jan. 2009 to Mar. 2014  
*Graduate Research and Teaching Assistant*

- Investigated surface roughness effects on hypersonic boundary layer transition in a low-disturbance tunnel.
- Designed a hypersonic wind tunnel model with interchangeable rough nosetips.
- Performed boundary layer stability computations supporting Northrup Grumman flight tests.
- Prepared and led laboratory sessions focused on experimental aerodynamics with 50 students per semester.

**Cornell University, Ithaca, New York**     Dec. 2006 to Dec. 2008  
*Graduate Research and Teaching Assistant*

- Studied effects of intense free stream turbulence on turbulent boundary layers using hotwire anemometry.
- Led 40 students in laboratory sessions for a mechanical engineering course focused on solid mechanics.

## Peer-Reviewed Publications

- Sharp NS, Neuscammann S, and Warhaft Z. “Effects of large-scale free stream turbulence on a turbulent boundary layer.” *Physics of Fluids*, Vol. 21:9 (2009).
- Geraschenko S, Sharp NS, Neuscammann S, and Warhaft Z. “Lagrangian measurements of inertial particle accelerations in a turbulent boundary layer.” *Journal of Fluid Mechanics*, Vol. 617 (2008), p. 255-281.

## Articles and Conference Papers

- Sharp NS, “Bringing the Stars Home,” *American Scientist*, Vol. 106:5, pp. 312-3, <https://www.americanscientist.org/article/bringing-the-stars-home>, Aug. 2018.
- Sharp NS, “Six Selfish Reasons to Communicate Science,” Union of Concerned Scientists Blog, <https://blog.ucsusa.org/science-blogger/why-communicate-science>, Jul. 2017.
- Sharp NS, “The Beautiful Unpredictability of Coffee, Clouds, and Fire,” Nautilus Blog, <http://nautil.us/blog/the-beautiful-unpredictability-of-coffee-clouds-and-fire>, Jul. 2014.
- Sharp NS, and White EB. “Roughness-induced transient growth on a hypersonic blunt cone,” *Proceedings of the AIAA 52<sup>nd</sup> Aerospace Sciences Meeting*, National Harbor, Maryland, 2014.

## Invited Talks

- “The Beauty of the Flow,” M&AE Seminar, University of Colorado, Colorado Springs, 2018.
- “Spreading Science Through Art,” *Liquid Assets*, Utah State University, 2018.
- “Spreading Science Through Video,” Flow Visualization Course Guest Lecture, University of Colorado, Boulder, 2018.
- “Help! I’m Trying to Make a Video!” ES 123 Course Guest Lecture, Harvard University, 2018.
- “Mixed Nuts, Skipping Rocks, and Molasses Tsunamis: Communicating Fluid Physics to the Public,” Thermal-Fluids Seminar, Oregon State University, 2017.
- “Mixed Nuts, Skipping Rocks, and Molasses Tsunamis: Communicating Fluid Physics to the Public,” Exploratorium, 2017.
- “Celebrating the Beauty and Diversity of the Flow,” Women’s History Month Address, Advisory Council on Women, NASA Jet Propulsion Laboratory, 2017.
- “Wind Tunnels, Websites, and Waves of Molasses,” Keynote Address, Students in Industry Day, Colorado Chapter, American Society of Mechanical Engineers, 2017.
- “Slow as Molasses in January: Fluid Dynamics and the Boston Molasses Flood,” *Annals of Improbable Research*, AAAS Conference, Boston, MA, 2017.
- “Mixed Nuts, Skipping Rocks, and Molasses Tsunamis: Communicating Fluid Physics to the Public,” Computations in Science Seminar, University of Chicago, 2017.
- “The Beauty of the Flow,” 1.060A/B Course Guest Lecture, Massachusetts Institute of Technology, 2016.
- “Fluid Dynamics,” 24/7 Lecture, Ig Nobel Prize Ceremony, 2016.
- “Re-Telling Science,” New England Complex Fluids Meeting, Massachusetts Institute of Technology, 2016.
- “More Than Just *Cosmos*: Communicating Science in the Internet Era,” Applied Mechanics Colloquium, Harvard University, 2016.
- “The Extremes of Fluid Dynamics,” Keynote Address, APS New England Section Meeting, 2016.
- “The Beauty of the Flow,” ES 123 Course Guest Lecture, Harvard University, 2016.
- “Communicating Science in the Internet Era,” Mechanical Engineering departmental seminar, Tufts University, 2016.
- “Improbable Fluid Connections,” *Annals of Improbable Research*, AAAS Conference, Washington, D.C., 2016.
- “More Than Just *Cosmos*: Communicating Science in the Internet Era,” Mechanical Science and Engineering departmental seminar, University of Illinois, 2016.
- “Communicating Fluid Dynamics: From the Lab to the Classroom and Beyond,” Massachusetts Institute of Technology, 2016.
- “Adventures in Fluid Dynamics,” Brown University, 2015.
- “Scientist-Reporter Workshop: How to tell your science story,” co-taught with David Hu, Flora Lichtman, Rachel Levy and Jason Bardi, APS Division of Fluid Dynamics annual conference, 2014.
- “The Beauty of the Flow,” *Applied Mathematics Undergraduate Seminar*, Texas A&M University, 2013.
- “Surface roughness effects on hypersonic boundary layer transition and online outreach in fluid dynamics,” *Pointwise, Inc.*, 2013.
- “Hypersonic Transition to Turbulence,” *Zonta Club of Fredericksburg*, 2012.
- “Hypersonic Laminar-Turbulent Transition,” *Zonta International District 10 Conference*, 2011.

## Selected Media Coverage

- *Nights* (New Zealand Radio), “The Great Molasses Flood of 1919,” <https://goo.gl/56O5CW>, Mar. 2017.
- *The Guardian*, “Study reveals why so many met a sticky end in Boston’s Great Molasses Flood,” <https://goo.gl/C4o8yt>, Feb. 2017.
- *Popular Science*, “McDonald’s Fancy New Straw Doesn’t Suck,” <https://goo.gl/D3QRtl>, Feb. 2017.
- *APS News*, “This Month in Physics History,” <https://goo.gl/S8ccqL>, Jan. 2017.
- *The New York Times*, “Solving the Mystery Behind the Deadly ‘Tsunami of Molasses’ of 1919,” <http://nyti.ms/2g2AM3C>, Nov. 2016.
- Associated Press, “Slow as Molasses? Sweet But Deadly 1919 Disaster Explained,” syndicated in *The Washington Post*, *Boston Globe*, *Chicago Tribune*, and others, <http://goo.gl/GBQt0E>, Nov. 2016.
- *Science Friday*, Annual Ig Nobel Ceremony Broadcast, <http://goo.gl/w60S7k>, Nov. 2016.
- *CBC’s* “As It Happens” (Canada), Canadian Public Radio, <http://goo.gl/56fblQ>, Nov. 2016.
- *Die Welt* (Germany), “Das Geheimnis Hinter dem Tödlichen Sirup-Tsunami,” <http://goo.gl/WVgILN>, Nov. 2016.
- *New Scientist*, “Incredible Physics Behind the Deadly 1919 Boston Molasses Flood,” <http://goo.gl/eXKjM7>, Nov. 2016.
- *Cosmos* (Australia), “Deadly Molasses Flood Surged Faster Than Olympic Sprinters,” <http://goo.gl/SktyVB>, Nov. 2016.
- *Smithsonian*, “The Sticky Science Behind the Deadly Boston Molasses Disaster,” <http://goo.gl/YzRcbS>, Nov. 2016.
- *ABC’s* “The Science Show” (Australia), Australian Public Radio, <http://goo.gl/x3fmj1>, Aug. 2016.
- *Science Careers*, “Going with the Flow,” <http://goo.gl/Pxsw7U>, Apr. 2016.
- *APS News*, “Art and Science in the Gallery of Fluid Motion,” <http://goo.gl/5zBeQW>, Feb. 2016.
- *Curiously Krulwich* (National Geographic), “Help! I’m Trapped in a Drop of Water,” <http://goo.gl/Bg0dev>, Jan. 2016.
- *The Verge*, “Give Your Mind a Break with Fluid Dynamics Videos,” <http://goo.gl/eXezTy>, Sep. 2015.
- *Krulwich Wonders* (NPR), “A Tough Little Drop Fights to Stick Around,” <http://goo.gl/INPlk2>, Jul. 2014.
- *The Atlantic*, “Paint is Probably the Internet’s Second Favorite Non-Newtonian Fluid to Vibrate on a Speaker,” <http://goo.gl/IBbnVI>, Dec. 2013.
- *BoingBoing*, “Supersonic Airflow in a Rocket Nozzle,” <http://goo.gl/eYchjQ>, Dec. 2013.
- *Wired*, “101 Signals: Science,” <http://goo.gl/FcWh8h>, Aug. 2013.
- *BoingBoing*, “How To: Instantly Turn Water Into Snow,” <http://goo.gl/HuLa5h>, Dec. 2012.

## Conference Presentations

- Sharp NS, “F\*\*\* Yeah Fluid Dynamics: Getting started in science communication,” presented at the *APS Division of Fluid Dynamics* annual conference, 2017.
- Sharp NS, Kennedy J, and Rubinstein S, “‘In a sea of sticky molasses’: The physics of the Boston Molasses Flood,” presented at the *APS Division of Fluid Dynamics* annual conference, 2016.
- Sharp NS, “F\*\*\* Yeah Fluid Dynamics: Inside the science communication process,” presented at the *APS Division of Fluid Dynamics* annual conference, 2016.
- Sharp NS, “F\*\*\* Yeah Fluid Dynamics: On science outreach and appealing to broad audiences,” presented at the *APS Division of Fluid Dynamics* annual conference, 2015.
- Sharp NS and White EB. “Discrete surface roughness effects on a blunt hypersonic cone in a quiet tunnel,” presented at the *APS Division of Fluid Dynamics* annual conference, 2013.
- Sharp NS. “F\*\*\* Yeah Fluid Dynamics: Lessons from online outreach,” presented at the *APS Division of Fluid Dynamics* annual conference, 2013.
- Sharp NS, Hofferth J, and White EB. “Surface roughness effects on a blunt hypersonic cone,” presented at the *APS Division of Fluid Dynamics* annual conference, 2012.
- Sharp NS, Hofferth J, and White EB. “Experiments on roughness-induced transient growth in a hypersonic boundary layer,” presented at the *Int’l Workshop on Hypersonic Stability and Transition*, Sedona, AZ, 2012.
- Sharp NS, Neuscammann S, and Warhaft Z. “Complex dynamics of a boundary layer with free stream turbulence,” presented at the *APS Division of Fluid Dynamics* annual conference, 2008.
- Sharp N, Neuscammann S, Geraschenko S, and Warhaft Z. “Measurements in a boundary layer with intense free stream turbulence,” presented at the *APS Division of Fluid Dynamics* annual conference, 2007.

## Poster Sessions

- Sharp N, Neuscamman S, Geraschenko S, and Warhaft Z. “Effects of intense free stream turbulence on a turbulent boundary layer,” presented at *Fluid Science and Turbulence Symposium*, Baltimore, MD, 2008.
- Sharp N, Neuscamman S, and Warhaft Z. “Measurement in a boundary layer with intense free stream turbulence,” presented at *SIGMA Visit Weekend Poster Session*, 2008.
- Sharp N and White EB. “An investigation of the odor-sensing abilities of moths,” presented at CWRU’s *Support of Undergraduate Research and Creative Endeavors (SOURCE) Symposium and Poster Session*, 2006.
- Taylor B, Sharp N, Wilson M, and Cohen M. “Improved foot design of Robot V,” presented at CWRU’s *SOURCE Symposium and Poster Session*, 2005.

## Honors, Grants, and Proposals

- Tumblr Lifetime Achievement, 2015
- Zonta International Amelia Earhart Fellow, 2011
- Boeing Fellowship recipient, 2009
- Awarded a \$3,000 research grant as a SOURCE Summer Fellow, 2005
- Fred Hale Vose Prize recipient for showing “great promise of professional leadership,” Dept. of Mech. and Aero. Engr., Case Western Reserve University, 2006
- Robert & Leona Garwin Award recipient for excellence in theoretical and experimental mechanical engineering, Dept. of Mech. and Aero. Engr., Case Western Reserve University, 2005
- Trustees Scholarship recipient, Case Western Reserve University, 2002 - 2006
- Tau Beta Pi Honor Society Member

## Professional Service

- American Physical Society (APS), Member, 2007 to present
  - Member, Science and Media Relations Committee, 2015 to present
  - Chair, Science and Media Relations Committee, 2018
  - Vice-Chair, Science and Media Relations Committee, 2017
  - Gallery of Fluid Motion Video Coordinator, 2017
- American Institute of Aeronautics and Astronautics (AIAA), Member, 2012 to 2014
- Aggie Aerospace Women in Engineering (AAWE), Texas A&M University, Founding Member, 2012 to 2014

## Skills

- Programming Languages: MATLAB, Python, Fortran 90/95, LabView, HTML, PHP
- Software Packages: Lightworks, ANSYS Fluent, SolidWorks, Gnuplot, TecPlot, Adobe Photoshop, Adobe Premiere, Adobe After Effects, Adobe Illustrator, Adobe Audition
- Other: UNIX/Linux experience
- Proficient in written and spoken German