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Education

- **Yale University**, Mechanical Engineering, Ph.D., 1993
  Advisor: Professor Katepalli R. Sreenivasan
- **Yale University**, Mechanical Engineering, M.Phil., 1993
  Advisor: Professor Katepalli R. Sreenivasan
- **University of Minnesota**, Mechanical Engineering, M.S., 1989
  Advisors: Professor Terrence W. Simon & Professor Avram Bar-Cohen
- **State University of New York, Buffalo**, Mechanical Engineering, B.S., 1986

Appointments

- **Clemson University**, *Professor*, Clemson, SC ——— (8/11–present)
- **Clemson University**, *Associate Professor*, Clemson, SC ———(8/06–8/11)
- **Clemson University**, *Assistant Professor*, Clemson, SC ———(8/00–7/06)
- **U.S. Naval Research Laboratory**, *Mechanical Engineer*, Washington, DC ———(7/97–7/00)
- **Howard University**, *Adjunct Assistant Professor*, Washington, DC ———(8/99–7/00)
- **Naval Research Laboratory**, *Postdoctoral Associate*, Washington, DC ———(10/95–6/97)
- **Integrated Technologies for Medicine, Inc.**, *Senior Engineer*, Silver Spring, MD —(9/93–7/95)
- **Technology Assessment & Transfer**, *Consultant*, Annapolis, MD ———(12/94–5/95)

Awards and Honors

- **Mentoring Award, Clemson University, College of Engineering, Computing, and Applied Sciences**, (2019)
- **Fellow, American Society of Mechanical Engineers**, (2014 – present)
- **National Research Council Postdoctoral Associate**, *Naval Research Laboratory* (1995 – 1997)
- **Visiting Scholar**, *California State University, Sacramento* (1995)
- **Guest Researcher**, *Army Research Laboratory* (1993 – 1995)
- **Becton Fellow**, *Yale University* (1989 – 1990)
- **Microelectronic & Information Sciences Semiconductor Manufacturing Fellow**, *University of Minnesota* (1988 – 1989)

- **Magna Cum Laude Graduate**, *S.U.N.Y. Buffalo* (1986)
- **Graduated with Distinction**, *Mechanical Engineering, S.U.N.Y. Buffalo* (1986)
- **Dean's Honor List in Engineering and Applied Sciences**, *S.U.N.Y. Buffalo* (1985 – 1986)
- **Gustav H. and Grete M. Zimmer Memorial Scholar**, *S.U.N.Y. Buffalo* (1984 – 1985)
- **New York State Regent's Scholar**, *S.U.N.Y. Buffalo* (1982)

Publications

76. S. Kala & J. R. Saylor, "The effect of relative humidity on deposition pattern in inertial impactors: The role of particle elasticity and surface attraction," *Powder Technology*, **428** 118798 (2023).
75. P. Wilson, X. Shao, J. R. Saylor & J. B. Bostwick, "Role of edge effects and fluid depth in azimuthal Faraday waves," *Phys. Rev. Fluids*, **7** 014803 (2022).
74. J. Tabor, E. Sarver & J. R. Saylor, "A fog-and-tube scrubber for the removal of diesel particulate matter from engine exhaust," *AAQR*, **21** 210134 (2021).
73. S. Kala & J. R. Saylor, "Factors affecting the diameter of ring-shaped deposition patterns in inertial impactors having small S/W ratios," *Aerosol Sci. Technol.*, **56** 234–246 (2021).
72. N. Santa, C. Keles, J. R. Saylor & , E. Sarver, "Demonstration of optical microscopy and image processing to classify respirable coal mine dust particles," *Minerals*, **11** 838 (2021).
71. X. Shao, P. Wilson, J. R. Saylor & J. B. Bostwick, "Viscoelastic effects in circular edge waves," *J. Fluid Mech.*, **919** A18 (2021).
70. X. Shao, P. Wilson, J. R. Saylor & J. B. Bostwick, "Surface wave pattern formation in a cylindrical container," *J. Fluid Mech.*, **915** A19 (2021).
69. X. Shao, C. T. Gabbard, J. B. Bostwick & J. R. Saylor, "On the role of meniscus geometry in capillary wave generation," *Exp. Fluids*, **62** 59 (2021).
68. R. C. Phillips, N. B. Kaye & J. R. Saylor, "A multi-reservoir study of the impact of uncertainty in pool evaporation estimates on water-availability models," *J. of South Carolina Water Resources*, **7**, (2020).
67. X. Shao, G. Bevilacqua, P. Ciarletta, J. R. Saylor & J. B. Bostwick, "Experimental observation of Faraday waves in soft gels," *Phys. Rev. E*, **102** 060602 (2020).
66. G. Bevilacqua, X. Shao, J. R. Saylor, J. B. Bostwick & P. Ciarletta, "Faraday waves in soft elastic solids," *Proc. R. Soc. A.*, **476** 20200129 (2020).
65. X. Shao, S. Fredericks, J. R. Saylor & J. B. Bostwick, "A method for determining surface tension, viscosity, and elasticity of gels via ultrasonic levitation of gel drops," *JASA*, **147** 2488 (2020).
64. X. Shao, S. A. Fredericks, J. R. Saylor & J. B. Bostwick, "Elastocapillary transition in gel drop oscillations," *PRL*, **123** (2019).
63. J. Hodges, J. R. Saylor & N. B. Kaye, "A comparison of the diurnal variation in lake surface temperature for the five major lakes of the Savannah River Basin," *Journal of South Carolina Water Resources*, **6** (2019).
62. S. Fredericks & J. R. Saylor, "Experimental study of drop shape and wake effects on particle scavenging for non-evaporating drops using ultrasonic levitation," *J. Aerosol Sci.*, **127** 1 - 17 (2019).

61. X. Shao, J. R. Saylor & J. B. Bostwick, "Extracting the surface tension of soft gels from elastocapillary wave behavior," *Soft Matter*, **14** 7347 - 7353, doi 10.1039/C8SM01027G (2018).

60. S. Fredericks & J. R. Saylor, "Ring-shaped deposition patterns in small nozzle-to-plate distance impactors: an alternate aerosol sizing method," *Aerosol Sci. Technol.*, **52** 30 - 37 (2018).

59. S. Fredericks & J. R. Saylor, "Corrigendum: 'Parametric investigation of two aerosol scavenging models in the inertial regime,"' *J. Aerosol Sci.*, **114** 342-343 (2017).

58. L. Rojas-Mendoza, E. A. Sarver & J. R. Saylor, "Removal of DPM from an air stream using micron-scale droplets," *Aerosol Air Qual. Res.*, **17** 1865 - 1874, (2017).

57. T. M. Merrell & J. R. Saylor, "Scavenging of micron-scale particles using a combination of fog and a cylindrical ultrasonic standing wave field," *J. Aerosol Sci.*, **107** 14-30 (2017).

56. T. M. Merrell & J. R. Saylor, "Demisting using an ultrasonic standing wave field," *J. Acoust. Soc. Am.*, **141** 172-182 (2017).

55. L. Rojas-Mendoza, Z. Henderson, E. Sarver & J. R. Saylor, "Laboratory demonstration of DPM mass removal from an exhaust stream by fog drops," *Mining Engineering*, **69** 55-60 (2017).

54. S. Fredericks & J. R. Saylor, "Parametric investigation of two aerosol scavenging models in the inertial regime," *J. Aerosol Sci.*, **101** 34-42 (2016).

53. J. Hodges, J. R. Saylor & N. B. Kaye, "A functional form for the diurnal variation of lake surface temperature on Lake Hartwell, northwestern South Carolina," *IEEE J. Sel. Topics Appl. Earth Observ. Remote Sens.*, **9** 3564-3577 (2016).

52. R. C. Phillips, J. R. Saylor, N. B. Kaye, & J. M. Gibert, "A multi-lake study of seasonal variation in lake surface evaporation using MODIS satellite-derived surface temperature," *Limnology*, **17** 273-289 (2016).

51. D. S. Sontag & J. R. Saylor, "An experimental study of the collection of fog droplets using a mesh fabric: possible application to cooling towers," *Journal of Energy Resources Technology*, **138** 024501 (2016).

50. W. Ran & J. R. Saylor, "A mechanistic explanation of the increase in particle scavenging in the ultrasonic scrubber," *J. Aerosol Sci.*, **87** 88-101 (2015).

49. W. Ran & J. R. Saylor, "The directional sensitivity of the acoustic radiation force to particle diameter," *J. Acoust. Soc. Am.*, **137** 3288 (2015).

48. L. Rojas-Mendoza, E. McCullough, E. Sarver & J. R. Saylor, "A preliminary investigation of DPM scavenging by water sprays," *Proceedings of the 15th North American Mine Ventilation Symposium.*, 331-339 (2015)

47. W. Ran, J. R. Saylor & R. G. Holt, "Improved particle scavenging by a combination of ultrasonics and water sprays," *J. Aerosol Sci.*, **67** 104-118 (2014).

46. R. K. Sundberg-Anderson & J. R. Saylor, "Mesler entrainment in alcohols," *Exp. Fluids*, **55** 1653 (2014).

45. D. Sitarski, R, J. Lee, J. R. Saylor, & J. P. McHugh, "Large-scale circulation in a rectangular enclosure with periodic boundary temperature," *J. Fluids Eng.*, **135** 071201 (2013).

44. S. M. Bower & J. R. Saylor, "Sherwood-Rayleigh parameterization for evaporation in the presence of surfactant monolayers," *AIChE J.*, **59** 303-315 (2012).

43. J. R. Saylor & G. D. Bounds, "Experimental study of the role of the Weber and capillary numbers on Mesler entrainment," *AIChE Journal*, **58** 3541-3851 (2012).

42. B. H. Mills, J. R. Saylor & F. Y. Testik, "An experimental study of Mesler entrainment on a surfactant-covered interface: the effect of drop shape and Weber number," *AIChE Journal*, **58** 46-58 (2012).

41. S. M. Bower & J. R. Saylor, "The effects of surfactant monolayers on free surface natural convection," *Int. J. Heat Mass Trans.*, **54** 5348-5358 (2011).

40. J. Kou, K. P. Judd, & J. R. Saylor, "The temperature statistics of a surfactant-covered air/water interface during mixed convection heat transfer and evaporation," *Int. J. Heat Mass Trans.*, **54** 3394-3405 (2011).

39. S. M. Bower & J. R. Saylor, "Erratum to 'A study of the Sherwood-Rayleigh relation for water undergoing natural convection-driven evaporation,' " *Int. J. Heat Mass Trans.*, **54** 749 (2011).

38. R. J. Lee & J. R. Saylor, "The effect of a surfactant monolayer on oxygen transfer across an air/water interface during mixed convection," *Int. J. Heat Mass Trans.*, **53** 3405-3413 (2010).

37. B. K. Jones & J. R. Saylor, "Axis ratios of drops levitated in a vertical wind tunnel," *Journal of Atmospheric and Oceanic Technology*, **26** 2413-2419 (2009).

36. S. M. Bower & J. R. Saylor, "A study of the Sherwood-Rayleigh relation for water undergoing natural convection-driven evaporation," *Int. J. Heat Mass Trans.*, **52** 3055-3063 (2009).

35. S. M. Bower, J. Kou, & J. R. Saylor, "A method for the temperature calibration of an infrared camera using water as the radiative source," *Rev. Sci. Instrum.*, **80** 095107 (2009).

34. J. Kou & J. R. Saylor, "A method for removing surfactants from an air/water interface," *Rev. Sci. Instrum.*, **79** 123907 (2008).

33. N. A. Sivasubramanian & J. R. Saylor, "Application of a histogram modification algorithm to the processing of raindrop images," *Optical Engineering*, **47** 037011 (2008).

32. T. A. Conover & J. R. Saylor, "Statistics of the surface temperature field of an air/water interface under air flow," *Experiments in Fluids*, **43** 509-524 (2007).

31. J. L. Lapp & J. R. Saylor, "Correlation between lightning types," *Geophysical Research Letters*, **34** L11804 (2007).

30. J. R. Saylor & N. A. Sivasubramanian, "Edge detection methods applied to the analysis of spherical raindrop images," *Applied Optics*, **46** 5352-5367 (2007).

29. T. A. Conover & J. R. Saylor, "Infrared imaging of a solid phase surfactant monolayer," *Langmuir*, **22** 6881-6886 (2006).

28. D. D. Saxena & J. R. Saylor, "Use of thresholding algorithms in the processing of raindrop imagery," *Applied Optics*, **45** 2672-2699 (2006).

27. J. R. Saylor, C. W. Ulbrich, J. W. Ballentine & J. L. Lapp, "The correlation between lightning and DSD parameters," *IEEE Trans. Geosci. Remote Sens.*, **43** 1806–1815 (2005).

26. J. R. Saylor & A. L. Kinard, "Simulation of particle deposition beneath Faraday waves in thin liquid films," *Phys. Fluids* **17** 047106 (2005).

25. J. R. Saylor & B. K. Jones, "The existence of vortices in the wakes of simulated raindrops," *Phys. Fluids* **17** 031706 (2005).

24. J. R. Saylor & N. K. Grizzard, "The optimal drop shape for vortices generated by drop impacts: the effect of surfactants on the drop surface," *Exp. Fluids* **36**, 783-790 (2004).

23. M. Grujicic, J. R. Saylor, D. E. Beasley, W. S. DeRosset, & D. Helfritch, "Computational analysis of the interfacial bonding between feed-powder particles and the substrate in the cold-gas dynamic-spray process," *Appl. Surf. Sci.* **219** 211-227 (2003).

22. J. R. Saylor & N. K. Grizzard, "The effect of surfactant monolayers on vortex rings formed from an impacting water drop," *Phys. Fluids* **15** 2852-2863 (2003).

21. P. H. Wright & J. R. Saylor, "Patterning of particulate films using Faraday waves," *Rev. Sci. Instrum* **74** 4063-4070 (2003).

20. J. R. Saylor, "The fate of soluble and insoluble surfactant monolayers subjected to drop impacts," *Exp. Fluids*, **34** 540-547 (2003).

19. B. K. Jones, J. R. Saylor & L. F. Bliven, "Single camera method for determining optical axis position of ellipsoidal drops," *Applied Optics: Lasers, Photonics, and Environmental Optics* **42** 972–978 (2003).

18. J. R. Saylor, K. A. Flack, M. P. Schultz & G. B. Smith, "The correlation between surface temperature and subsurface velocity during evaporative convection," *Exp. Fluids*, **32** 570-579 (2002).

17. J. R. Saylor, B. K. Jones & L. F. Bliven, "A method for increasing depth of field during droplet imaging," *Rev. Sci. Instrum.*, **73** 2422-2427 (2002).

16. J. R. Saylor, "Determining liquid substrate cleanliness using infrared imaging," *Rev. Sci. Instrum.*, **72** 4408-4414 (2001).

15. K. A. Flack, J. R. Saylor & G. B. Smith, "Near surface turbulence for evaporative convection at an air/water interface," *Phys. Fluids*, **13** 3338-3345 (2001).

14. J. R. Saylor, G. B. Smith & K. A. Flack, "An experimental investigation of the surface temperature field during evaporative convection," *Phys. Fluids*, **13** 428-439 (2001).

13. J. R. Saylor, A. J. Szeri & G. P. Foulks, "Measurement of surfactant properties using a standing circular capillary wave field," *Exp. Fluids*, **29** 509-518 (2000).

12. J. R. Saylor, G. B. Smith & K. A. Flack, "The effect of a surfactant monolayer on the temperature field of a water surface undergoing evaporation," *Int. J. Heat & Mass Trans.*, **43** 3073-3086 (2000).

11. J. R. Saylor, G. B. Smith & K. A. Flack, "Infrared imaging of the surface temperature field of water during film spreading," *Phys. Fluids*, **12** 597-602 (2000).

10. J. R. Saylor & R. A. Handler, "Capillary wave gas exchange in the presence of surfactants," *Experiments in Fluids* **27** 332-338 (1999).

9. R. A. Handler, J. R. Saylor, R. I. Leighton & A. L. Rovelstad, "Transport of a passive scalar at a shear free boundary in fully developed turbulent open channel flow," *Phys. Fluids* **11** 2607-2625 (1999).

8. J. R. Saylor, "The role of capillary waves in oceanic air/water gas exchange," *Tellus* **51B** 616-628 (1999).

7. J. R. Saylor & K. R. Sreenivasan, "Differential diffusion in low Reynolds number water jets," *Physics of Fluids* **10** 1135-1146 (1998).

6. J. R. Saylor, "Measurements of differential diffusion in a liquid-filled lung model," *Exp. Fluids* **23** 498-503 (1997).

5. J. R. Saylor & R. A. Handler, "Gas transport across an air/water interface populated with capillary waves," *Physics of Fluids* **9** 2529-2541 (1997).

4. J. R. Saylor, "Internal reflection beneath capillary water waves: a method for measuring wave slope," *Applied Optics: Lasers, Photonics, and Environmental Optics* **36** 1121-1129 (1997).

3. J. R. Saylor, "Photobleaching of disodium fluorescein in water," *Exp. Fluids* **18** 445-447 (1995).

2. P. Kailasnath, K. R. Sreenivasan & J. R. Saylor, "Conditional scalar dissipation rates in turbulent wakes, jets, and boundary-layers," *Phys. Fluids A* **5** 3207-3215 (1993).

1. J. R. Saylor, A. Bar-Cohen, T. Y. Lee, T. W. Simon, W. Tong, P. S. Wu, "Fluid selection and property effects in single and two-phase immersion cooling," *IEEE Trans. Components, Hybrids and Manufacturing Technology* **11** 557-565 (1988).

Books and Monographs

- J. R. Saylor Raindrop Imaging *Encyclopedia of Image Processing* edited by P. Laplante, Taylor & Francis, pp. 557 - 565 (2019).
- J. R. Saylor Evaporation suppression from reservoirs *Thermal Power Plant Cooling: Context and Engineering* edited by C. W. King, ASME Press (2014).
- B. K. Jones, J. R. Saylor, & F. Y. Testik Raindrop Morphodynamics *Rainfall: State of the Science* edited by F. Y. Testik & M. Gebremichael, Geophysical Monograph Series, Volume 191 (2010).
- G. M. Korenowski, J. R. Saylor, E. A. van Wagenen, J. S. Kelley, M. E. Anderson, & E. J. Edwards Imaging surfactant concentration distribution at the air/water interface Part2: Insoluble monolayer concentrations on standing capillary waves *Marine Surface Films: Chemical Characteristics, Influence on Air-Sea Interactions and Remote Sensing* edited by M. Gade, H. Hühnerfuss, & G. M. Korenowski, pp. 165-174, Springer-Verlag, Berlin (2006).
- A. J. Szeri, R. L. Stefan & J. R. Saylor Surfactant scavenging by microbubble clouds: consequences for capillary wave damping *Fluid Mechanics and the Environment: Dynamical Approaches* edited by J. L. Lumley, vol. 566 of Lecture Notes in Physics, pp. 337-352, Springer-Verlag, Berlin (2001).

Print Media & Letters to the Editor

- J. R. Saylor, "Don't Dilute Education," **Mechanical Engineering**, vol. 145, no. 5, pg 8 (2023).
- J. R. Saylor, "Be Selfish, Save Your Lake," **Minnesota Lakes & Rivers**, Guest Blog (2022).
- J. R. Saylor, "These Wetlands Feed the Largest Aquifer in the U.S. What Happens If We Lose Them?," **Discover Magazine**, April 18, 2021.
- J. R. Saylor, "A Window of Opportunity," **Greenville News**, August 19, 2012.

Research Reports

- J. R. Saylor Global prediction of gas exchange enhancement due to capillary waves in the ocean **NRL Review** (1998).
- R. A. Handler, J. R. Saylor & R. I. Leighton Carbon dioxide exchange at the air/sea interface **NRL Review** (1998).

Conference Presentations

72. *Methods for improving the particle sizing resolution of inertial impactors using ring shaped deposits* S. Kala & J. R. Saylor, APS Division of Fluid Dynamics, 73rd Annual Meeting (DFD2020), November 22-24, 2020, Virtual/Chicago, IL.

71. *Application of optical microscopy for semi-continuous coal mine dust monitoring* N. Santa, E. A. Sarver & J. R. Saylor, SME Annual Conference and Exposition, Phoenix, AZ, February 23 - 26, 2020.

70. *A comparison of the modeling and field tests for a fog-based DPM exhaust after-treatment* J. Tabor, E. A. Sarver & J. R. Saylor, SME Annual Conference and Exposition, Phoenix, AZ, February 23 - 26, 2020.

69. *On the role of particle rebound in halo formation in particle impactors* S. Kala & J. R. Saylor, APS Division of Fluid Dynamics, 72nd Annual Meeting (DFD2019), November 23-26, 2019, Seattle, WA.

68. *Rheological measurements of gels via ultrasonic levitation of gel drops* J. R. Saylor, X. Shao, S. A. Fredericks & J. B. Bostwick, APS Division of Fluid Dynamics, 72nd Annual Meeting (DFD2019), November 23-26, 2019, Seattle, WA.

67. *Experimental investigation of Faraday wave onset in viscoelastic materials* X. Shao, J. R. Saylor, S. A. Fredericks, J. B. Bostwick & P. Ciarletta, APS Division of Fluid Dynamics, 72nd Annual Meeting (DFD2019), November 23-26, 2019, Seattle, WA.

66. *Optical microscopy - A tool for semi-continuous coal mine dust monitoring* N. Santa, E. Sarver, C. Keles & J. R. Saylor, 2019 Longwall Exhibition & Conference, Pittsburgh, PA, May 19 - 22, 2019

65. *Use of fog for DPM scrubbing in underground mines* J. Tabor, E. A. Sarver & J. R. Saylor, SME Annual Conference and Exposition, Denver, CO, February 24 - 27, 2019.

64. *Frequency response of edge waves in soft viscoelastic materials* X. Shao, J. Bostwick & J. R. Saylor, APS Division of Fluid Dynamics 71st Annual Meeting (DFD 2018), Atlanta, GA, November 18 - 20, 2018.

63. *Gel surface tension measurement via forced drop oscillation in an ultrasonic standing wave field* S. A. Fredericks, X. Shao, J. R. Saylor & J. Bostwick, APS Division of Fluid Dynamics 71st Annual Meeting (DFD 2018), Atlanta, GA, November 18 - 20, 2018.

62. *Elastocapillary waves on ultra-soft solids exhibit dispersion* X. Shao, J. R. Saylor & J. Bostwick, APS Division of Fluid Dynamics 70th Annual Meeting (DFD 2017), Denver, CO, November 19 - 21, 2017.

61. *Size segregated ring pattern formation in particle impactors* J. R. Saylor & S. A. Fredericks, APS Division of Fluid Dynamics 69th Annual Meeting (DFD 2016), Portland, OR, November 20 - 22, 2016.

60. *Particle scavenging in a cylindrical ultrasonic standing wave field using levitated drops* T. Merrell & J. R. Saylor, APS Division of Fluid Dynamics 68th Annual Meeting (DFD 2015), Boston, MA, November 23 - 25, 2015.

59. *Introducing the ultrasonic scrubber: potential applications in dust control* J. R. Saylor & W. Ran, The 15th North American Mine Ventilation Symposium, Blacksburg, VA, June 20-25, 2015.

58. *Preliminary investigation of DPM scavenging by water sprays* L. Rojas-Mendoza, E. McCullough, E. Sarver & J. R. Saylor, The 15th North American Mine Ventilation Symposium, Blacksburg, VA, June 20-25, 2015.

57. *The performance and operating mechanism of the ultrasonic scrubber* J. R. Saylor & W. Ran, APS Division of Fluid Dynamics 67th Annual Meeting (DFD 2014), San Francisco, CA, November 23 - 25, 2014.

56. *Parameterization of the scavenging coefficient for particle scavenging by drops* S. Fredericks & J. R. Saylor, APS Division of Fluid Dynamics 67th Annual Meeting (DFD 2014), San Francisco, CA, November 23 - 25, 2014.

55. *Improving satellite measurements of reservoir surface temperature via a thermal model of lake surface temperature for improved evaporation estimates* J. L. Hodges, J. R. Saylor, N. B. Kaye, & R. Phillips, South Carolina Water Resources Conference, Columbia, SC, October 15-16, 2014.

54. *A comparison of remote sensing estimates of lake evaporation with pan evaporation measurements along the Savannah River Basin* R. Phillips, J. R. Saylor, N. B. Kaye, & J. Gibert, South Carolina Water Resources Conference, Columbia, SC, October 15-16, 2014.

53. *The effect of uncertainty in evaporation rate on predictions of water availability in the Savannah River basin* R. Phillips, N. B. Kaye, & J. R. Saylor, South Carolina Water Resources Conference, Columbia, SC, October 15-16, 2014.

52. *Experimental validation of the directional sensitivity of the acoustic radiation force to particle diameter* W. Ran & J. R. Saylor, APS Division of Fluid Dynamics 66th Annual Meeting (DFD 2013), Pittsburgh, PA, 2013.

51. *An ultrasonic scrubber: enhanced removal of particles by water sprays via ultrasonic excitation* J. R. Saylor & W. Ran, APS Division of Fluid Dynamics 66th Annual Meeting (DFD 2013), Pittsburgh, PA, 2013.

50. *Mesler entrainment in alcohols* J. R. Saylor & R. K. Sundberg, APS Division of Fluid Dynamics 65th Annual Meeting (DFD 2012), San Diego, CA, 2012.

49. *The effect of gas properties on Mesler bubble entrainment* R. K. Sundberg & J. R. Saylor, APS Division of Fluid Dynamics 64th Annual Meeting (DFD 2011), Baltimore, MD, 2011.

48. *Optical freezing of Faraday waves for precise pore size distributions in tissue scaffolds* A. Sampathkumar, C. M. Klapperich, J. R. Saylor, & R. G. Holt, Acoustical Society of America 161st Meeting, Seattle, WA, 2011.

47. *The effect of shape mode oscillations on the particle scavenging efficiency of water droplets using acoustic levitation* J. Kizzee & J. R. Saylor, APS Division of Fluid Dynamics 63rd Annual Meeting (DFD 2010), Long Beach, CA, 2010.

46. *An experimental study of Mesler entrainment in silicone oil* J. R. Saylor & G. D. Bounds, APS Division of Fluid Dynamics 63rd Annual Meeting (DFD 2010), Long Beach, CA, 2010.

45. *The dependence of Mesler entrainment on Weber number and drop axis ratio* J. R. Saylor, B. H. Mills & F. Y. Testik, APS Division of Fluid Dynamics 62nd Annual Meeting (DFD09), Minneapolis, MN, 2009.

44. *The existence of longitudinal vortices in the flow of air above an air/water interface* J. Kou & J. R. Saylor, APS Division of Fluid Dynamics 62nd Annual Meeting (DFD09), Minneapolis, MN, 2009.

43. *Experimental investigation of the effects of surface conditions on natural convection-driven evaporation* S. M. Bower & J. R. Saylor, APS Division of Fluid Dynamics 62nd Annual Meeting (DFD09), Minneapolis, MN, 2009.

42. *A study of the effect of surface conditions on free-surface evaporative convection* S. M. Bower & J. R. Saylor, APS Division of Fluid Dynamics 61st Annual Meeting (DFD08), San Antonio, TX, 2008.

41. *The effect of surface conditions on the statistics of the surface temperature field during mixed convection* J. Kou & J. R. Saylor, APS Division of Fluid Dynamics 61st Annual Meeting (DFD08), San Antonio, TX, 2008.

40. *The impact of surface conditions on gas exchange across an air/water interface during mixed convection* R. J. Lee & J. R. Saylor, APS Division of Fluid Dynamics 61st Annual Meeting (DFD08), San Antonio, TX, 2008.

39. *A study of the Nusselt-Rayleigh and Sherwood-Rayleigh scaling laws for water undergoing free-surface natural convection* S. M. Bower & J. R. Saylor, ASME/IMECE, Seattle, WA, 2007.

38. *An experimental study of the air/water interfacial surface temperature field during mixed convection* J. Kou, K. P. Judd & J. R. Saylor, APS Division of Fluid Dynamics 60th Annual Meeting (DFD07), Salt Lake City, UT, 2007.

37. *A study of the Nusselt-Rayleigh and Sherwood-Rayleigh scaling laws for water undergoing free-surface natural convection* S. M. Bower & J. R. Saylor, APS Division of Fluid Dynamics 60th Annual Meeting (DFD07), Salt Lake City, UT, 2007.

36. *Estimates of rainfall using a two parameter radar/lightning method* J. L. Lapp, J. R. Saylor & C. W. Ulbrich, The American Geophysical Union (AGU) 2006 Fall Meeting, San Francisco, CA, 2006.

35. *The effect of downstream location on the statistics of the surface temperature field for flow over an air/water interface* K. P. Judd & J. R. Saylor, APS Division of Fluid Dynamics 59th Annual Meeting (DFD06), Tampa Bay, FL, 2006.

34. *The effect of wind speed on the statistics of the temperature field of an air/water interface* J. R. Saylor & T. A. Conover, APS Division of Fluid Dynamics 59th Annual Meeting (DFD06), Tampa Bay, FL, 2006.

33. *The relationship between raindrop statistics and cloud-to-ground and intracloud lightning* J. L. Lapp, J. R. Saylor & T. E. Lavezzi-Light, 86th AMS Annual Meeting, Atlanta, GA, 2006.

32. *The effect of drop shape oscillations on particle scavenging by drops* J. R. Saylor & R. E. McDonnell, APS Division of Fluid Dynamics 58th Annual Meeting (DFD05), Chicago, IL, 2005.

31. *Simulation of the formation of particulate films created by Faraday waves* J. R. Saylor & R. G. Holt, 57th Annual meeting of the Division of Fluid Dynamics of the American Physical Society, Seattle, WA, 2004.

30. *Faraday film patterns* R. G. Holt & J. R. Saylor, 147th Meeting of the Acoustical Society of America, New York, NY, 2004.

29. *Patterning of particulate films using Faraday waves: Faraday films* J. R. Saylor, 56th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, East Rutherford, NJ, 2003.

28. *A statistical analysis of the surface temperature field during free-surface natural convection* P. H. Wright & J. R. Saylor, 56th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, East Rutherford, NJ, 2003.

27. *A wind tunnel study of raindrop oscillations* B. K. Jones & J. R. Saylor, 56th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, East Rutherford, NJ, 2003.

26. *Drop induced vortex rings: the effect of surfactants on the drop and the free surface* J. R. Saylor & N. K. Grizzard, 55th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Dallas, TX, 2002.

25. *Rain drop size distributions obtained in stratiform and convective rain using the rain imaging system (RIS)* J. R. Saylor, L. F. Bliven, B. K. Jones & C. W. Ulbrich, American Geophysical Union Spring Meeting, Washington, DC, 2002.

24. *Drop size distributions obtained using the rain imaging system (RIS)* J. R. Saylor, L. F. Bliven, B. K. Jones & C. W. Ulbrich, Presentation to the American Meteorological Society, Upstate South Carolina Chapter, Greenville, SC, 2002.

23. *Detection of surfactant contamination using infrared imaging* J. R. Saylor, 54th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, San Diego, CA, 2001.

22. *Differential mixing of salt and heat by breaking internal waves* B. Ruddick, D. Hebert, J. R. Saylor & S. Waterman, Wave Phenomena III - The Pacific Institute for the Mathematical Sciences, University of Alberta, Edmonton, 2001.

21. *The effect of surfactant monolayers on drop induced vortex ring penetration* N. K. Grizzard & J. R. Saylor, 54th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, San Diego, CA, 2001.

20. *Differential mixing of salt and heat by breaking internal waves* B. Ruddick, D. Hebert, J. R. Saylor & S. Waterman, The Oceanography Society Biennial Scientific Meeting, Miami Beach, 2001.

19. *The Three-Dimensional Surface Structure of the Crests of Weak Spilling Breakers* T. Steinbach, X. Liu, J. Duncan , G. Smith, J. R. Saylor, 53rd Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Washington, DC, 2000.

18. *Differential mixing of salt and heat by breaking internal waves* D. Hebert, B. Ruddick, J. R. Saylor & S. Waterman, Meeting of the American Geophysical Union, San Francisco, 2000.

17. *A Spectral Analysis of the Surface Temperature Field During Evaporative Convection* J. R. Saylor, G. B. Smith & K. A. Flack, 52nd Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, New Orleans, LA, 1999.

16. *Subsurface Velocity and Turbulence Measurements During Evaporative Convection: the Role of Surfactant Monolayers* K. A. Flack, G. B. Smith & J. R. Saylor, 52nd Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, New Orleans, LA, 1999.

15. *Surfactant Concentration Distribution on Standing Circular Capillary Waves* G. M. Korenowski, J. R. Saylor, A. J. Szeri & E. A. Van Wagenen, 52nd Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, New Orleans, LA, 1999.

14. *Imaging Surfactant Concentration Distributions at the Air/Water Interface* G. M. Korenowski, J. S. Kelley, E. Van Wagenen, M. E. Anderson, E. J. Edwards, A. Hirsa, & J. R. Saylor, IGARSS 99, Heidelberg, 1999.

13. *Measurement of Surfactant Properties Using Standing Cylindrical Capillary Waves* J. R. Saylor, A. J. Szeri & G. P. Foulks, 51st Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Philadelphia, 1998.

12. *Surface Temperature and Subsurface Velocity Near a Free Surface* K. A. Flack, J. R. Saylor & G. B. Smith, 51st Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Philadelphia, 1998.

11. *Imaging of an Insoluble Monolayer on Circular Capillary Waves* E. A. VanWagenen, J. R. Saylor & G. M. Korenowski, 51st Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Philadelphia, 1998.

10. *Imaging a Surfactant Concentration Gradient Downstream of a Reynolds Ridge* E. VanWagenen, G. Korenowski, H. S. Jin, A. Hirsa & J. R. Saylor, 72nd ACS Colloid & Surface Science Symposium, The Pennsylvania State University, 1998.

9. *The Interplay of Surfactants and Capillary Waves During Air/Sea Gas Exchange* J. R. Saylor & R. A. Handler, Johns Hopkins Conference in Environmental Fluid Mechanics, Baltimore, 1998.

8. *Surfactant effects on capillary wave gas exchange* J. R. Saylor & R. A. Handler, 50th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, San Francisco, 1997.

7. *Thermal signature of turbulence at a free surface* R. A. Handler & J. R. Saylor, 50th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, San Francisco, 1997.

6. *A novel method for studying capillary wave gas exchange processes* J. R. Saylor & R. A. Handler, The Oceanography Society's Scientific Meeting, Seattle, 1997.

5. *Turbulence mediated heat transfer at a free surface* R. A. Handler, J. R. Saylor, A. L. Rovelstad & R. I. Leighton, 29th International Liege Colloquium on Ocean Hydrodynamics, Liege, 1997.

4. *The effect of Faraday waves on gas transport* J. R. Saylor & R. A. Handler, 49th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Syracuse, 1996.

3. *Differential diffusion in turbulent and transitional flows* J. R. Saylor and K. R. Sreenivasan, 44th Annual Meeting of the Division of Fluid Dynamics of the American Physical Society, Tempe, 1991.

2. *The effect of a dimensionless length scale on the critical heat flux in saturated, pool boiling* J. R. Saylor, T. W. Simon, A. Bar-Cohen, 26th National Heat Transfer Conference, Philadelphia, August, 1989.

1. *Fluid selection and property effects in single and two-phase immersion cooling* T. Y. Lee, J. R. Saylor, T. W. Simon, W. Tong, P. S. Wu, A. Bar-Cohen, InterSociety Conference on Thermal Phenomena in the Fabrication and Operation of Electronic Components, Los Angles, 1988.

Invited Seminars

- *Enhancement of Particle/Drop Scavenging Using Ultrasonics,* **University of New Mexico,** Albuquerque, NM (December, 2017).
- *The Use of Ultrasonics to Enhance Particle/Drop Scavenging,* **New Mexico State University,** Las Cruces, NM (November, 2017).
- *Description of the Ultrasonic Scrubber: Performance and Operating Mechanisms,* **Baylor University,** Waco, TX (April, 2016).
- *The Ultrasonic Scrubber: Description, Performance, and Operating Mechanism,* **Boise State University,** Boise, ID (September, 2015).
- **Brigham Young University,** Provo, UT (February, 2015).
- *Mesler Entrainment: Reproducibility, Utility, and Functional Dependence,* **Vanderbilt University,** Nashville, TN (December, 2010).
- *Improving Spray Scavenging via Ultrasonic Excitation of Drop Oscillations,* **Pittsburgh Research Laboratory, CDC/NIOSH,** Pittsburgh, PA (May, 2009).
- *Transport and Statistics at the Air/Water Interface,* **Lehigh University,** Bethlehem, PA (November, 2008).
- *Transport and Statistics at the Air/Water Interface,* **Boston University,** Boston, MA (October, 2008).
- *The Oscillatory and Vortex-Shedding Characteristics of Raindrops,* **Duke University,** Durham, NC (April, 2004).

Sponsored Research

- *Quantifying Aerosol Deposition Mechanisms in Model Dry Cask Storage Systems,* DOE/NEUP, co-PI, **$800,000** (10/1/2022 - 8/31/2025).
- *Methods for improved size resolution for particle impactors,* NSF, PI, **$303,457** (9/1/2018 - 8/31/2022).
- *Removal of DPM, silica, and coal dust using high volume fog generation,* Alpha Foundation, PI, **$579,604** (1/1/2017 - 8/1/2020).
- *Proof-of-concept work to demonstrate optical microscopy with automated image analysis as a tool for semi-continuous coal mine dust monitoring,* Alpha Foundation (via VA Tech.), co-PI, **$52,913** (10/1/2018 - 3/31/2020).
- *DPM Research: Monitoring responses to ventilation and control by water sprays, and capacity building for mine ventilation expertise,* NIOSH (via VA Tech.), co-PI, **$116,791** (9/1/2014 - 8/31/2019).
- *Ultrasonic particle scrubbing with drops,* NSF, PI, **$221,541** (9/1/2013 - 8/31/2016).
- *Enhancing satellite measurements of water surface temperature using a thermal model of the lake surface for improved evaporation estimates,* SC Water Resources Center, PI, **$60,000** (3/1/2012 - 2/28/2014).
- *A modeling study of water shortages in the Savannah River basin: sensitivity of water availability to evaporative loss and climate change,* SC Water Resources Center, co-PI, **$92,335** (3/1/2011 - 2/29/2016).
- *Improved spray scavenging of particles via acoustic excitation,* CDC/NIOSH, PI, **$701,937** (8/1/2008 - 7/31/2012).
- *Mixed Convection Gas Transfer Across Surfactant-Contaminated Air/Water Interfaces,* NSF, PI, **$299,892** (2/7/2005 - 8/31/2010).
- *Rapid Measurement of Heat Fluxes from Surface Waters,* DOE (through Savannah River National Laboratory), PI, **$400,269** (10/1/2005 - 2/20/2009).
- *Measurements of Heat Fluxes from Cooling Ponds with a Thermal Imager,* DOE (through Savannah River National Laboratory), PI, **$43,202** (1/1/2005 - 2/6/2006).
- *The Use of Cloud-to-Ground and In-Cloud Lightning Characteristics as a Proxy for Rain Rate Measurement,* DOE (through Los Alamos National Laboratory), PI, **$45,614** (4/29/2005 - 12/31/2005).
- *Supplemental Funding Request: A Demonstration of the Performance Characteristics of the Rain Imaging System (RIS),* NSF, PI, **$31,914** (2/18/2004 - 2/28/2006).
- *A Demonstration of the Performance Characteristics of the Rain Imaging System (RIS),* NSF, PI, **$174,970** (3/15/2003 - 2/28/2006).
- *Renewal: An Investigation of Raindrop Size and Shape,* NASA (South Carolina Space Grant Consortium), PI, **$30,000** (2/25/2003 - 32/28/2005).
- *Field Measurements of Drop Size Distributions in Stratiform and Convective Rain,* NASA, PI, **$21,953** (9/1/2002 - 8/31/2005).
- *An Investigation of Raindrop Size and Shape,* NASA (South Carolina Space Grant Consortium), PI, **$30,000** (3/1/2002 - 4/1/2004).
- *Statistical Characterization of Rainfall in Support of Radar Precipitation Measurements,* Research Grants Committee, Clemson University, PI, **$1,500** (12/31/2002 - 6/30/2003).

- *High Speed Video System for Wave Imaging,* Capital Purchase Program, Naval Research Laboratory, PI, **$200,000** (1998).
- *Portable Nebulizer for Monodisperse Aerosol Generation,* SBIR Grant, National Institutes of Health, PI, **$100,000** (1995).

Other Sponsored Activity

- Travel Grant, NASA (South Carolina Space Grant Consortium). *The Impact of Rain on the Global Environment,* **$2,000** (3/1/2001 - 2/28/2003).
- Grant in the form of equipment, NASA Goddard Space Flight Center, approximate value: **$11,000** (5/2001).

CAREER TOTAL: $3,520,892

Courses Taught

Graduate level

- ME 831, Convective Heat Transfer (S2016, S2015, S2009, S2008, S2006, S2004).

Undergraduate level

- ME 2030, Foundations of Thermal and Fluid Systems, S2020, F2018, F2017, S2017, F2016, S2016, F2011, S2011, S2006, S2005, F2004, S2004, S2003, F2003, F2002.
- ME 3030, Thermodynamics, S2023, F2022, S2022, F2021, S2021, F2020, F2019, S2018, F2014, S2014, F2013, S2013, F2012, S2012, F2010, S2010, F2009, S2009, F2008, F2007, F2005, S2002, S2001, F2001
- ME 3040, Heat Transfer, S2007, S2008.
- ME 4930, Selected Topics in Mechanical Engineering, F2016.
- ME 4020, Internship in Engineering Design, S2019, F2011, F2010, F2009, S2007, F2001, F1999.
- ME 4150, Undergraduate Research, Anecia Hoffield, F2018
- ME 4150H, Honors Undergraduate Research, Dylan K. Sontag, S2013, S2014.
- ME 4150H, Honors Undergraduate Research, Anecia Hoffield, F2018.
- ME 4150H, Honors Undergraduate Research, Christian G. A. Gaeta, F2012, S2013.
- ME 4150H, Honors Undergraduate Research, D. Adam Spencer, F2012, S2013.
- ME 4150H, Honors Undergraduate Research, Steven M. Bower, S2006, F2006.
- ME 4150H, Honors Undergraduate Research, Robert H. King, F2002.
- ME 4150, Undergraduate Research, Alexandria M. Stoker, Su2012.
- ME 4150, Undergraduate Research, Greg Johnson, Su2011.
- ME 4150, Undergraduate Research, Garret D. Bounds, F2010.
- ME 4150, Undergraduate Research, Brantley Mills, F2008, S2009.
- ME 4150, Undergraduate Research, David Sitarski, F2008.

- ME 4150, Undergraduate Research, James W. Ballentine, F2003.
- ME 4150, Undergraduate Research, Abigail L. Kinard, F2003.
- ME 4150, Undergraduate Research, Brian K. Jones, F2001.
- ME 4150, Undergraduate Research, Nathan K. Grizzard, F1999.

Advising

Postdoctoral Fellows

- Dr. K. Peter Judd, Clemson University (2006 - 2007)
- Dr. Timothy A. Conover, Clemson University (2005 - 2006)

Graduate Students

- Shivuday Kala, Current Ph.D. student
- Nisarg Patel, Current M.S. student
- Nestor Santa, M.S. (May 2021) (co-advised with Dr. Emily Sarver, Virginia Tech.)
- Xingchen Shao, Ph.D. (August 2021) (co-advised with Dr. J. B. Bostwick)
- Steven A. Fredericks, Ph.D. (May 2018)
- Tyler M. Merrell, M.S. (August 2016)
- Weiyu Ran, Ph.D. (Dec. 2014)
- Jonathan L. Hodges, M.S. (Dec. 2014)
- Ryne C. Phillips, M.S. Civil Engineering (Dec. 2013; co-advised with Dr. N. B. Kaye)
- Rachel K. Sundberg-Anderson, M.S., non-thesis (May 2014)
- Mayur S. Mohite, M.S., non-thesis (May 2014)
- Steven M. Bower, Ph.D. (Aug. 2011)
- Jie Kou, Clemson University, Ph.D. (Dec. 2010)
- R. J. Lee, Clemson University, M.S. (Dec. 2009)
- Justin L. Lapp, Clemson University, M.S. (Aug. 2007)
- Prasad Gokhale, Clemson University, M.S. (2007)
- Nithya A. Sivasubramanian, Clemson University, M.S. (May 2006)
- Raymond E. McDonnell, III, Clemson University, M.S. (Dec. 2006)
- Diana M. Lang, Clemson University, M.S. (Aug. 2006)
- Paul H. Wright, Clemson University, M.S. (Dec. 2005)
- Brian K. Jones, Clemson University, M.S. (Aug. 2004)
- Disha D. Saxena, Clemson University, M.S. (Dec. 2004)
- Nathan K. Grizzard, Clemson University, M.S. (Aug. 2002)

International Graduate Students

- External Dissertation Examiner, Gavin Brink, University of Southern Queensland, Australia.

Undergraduate Researchers

- Srah Johnson, Clemson University, ME 4150 (F2022).
- Alessandra St. Germaine, Clemson University, Creative Inquiry Student (Sp2018).
- Steele Tarleton, Clemson University, Creative Inquiry Student (Sp2018).
- Anecia Hoffield, Clemson University, Undergraduate Researcher (Su2017).
- Jon Brownfield, Clemson University, Undergraduate Researcher (S2017).
- Allison Brophy, Clemson University, Undergraduate Researcher (S2017).
- Jeremy Davis, Clemson University, Undergraduate Researcher (F2016).
- Dylan S. Sontag, Clemson University, Undergraduate Researcher (F2013, S2014).
- D. Adam Spencer, Clemson University, Undergraduate Researcher (F2012, S2013).
- Christian G. A. Gaeta, Clemson University, Undergraduate Researcher (F2012, S2013).
- Alexandria M. Stoker, Clemson University, Undergraduate Researcher (Su2012).
- Greg Johnson, Clemson University, Undergraduate Researcher (Su2011).
- Garrett Bounds, Clemson University, Undergraduate Researcher (Su2010, F2010, S2012).
- Forrest Williard, Clemson University, Undergraduate Researcher (Su2010).
- David Sitarski, Clemson University, Undergraduate Researcher (S2009).
- Brantley Mills, Clemson University, Undergraduate Researcher (F2008, S2009, Su2009, F2009).
- Steven M. Bower, Clemson University, Undergraduate Researcher (S2006).
- Robert H. King, Clemson University, Undergraduate Researcher (F2002).
- Jessica A. Taylor, Clemson University, NSF-REU Researcher (Su2002).
- Jesse D. Black, Clemson University, Undergraduate Researcher (Su2003).
- Brian K. Jones, Clemson University, NSF-REU Researcher (Su2001, F2001).
- James W. Ballentine, Clemson University, Undergraduate Researcher (F2003).
- Abigail L. Kinard, Clemson University, Undergraduate Researcher (F2003).
- Nathan K. Grizzard, Clemson University, Undergraduate Researcher (F2000, S2001).

Professional Activities

- Clemson University Water Energy Consortium Fellow (2014 - present).
- ASME Energy Water Nexus Committee (2012 - present).
- NSF Proposal Writing Workshop. Focus on CCLI Program (11/12/2009).
- Nominating Committee Member, American Physical Society, Division of Fluid Dynamics (2008 - 2009).
- ASME Environmental Heat Transfer Committee (K19) member (2006 - present).
- Reviewer, Physics of Fluids (2005 - present).
- Reviewer, Journal of Fluid Mechanics (2006 - present).
- Reviewer, Experiments in Fluids (1995 - present).
- Reviewer, Journal of the Acoustical Society of America (2005 - present).
- Reviewer, ASME Journal of Fluids Engineering (2003 - present).
- Reviewer, Atomization and Sprays (2006 - present).
- Reviewer, Microgravity Science and Technology (2006 - present).
- Reviewer, Measurement Science and Technology (2006 - present).
- Reviewer, Physics Letters A (2008 - present).
- Reviewer, SIAM Journal on Applied Dynamical Systems (2003 - present).
- Reviewer, International Journal of Imaging (2008 - present).
- Reviewer, International Journal of Artificial Organs (2005 - present).
- Reviewer, IEEE Transactions on Geoscience and Remote Sensing (2005 - present).
- NSF Panelist: Engineering Directorate (2006, 2009, 2012).
- NSF Reviewer: CAREER Program (2008 - present).
- NSF Reviewer: Division of Ocean Sciences (2004 - present).
- NSF Reviewer: Physical Meteorology Program (2003 - present).
- NSF Reviewer: Division of Earth Sciences (2006 - present).
- Reviewer: U.S. Civilian Research & Development Foundation (CRDF), Basic Research and Higher Education (BRHE) Fellowship (2006).
- National Institutes for Water Resources Reviewer: (2009 - present).
- DHS, Panel Member: DHS Graduate and Undergraduate Fellowship Program (2006).
- DHS, Panel Member: DHS Graduate and Undergraduate Fellowship Program (2004).
- DHS, Panel Member: First DHS Graduate and Undergraduate Fellowship Program (June 17-19, 2003).
- NSERC (Canada): Discovery Grant Reviewer (2007).
- American Physical Society, Division of Fluid Dynamics (DFD) Conference Chair (1998, 2000, 2009, 2010).

- Faculty Advisor, Pi Tau Sigma Mechanical Engineering Honor Society, Clemson University (2000-2007): Hosted 2005 International Convention at Clemson. Advised chapter during advent of a new series of high school design competitions.
- Executive Committee Director for Washington, D.C. Chapter of ASME (1999-2000): Worked to broaden the ASME base to better include engineers in Federal laboratories.
- Mentor, DOD Science and Engineering Apprenticeship Program (1998-1999): Mentored local high school faculty interested in conducting research during the summer, and incorporating this research in classrooms during the school year.
- Mentor, Yale University, Academic Mentorship Program in the Sciences (AMPs) (1991-1992): Served as graduate student mentor to minority undergraduates in science and engineering.
- Elementary School Mathematics Tutor: New Haven, CT, Washington, DC.

Consulting Experience

- Teludyne Tech, Inc., Greer, SC (2012).
- Nitro Strike, Williamston, SC (2011).
- Technology Assessment & Transfer, Annapolis, MD (1995).
- 3M, Saint Paul, MN (1987).

Patents

- *Rapid paterning of soft materials by interfacial wave interaction with intense light* Provisional US Patent filed, March, 2012, J. R. Saylor, R. G. Holt, A. Sampathkumar, and C. Klapperich.
- *Gas-assisted atomizing devices and methods of making gas-assisted atomizing devices* US Patent No. US 6,513,736 B1, Feb. 4, 2003, P. R. Skeath, J. R. Saylor and A. L. Rovelstad.
- *Gas-assisted atomizing devices and methods of making Gas-assisted atomizing devices* US Patent No. US 6,352,209 B1, Mar. 5, 2002, P. R. Skeath, J. R. Saylor and A. L. Rovelstad.
- *Gas-assisted atomizing devices and methods of making gas-assisted atomizing devices* US Patent No. US 6,189,214 B1, Feb. 20, 2001, P. R. Skeath, J. R. Saylor and A. L. Rovelstad.
- *Gas-assisted atomizing device* Australian Patent No. AU 729427 (B2), Feb. 1, 2001, P. R. Skeath, J. R. Saylor and A. L. Rovelstad.
- *Rayleigh-breakup atomizing devices and methods of making Rayleigh-breakup atomizing devices* US Patent No. US 6,378,788 B1, April 30, 2002, P. R. Skeath, J. R. Saylor and A. L. Rovelstad.
- *Rayleigh-breakup atomizing devices and methods of making Rayleigh-breakup atomizing devices* US Patent No. US 6,189,813 B1, February 20, 2001, P. R. Skeath, J. R. Saylor and A. L. Rovelstad.
- *Rayleigh-breakup atomizing devices and methods of making Rayleigh-breakup atomizing devices* Australian Patent No. AU 728998 (B2), Jan. 25, 2001, P. R. Skeath, J. R. Saylor and A. L. Rovelstad.

University Service

- Chair, Thermal/Fluid Sciences Group (2017 - 2020)
- Chair, Tenure, Promotion and Reappointment Committee (2014 - 2015; 2019 - present)
- Member, Tenure, Promotion and Reappointment Committee (2011 - present)
- Chair, Honors, Awards and Scholarship Committee (2013 - 2014).
- Member, Curriculum Committee (2015 - present).
- Member, University Graduate Council (2012 - present).
- Member, Honors, Awards and Scholarship Committee (2012 - 2013).
- Member, Advisory Committee for the Associate Dean for Research and Graduate Studies (2014 - 2016).
- Water Energy Consortium (2013 - present).

  Team Leader: Improved water efficiency of energy resource development and power production processes and systems.
- Chair, Ph.D. Qualifier Exams (2007 - 2011)
- Member, Committee for Two-Year Reappointment Review of Departmental Chair (2014)
- Member, Committee for Five-Year Reappointment Review of ExxonMobil Endowed Chair (2014)
- Member, Committee for Five-Year Reappointment Review of Wilfred P. & Helen S. Tiencken Endowed Chair (2014)
- Member, Committee for Five-Year Reappointment Review of Warren H. Owen Endowed Chair (2014)
- Member, Search Committee for Department Chair (2009 - 2010)
- Member, Faculty Search Committee (2010 - 2011)
- Member, Faculty Search Committee (2004 - 2005)
- Member, Research Committee (2014 - 2015).
- Member, College Graduate Academic Integrity Committee (2012 - present)
- Member, Undergraduate Grievance Committee (2010 - present)
- Chair, Graduate, Research, Computer and Facilities Committee (2010 - 2011)
- Member, Dean's Unix Task Force (2010)
- Member, College UNIX Support Personnel Search Committee (2010)
- Member, Graduate and Research Committee (2005 - 2010)
- Member, Seminar Committee (2001 - 2005)
- Member, Undergraduate Committee (2003 -2005)
- Chair, Seminar Committee (2001 - 2003)

Other Service

- Faculty Advisor: Pi Tau Sigma, Mechanical Engineering Honor Society (2000 - 2007). Hosted Pi Tau Sigma National Convention, February 2005.
- NASA Aeronautics University Level Student Competition Advisor (2003-2005): Advised a group of 4 ME undergraduates and one ECE undergraduate in the *Revolutionary Vehicles Student Competition.* In 2004, the group won 2nd place for *Aerius,* a High Altitude Long Endurance Vehicle. In 2005 the group won 2nd place for *Mobius, Mars UAV*.

Memberships

- American Society of Mechanical Engineers (1993 – present).
- American Physical Society.
- Sigma Xi.
- The Order of the Engineer.

Graduate and Post Doctoral Advisors

- Prof. Avi Bar-Cohen, M.S. Thesis Advisor, University of Minnesota
- Dr. Robert A. Handler, Post-Doctoral Advisor, Naval Research Laboratory
- Prof. T. W. Simon, M. S. Thesis Advisor, University of Minnesota
- Prof. K. R. Sreenivasan, Ph.D. Thesis Advisor, Yale University

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