

S. Mostafa Ghiaasiaan

Professor

G. W. Woodruff School of Mechanical Engineering Georgia Institute of Technology

I. EARNED DEGREES

<u>Degree</u>	<u>Year</u>	<u>University</u>	<u>Field</u>
Ph.D.	1983	University of California-Los Angeles	Mechanical Engineering
M.Sc.	1978	University of London Imperial College of Science and Technology	Nuclear Science & Eng.
B.S.	1977	Aryamehr University of Technology, Tehran, Iran	Mechanical Engineering

II. EMPLOYMENT

<u>Title</u>	<u>Organization</u>	<u>Years</u>
Professor	Georgia Institute of Technology	4/2001 - present
Associate Professor	Georgia Institute of Technology	3/1991-4/2001
Engineer II	Southern California Edison Company	9/1990 - 3/1991
Visiting Lecturer	University of California-Los Angeles	4/1990 - 6/1990
Senior Staff Scientist	Science Applications Intl. Corp.	3/1983 - 9/1990

PUBLISHED BOOKS, BOOK CHAPTERS, AND EDITED VOLUMES

Books

1. Chexal, B., Horowitz, J., McCarthy, G., Merilo, M., Sursock, J.-P., Harrison, J., Highes, D., Ghiaasiaan, S. M., Dhir, V.K., Kastner, W. and Kohler, W., *Pressure Drop Technology for Design and Analysis*, Electric Power Research Institute, Palo Alto, CA, 1999.
2. Ghiaasiaan, S.M., *Two-Phase Flow, Boiling and Condensation in Conventional and Miniature Systems*, Cambridge University Press, 2008.
3. Ghiaasiaan, S.M., *Convective Heat and Mass Transfer*, Cambridge University Press, 2011.
4. Ouchiha , Z., Ghezal, A., and Ghiaasiaan, S.M., Transient Flow of Fluids: Some Applications of the Navier Stokes Equations. In R. Younsi (ed.), *Navier-Stokes Equations: Properties, Description and Applications*, Chapter 9, Nova Publishers, 2012.

Refereed Book Chapters

1. Ghiaasiaan, S. M. and Abdel-Khalik, S. I., *Two-Phase Flow in Microchannels*, to appear in Advances in Heat Transfer, J. P. Hartnett and T. F. Irvine, Jr., Eds., Vol. 34, pp. 145-254, Academic Press, 2001.
2. Ouchiha, Z., Ghezal, A., and Ghiaasiaan, S.M., Transient Flow of Fluids: Some Applications of the Navier Stokes Equations. In R. Younsi (ed.), *Navier-Stokes Equations: Properties, Description and Applications*, Chapter 9, Nova Publishers, 2012.

Published Journal Articles

1. Catton, I., Briendsfield, W. and Ghiaasiaan, S. M., *Heat Transfer from a Heated Pool to a Melting Miscible Substrate*, J. Heat Transfer, Vol. 105, pp. 447-453, 1983.
2. Ghiaasiaan, S. M. and Wassel, A.T., *Inverted Vertical Spout Flash Evaporators for Ocean Thermal Energy Conversion*, Int. Comm. Heat Mass Transfer, Vol. 10, pp. 511-524, 1983.
3. Wassel, A.T. and Ghiaasiaan, S. M., *Falling Film Flash Evaporators for Open Cycle Ocean Thermal Energy Conversion*, Int. Comm. Heat Mass Transfer, Vol. 12, pp. 113-125, 1984.
4. Ghiaasiaan, S. M., Catton, I. and Duffy, R. B., *Thermal Hydraulic and two-Phase Phenomena during Reflooding of Nuclear Reactor Cores*, J. Fluids Engineering, Vol. 106, pp. 477-485, 1984.
5. Ghiaasiaan, S. M., et al., *Conduction in Nuclear Fuel Rods*, Nucl. Engineering Design, Vol. 85, pp. 89-96, 1985.
6. Ghiaasiaan, S. M., Wassel, A. T. and Divakaruni, M.S., *Bottom Reflooding of Pressurized Water Reactors, Part I: Forced-Feed and Core Thermal-Hydraulics*, Nucl. Technology, Vol. 81, pp. 13-27, 1988.
7. Ghiaasiaan, S. M., *Bottom Reflooding of Pressurized Water Reactors, Part 2: Gravity-Feed and Liquid Loop Oscillatory Flow*, Nucl. Technology, Vol. 81, pp. 28-38, 1988.
8. Ghiaasiaan, S.M., Wassel, A.T. and Pesaran, A.A., *Gas Desorption from Sea Water in OC-OTEC Barometric Upcomers*, J. Solar Energy Engineering, Vol. 112, pp. 204-215, 1990.
9. Ghiaasiaan, S.M., Lin, C.S. and Wassel, A.T., *Direct Contact Condensation in the Presence of non-Condensables*, J. Solar Energy Engineering, Vol. 113, pp. 228-235, 1991.
10. Ghiaasiaan, S.M., *Thermal-Hydraulics of an OC-OTEC Spout Flash Evaporator*, ASME J. Energy Resources Technology, Vol. 114, pp. 187-196, 1992.
11. Kamboj, B.K., Ghiaasiaan, S. M. and Abdel-Khalik, S.I., *Two-Phase Flow and Heat Transfer in a Once-Through Steam Generator during Auxiliary Feedwater Injection*, Nuclear Technology, Vol. 100, pp. 347-360, 1992.

12. Lillibridge, K. H., Ghiaasiaan, S. M. and Abdel-Khalik, S. I., *An Experimental Study of Gravity-Driven Countercurrent Two-Phase Flow in Horizontal and Inclined Channels*, Nuclear Technology, Vol. 105, pp. 123-134, 1994.
13. Kamboj, B. K., Ghiaasiaan, S. M. and Abdel-Khalik, S. I., *Modeling of Transient Thermal-Hydraulic Phenomena in a Once-Through Steam Generator During Auxiliary Feedwater Injection*, Nuclear Technology, Vol. 105, pp. 381-394, 1994.
14. Ghiaasiaan, S. M. and Luo, D., *Transient Mass Transfer at the Surface of an Evaporating Stationary Droplet*, Int. J. of Heat Mass Transfer, Vol. 37, pp. 461-468, 1994.
15. Ren, W. M., Ghiaasiaan, S. M. and Abdel-Khalik, S. I., *GT3F: An Implicit Finite-Difference Computer Code for Transient Three-Dimensional Three-Phase Flow, Part I: Governing Equations and Solution Scheme*, Numerical Heat Transfer-Part B: Fundamentals, Vol. 25, pp. 1-20, 1994.
16. Ren, W. M., Ghiaasiaan, S. M. and Abdel-Khalik, S. I., *GT3F: An Implicit Finite-Difference Computer Code for Transient Three-Dimensional Three-Phase Flow, Part II: Applications*, Numerical Heat Transfer - Part B: Fundamentals, Vol. 25, pp. 21-38, 1994.
17. Ghiaasiaan, S. M., Kamboj, B. K. and Abdel-Khalik, S. I., *Modeling of Gravity-Driven Oscillatory Countercurrent Two-Phase Channel Flows*, Nuclear Science and Engineering, Vol. 117, pp. 22-32, 1994.
18. Ghiaasiaan, S. M. and Eghbali, D. A., *Transient Mass Transfer of a Trace Species in an Evaporating Spherical Droplet with Internal Circulation*, Int. J. Heat Mass Transfer, Vol. 37, pp. 2287 - 2295, 1994.
19. Ghiaasiaan, S.M., Turk, R.E., and Abdel-Khalik, S.I., *Countercurrent Flow Limitation in Inclined Channels with Bends*, Nuclear Engineering and Design, Vol. 152, pp. 379-388, 1994.
20. Ghiaasiaan, S. M., Kamboj, B. K. and Abdel-Khalik, S. I., *Two-Fluid Modeling of Condensation in the Presence of Noncondensables in Two-Phase Channel Flows*, Nucl. Sci. Eng., Vol. 119, pp. 1-17, 1995.
21. Ghiaasiaan, S.M., Taylor, K.E., Kamboj, B.K. and Abdel-Khalik, S.I., *Countercurrent Two-Phase Flow Regimes and Void Fraction in Vertical and Inclined Channels*, Nuclear Science and Engineering, Vol. 119, pp. 182-194, 1995.
22. Ghiaasiaan, S. M. and Yao, G. F., *Diffusion and Convective Deposition of Aerosols in Rising Spherical Bubbles with Internal Circulation*, Int. J. Multiphase Flow, Vol. 21, pp. 907-918, 1995.
23. Kamboj, B.K., Ritenour, E.M., Ghiaasiaan, S.M. and Abdel-Khalik, S.I., *Gravity-Driven Countercurrent Two-Phase Flow during Filling of an Unvented Vessel*, Nuclear Engineering and Design, Vol. 157, pp. 205-219, 1995.

24. Lindsay, J.D., Ghiaasiaan, S.M. and Abdel-Khalik, S.I., *Macroscopic Flow Structures in a Bubbling Paper Pulp-Water Slurry*, Industrial and Engineering Chemistry Research, Vol. 34, pp. 3342 - 3354, 1995.
25. Ghiaasiaan, S.M., Bohner, J.D. and Abdel-Khalik, S.I., *The Effect of Gas Injection Configuration on Two-Phase Countercurrent Flow Limitation in Short Vertical Channels*, Nuclear Science and Engineering, Vol. 123 pp. 136-146, 1996.
26. Yao, G.F. and Ghiaasiaan, S.M., *Wall Friction in Annular-dispersed Two-Phase Flow*, Nuclear Engineering and Design, Vol. 163, pp. 149-161, 1996.
27. Schoonover, K.G., Ren, W. M., Ghiaasiaan, S. M. and Abdel-Khalik, S.I., *Mechanistic Modeling of Desuperheater Performance*, Transactions of Instrumentation Society of America, Vol. 35, pp. 45-51, 1996.
28. Yao, G.F., Ghiaasiaan, S.M. and Eghbali, D.A., *Semi-Implicit Modeling of Condensation in the Presence of Noncondensables in the RELAP5/MOD3 Computer Code*, Nuclear Engineering and Design, Vol. 166, pp. 277-291, 1996.
29. Yao, G.F. and Ghiaasiaan, S.M., *Numerical Modeling of Condensing Two-Phase Flows*, Numerical Heat Transfer. Part B: Fundamentals, Vol. 30, pp. 137-159, 1996.
30. Luo, D. and Ghiaasiaan, S. M., *Liquid-Side Interphase Mass Transfer in Cocurrent Vertical Two-Phase Channel Flows*, Int. J. Heat Mass Transfer, Vol. 40, pp. 641-656, 1997.
31. Luo, D. and Ghiaasiaan, S.M., *Interphase Mass Transfer in Cocurrent Vertical Two-Phase Channel Flows with Non-Newtonian Liquids*, International Communications in Heat and Mass Transfer, Vol. 24, pp. 1-10, 1997.
32. Ghiaasiaan, S. M. and Yao, G.F., *A Theoretical Model for Deposition of Aerosols in Rising Spherical Bubbles Due to Diffusion, Convection, and Inertia*, Aerosol Science and Technology, Vol. 26, pp. 141-153, 1997.
33. Ghiaasiaan, S.M., Dabiri, A.E. and Luo, D., *Heat Transfer in a Turbulent Falling Film Subject to Intense Volumetric Heating*, Journal of Enhanced Heat Transfer, Vol. 4, pp. 87-98, 1997.
34. Ghiaasiaan, S. M., Muller, J. R., Sadowski, D. L. and Abdel-Khalik, S.I., *Critical Flow of Initially Highly Subcooled Water through a Short Capillary*, Nuclear Science and Engineering, Vol. 126, pp. 229-238, 1997.
35. Ghiaasiaan, S. M. and Eghbali, D.A., *On Modeling of Turbulent Vapor Condensation with Noncondensables*. J. Heat Transfer, Vol. 119, pp. 373-376, 1997.

36. Ghiaasiaan, S. M., Wu, X., Sadowski, D. L. and Abdel-Khalik, S.I., *Hydrodynamic Characteristics of Countercurrent Two-Phase Flow in Vertical and Inclined Channels: Effect of Liquid Properties*. Int. J. Multiphase Flow, Vol. 23, pp. 1063-1083, 1997.
37. Ghiaasiaan, S. M. and Geng, H., *Mechanistic Non-Equilibrium Modeling of Critical Flashing Flow of Subcooled Liquids Containing Dissolved Noncondensables*, Numerical Heat Transfer: A, Vol. 32, pp. 435-458, 1997.
38. Bose, F., Ghiaasiaan, S. M. and Heindel, T. J., *Hydrodynamics of Dispersed Liquid Droplets in Agitated Synthetic Fibrous Slurries*, Industrial and Engineering Chemistry Research, Vol. 36, pp. 5028-5039, 1997.
39. Geng, H. and Ghiaasiaan, S. M., *Mechanistic Modeling of Critical Flow of Initially Subcooled Liquid Containing Dissolved Noncondensables Through Cracks and Slits Based on the Homogeneous-Equilibrium Mixture Method*, Nuclear Science and Engineering, Vol. 129, pp. 294 - 304, 1998.
40. Adams, T. M., Ghiaasiaan, S. M. and Abdel-Khalik, S. I., *Effect of Dissolved Noncondensables on Hydrodynamics of Microchannels Subject to Liquid Forced Convection*, J. Enhanced Heat Transfer, Vol. 6., pp. 395-403, 1999.
41. Triplett, K. A., Ghiaasiaan, S. M., Abdel-Khalik, S. I. and Sadowski, D. L., *Gas-Liquid two-phase Flow in Microchannels, Part 1: Two-Phase Flow Patterns*, Int. J. Multiphase Flow, Vol. 25, pp. 377 – 394, 1999.
42. Triplett, K. A., Ghiaasiaan, S. M., Abdel-Khalik, S. I., LeMouell, A and McCord, B. N., *Gas-Liquid Two-Phase Flow, Part 2: Void Fraction and Pressure Drop*, Int. J. Multiphase Flow, Vol. 25, pp. 395 – 410, 1999.
43. Roach, G. M., Abdel-Khalik, S. I., Ghiaasiaan, S. M. and Jeter, S. M., *Low Flow Critical Heat Flux in Heated Microchannels*, Nucl. Sci. Eng., Vol. 131, pp. 411 – 425, 1999.
44. Welsh, S. A., Ghiaasiaan, S. M. and Abdel-Khalik, S. I., *Countercurrent Gas-Pseudoplastic Liquid Two-Phase Flow*, Ind. Eng. Chem. Res. Vol. 38, pp. 1083 – 1093, 1999.
45. Roach, G. M., Abdel-Khalik, S. I., Ghiaasiaan, S. M. and Jeter, S. M., *Low Flow Onset of Flow Instability in Heated Microchannels*, Nucl. Sci. Eng., Vol. 133, pp. 106 – 117, 1999.
46. Ekberg, N. P., Ghiaasiaan, S. M., Abdel-Khalik, S. I., Yoda, M. and Jeter, S. M., *Gas-Liquid Two-Phase Flow in Narrow Horizontal Annuli*, Nucl. Eng. Des., Vol. 192, pp. 59 – 80, 1999.
47. Adams, T. M., Ghiaasiaan, S. M. and Abdel-Khalik, S. I., *Enhancement of Liquid Forced Convection Heat Transfer in Microchannels due to the Release of Dissolved Noncondensables*, Int. J. Heat and Mass Transfer, Vol. 42, pp. 3563 – 3573, 1999.

48. Kennedy, J. E., Roach, G. M., Jr., Dowling, M. F., Abdel-Khalik, S. I., Ghiaasiaan, S. M., Jeter, S. M. and Qureshi, Z. H., *The Onset of Flow Instability in Uniformly Heated Horizontal Microchannels*, J. Heat Transfer, Vol. 122, pp. 118 – 125, 2000.
49. Narrow, T. L., Ghiaasiaan, S. M., Abdel-Khalik, S. I. and Sadowski, D. L., *Gas-Liquid Two-Phase Flow Patterns and Pressure Drop in a Horizontal Micro-Rod Bundle*, Int. J. Multiphase Flow, Vol. 26, pp. 1281 – 1294, 2000.
50. Remley, T. J., Abdel-Khalik, S. I., Jeter, S.M., Ghiaasiaan, S. M. and Dowling, M.F., *Effect of Non-uniform Heat Flux on Wall Friction and Convection Heat Transfer Coefficient in a Trapezoidal Channel*, Int. J. Heat and Mass Transfer, Vol. 44, pp. 2453-2459, 2001.
51. Ghiaasiaan, S. M. and Laker, T. S., *Turbulent Forced Convection in Microtubes*, Int. J. Heat and Mass Transfer, Vol.44, pp. 2777-2782, 2001.
52. Chedester, R.C., and Ghiaasiaan, S.M., “Proposed Mechanism for Hydrodynamically-Controlled Onset of Significant Void in Microchannels,” Int. J. Heat Fluid Flow, Vol. 23, pp. 769-775 , 2002.
53. Stoddard, S.M., Blasick, A.M., Ghiaasiaan, S.M., Abdel-Khalik, S.I., Jeter, S.M., and Dowling, M.F., “Onset of Flow Instability and Critical Heat Flux in Thin Horizontal Annuli,” Experimental Thermal and Fluid Sciences. Vol. 26, pp. 1-14, 2002.
54. Ghiaasiaan, S.M., and Chedester, R.C., “Boiling Incipience in Microchannels,” Int. J. Heat Mass Transfer, Vol. 45, pp. 4599-4606, 2002.
55. Yan, J.-H., Laker, T.S., and Ghiaasiaan, S.M., “Linear Stability of Inverted Annular Flow in Capillaries,” Int. J. Heat Fluid Flow, Vol. 24, pp. 122-129, 2003.
56. Yao, G.F., Abdel-Khalik, S.I., and Ghiaasiaan, S.M., “An Investigation of Simple Evaporation Models Used in Spray Simulations,” J. Heat Transfer, Vol. 125, pp. 179-182, 2003.
57. Akbar, M.K., Plummer, D.A., and Ghiaasiaan, S.M.,”On Gas-Liquid Two-Phase Flow Regimes in Michrochannels,” Int. J. Multiphase Flow, Vol. 29, pp. 855-865, 2003.
58. Xie, T., Ghiaasiaan, S.M., Karrila, S., and McDonough, T.J., “Flow Regimes, Gas Holdup, and Bubble Characteristics in Paper Pulp-Water-Gas Three-Phase Slurry Flow,” Chemical Eng. Science, Vol. 58, pp. 1417-1430, 2003 (Chemical Engineering Science’s Most Cited Paper for 2003-2006).
59. Akbar, M.K., and Ghiaasiaan, S.M., “Stability of Stratified Gas-Liquid Two-Phase Flow in Horizontal Annular Channels”, Experimental Thermal and Fluid Science, Vol. 28, pp. 17-21, 2003.

60. Akbar, M.K., Yan, J., and Ghiaasiaan, S.M., "Mechanism of Gas Absorption Enhancement in a Slurry Droplet Containing Reactive, Sparingly Soluble Micro Particles," Int. J. Heat Mass Transfer, Vol. 46, pp. 4561-4571, 2003.
61. Xie, T., Ghiaasiaan, S.M., and Karrila, S., "Flow Regime Identification in Gas-Liquid-Pulp Fiber Slurry Flows Based on Pressure Fluctuations Using Artificial Neural Networks," Ind. Eng. Chem. Research, Vol. 42, pp. 7017-7024, 2003.
62. Ghiaasiaan, S.M., "Gas-Liquid Two-Phase Flow and Boiling in Mini and Microchannels," Multiphase Science and Technology, Vol. 15, pp. 323-336, 2003.
63. Laker, T.S., and Ghiaasiaan, S.M., "Monte-Carlo Simulation of Aerosol Transport in Rising Spherical Bubbles with Internal Circulation," J. Aerosol Science, Vol. 35, pp. 473-488, 2004.
64. Akbar, M.K., and Ghiaasiaan, S.M., "Modeling the Gas Absorption in a Spray Scrubber with Dissolving Reactive Particles," Chem. Eng. Science, Vol. 59, pp. 967-976, 2004.
65. Akbar, M.K., Ghiaasiaan, S.M., and Karrila, S., "An Experimental Study of Interfacial Surface Area Concentration in a Short Vertical Column Subject to Paper Pulp-Water-Gas Three-Phase Flow," Chem. Eng. Science, Vol. 59, pp. 1079-1086, 2004.
66. Xie, T., Ghiaasiaan, S.M., and Karrila, S., "Artificial Neural Network Approach for Flow Regime Classification in Gas-Liquid Fiber Flows Based on Frequency Domain Analysis of Pressure Signals," Chem. Eng. Science, Vol. 59, pp. 2241-2251, 2004.
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68. Akbar, M.A., and Ghiaasiaan, S.M., "Radiation Heat Transfer and Soot Thermophoresis in Laminar Tube Flow," Numerical Heat Transfer, Vol. 47, 653-670, 2005.
69. Dillon, C.M., Abdel-Khalik, S.I., Ghiaasiaan, S.M., Jeter, S.M., and Sadowski, D.L., "Two-Phase Pressure Drop in a Horizontal Thin Annulus: Effects of Channel Vibration and Wall Gas Injection," Experimental Thermal and Fluid Science, Vol. 30, 67-78, 2005.
70. Akbar, M.K., and Ghiaasiaan, S.M., "A CFD Model for Aerosol Transport in Rising Gas Bubbles," J. Aerosol Science, Vol. 37, 735-749, 2006.
71. Karam, R.A., Blaylock, D., Burgett, E., Ghiaasiaan, S.M., and Hertel, N., "High Temperature Helium-cooled Fast Reactor," Energy Conversion and Management, Vol. 47, 2794-2800, 2006.
72. Cha, J.S., Ghiaasiaan, S.M., Desai, P.V., Harvey, J.P., and Kirkconnell, C.S., "Multi-Dimensional Effects in Pulse Tube Refrigerator," Cryogenics, 658-665, 2006.

73. Akbar, M.K., and Ghiaasiaan, S.M., "Simulation of Taylor Flow in Capillaries Based on the Volume-of-Fluid Technique," Industrial & Engineering Chemistry Research, Vol. 45, 5396-5403, 2006.
74. Kern, B.J., Sadowski, D.L., Ghiaasiaan, S.M., and Abdel-Khalik, S.I., "Void Fraction Distribution in Two-Phase Jets for Z-Pinch IFE Reactor Applications," Fusion Science and Technology, Vol. 52, pp. 958 – 962, 2007.
75. Chalfi, T.K., and Ghiaasiaan, S.M., "Pressure drop caused by flow area changes in capillaries under low flow conditions," Int. J. Multiphase Flow , Vol. 34, 2-12, 2008.
76. Novak, V., Sadowski, D.L., Schoonover, K.G., Abdel-Khalik, S.I., and Ghiaasiaan, S.M., "Heat Transfer in Two-Component Internal Mist Cooling: Part 1 – Experimental Investigation." Nuclear Engineering and Design , Vol. 238, 2341-2350, 2008.
77. Novak, V., Sadowski, D.L., Schoonover, K.G., Abdel-Khalik, S.I., and Ghiaasiaan, S.M., "Heat Transfer in Two-Component Internal Mist Cooling: Part 2 – Mechanistic Modeling." Nuclear Engineering and Design Vol. 238, 2351-2358, 2008.
78. Clearman, W.M., Cha, J.S., Ghiaasiaan, S.M., and Kirkconnel, C.S., "Anisotropic Hydrodynamic Parameters of Microporous Media Applied in Pulse Tube and Stirling Cryocooler Regenerators," Cryogenics, Vol. 48, pp. 112-121, 2008.
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81. Akbar, M.K., Rahman, M., and Ghiaasiaan, S.M., "Particle Transport in a Small Square Enclosure in Laminar Natural Convection," J. Aerosol Science, Vol. 40, pp. 747-761, 2009.
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83. Sumner, T.S., Stacey, W.M., and Ghiaasiaan, S.M., "Dynamic Safety Analysis of The SABR Subcritical Transmutation Reactor Concept," Nuclear Technology, Vol. 171, pp. 123-135, 2010.
84. Pathak, M., and Ghiaasiaan, S.M., "Convective Heat Transfer and Thermal Dispersion during Laminar Pulsating Flow in Porous Media," Int. J. Thermal Science, Vol. 50, pp. 440-448, 2011.

85. Sumner, T., and Ghiaasiaan, S.M. "Effects of Fuel Type on the Safety Characteristics of a Sodium Cooled Fast Reactors. Part I: Background, Modeling Tools and Pre-Transient Calculations," Annals of Nuclear Energy, Vol. 38, pp. 1559-1568 (2011).
86. Sumner, T., and Ghiaasiaan, S.M. "Effects of Fuel Type on the Safety Characteristics of a Sodium Cooled Fast Reactors. Part II: Simulation Results," Annals of Nuclear Energy, Vol. 38, pp. 1760-1768 (2011).
87. Ouchiha, Z., Ghiaasiaan, S.M., Loraud, J.C., Ghezal, A. "Transient Flow of Highly Pressurized Fluids in Pipelines," Int. J. Pressure Vessels and Piping, Vol. 92, pp. 106-114 (2012).
88. Mulcahey, T.I., Pathak, M., and Ghiaasiaan, S.M. "The Effect of Flow Pulsation on Drag and Heat Transfer in an Array of Heated Square Cylinders," Int. J. Thermal Science, Vol. 64, pp. 105-120, 2013.
89. Pathak, M., Mulcahey, T.I., and Ghiaasiaan, S.M. "Conjugate Heat Transfer during Oscillatory Laminar Flow in Porous Media," Int. J. Heat Mass Transfer, Vol. 66, pp. 23-30 (2013).
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91. Ouchiha, Z., Ghiaasiaan, S.M., and Ghezal, A. "Transient Phenomena in Liquid-Gas Flow in Pipelines," J. Fluid Flow, Heat and Mass Transfer, Vol. 2, pp. 7-13 (DOI: 10.11159/jffhmt.2015.002; available at <http://jffhmt.aveestia.com/2015/PDF/002.pdf>)

Conference Presentations with Proceedings (Refereed; partial)

1. Ghiaasiaan, S.M. Catton, I. and Duffey, R.B., *Thermal-Hydraulics and Two-Phase Phenomena in Reflooding of Nuclear Reactor Cores*, ASME Paper #82-FE-1, Presented at the ASME Summer Meeting, 1982.
2. Ghiaasiaan, S. M., Catton, I. and Duffey, R. B., *A Single Channel Reflood Model*, ASME Paper #82-WA/HT-33, 1982.
3. Ghiaasiaan, S.M. Catton, I. and Duffy, R.B., *Multi-Dimensional and Local Two-Phase Flow and Thermal-Hydraulic Analysis of Reflooding of Hot Rod Bundles*, Proceedings Joint NRC/ANS Meeting on Basic Thermal-Hydraulic Mechanisms, NUREG/CP-0043, pp. 547-582, 1983.
4. Ghiaasiaan, S.M., et al., *Thermal-Hydraulics and Heat-Up of Light Water Reactor Cores during Severe Accidents*, Proc. 1985 National Heat Transfer Conf., ANS, pp. 205-222.
5. Ghiaasiaan, S.M. and Micheletti, W.C. *Effect of Surface-Active Chemical Additives on the Performance of Cooling Towers*, ASME Paper #87-JPGC-Pwr-5, 1987.

6. Ghiaasiaan, S. M., et al., *Scaling of Thermal-Hydraulics and Counter-Current Flow Flooding in a Once-Through Steam Generator during Auxiliary Feedwater Injection*, Proc. 1988 National Heat Transfer Conference, ANS, pp. 399 - 413.
7. Catton, I., Ghiaasiaan, S. M. and Duffey, R. B., *Multi-Dimensional Thermal-Hydraulics and Two-Phase Phenomena during Quenching of Hot Rod Bundles*, in Transient Phenomena in Multiphase Flow, edited by N. H. Afgan, pp. 491-525, Hemisphere Publishing Corp., 1988.
8. Ghiaasiaan, S.M., Wassel, A.T., Vega, L. and Nihous, G., *A Semi-Analytical Model for Spout Flash Evaporators in Open-Cycle Ocean Thermal Energy Conversion*, Proceedings, International Conference on Ocean Energy Recovery, pp. 275-287, American Society of Civil Engineers, 1989.
9. Dabiri, A.E., Ghiaasiaan, S.M. and Schulze, M.E., *Thermal Analysis of an Accelerator Target Window*, in Topics in Heat Transfer, ed., M. Toner, et al., HTD-Vol. 206-2, pp. 39-46, ASME, 1992.
10. Ghiaasiaan, S.M., Luo, D. and Dabiri, A.E., *Heat Transfer in a Laminar Boundary Layer Subject to Intense Volumetric Heating*, in Micromechanical Systems, Ed., D. Cho, et al., DSC-Vol. 40, pp. 295-311, ASME, 1992.
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12. Taylor, K.E., Ghiaasiaan, S.M., Abdel-Khalik, S.I., Lindsay, J.D. and George, J., *Macroscopic Flow Structures in a Bubbling Paper Pulp-Water Slurry*, AIChE National Meeting, San Francisco, CA, November 1994.
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70. Perrella, M.D., and Ghiaasiaan, S.M. "Periodic Flow Hydrodynamic Resistance Parameters for Various Regenerator Filler Materials at Cryogenic Temperatures," to be presented at 19th International Cryocooler Conference (ICC-19), San Diego, CA, June 20 – 23, 2016.
71. Perrella, M.D., and Ghiaasiaan, S.M. "Theoretical Design and Optimization of a Next-Generation, Two-Stage, 20 W at 20 K Pulse Tube Cryocooler," to be presented at 19th International Cryocooler Conference (ICC-19), San Diego, CA, June 20 – 23, 2016.
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Software

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2. STARRS, A Computer Code for the Calculation of Transport and Retention of Radioactive Species in the Secondary Side of a U-Tube Steam Generator during a Tube Rupture Event (1990). STARRS was sponsored by EPRI, and was provided to utilities for safety analysis as a licensable software, to be used with EPRI's Modular Modeling System (MMS).
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4. GT3F: An Implicit Finite-Difference Computer Code for Transient Three-Dimensional Three-Phase Flows (1994). GT3F was developed and copyrighted at Georgia Tech, and has since been used for licensing analysis by NRC and its contractors.

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6. Wassel, A.T., Ghiaasiaan, S.M., Denny, V.E., and Traci, R.M., Modeling of Natural Circulation in Reactor Coolant Systems, Fluid Physics Ind. Report FPI-R88-05-04, Encinita, California (Prepared for USNRC), 1988.
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9. Ghiaasiaan, S. M. and Wassel, A.T., STARRS-MMS Code: Evaluating Steam Generator Tube Ruptures. Vol. 2: Programmer's Manual, EPRI NP-6668, Volume 2, Electric Power Research Institute, Palo Alto, California, 1990.
10. Ghiaasiaan, S. M. and Wassel, A.T., STARRS-MMS Code: Evaluating Steam Generator Tube Ruptures. Vol. 3: User's Manual, EPRI NP-6668, Volume 3, Electric Power Research Institute, Palo Alto, California, 1990.
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16. Ghiaasiaan, S. M., Farr, J. L., Jr., Wassel, A.T. and Lin, C.S., STARRS-EPRIGEMS-02 Code: An Expert Analytical Tool for Assessing PWR Steam Generator Tube Rupture events. Vol. 2: Programmer's Manual, Volume 2, Parts 1: Using the STARRS-EPRIGEMS Package, and 2: User's Manual; EPRI TR-102623, Electric Power Research Institute, Palo Alto, California, 1993.
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18. Ghiaasiaan, S.M., Yan, J.H., and McCord, B.B., Numerical Models for Condenser and Evaporator Components of Fuel Cells, submitted to Tyndall Air Force Base, FL, January 2002. (Report number A809204; Available for sale from Storming Media, <http://www.stormingmedia.us/80/8092/A809204.html>).

Conference and Workshop Presentations

1. Farr, J. L., Wassel, A. T., Ghiaasiaan, S. M., Kalra, S. P. and Cain, D. G., "*STARRS: Expert Analytical Tool for Assessing PWR Steam Generator Tube Rupture Events*," Presented at Conf. on Advanced Computer Technology for Power Industry, Scottsdale, AZ, Dec. 4-6, 1989.
2. Wassel, A.T, Ghiaasiaan, S.M., Farr, J. L., Jr. and Kalra, S.P., "*On the Application of STARRS Methodology to Assess Tube Rupture Consequences in PWR Plants*," Conference on Expert Systems Application for the Electric Power Industry, Orlando, FL, June 5-8, 1989.
3. Perrella, M.D., Ghiaasiaan, S.M. "Periodic Flow Hydrodynamic Resistance Parameters for ErPr Rare-Earth Regenerator Material at Cryogenic Temperatures", presented in Cryogenics Engineering Conf. and International Cryogenics Materials Conf. (CEC/ICMC), Tucson, Arizona, June 28 – July 2, 2015.

Invited Seminar Presentations

1. Ghiaasiaan, S. M., “Two-Phase Flow in Microsystems, Joint Aerospace/Mechanical Engineering/Nuclear and Radiological Engineering Seminar,” University of Florida at Gainesville, FL (July 11, 2000).
2. Ghiaasiaan, S.M., “*Gas-Liquid Two-Phase Flow and Boiling in Microchannels*,” Workshop on Scientific Issues in Multiphase Flows: A Roadmap to the Future, University of Illinois at Urbana-Champaign, May 7-9, 2002 (sponsored by USDOE).
3. Ghiaasiaan, S.M., “*Miniaturization of Pulse Tube Cryocoolers: Opportunities and Challenges*,” Seminar broadcast to Raytheon sites nationwide, October 3, 2007.
4. Ghiaasiaan, S.M., “Design and Development of Next Generation High Capacity, 20K Pulse Tube Cryocooler”, Annual Technical Seminar (First), NASA Goddard Institute for Space Studies, April 4, 2014.
5. Ghiaasiaan, S.M., Miller, F., Perrella, M. “Design and Development of Next Generation High Capacity, 20K Pulse Tube Cryocooler”, Annual Technical Seminar (Second), NASA Glen Research Center, September 21, 2015.

GRANTS AND CONTRACTS: AS PRINCIPAL INVESTIGATOR

GRANT TITLE	FUNDING ORGANIZATION	LEVEL OF FUNDING	DATE (MO & YEAR)
<i>Design and Thermal Analysis of a PET Foil Window Cooling System</i>	Science Applications International Corporation	\$ 34,309	5/6/91 – 1/15/92
<i>Direct-Contact Condensation in the Presence of Non-Condensables</i>	Westinghouse Savannah River Company, through ERDA	\$ 120,598	5/1/93 – 5/31/96
<i>Thermal Analysis of PET Window Systems</i>	Science Applications International Corporation	\$ 34,156	7/1995 – 6/1997
<i>Turbulence Characteristics of Pulp Suspensions in Flotation Systems</i>	GT-IPST Seed Grant Program	\$ 19,990	10/1/95 – 6/30/96
<i>Modeling of Condensation in the Presence of Noncondensables for RELAP5/MOD3 Computer Code</i>	INEL/NRC	\$ 50,383	9/25/96 – 5/30/97
<i>Proof-of-Concept for Johnson Heat Pump</i>	Johnson Research and Development Company, Georgia Research Alliance	\$ 104,000	9/15/98 – 9/15/00

<i>Flow Pattern Identification in Fiber Suspensions</i>	GT-IPST Seed Grant Program	\$ 20,000	7/1/99 – 6/30/00
Development of Numerical Models for Condenser and Evaporator Components of Modern Fuel Cells	AFRL	\$ 54,497	10/01/00 – 01/21/02
<i>Proof-of-Concept for Johnson Heat Pump</i>	Johnson Research & Development, Co.	\$104,033	9/15/98 – 10/30/05
<i>Bubble Size Control to Improve Oxygen-Based Bleaching</i>	IPST/DOE	\$ 125,314	11/01/00 – 02/29/04
<i>Research on Hydrogen Flow in Fuel Cell Components</i>	Johnson Research & Development, Co. / Corporate Liaison	\$ 36,300	03/01/2002 – 2004
<i>Space Fission Propulsion System Thermal Management</i>	NASA-GSRP Student Fellowship	\$ 24,000	05/01/2003 – 04/30/2004
<i>Modeling of Thin Film Evaporative Cooling</i>	NASA/Langley Research Center	\$ 16,509	06/10/04 – 09/27/04
<i>Research on Thermal Properties of Coating Materials</i>	Industrial Coating Alliance Group, Inc./ Corporate Liaison	\$ 15,000	06/01/2003 – 2007
<i>Pulse Tube Miniaturization</i>	Raytheon	\$ 100,000	09/2006 – 09/2008
<i>Small Scale Cryogenic Refrigeration Technology</i>	Virtual AeroSurface Technologies/MDA	\$ 66,580	09/2007 – 03/2008
<i>Regenerative Pulse Tube Cryocoolers</i>	Raytheon	\$ 260,873	09/97 – open
<i>Research on Johnson Thermoelectric Converter (JTEC)</i>	Johnson Research Co.	\$ 32,463	08/2008 – 2010
<i>Research on Proton Exchange Membranes</i>	Johnson Research Co	\$ 10,000	01/2010 – 2011
<i>Small Scale Cryogenic Refrigeration Technology – Phase II</i>	Virtual Aerosurface Technologies/MDA Johnson Research Co.	\$ 260,000	02/2009 – 05/2011
<i>Cryocooler Research</i>	Iris Technologies	\$ 7,000	08/2010 – 2012
<i>Small Scale Cryogenic Refrigeration Technology</i>	Iris Technologies	\$ 12,525	06/2011 – 09/2011
<i>Electrochemical Heat Pump (EHP) for Advanced Cooling Systems</i>	Johnson R&D/DOE	\$ 100,000 (\$40,000 for GT)	08/2011 – 04/2012
Two-Stage, 20K Pulse Tube Cryocooler for Space Studies	NASA Goddard Space Flight Center (NSTRF)	\$ 134,288	09/2011 – 09/2013
Cryogenics Research	Iris Technologies/GTF	\$ 16,000	01/2010 - Open
<i>Tactical 4k Cryooler Phase II</i>	Iris Technologies/ONR	\$ 122,099	09/2011 – 08/2013
<i>Equipment and Instrumentation for Cryocooler Research and Development</i>	ONR/DURIP	\$ 126,920	08/2012 – 09/2013
<i>Design and Development of a Next Generation High Capacity, 20 K</i>	NASA (STRO-ESI)	\$ 500,000 (\$ 250,000)	01/2013 – 01/2015

<i>Pulse Tube Cryocooler for Active Thermal Control on Future Space Exploration Missions</i>		For GT)	
<i>Low Size, Weight and Power 4K Cryocooler Phase I</i>	Iris Technologies/ONR	\$ 135,000 (\$42,000 For GT)	05/2013-01/2014
<i>LN2 Precooled Two-Stage Pulse Tube Cooler for Low Temperature Superconducting Electronics</i>	Iris Technologies/ONR	\$ 25,000	5/2013 – 11/2013
<i>LN2 Precooled Two-Stage Pulse Tube Cooler for Low Temperature Superconducting Electronics: Option 1</i>	Iris Technologies/ONR	\$ 17,000	10/2013 – 12/2013
<i>Low T, Low Q Cryocooler for Science Instruments Ended due to unexpected departure of the student</i>	NASA Goddard Space Flight Center (NSTRF) Fellowship	\$ 270,000 (\$67,450 per year) (\$27,000 spent)	9/2013 – 9/2017 (Ended in fall 2015)
<i>Research on Cryogenics Liquid Transport</i>	Chart Industries	\$ 17,000	01/2014 - Open
<i>LNG Transport and Delivery Systems</i>	Chart Industries	\$ 92,066	08/2014 – 08/2015
<i>LNG Transport and Delivery Systems-Supplement</i>	Chart Industries	\$ 8,000	07/2015 – 09/2015
<i>LNG Transport and Delivery Systems - Phase II</i>	Chart Industries	\$ 130,070	09/2015 – 02/2017
<i>Effect of Tilt Angle on Acoustic Stirling Cryocoolers</i>	Chart Industries	\$ 117,350	09/2015 – 02/2017

GRANTS AND CONTRACTS: AS CO – PRINCIPAL INVESTIGATOR

GRANT TITLE	FUNDING ORGANIZATION	LEVEL OF FUNDING	DATE (MO & YEAR)
<i>Fundamentals of Three-Phase Pulp Suspension Flows</i>	Institute of Paper Science and Technology	\$ 29,611	2/1/93 – 12/31/93
<i>Technical Feasibility of the Johnson Tube Heat Pump Concept</i>	Johnson Research & Development Company	\$ 24,000	3/1/93 – 8/31/93
<i>Multi-fluid Modeling of Two-Phase Flow</i>	CON-TEK Valves, Inc.	\$ 150,000	5/1/93 – 4/30/96
<i>Advanced Heat Pump Components and Cycles</i>	Hamig Estate Fund (ASHRAE)	\$ 29,500	1/1/94 – 12/31/95
<i>Manned Spacecraft External Thermal Control Using the Johnson Tube™ Heat Pump</i>	Johnson Research and Development Company	\$ 23,330	1/11/94 – 7/11/94

<i>An Experimental Facility for Spray Visualization and Performance Assessment of Desuperheaters</i>	CON-TEK Valves, Inc.	\$ 132,654	7/18/94 – 6/30/96
<i>Component Optimization and Prototype Development for the Johnson Tube Heat Pump</i>	Johnson Research and Development Company/AFRL	\$ 50,000	9/19/95 – 9/18/96
<i>CHF Database and Models for APT Neutron Source Tungsten Bundles</i>	Westinghouse Savannah River Company through ERDA	\$ 221,841	7/11/96 – 1/31/98
<i>Development of a Mechanistic Two-phase Flow Computer Model for Steam Conditioning Applications</i>	CON-TEK Valves, Inc.	\$ 169,166	6/1/95 – 6/30/00
<i>Flow Regime Maps for APT Neutron Source Bundles</i>	Southeastern Consortium APT Project Office	\$ 45,000	9/1/97 – 8/31/99
<i>Investigation of Single and Two-Phase Phenomena in The APT Blanket</i>	Southeastern Consortium APT Project Office	\$ 63,000	9/1/97 – 8/31/98
<i>An Experimental Facility for Spray Visualization and Performance Assessment of Desuperheaters: Modification 1.</i>	CON-TEK Valves, Inc.	\$ 72,580	7/18/94 – 6/30/99
<i>Flow Visualization within a Seven-Rod Prototypical APT Target Bundle</i>	Westinghouse Savannah River Company	\$ 50,000	7/24/97 – 2/28/98
<i>OFI and CHF Database for APT Tungsten Target Annuli</i>	General Atomics	\$ 69,500	4/1/98 – 1/31/99
<i>Investigation of Thermal-Hydraulic Phenomena in the APT Tungsten Target Annuli</i>	Southeast Consortium APT Project Office	\$ 162,000	9/1/98 – 8/31/99

INDIVIDUAL STUDENT GUIDANCE

Ph.D. Students: Graduated

1. B. K. Kamboj, 1993. *Modeling of Once-Through Steam Generator Thermal-Hydraulics during a Loss of Coolant Accident.* (with Dr. S. I. Abdel-Khalik).
2. W. M. Ren, 1994. *Mechanistic Modeling of Steam Explosions.* [Received 1995 Sigma Xi Dissertation Award] (with Dr. S. I. Abdel-Khalik).

3. M. Hwang, 1994. *Numerical Modeling of the Expansion Phase of Vapor Explosions*. (with Dr. S. I. Abdel-Khalik).
4. Y. Sun, 1994. *Heat Transfer in Molten Core/Concrete Systems*. (with Dr. S. I. Abdel-Khalik).
5. D. Luo, 1995. *Transfer Processes in Cocurrent Two-Phase Channel Flow*.
6. G. F. Yao, 1996. *Numerical Modeling of Condensing Two-Phase Channel Flows*.
7. M. Aljohani, 1996. *A Three-Dimensional Mechanistic Model of Steam condensers Using Porous Media Formulation*. (With Dr. S. I. Abdel-Khalik)
8. D. A. Eghbali, 1997. *Combined Heat and Mass Transfer in Gas-Liquid Two-Phase Systems*.
9. Haining Geng, 1999. *Theoretical Modeling of the Effect of Dissolved Noncondensables on Critical Flow Flashing and Boiling Vapor Bubble Ebullition in Subcooled Liquids*.
10. Xumei Wu, 2001, *Monte Carlo Modeling of Turbulent Dispersion of Evaporating Droplets in Nonequilibrium Two-Phase Flow*. (With Dr. S.I. Abdel-Khalik).
11. Travis Laker, 2003, *Transport of Microscopic Particles in Microchannels and Microbubbles*.
12. Tao Xie, Fall 2004, *Hydrodynamic Characteristics of Gas/Liquid/Fiber Three-Phase Flows Based on Objective and Minimally-Intrusive Pressure Fluctuation Measurements*.
13. Muhammad K. Akbar, Fall 2004, *Transport Phenomena in Complex Two and Three-Phase Flow Systems*.
14. Jeung Cha, Summer 2007, *Hydrodynamic Parameters of Microporous Media for Steady and Oscillatory Flow: Application to Cryocooler Regenerators*.
15. Sheila Rezak, Summer 2008. *Analysis of Fiber Suspensions using the Lattice Boltzmann Method*. (co-advised with Dr. Cyrus Aidun).
16. Tyler Sumner, Spring 2010. *Effects of Fuel Type on the Safety Characteristics of a Sodium Cooled Fast Reactor*
17. Ted J. Conrad, Summer 2011. *Miniaturized Pulse Tube Refrigerators*.
18. Mihir Pathak, Summer 2013. *Periodic Flow Physics in Porous Media of Regenerative Cryocoolers*.
19. Thomas I. Mulcahey, Spring 2014. *Convective Instability Of Oscillatory Flow In Pulse Tube Cryocoolers Due To Asymmetric Gravitational Body Force*.

Ph.D. Students: In Progress

1. Mallik Ahmed
 Advising Started: Fall 2013
 Qualifying Exam: TBD
 Thesis Title: Boiling Instability of Cryogenic Fluids in Helically Coiled Tubes
2. Matthew Perrella
 Advising Started: Spring 2014

Qualifying Exam: Spring 2014
Thesis Title: Periodic Flow in Porous Media at Cryogenic Conditions

3. Veera Manek
Advising Started: Fall 2014
Qualifying Exam: Spring 2014 (Transfer from AE)
Thesis Title: Distillation-Assisted Removal of Contaminant from Liquefied Natural Gas
4. Tao Fang
Advising Started: Fall 2015
Qualifying Exam: TBD
Thesis Title: Gravitational Effects of Acoustic Stirling Cryocoolers

M.S. Students with M.S. Thesis

1. Kris Lillibridge, 1993. *Buoyancy-Driven Two-Phase Countercurrent Flow*.
2. Rodney E. Turk, 1993. *The Hydrodynamics of Countercurrent Two-Phase Flow in Inclined Channels*. (with Dr. S. I. Abdel-Khalik)
3. Kevin E. Taylor, 1994. *An Experimental Investigation of a Bubbling Three-Phase Pool*. (with Dr. S. I. Abdel-Khalik)
4. Eric M. Ritenour, 1994. *Two-Phase Flow in Inclined Channels*. (with Dr. S. I. Abdel-Khalik)
5. John D. Bohner, 1994. *The Effect of Wall Gas Injection on Two-Phase Countercurrent Flow Limitation*. (With Dr. S. I. Abdel-Khalik)
6. Eric F. Griffith, 1994. *Vapor Explosions in Thermite Generated Melts*. (With Dr. S. I. Abdel-Khalik)
7. X. Wu., Fall 1996. *Hydrodynamic Characteristics of Countercurrent Two-Phase Flows Involving Highly Viscous Liquids*. (With Dr. S. I. Abdel-Khalik)
8. Feler Bose, Fall 1997. *Turbulent Characteristics of Pulp Slurries in Agitated Vessels*. (With Dr. Ted Heindel, IPST).
9. Michael Stinson, Fall 1997. *Hydrodynamics and Liquid Side-Controlled Interfacial Mass Transfer in Horizontal Gas-Liquid Two-Phase Flow*.
10. Kimberly A. Triplett, Fall 1997. *Two-Phase Flow Regime Maps and Pressure Drop in Microchannels*. (With Dr. S. I. Abdel-Khalik.)
11. Susan Welsh, 1998. *Flow Patterns in Two-Phase Channel Flows Involving Non-Newtonian Liquids*. (With Dr. S. I. Abdel-Khalik.)
12. G. M. Roach, Jr., 1998. *Onset of Flow Instability and Critical Heat Flux in Uniformly-Heated Microchannels*. (With Dr. S. I. Abdel-Khalik.)
13. Matthew D. Rhodes, 1999. *Theoretical Modeling of the Onset of Ledinegg Flow Instability in a Heated Channel*. (With Dr. S. I. Abdel-Khalik.)
14. Travis Laker, Spring 2001. *Secondary Flows in a Rotating Serpentine Circular Duct*.
15. Clint Chedester, Summer 2002. *Transport Phenomena in Proton Exchange Membranes*. [Received 2002 Sigma Xi Best MS Thesis Award]

16. Omar Mireles, Winter 2003. *Non-Nuclear Material Compatibility Test of Nb-Zr and SST 316 for Space Reactors Applications.*
17. Jeesung Cha, Spring 2004. *CFD Modeling of Pulse Tube Cryocoolers.*
18. Brian K. Stewart, Fall 2004. *Development of a Thin Film Evaporative Cooling System for a High Energy Thulium: Lutetium Lithium Fluoride Solid-State Laser Oscillator Crystal.*
19. Nurudeen Olayiwola, Summer 2005. *Forced Flow Boiling in Mini and Microchannels.*
20. Brian Kern, Summer 2006. *Hydrodynamics of a Two-Phase Falling Jet.* (With Dr. S. I. Abdel-Khalik.)
21. Toufik Chalfi, Summer 2007. *Pressure Loss Associated with Flow Area Change in Micro-channels.*
22. William L. Clearman, Summer 2007. Measurement and Correlation of Directional Permeability and Forchheimer's Inertial Coefficient of Micro Porous Structures Used in Pulse-Tube Cryocoolers.
23. Brian Lockwood, Summer 2007. A Two Dimensional Fluid Dynamics Solver for Use in Multiphysics Simulations of Gas Cooled Reactors.
24. Sung Min Kim, Spring 2008. Numerical Investigation on Laminar Pulsating Flow Through Porous Media.
25. Evan Landrum, Spring 2009. Anisotropic Parameters of Mesh Fillers Relevant to Miniature Cryocoolers.
26. Mihir Pathak, Summer 2010. Thermal dispersion and convection heat transfer during laminar pulsating flow in porous media.
27. Umberto Cardella (Technical University of Munich), Summer 2011. Loss of Intermediate Cooling in an Innovative Sodium Fast Reactor – The Effect of Fuel Type. (With Professor Rafael Macian-Juan.)
28. Noelle Joy Keltner, Fall 2013. Study of PocoFoam as a Heat Exchanger Element in Cryogenic Applications.
29. Michael R. Baldwin
 Advising started: Spring 2014
 Thesis title: Relative permeability and Passability for Two-Phase Flow in Packed Porous Beds.

Mentorship of postdoctoral fellows or visiting scholars

1. Dr. B. K. Kamboj, 1993 - 1994. *Thermal Hydraulics, Multi-Phase Flows.*
2. Dr. W. M. Ren, 1994 - 1995. *Steam Explosions, Multiphase Flow.*
3. Dr. G. F. Yao, 1996 - 1998. *Spray Evaporators, Multiphase Flow.*
4. Dr. B. N. McCord, 1996 - 1998. *Two-Phase Flow in Capillaries.*
5. Dr. B. N. McCord, 2001 (part-time) Boiling and *Two-Phase Flow in Microchannels.*

5. Dr. Jinhua Yan, 2001 - 2002. *Numerical Modeling of condenser and Evaporator Components of Fuel Cells.*
6. Zohra Ouchiha, (visiting scholar) 2008-2010. *Simulation of Flow Oscillations and Shock Waves in Gas Pipelines.*
7. Umberto Cardella (visiting scholar from Fakultät für Maschinenwesen Technische Universität München, Germany). 11/2010 – 6/2011. Simulation of Severe Accidents in Liquid Metal Fast Reactors.
8. Shuangtao Chen (visiting scholar from Xi'an Jiaotong University, [Shaanxi](#), China), 10/2010 – 10/2011. CFD Simulation of Cryocoolers.
9. Dr. Guo-Jian Ji (visiting scholar, Lecturer, Department of Heat and Power, School of Petroleum Engineering, Changzhou University, Changzhou, P. R. China), 12/01/2014 – 12/01/2015. Cryogenic multi-phase flow.
10. Lu Niu (visiting scholar, School of Energy and Power Engineering, Xi'an Jiaotong University, [Shaanxi](#), China), 10/01/2015 – present. Cryogenics and cryocoolers

EDITORIAL BOARD MEMBERSHIPS

General Chair, International Cryocoolers Conference and Exhibition (ICC-16), Atlanta, GA, May 17-20	2010
Chair, International Cryocooler Conference Board	2008 – 2011
Member, International Cryocooler Conference Board	2011 – 2015
Executive Editor, <i>Annals of Nuclear Energy</i>	2006 – present

SOCIETY OFFICES, ACTIVITIES, AND MEMBERSHIP

Registered Professional Mechanical Engineer, State of California (M26002)	1987 – present
Member (Fellow), American Society of Mechanical Engineers	1984 - present
Member, American Nuclear Society	1989 – present
Member, Cryogenics Society of America	2009 - present
Member, ASME K-13 (Heat Transfer in Multiphase Systems) Committee	2000 – present

ORGANIZATION AND CHAIRMANSHIP OF TECHNICAL SESSIONS, WORKSHOPS AND

CONFERENCES

Session Organizer and Chair, Thermal Hydraulics of Small Flow Channels, 1999 - 2000 The ASME/SFEN/JSME 8 th International Conference on Nuclear Engineering (ICONE-8), Baltimore, MD, April 2 – 6, 2000	
Session Co-organizer, Fundamentals of Heat Transfer in	1999 - 2000

Microdevices and Microsystems, ASME International Mechanical Engineering Congress and Exhibit (IMECE-2000), Orlando, FL, November 5 – 10, 2000.

Organizer and Co-Chair, “Heat Transfer in Multiphase Systems,” IMECE-2001, Nov. 2001, New York. 2000- 2001

Organizer and Co-Chair, “Two-Phase Flow and Heat Transfer in Microsystems,” IMECE- 2002 2001-2002

Organizer and Co-Chair, “Direct-Contact Condensation,” IMECE-2002 2001-2002

Invited Participant and Speaker, “Defining Scientific Issues in Multiphase Flow,” DOE-sponsored Workshop, UIUC, May 7-9, 2002 2002

Organizer and Co-Chair, “Microscale Multiphase Flow and Heat Transfer” 2003 ASME Summer Heat Transfer Conference 2002-2003

Organizer and Co-Chair, “Application of Artificial Neural Networks in Multiphase Flow and Heat Transfer,” IMECE-2003 2002-2003

Organizer and Co-Chair, “Hydrodynamics and Transport Phenomena in Gas-Solid-Liquid Three-Phase Flow Systems,” 2004 ASME Summer Heat Transfer Conference 2003-2004

Organizer and Co-Chair, “Boiling Heat Transfer,” IMECE-2004 2003-2004

External Referee, for promotion, Ben Gurion University of the Negev (Israel) 2002

Track Leader, Heat Transfer in Multiphase Systems, 2005 Summer Heat Transfer Conference 2004-2005

External Referee, for promotion to full professor, University of Missouri, Rolla 2005

External Referee, for tenure & promotion to Associate professor, Iowa State University 2005

Organizer and Co-Chair, Session on Regenerators, 14th International Cryocoolers Conference (ICC14) 2006

Member of Advisory Editorial Board, *Annals of Nuclear Energy* 2006

Organizer and Co-Chair, Session on Multiphase Heat Transfer, ASME-JSME Thermal Engineering and ASME Summer Heat Transfer Conference, July 2007, Vancouver, Canada 2007

Organizer and Co-Chair, Session on Regenerators, 2007 International Cryogenics Engineering Conference and Cryogenics Materials Conference, Chattanooga, Tennessee 2007

Organizer and Co-Chair, Session on Modeling of Pulse-Tube/Stirling Cryocoolers, 15th International Cryocoolers Conference (ICC15) 2008

External Referee, for promotion to full professor, The University of Utah, Salt Lake City 2008

Organizer and Co-Chair, Session on Boiling Heat Transfer, IMECE-2009, Orlando, November 13-19 2009

General Chair, International Cryocoolers Conference and Exhibition (ICC-16), Atlanta, GA, May 17-20 2010

Chair, International Cryocooler Conference Board	2008 – 2011
Organizer and Chair, Session on Advanced Modeling Techniques, 17 th International Cryocooler Conference (ICC-17), July 9-12	2012
Organizer and Co-Chair, Session on Regenerators, 18 th International Cryocoolers Conference (ICC18)	2014

SCHOOL COMMITTEE SERVICE

Member, NE Undergraduate Program Committee	1991 - 1992
Member, Woodruff Seminar Series Committee	1991 - 1992
Member, ME Graduate Committee	1991 - 1992
Member, ME Undergraduate Committee	1992 - 1994
Member, Nuclear Safeguards Committee	1992 - 1998
Member, ME Faculty Recruiting Committee	1994 - 1996
Member, Woodruff Seminar Series Committee	1996 - 1997
Member, Woodruff School Awards Committee	1998 - 2000
Member, NE Recruitment Committee	1998 – 2002
Chair, Woodruff School Award Committee	2000 – 2002
Member, Woodruff School Graduate Committee	2005 –2006
Member, Woodruff School Awards Committee	2006 – 2007
Chair, Heat Transfer & Energy Systems RAG Committee	2008 – 2010
Member, ME Graduate Committee	2008 – 2012
Member, ME PPR Committee	2012
Member, ME PPR Committee	2013
Member, ME Graduate Committee	2013 – 2015
Member, ME RPT Committee	Fall 2015 - present
Member, AE School Area Review Committee for promotion to full professor	2015