

RESEARCH RESUME

AFSHIN J. GHAJAR

Regents Professor and John Brammer Endowed Professor
School of Mechanical and Aerospace Engineering
Oklahoma State University, Stillwater, Oklahoma 74078-5016

Tel: (405) 744-5900 ; Fax: (405) 744-7873

Email: afshin.ghajar@okstate.edu ; Web page: <http://aghajar.okstate.edu>

ACADEMIC BACKGROUND

Ph.D., Mechanical Engineering, Oklahoma State University, 1979

M.S., Mechanical Engineering, Oklahoma State University, 1975

B.S., Mechanical Engineering, Oklahoma State University, 1974

RESEARCH INTERESTS

Two-Phase Flow Heat Transfer

Mixed Convection and Pressure Drop in the Transition Region

Thermal Management of Mini and Micro Systems

Computational Heat Transfer and Fluid Mechanics

Heat Transfer in Liquid and Air-Cooled Electronic Equipment

Thermal and Hydraulic Analysis of High Flux Heat Exchangers

Thermal Aspects of CVD Diamond Synthesis

Forced Convection and Pressure Drop in Non-Newtonian Fluids

Stratified Thermal Storage

Natural Convection in the Supercritical Region

PROFESSIONAL EXPERIENCE

John Brammer Endowed Professor, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, July 2012-present.

Regents Professor, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, July 2000-present.

The position of Regents Professor is the most prestigious position that may be attained in recognition of scholarly accomplishments by faculty on the campus of the Oklahoma State University. The title of Regents Professor is bestowed to recognize a scholar of exceptional ability who has achieved national and international distinction. A nominee must be recognized by colleagues, nationally and internationally, for past and current unique contributions and accomplishments in several areas within the discipline.

Professional Experience, cont'd.

Professor and Director of Graduate Studies, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, August 1998-December 2013.

Teaching graduate and undergraduate courses in the thermal sciences area and perform research in single-phase and two-phase flow forced and mixed convection, and thermal management of mini and micro systems. In addition, handle graduate admission, advisement, recruitment, and teaching assistant decisions as well as tracking the progress of Master of Science and Doctoral Mechanical and Aerospace graduate students.

Professor, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, July 1991 to August 1998.

Taught graduate and undergraduate courses in heat transfer/thermodynamics/fluid mechanics and performed research in mixed convection and pressure drop in tubes in the transition region, thermal aspects of CVD diamond synthesis, air-cooled electronic equipment, high flux heat exchangers, computational fluid dynamics and heat transfer, two-phase flow heat transfer, and thermal management of mini and micro systems.

Summer Research Fellow, Thermal Laboratory, Wright Patterson AFB, Dayton, Ohio, May to August 1993. The Air Force Office of Scientific Research (AFOSR) awarded this Summer Faculty Fellowship.

Developed a general methodology for comparison of hydraulic and thermal performance of different liquid coolants in complex systems. As a case study, the performance of polyalphaolefin (PAO) and a silicate-based fluid (Coolanol 25R) used as liquid coolant in avionics systems were compared.

Associate Professor, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, July 1985 to July 1991.

Taught graduate and undergraduate courses in heat transfer/fluid mechanics and performed research in mixed convection and pressure drop in tubes in the transition region, air-cooled electronic equipment, stratified thermal storage, mixed convection and pressure drop in tubes in the transition region, and heat transfer and pressure drop in viscoelastic fluids.

Assistant Professor, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, August 1981 to July 1985.

Taught graduate and undergraduate courses in the thermal sciences area and performed research in stratified thermal storage, heat transfer and pressure drop in viscoelastic fluids, and natural convection in the near-critical/supercritical region.

Summer Research Fellow, Process Engineering Group, Dow Chemical, Freeport, Texas, May to August 1984. The Dow Chemical Company awarded this Summer Faculty Fellowship.

Responsible for design of “process furnaces” for the refining and petrochemical industries. These are heat transfer units in which heat energy from combustion of fuel is transferred to a process fluid. Typically, the fluid to be heated is contained in tube coil rows disposed along the walls and ceiling of the combustion chamber.

Professional Experience, cont'd.

Assistant Professor, Mechanical Engineering Department, Western New England College, Springfield, Massachusetts, September 1979 to July 1981.

Taught undergraduate courses in heat transfer/thermodynamics/fluid mechanics and performed research in natural convection in the near-critical region and aerodynamics of golf balls.

Teaching/Research Associate, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, January 1974 to July 1979.

RESEARCH GRANTS AND CONTRACTS

“Experimental Measurements of Heat Transfer in Horizontal Mini-Tubes with Three Inlet Configurations (straight tube length, 90° bend, and 180° bend),” Supported by the Fundo para o Desenvolvimento das Ciencias e da Tecnologia and the Institute for the Development and Quality, Macau, University of Macau, 1-1-15 to 12-31-20. Co-principal Investigator with Dr. L. M. Tam, University of Macau.

“Heat Transfer and Pressure Drop Measurement for Horizontal Micro-Tube,” Supported by the Fundo para o Desenvolvimento das Ciencias e da Tecnologia and the Institute for the Development and Quality, Macau, University of Macau, 1-1-09 to 12-31-14. Co-principal Investigator with Dr. L. M. Tam, University of Macau.

“Study of Bubble Phenomena in a Vibrating Fluid Column” Sandia National Laboratories, Albuquerque, New Mexico, 5-1-11 to 4-30-12. Principal Investigator.

“Methodology to Measure Thermal Performance of Pipe Insulation at Below-Ambient Temperatures,” ASHRAE Research Project 1356-RP, 8-1-08 to 7-31-11. Co-principal Investigator with Dr. L. Cremaschi (Mechanical & Aerospace Engineering, OSU).

“Equipment Grant for Establishment of a Research Laboratory for Measurement and Evaluation of Single-Phase Heat Transfer and Pressure Drop inside Enhanced Tubes for Transition Flow,” University of Macau and Institute for the Development and Quality, Macau, 7-1-06 to 12-31-11. Co-principal Investigator with Dr. L. M. Tam, University of Macau.

“Fabrication of Mini/Micro Channels,” Sandia National Laboratories for DOE, Albuquerque, New Mexico, 7-1-06 to 8-31-07. Principal Investigator.

“Renovation of Thermal/Fluids Laboratory,” Vice President for Research & Technology Transfer Facility Renovation Fund, OSU, 1-18-06 to 5-31-07. Co-principal Investigator with J. D. Spitler, D. E. Fisher, and K. Sallam (Mechanical & Aerospace Engineering, OSU).

“Thermal Management of Mini/Micro Channels,” Sandia National Laboratories for DOE, Albuquerque, New Mexico, 3-1-04 to 12-31-06. Principal Investigator.

“High Temperature Reactor Modeling for the Production of Titanium Dioxide (TiO₂),” Kerr-McGee Chemical Corporation, Oklahoma City, Oklahoma, Phase I: 7-1-99 to 12-31-99; Phase II: 1-1-00 to 12-31-00; Phase III: 1-1-01 to 12-31-01; Phase IV: 1-1-02 to 12-31-02; Phase V: 1-1-03 to 12-31-03; Phase VI: 1-1-04 to 12-31-04. Co-principal Investigator with G. L. Foutch and A. H. Johannes (Chemical Engineering, OSU).

“Heat Transfer Laboratory Modernization Equipment Grant,” Micro Motion, National Instruments, Omega, and Dell Computers, 2002-2003. Principal Investigator.

“Synthesis Reactor Design for Cadmium and Zinc Selenides,” Oklahoma Center for Advancement of Science and Technology (OCAST) and Eagle-Picher Industries, Miami, Oklahoma, 12-1-96

Research Grants and Contracts, cont'd.

- to 11-30-98. Co-principal Investigator with G. L. Foutch and A. H. Johannes (Chemical Engineering, OSU).
- “Multiphase Heat Transfer in Flowlines and Wellbores,” The University of Tulsa Joint Industry Project (over 25 oil companies) on Wax Deposition, 1-1-96 to 12-31-98. Co-principal Investigator with R. L. Dougherty (Mechanical & Aerospace Engineering, OSU).
- “Development of an Experimental Facility for Two-Phase Heat Transfer Studies,” Oklahoma State University Foundation/Petroleum Related Funding, 11-1-96 to 12-31-99. Co-principal Investigator with R. L. Dougherty (Mechanical & Aerospace Engineering, OSU).
- “Hydraulic and Thermal Performance Tests on a High Flux Heat Exchanger with PAO as the Coolant,” Wright Laboratory, Wright Patterson AFB, 12-1-94 to 11-30-95. Principal Investigator.
- “Fundamental and Applied Aspects of CVD Diamond Technology,” University Center for Energy Research, Oklahoma State University, 7-1-91 to 6-30-94. Co-principal Investigator with R. Komanduri, D. G. Lilley, K. A. M. Gasem (Chemical Engineering, OSU), L. M. Raff (Chemistry, OSU), H. L. Scott and J. N. Lange (Physics, OSU).
- “Energy Equipment Measurements Using Laser Doppler Anemometry,” Oklahoma Center for the Advancement of Science and Technology (OCAST), 9-1-90 to 8-31-91. Co-principal Investigator with P. M. Moretti (Mechanical & Aerospace Engineering, OSU).
- “Aerometrics Matching Funds Grant for OCAST Laser Doppler Anemometry,” Aerometrics, Inc., Sunnyvale, California, 9-1-90 to 8-31-91. Co-principal Investigator with P. M. Moretti, R. L. Dougherty, F. W. Chambers, and D. G. Lilley (Mechanical & Aerospace Engineering, OSU).
- “Heat Transfer and Pressure Drop in Tubes in the Transition Region for Various Entry Configurations,” National Science Foundation (NSF), 6-15-88 to 10-31-91. Principal Investigator.
- “Study of Design and Performance Improvements of Thermal Storage Tank Inlets,” University Center for Energy Research, Oklahoma State University, 7-1-87 to 6-30-89. Principal Investigator.
- “High Performance Stratified Thermal Storage: Innovative Inlet Design,” University Center for Energy Research, Oklahoma State University, 7-1-86 to 6-30-87. Principal Investigator.
- “Investigation of Friction Factor and Heat Transfer Characteristics of Drag-Reducing Turbulent Pipe Flows,” University Center for Energy Research, Oklahoma State University, 8-1-85 to 6-30-86. Principal Investigator.
- “Stratification in Thermal Storage,” University Center for Energy Research, Oklahoma State University, 8-1-85 to 6-30-86. Principal Investigator.
- “Study of Thermal Storage Systems for Use in the Heating and Cooling of Buildings,” University Center for Energy Research, Oklahoma State University, 10-1-83 to 6-30-84. Co-principal Investigator with P. M. Moretti (Mechanical & Aerospace Engineering, OSU).
- “Aerodynamics of Golf Balls,” Spalding Company, Chicopee, Massachusetts, 10-15-80 to 7-15-81. Principal Investigator.

HONORS AND AWARDS

According to the Google Scholar, the total number of citations of Professor Ghajar’s publications is over **8000**. A 2020 study conducted by Ionnidis et al. of Stanford University ([Updated science-wide author databases of standardized citation indicators \(plos.org\)](#)), ranked nearly 160,000 scientists of all disciplines based on citations to their work over their career and for the year 2019. Professor Ghajar ranked in the top **1.3%** of researchers in Mechanical Engineering and Transports category over his career and for the year 2019.

HONORS AND AWARDS, cont'd.

- Donald Q. Kern Award “*for outstanding leadership in the field of heat exchangers and two-phase flow, book and archival research publications, and service to academic and industrial professionals*”, awarded by the Transport and Energy Processes Division of the American Institute of Chemical Engineers, June 2017.
- ASME ICNMM 2016 Outstanding Leadership Award, this award recognizes a person whose service within the ICNMM (International Conference on Nanochannels, Microchannels, and Minichannels) is exemplary; the recipient of the award contributed significantly to the lasting success of the conference, July 2016.
- 75th Anniversary Medal of the ASME Heat Transfer Division “*in recognition of service to the heat transfer community and contributions to the field*”, July 2013.
- ASHRAE Poster Presentation Award as co-author of “*Measurements of Pipe Insulation Thermal Conductivity at Below Ambient Temperature Part 1: Experimental Methodology and Dry Tests*”, this award was presented to recognize the best poster from the 2012 ASHRAE Winter and Annual Conferences, June 2013.
- John Brammer Endowed Professor, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, July 2012.
- Honorary Professor of Xi'an Jiaotong University, Xi'an, China. Xi'an Jiaotong University is one of the top ten universities in China and is ranked number 1 in the field of Energy and Power Engineering. The Honorary Professorship at Xi'an Jiaotong University is one of the highest positions offered by the university to foreign scholars, July 2009.
- College of Engineering Outstanding Advisor Award for Commitment to Students as Demonstrated by Exceptional Advising and Outstanding Student Success, awarded by the Oklahoma State University College of Engineering, 2008.
- Golden Torch Faculty Award for Outstanding Scholarship, Leadership, and Service, awarded by the Oklahoma State University Achafoa Chapter of National Mortar Board Honor Society, 2003.
- Regents Professor, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, July 2000.
- Halliburton Excellent Teacher Award for Outstanding Achievement and Professionalism in Education and Services to Students, awarded by Oklahoma State University College of Engineering, 1998.
- Regents Distinguished Teaching Award for the College of Engineering, Architecture and Technology, awarded by Oklahoma State University to Faculty who have evidenced unusually significant and meritorious achievement in the instruction of students, 1996.
- Mechanical Engineering Outstanding Faculty Award for Excellence in Teaching and Research awarded by Oklahoma State University Mechanical and Aerospace Engineering students, 1983-84 and 1989-90 academic years.
- Halliburton Excellent Young Teacher Award for Outstanding Achievement and Professionalism in Education and Services to Students, awarded by Oklahoma State University College of Engineering, 1987.
- Fellow, American Society of Thermal and Fluids Engineers (ASTFE), 2020
- Fellow, American Society of Mechanical Engineers (ASME), 1996.
- Associate Fellow, American Institute of Aeronautics and Astronautics (AIAA), 1993.
- Air Force Office of Scientific Research (AFOSR) Summer Faculty Fellowship, 1993.
- Dow Chemical Summer Faculty Fellowship, 1984.
- Phi Eta Sigma (Scholastic Honorary Fraternity), 1972.
- Pi Tau Sigma (National Honorary Mechanical Engineering Fraternity), 1973.
- Phi Kappa Phi (Honor Society), 1979.
- Tau Beta Pi (Engineering Honor Society), 1983.
- Sigma Gamma Tau (National Honor Society in Aerospace Engineering), 1992.
- Recipient of Atomic Energy Organization of Iran Scholarship (AEOI), 1976-1979.
- Recipient of National Iranian Oil Company Scholarship (NIOC), 1973-1976.
- Two-time recipient of International Student Scholarship, Oklahoma State University, 1971 & 1972.
- Honor standing at Oklahoma State University, 1970-1974.

EDITORIAL POSITIONS

Editor-in-Chief for *Heat Transfer Engineering*, an international journal published twenty-two times per year by Taylor and Francis, 1997-present.

Heat Transfer Engineering is an unparalleled resource for key advances in the field of heat transfer for the practicing engineer and other workers in this field. The journal publishes analytical, numerical, and experimental articles of lasting interest in the general area of heat-mass transfer and the related fluid mechanics and thermodynamics. In a clear, easy-to-read format, the journal includes refereed papers of original work, state-of-the-art reviews, articles on engineering case studies and technology development, reviews of fundamentals, heat in history articles, and any other items that may be appropriate. Each volume of the journal contains about 2000 pages (90 pages per issue and twenty-two issues per year). In 1997 when I was appointed as the Editor-in-Chief, the journal published 4 times per year, in 2000 it was increased to 6 issues per year, in 2004 it was increased to eight issues per year, in 2005 it was increased to ten issues per year, in 2007 it was increased to twelve issues per year, in 2009 it was increased to fourteen issues per year, in 2011 it was increased to fifteen issues per year, in 2014 it was increased to eighteen issues per year, in 2018 it was increased to twenty issues per year, and in 2020 it was increased to **twenty-two issues per year**.

Heat Transfer Series Editor for *CRC Press / Taylor & Francis*. This includes handbooks, textbooks and reference books on the subject of Heat Transfer, 2007-present.

Guest Editor, Special Issue on “Frontiers and Progress in Multiphase Flow and Heat Transfer”, for *Heat Transfer Engineering*, 2017-2018.

Guest Editor, Special Issue on “Advances in Heat Transfer Enhancement”, for *Advances in Mechanical Engineering*, 2014-2015.

Guest Editor, Special Issue on “In Celebration of Professor John Richard Thome on His 60th Birthday”, for *Heat Transfer Engineering*, 2012-2013.

Guest Editor, Special Issue on “Two-Phase Flow and Heat Transfer Enhancement”, for *Advances in Mechanical Engineering*, 2012-2013.

Member of Editorial Board for the *International Journal of Fluid Flow, Heat and Mass Transfer (JFFHMT)*, Avestia Publishing, Canada, 2017-present.

Member of Editorial Board for the *International Journal of Microscale and Nanoscale Thermal and Fluid Transport Phenomena*, Nova Science Publishers, New York, 2009-present.

Member of Editorial Board for the *International Journal of Energy Equipment and Systems (energyequipsys)*, University of Tehran, 2013-present.

Member of Editorial Board for the *International Journal of Applied Mechanics (JAMECH)*, University of Tehran, 2012-present.

Member of Editorial Board for the *Journal of Engineering Research (TJER)*, Sultan Qaboos University, 2002-present.

Executive/Coordinating Editor for *Heat Transfer Engineering*, an international quarterly published by Taylor and Francis, 1986-1996.

INTERNATIONAL SCIENTIFIC/ADVISORY COMMITTEE MEMBERSHIP

- Honorary Chair of the *Second international Symposium on Thermal-Fluid Dynamics (ISTFD2021)*, Beijing, China, July 31- August 3, 2021.
- Member of International Scientific and Advisory Board for the International Conference on Energy and Sustainable Development 2020 (ICESD 2020), Jadavpur University, Kolkata, India, February 14-15, 2020.
- Member of International Scientific and Advisory Committee for the 5th International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT2019), Novosibirsk, Russia, August 13-16, 2019.
- Member of International Scientific Committee for the 11th International Conference on Science Technology, and Innovation for Sustainable Well-Being (STISWB XI), Universiti Teknologi Malaysia, Johor Bahru, Malaysia, July 29-August 1, 2019.
- Member of International Advisory Committee for HEFAT 2019 (14th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Wicklow, Ireland, July 22-24, 2019.
- Member of International Scientific Committee for the 5th International Conference on Polygeneration (ICP 2019), Kyushu University, Fukuoka, Japan, May 15-17, 2019.
- Member of Scientific Committee for the 4th World Congress on Momentum, Heat and Mass Transfer (MHMT'19), Rome, Italy, April 10-12, 2019.
- Member of International Scientific Committee for the 11th International Conference on Computational Heat, Mass and Momentum Transfer (ICCHMT2018), Cracow, Poland, May 21-24, 2018.
- Member of Scientific Committee for the 3rd World Congress on Momentum, Heat and Mass Transfer (MHMT'18), Budapest, Hungary, April 12-14, 2018.
- Member of International Scientific Committee for the 5th International Symposium on Heat Transfer and Energy Conservation (ISHTEC2016), Guangzhou, China, November 11-13, 2016.
- Member of International Scientific Committee for the IVth International Symposium on Innovative Materials for Processes in Energy Systems 2016 (IMPRES 2016), Taormina, Sicily, Italy, October 23-26, 2016.
- Member of International Advisory Committee for HEFAT 2016 (12th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Malaga, Costa Del Sol, Spain, July 11-13, 2016.
- Member of International Scientific and Advisory Committee and Co-Chairman for the 3rd International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT2015), Taipei, Taiwan, October 16-19, 2015.
- Member of International Scientific Committee for the 17th IAHR Cooling Tower & Heat Exchangers Symposium, Gold Coast, Queensland, Australia, September 8-11, 2015.
- Member of International Advisory Committee for HEFAT 2015 (11th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Kruger National Park, South Africa, July 20-23, 2015.
- Member of International Organization Committee The 6th International Conference on Science, Technology and Innovation for Sustainable Well-Being (STISWB-VI), Siem Reap, Cambodia, August 28-30, 2014.
- Member of International Advisory Committee for HEFAT 2014 (10th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Orlando, Florida, USA, July 14-16, 2014.
- Member of Technical Program Committee for the Energy System Modeling and Optimization Conference (ESMOC 2013), National Institute of Technology Durgapur, West Bengal, India, December 9-11, 2013.

International Scientific/Advisory Committee Membership, cont'd.

- Member of International Scientific and Advisory Committee and Co-Chairman for the 2nd International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT2013), Xi'an, Shaanxi, China, October 18-21, 2013.
- Member of International Scientific Committee for the International Symposium on Innovative Materials for Processes in Energy Systems 2013 (IMPRES2013), Kyushu University, Fukuoka, Japan, September 4-6, 2013.
- Member of the Scientific Committee for ICMF 2013 (8th International Conference on Multiphase Flow 2013), Jeju, Korea, May 26-31, 2013.
- Member of International Advisory Committee for HEFAT 2012 (9th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Malta, July 16-18, 2012.
- Member of International Scientific Committee for the 4th International Symposium on Heat Transfer and Energy Conservation (ISHTEC2012), Guangzhou, China, January 6-9, 2012.
- Member of International Scientific and Advisory Committee and Co-Chairman for the 2011 International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT'2011), Xi'an, Shaanxi, China, October 17-20, 2011.
- Member of International Advisory Committee for HEFAT 2011 (8th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Mauritius, Africa, July 11 to 13, 2011.
- Member of International Advisory Committee for the International Conference on Thermal Energy and Environment (INCOTEE 2011), Tamilnadu, India, March 24 -26, 2011.
- Member of International Scientific Committee for the International Symposium on Innovative Materials for Processes in Energy Systems 2010 (IMPRES2010), Singapore, November 29-December 1, 2010.
- Member of International Scientific Committee for the PRES'10 (13th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Prague, Czech Republic, August 28-September 1, 2010.
- Member of International Advisory Board for The Second International Conference on Science, Technology and Innovation for Sustainable Well-Being (STISWB-II), Quang Binh University, Viet Nam, August 13-14, 2010.
- Member of International Advisory Committee for HEFAT 2010 (7th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Antalya, Turkey, July 19-21, 2010.
- Member of International Advisory Committee for The Technology and Innovation for Sustainable Development Conference (TISD2010), Nong Khai, Thailand, March 4-6, 2010.
- Member of International Advisory Board for The First International Conference on Science, Technology and Innovation for Sustainable Well-Being (STISWB-I), Mahasarakham, Thailand, July 23-24, 2009.
- Member of International Scientific Committee for the 6th International Symposium on Multiphase Flow, Heat Mass Transfer and Energy Conversion (ISMF2009), Xi'an, China, July 11-15, 2009.
- Member of International Scientific Committee for the PRES'09 (12th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Rome, Italy, May 10-13, 2009.
- Member of International Scientific Committee for the PRES'08 (11th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Prague, Czech Republic, August 24-28, 2008.
- Member of International Advisory Committee for HEFAT 2008 (6th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Pretoria, South Africa, June 30-July 2, 2008.
- Member of International Advisory Committee for HEFAT 2007 (5th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Sun City, South Africa, July 1-4, 2007.

International Scientific/Advisory Committee Membership, cont'd.

- Member of International Scientific Committee for the PRES'07 (10th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Ischia Island (Gulf of Naples), Italy, June 24-27, 2007.
- Member of International Scientific Committee for the PRES'06 (9th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Prague, Czech Republic, August 27-31, 2006.
- Member of International Advisory Committee for HEFAT 2005 (4th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Cairo, Egypt, September 19-22, 2005.
- Member of International Scientific Committee for the PRES'05 (8th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Taormina, Italy, May 15-18, 2005.
- Member of International Advisory Committee for ENCIT 2004 (10th Brazilian Congress of Thermal Engineering and Sciences) Rio de Janeiro, Brazil, November 29-December 3, 2004.
- Member of International Scientific Committee for the PRES'04 (7th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Prague, Czech Republic, August 22-26, 2004.
- Member of International Advisory Committee for HEFAT 2004 (3rd International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics), Cape Town, South Africa, June 21-24, 2004.
- Member of International Scientific Committee for the PRES'03 (6th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution reduction), Hamilton, Ontario, Canada, October 26-29, 2003.
- Member of International Scientific Committee for the PRES'02 (5th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution reduction), Prague, Czech Republic, August 25-29, 2002.
- Member of International Scientific Committee for the 12th IAHR Cooling Tower & Heat Exchangers Symposium, Sydney, Australia, November 11-14, 2001.

REGISTRATION

Oklahoma – Licensed Professional Engineer (# 13803), 1984.

MEMBERSHIP IN PROFESSIONAL SOCIETIES

American Society of Thermal and Fluids Engineers (ASTFE), 2015-present, **Fellow** (2020)
American Society of Mechanical Engineers (ASME), 1975-present, **Fellow** (1996).
American Institute of Aeronautics and Astronautics, 1982-present, **Associate Fellow** (1993).

REVIEW SERVICE

ASME Journal of Heat Transfer

ASME Journal of Fluids Engineering

ASME Journal of Solar Energy Engineering

ASME Heat Transfer and Computers in Engineering Conferences

ASME International Mechanical Engineering Congress

Review Service, cont'd.

International Journal of Heat and Mass Transfer

Numerical Heat Transfer

Heat Transfer Engineering

Journal of Enhanced Heat Transfer

International Journal of Multiphase Flow

International Journal of Thermal Sciences

Chemical Engineering Communications

Chemical Engineering & Technology

AIAA Journal

AIAA Journal of Thermophysics and Heat Transfer

AIAA Thermophysics and Aerospace Sciences Conferences

National Science Foundation – Proposal Reviewer

American Association for the Advancement of Science (AAAS) – Proposal Reviewer

King Fahd University of Petroleum & Minerals (KFUPM) – Proposal Reviewer

Qatar National Research Fund – Proposal Reviewer

McGraw-Hill Book Company – Book Reviewer

Wiley Book Company – Book Reviewer

CRC Press – Book Reviewer

PROFESSIONAL SOCIETY ACTIVITIES (INTERNATIONAL/NATIONAL)

Member of ASME Heat Transfer Division K-13 Committee on Heat Transfer in Multiphase Systems (June 2000-Present).

Member of ASME Heat Transfer Division K-16 Committee on Heat Transfer in Electronic Equipment (1993-2000).

ASME/ABET Mechanical Engineering Program Evaluator (1996-1998).

Co-Chairman and organizer of a session on “Two-Phase Flow” for the *3rd World Congress on Momentum, Heat and Mass Transfer (MHMT'18)*, Budapest, Hungary, April 12-14, 2018.

Co-Chairman and organizer of a session on “Solar Energy” for the *12th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2016)*, Malaga, Costa del Sol, Spain, July 11-13, 2016.

Co-Chairman and organizer of a session on “Two-Phase Flow” for the *9th International Conference on Multiphase Flow (ICMF-2016)*, Florence, Italy, May 22-27, 2016.

Co-Chairman and organizer of a session on “Multiphase Heat Transfer in Energy Systems” for the *2009 ASME International Mechanical Engineering Congress and Exposition*, Orlando, Florida, November 13-19, 2009.

Chairman and organizer of a session on “Heat Exchangers as Equipment and Integrated Items” for PRES'09 (12th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Rome, Italy, May 10-13, 2009.

Co-Chairman and organizer of a session on “Multiphase Heat Transfer in Energy Systems” for the *2008 ASME International Mechanical Engineering Congress and Exposition*, Boston, Massachusetts, October 31-November 6, 2008.

Chairman and organizer of a session on “Industrial Application and Optimal Design” for PRES'08 (11th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction), Prague, Czech Republic, August 24-28, 2008.

Co-Chairman and organizer of a session on “Enhancement Methods in Multiphase Heat Transfer” for the *2008 ASME Summer Heat Transfer Conference*, Jacksonville, Florida, August 10-14, 2008.

Professional Society Activities (International/National), cont'd.

- Co-Chairman and organizer of three sessions on “Heat Transfer in Multiphase Systems” for the 2007 ASME-JSME Thermal Engineering Summer Heat Transfer Conference, Vancouver, British Columbia, Canada, July 8-12, 2007.
- Co-Chairman and organizer of a session on “Multiphase Heat Transfer” for the 2006 ASME International Mechanical Engineering Congress and Exposition, Chicago, Illinois, November 5-10, 2006.
- Co-Chairman and organizer of five sessions on “Heat Transfer in Multiphase Systems” for the 2005 ASME Summer Heat Transfer Conference, San Francisco, California, July 17-22, 2005.
- Co-Chairman and organizer of a session on “Convective Heat Transfer” for the 3rd International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics, Cape Town, South Africa, June 21-24, 2004.
- Co-Chairman and organizer of two sessions on “Heat Transfer in Multiphase Systems” for the 2004 ASME Heat Transfer/Fluids Engineering Summer Conference, Charlotte, North Carolina, July 11-15, 2004.
- Co-Chairman and organizer of a session on “Application of Artificial Neural Networks in Multiphase Flow and Heat Transfer” for the 2003 ASME International Mechanical Engineering Congress and Exposition, Washington, D. C., November 15-21, 2003.
- Chairman and organizer of three sessions on “Heat Transfer in Multiphase Systems” for the 2003 Summer Heat Transfer Conference, Las Vegas, Nevada, July 20-23, 2003.
- Co-Chairman and organizer of a session on “Two-Phase Flow and Heat Transfer in Micro Systems” for the 2002 ASME International Mechanical Engineering Congress and Exposition, New Orleans, Louisiana, November 17-22, 2002.
- Chairman and organizer of a session on “Heat Transfer in Two-phase Flow: Fundamentals-Boiling” for the Twelfth International Heat Transfer Conference, Grenoble, France, August 18-23, 2002.
- Co-Chairman and organizer of a session on “Fundamentals of Heat Transfer in Electronics Cooling” for the 2001 ASME International Mechanical Engineering Congress and Exposition, New York, NY, November 11-16, 2001.
- Co-Chairman and organizer of a session on “Nucleonics: Boiling and Critical Heat Flux” for the 5th ASME/JSME Thermal Engineering Joint Conference, San Diego, California, March 14-19, 1999.
- Co-Chairman and organizer of an Open Forum on “Nucleonics and Related Fundamentals” for the 5th ASME/JSME Thermal Engineering Joint Conference, San Diego, California, March 14-19, 1999.
- Chairman and organizer of a session on “High Heat Flux Heat Exchangers/Cold Plates for Cooling of Electronics” for the 1995 ASME International Mechanical Engineering Congress and Exposition, San Francisco, California, November 12-17, 1995.
- Co-Chairman and organizer of a session on “Heat Recovery Systems” for the 1994 ASME International Mechanical Engineering Congress and Exposition, Chicago, Illinois, November 6-11, 1994.
- Co-Chairman and organizer of two sessions on “Heat Transfer in High Heat Flux Systems” for the 1994 ASME International Mechanical Engineering Congress and Exposition, Chicago, Illinois, November 6-11, 1994.
- Co-Chairman and organizer of a session on “Computational Heat Transfer” for the AIAA 27th Thermophysics Conference, Nashville, Tennessee, July 6-8, 1992.
- Chairman and organizer of a session on “Computers in Thermal Science Education” for the 1991 ASME International Computers in Engineering Conference, Santa Clara, California, August 18-22, 1991.
- Chairman and organizer of a session on “Convective Flows” for the AIAA 26th Thermophysics Conference, Honolulu, Hawaii, June 24-26, 1991.

Professional Society Activities (International/National), cont'd.

- Co-Chairman and organizer of a session on “Computers in Education” for the *1990 ASME International Computers in Engineering Conference*, Boston, Massachusetts, August 5-9, 1990.
- Co-Chairman and organizer of a session on “Computers in Education” for the *1989 ASME International Computers in Engineering Conference*, Anaheim, California, July 30-August 2, 1989.
- Co-Chairman and organizer of a session on “Numerical Heat Transfer” for the *AIAA 24th Thermophysics Conference*, Buffalo, New York, June 12-15, 1989.
- Co-Chairman and organizer of a session on “Microcomputers in the Classroom” for the *1988 ASME International Computers in Engineering Conference*, San Francisco, California, July 31-August 3, 1988.
- Co-Chairman and organizer of a session on “Convective Heat Transfer II” for the *AIAA Thermophysics, Plasmadynamics and Lasers Conference*, San Antonio, Texas, June 27-29, 1988.

PROFESSIONAL SOCIETY ACTIVITIES (LOCAL)

- Participated and presented paper(s) at the Central Oklahoma Section ASME/AIAA Symposiums (1982-present).
- AIAA Oklahoma Section Officer in charge of Honors and Awards Activities (1994-1997).
- AIAA Oklahoma Section Officer in charge of Technical Activities (1991-1993).
- Member of Executive Committee for ASME Central Oklahoma Section (1982-1988).
- Member of Organizing Committee for the Central Oklahoma Section ASME/AIAA Symposium VIII (1986).
- Chairman of Program Committee and Organizer of the Central Oklahoma Section ASME/AIAA Symposium V (1983).
- Member of Oklahoma Academy of Science (1975-1983).
- Vice-Chairman and Chairman of Engineering Science Sections for the 71st and 72nd Annual Meetings of the Oklahoma Academy of Science (1982-1983).
- Participated and presented paper(s) at the Oklahoma Academy of Science Annual Meetings (1975-1983).
- Member of Executive Committee for ASME Region I (New England) Section (1979-1981).

INVITED SCIENTIFIC VISITS TO UNIVERSITIES AND LABORATORIES

- Dipartimento di Ingegneria Industriale e dell'Informazione, *Seconda Università degli Studi di Napoli, Visiting Senior Scientist*, April 5-9, 2019.
- Institute of Fluid Mechanics and Heat Transfer, *Vienna University of Technology*, Vienna, Austria, April 6-10, 2018.
- Dipartimento di Ingegneria Industriale e dell'Informazione, *Seconda Università degli Studi di Napoli, Visiting Senior Scientist*, May 27-31, 2016.
- Dipartimento di Ingegneria Industriale, *Università di Napoli Federico II & Dipartimento di Ingegneria Industriale e dell'Informazione, Seconda Università degli Studi di Napoli, Visiting Senior Scientist*, March 13-20, 2015.
- Department of Energy Sciences, *Lund University*, Lund, Sweden, June 8-11, 2014.
- Electromechanical Engineering Department, *University of Macau*, Macau, China, June 1-5, 2013.
- Mechanical Engineering Department, *University of Singapore*, Singapore, May 10 -20, 2010.
- Electromechanical Engineering Department, *University of Macau*, Macau, China, July 16-21, 2009.

Invited Scientific Visits to Universities and Laboratories, cont'd.

Department of Mechanical Engineering, *Chiang Mai University, Naresuan University, Maharakarm University, Rachmungkala Institute of Technology, and King Monkut Institute of Technology*, Thailand, July 22-August 1, 2009.

School of Energy and Power Engineering, Xi'an Jiaotong University, Xi'an, China, July 8-15, 2009.

Laboratory of Heat and Mass Transfer, *Swiss Federal Institute of Technology*, Lausanne, Switzerland, May 17-20, 2009.

Electromechanical Engineering Department, *University of Macau*, Macau, China, July 2-14, 2006.

Mechanical Engineering Department, *University of Pretoria*, Pretoria, South Africa, June 16-18, 2004.

INVITED KEYNOTE PAPERS & PRESENTATIONS

Ghajar, A. J., "Two-Phase Gas-Liquid Flow in Pipes with Different Orientations," Keynote Speaker, 5th International Conference on Multiphase Flow and Heat Transfer, **Lisbon, Portugal**, April 15-17, 2020.

Ghajar, A. J., "Transitional Flow in Tubes: Experimental Results and Recommended Correlations for Calculation of Pressure Drop and Heat Transfer in Plain and Micro-fin Tubes," Keynote Speaker, 4th International Conference on Experimental and Numerical Flow and Heat Transfer, **Rome, Italy**, April 10-12, 2019.

Ghajar, A. J., "Flow Patterns, Void Fraction and Convective Heat Transfer in Gas-Liquid Two Phase Flow at Various Pipe Inclinations," Keynote Speaker, 3rd International Conference on Multiphase Flow and Heat Transfer, **Budapest, Hungary**, April 12-14, 2018.

Ghajar, A. J., "Gas-Liquid Two-Phase Flow in Inclined Systems," Donald Q. Kern Award Speaker, 3rd Thermal and Fluids Engineering Conference (TFEC), **Fort Lauderdale, Florida**, March 4-7, 2018.

Ghajar, A. J. and Bhagwat, S. M., "Non-Boiling Gas-Liquid Two Phase Flow Phenomenon in Near Horizontal Upward and Downward Inclined Pipe Orientations," Keynote Paper, *ICFDT 2014 (International Conference on Fluid Dynamics and Thermodynamics)*, **Copenhagen, Denmark**, June 12-13, 2014.

Ghajar, A. J. and Bhagwat, S. M., "Flow Patterns, Void Fraction, Pressure Drop and Convective Heat Transfer in Two Phase Gas-Liquid Flow for Various Pipe Inclinations," Keynote Paper, *ICMF 2013 (8th International Conference on Multiphase Flow 2013)*, **Jeju, Korea**, May 26-31, 2013.

Ghajar, A. J., "Gas-Liquid Two Phase Flow Phenomenon in Vertical Upward and Downward Pipe Orientations," Keynote Lecture, *14th Brazilian Congress of Thermal Sciences and Engineering (ENCIT 2012)*, **Rio de Janeiro, Brazil**, November 18-22, 2012.

Ghajar, A. J. and Tang, C. C., "Void Fraction and Flow Patterns of Two-phase Gas-Liquid Flow in Various Pipe Inclinations," Keynote Paper, *7th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics (HEFAT 2010)*, **Antalya, Turkey**, July 19-21, 2010.

Ghajar, A. J. and Tang, C. C., "Recent Developments in Non-Boiling Two-Phase Flow Heat Transfer and Void Fraction in Various Pipe Inclinations," Invited Talk presented at the *6th International Symposium on Multiphase Flow, Heat and Mass Transfer, and Energy Conversion (ISMF2009)*, **Xi'an, China**, July 11-15, 2009, the *International Conference on Science, Technology and Innovation for Sustainable Well-Being*, **Mahasarakham, Thailand**, July 23-24, 2009.

Invited Keynote Papers & Presentations, cont'd.

- Ghajar, A. J.**, “Recent Advances in Non-Boiling Two-Phase Flow Heat Transfer in Horizontal, Inclined, and Vertical Pipes with Different Flow Patterns,” Keynote Speaker for the *International Iranian Society of Mechanical Engineers Conference*, held at the University of Tehran, **Tehran, Iran**, May 20-22, 2009.
- Ghajar, A. J.**, “Recent Advances in Non-Boiling Two-Phase Flow Heat Transfer in Horizontal, Inclined, and Vertical Pipes with Different Flow Patterns,” Invited Seminar delivered at the *Swiss Federal Institute of Technology*, **Lausanne, Switzerland**, May 18, 2009.
- Ghajar, A. J.** and Tang, C. C., “Importance of Non-Boiling Two-Phase Flow Heat Transfer in Pipes for Industrial Applications” Keynote Paper, *11th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction (PRES’08)*, **Prague, Czech Republic**, August 24-28, 2008.
- Ghajar, A. J.** and Tang, C. C., “Recent Advances in Non-Boiling Two-Phase Flow Heat Transfer in Pipes,” Keynote Paper, *5th International Conference on Transport Phenomena in Multiphase Systems (HEAT 2008)*, **Bialystok, Poland**, June 30-July 3, 2008.
- Ghajar, A. J.**, “Recent Advances in Non-Boiling Two-Phase Flow Heat Transfer in Pipes” Invited Seminar delivered at the University of Oklahoma, Department of Mechanical and Aerospace Engineering, **Norman, Oklahoma**, October 18, 2007.
- Ghajar, A. J.**, “Non-Boiling Heat Transfer in Gas-Liquid Flow in Pipes – A Tutorial,” Invited Tutorial, *10th Brazilian Congress of Thermal Engineering and Sciences (ENCIT 2004)*, **Rio de Janeiro, Brazil**, November 29-December 3, 2004.
- Ghajar, A. J.**, “Two-Phase Heat Transfer in Gas-Liquid Non-Boiling Pipe Flows,” Keynote Paper, *3rd International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics (HEFAT 2004)*, **Cape Town, South Africa**, June 21-24, 2004.
- Ghajar, A. J.**, “Two-Phase Heat Transfer” Invited Seminar delivered at the *University of Pretoria*, **Pretoria, South Africa**, June 18, 2004.

BOOKS

1. **Ghajar, A. J.**, *Single- and Two-Phase Flow Pressure Drop and Heat Transfer in Tubes*, Mechanical Engineering Series, Springer, Cham, Switzerland (in press).
2. Cengel, Y. A., J. M. Cimbala, and **Ghajar, A. J.**, *Fundamentals of Thermal-Fluid Sciences*, 6th edition, McGraw-Hill, New York, NY, 2022.
3. **Ghajar, A. J.**, *Two-Phase Gas-Liquid Flow in Pipes with Different Orientations*, SpringerBriefs in Applied Sciences and Technology, Springer, Cham, Switzerland, May 2020.
4. Cengel, Y. A. and **Ghajar, A. J.**, *Heat and Mass Transfer - A Practical Approach*, 6th edition, McGraw-Hill, New York, NY, 2020.
5. Cengel, Y. A. and **Ghajar, A. J.**, *Heat and Mass Transfer - A Practical Approach*, 5th edition, McGraw-Hill, New York, NY, 2016.
6. Cengel, Y. A. and **Ghajar, A. J.**, *Heat and Mass Transfer - A Practical Approach*, 4th edition, McGraw-Hill, New York, NY, 2011.
7. Heat Transfer Series Editor for *Inverse Heat Transfer Fundamentals and Applications*, 2nd Edition, Özisik, M. N., Orlande, H. R. B., Colaço, M. J., and Cotta, R. M., CRC Press/Taylor & Francis, Boca Rotan, FL, 2021.
8. Heat Transfer Series Editor for *The Art of Measuring in the Thermal Sciences*, edited by Meyer, J. P and De Paepe, M., CRC Press/Taylor & Francis, Boca Rotan, FL, 2021.
9. Heat Transfer Series Editor for *Heat Pumps for Cold Climate Heating*, edited by Huang, H., CRC Press/Taylor & Francis, Boca Rotan, FL, 2020.

Books, cont'd.

10. Heat Transfer Series Editor for *Convective Heat and Mass Transfer*, 2nd Edition, Ghiaasiaan, S. M., CRC Press/Taylor & Francis, Boca Rotan, FL, 2018.
11. Heat Transfer Series Editor for *Finite Difference Methods in Heat Transfer*, 2nd Edition, Özisik, M. N., Orlande, H. R. B., Colaço, M. J., and Cotta, R. M., CRC Press/Taylor & Francis, Boca Rotan, FL, 2017.
12. Heat Transfer Series Editor for *Advances in New Heat Transfer Fluids: From Numerical to Experimental Techniques*, Minea, A. A., CRC Press/Taylor & Francis, Boca Rotan, FL, 2017.
13. Heat Transfer Series Editor for *District Cooling: Theory and Practice*, Olama, A. A., CRC Press/Taylor & Francis, Boca Rotan, FL, 2017.
14. Heat Transfer Series Editor for *Compressible Fluid Flow*, 2nd Edition, Oosthuizen, P. H., and Carscallen, W. E., CRC Press/Taylor & Francis, Boca Rotan, FL, 2014.
15. Heat Transfer Series Editor for *Advances in Industrial Heat Transfer*, edited by Minea, A. A., CRC Press/Taylor & Francis, Boca Rotan, FL, 2013.
16. Heat Transfer Series Editor for *Introduction to Thermal and Fluid Engineering*, Kraus, A. D., Welty, J. R., and Aziz, A., CRC Press/Taylor & Francis, Boca Rotan, FL, 2012.
17. Heat Transfer Series Editor for *Thermal Measurements and Inverse Techniques*, edited by Orlande, H. R. B., Fudym, O., Maillet, D., and Cotta, R. M., CRC Press/Taylor & Francis, Boca Rotan, FL, 2011.
18. Heat Transfer Series Editor for *Conjugate Problems in Convective Heat Transfer*, Dorfman, A. S., CRC Press/Taylor & Francis, Boca Rotan, FL, 2010.
19. Heat Transfer Series Editor for *Engineering Heat Transfer*, 3rd Edition, Janna, W. S., CRC Press/Taylor & Francis, Boca Rotan, FL, 2009.

PUBLICATIONS (BOOK CHAPTERS)

1. **Ghajar, A. J.**, “Heat Transfer and Pressure Drop in the Transition Region of Smooth Horizontal Circular Tubes with Different Inlet Configurations,” *Advances in Heat Transfer*, Vol. 51, Chapter 1, pp. 1-53, edited by E. M. Sparrow, J. P. Abraham, J. W. Gorman and W. J. Minkowycz, Academic Press, Cambridge, MA, 2019.
2. **Ghajar, A. J.**, “Heat Transfer by Conduction and Convection,” in *Mark’s Standard Handbook for Mechanical Engineers*, 100th Anniversary Edition, Section 2.4, pp. 193-217, edited by A.M. Sadegh and W. M. Worek, McGraw-Hill, New York, NY, 2017.
3. **Ghajar, A. J.** and Bhagwat, S. M., “Gas-Liquid Flow in Ducts,” in *Handbook of Multiphase Flow*, 2nd Edition, Chapter 3, pp. 287-356, edited by E.E. Michaelides, C. T. Crowe, and J. D. Schwarzkopf, CRC Press/Taylor & Francis, Boca Rotan, FL, 2017.
4. **Ghajar, A. J.** and Bhagwat, S. M., “Flow Patterns, Void Fraction and Pressure Drop in Gas-Liquid Two Phase Flow at Different Pipe Orientations”, in *Frontiers and Progress in Multiphase Flow I*, Chapter 4, pp. 157-212, edited by L. Cheng, Springer International Publishing, Switzerland, 2014.
5. **Ghajar, A. J.** and Tang, C. C., “Heat Transfer Measurements for Non-Boiling Two-Phase Flow,” in *Handbook of Measurement in Science and Engineering*, 2V Set, First Edition, edited by Myer Kutz, John Wiley & Sons, Inc., New York, Volume 1, Chapter 19, pp. 661-685, 2013.
6. **Ghajar, A. J.** and Tang, C. C., “Void Fraction and Flow Patterns of Two-Phase Flow in Upward and Downward Vertical and Horizontal Pipes,” in *Advances in Multiphase Flow and Heat Transfer*, Vol. 4, Chapter 7, pp. 175-201, edited by L. Cheng and D. Mewes, Bentham Sciences Publishers Ltd, 2012.

Publications (Book Chapters), cont'd.

7. **Ghajar, A. J.** and Tang, C. C., “Advances in Void Fraction, Flow Pattern Maps, and Non-Boiling Heat Transfer Two-Phase Flow in Pipes with Various Inclinations,” in *Advances in Multiphase Flow and Heat Transfer*, Vol. 1, Chapter 1, pp. 1-52, edited by L. Cheng and D. Mewes, Bentham Sciences Publishers Ltd, 2009.
8. **Ghajar, A. J.**, “Transitional Flow in Tubes,” Chapter 8 in *Heat and Mass Transfer – A Practical Approach*, Y. A. Cengel, 3rd Edition, McGraw-Hill, New York, NY, pp. 482-490, 2007.
9. **Ghajar, A. J.** and Kim, J., “Calculation of Local Inside-Wall Convective Heat-Transfer Parameters from Measurements of the Local Outside-Wall Temperatures along an Electrically Heated Circular Tube,” Chapter 23 in *Heat Transfer Calculations*, edited by Myer Kutz, McGraw-Hill, New York, NY, pp. 23.3 to 23.27, 2006.
10. **Ghajar, A. J.**, “Compressible Flow,” Chapter 36 in *The Engineering Handbook*, 2nd Edition, edited by R. C. Dorf, CRC Press, Boca Roton, Florida, pp. 36-1 to 36-17, 2004.
11. Zurigat, Y. H. and **Ghajar, A. J.**, “Heat Transfer and Stratification in Sensible Heat Storage Systems,” Chapter 6 in *Thermal Energy Storage Systems and Applications*, edited by I. Dincer, and M. A. Rosen, John Wiley & Sons, UK, pp. 259-301, 2002.

PUBLICATIONS (JOURNAL ARTICLES)

1. Mohagheghian, S., **Ghajar, A. J.**, and Elbing, B. R., “Effect of Vertical Vibration on the Mixing Time of a Passive Scalar in a Sparged Bubble Column Reactor”, *Fluids*, Vol. 5, No. 1, Paper 6 (18 pages), 2020.
2. Cheng, L. and **Ghajar, A. J.**, “Frontiers and Progress in Multiphase Flow and Heat Transfer,” Editorial, *Heat Transfer Engineering*, Vol. 40, No. 16, pp. 1299-1300, 2019.
3. Mohagheghian, S., Still, A.L., Elbing, B. R., and **Ghajar, A. J.**, “Study of Bubble Size, Void Fraction, and Mass Transport in a Bubble Column under High Amplitude Vibration,” *ChemEngineering*, Vol. 2, No. 2, Paper 16 (25 pages), 2018.
4. Bhagwat, S. M. and **Ghajar, A. J.**, “Experimental Investigation of Non-Boiling Gas-Liquid Two Phase Flow in Downward Inclined Pipes,” *Experimental Thermal and Fluid Science*, Vol. 89, pp. 219-237, 2017.
5. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, and Chen, I. P., “Experimental Study of the Ultrasonic Effect on Heat Transfer inside a Horizontal Mini-Tube in the Laminar Region,” *Applied Thermal Engineering*, Vol. 114, pp. 1300-1308, 2017.
6. Bhagwat, S. M. and **Ghajar, A. J.**, “Experimental Investigation of Non-Boiling Gas-Liquid Two Phase Flow in Upward Inclined Pipes,” *Experimental Thermal and Fluid Science*, Vol. 79, pp. 301-318, 2016.
7. Elbing, B. R., Still, A.L., and **Ghajar, A. J.**, “Review of Bubble Column Reactors with Vibration,” *Industrial & Engineering Chemistry Research*, Vol. 55, pp. 385-403, 2016.
8. Bhagwat, S. M. and **Ghajar, A. J.**, “Modified Liquid Entrainment Fraction Correlation for Varying Pipe Orientations and System Pressures,” *International Journal of Multiphase Flow*, Vol. 74, pp.1–4, 2015.
9. Bhagwat, S. M. and **Ghajar, A. J.**, “An Empirical Model to Predict the Transition between Stratified and Non-Stratified Gas-Liquid Two Phase Flow in Horizontal and Downward Inclined Pipes”, *Heat Transfer Engineering*, Vol. 36, No. 18, pp. 1485-1494, 2015.

Publications (Journal Articles), cont'd.

10. **Ghajar, A. J.** and Bhagwat, S. M., “Non-Boiling Gas-Liquid Two Phase Flow Phenomenon in Near Horizontal Upward and Downward Inclined Pipe Orientations,” World Academy of Science, Engineering and Technology, *International Journal of Mechanical, Aerospace, Industrial and Mechatronics Engineering*, Vol. 8, No.6, pp. 1039-1053, 2014.
11. Cai, S., Cremaschi, L. and **Ghajar, A. J.**, “Pipe Insulation Thermal Conductivity under Dry and Wet Condensing Conditions with Moisture Ingress: A Critical Review,” *HVAC&R Research*, Vol. 20, pp. 458-479, 2014.
12. Bhagwat, S. M. and **Ghajar, A. J.**, “A Flow Pattern Independent Drift Flux Model Based Void Fraction Correlation for a Wide Range of Gas–Liquid Two Phase Flow,” *International Journal of Multiphase Flow*, Vol. 59, pp.186–205, 2014.
13. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Fu, P. H., and Sun, C., “Correlating Isothermal Friction Factor Data for Micro-fin Tubes Using Logistic Does Response Curve Fitting Method,” *Heat Transfer Engineering*, Vol. 35, No. 11-12, pp. 996-1006, 2014.
14. Wongwises, S., **Ghajar, A. J.**, Chau, K-W., Valladares, O.G., Kundu, B., Dalkilic, and Lazarus, G. A., “Two-Phase Flow and Heat Transfer Enhancement,” Editorial, *Advances in Mechanical Engineering*, Vol. 2013, Article ID 256839, doi:10.1155/2013/256839.
15. Tang, C. C., Tiwari, S., and **Ghajar, A. J.**, “Effect of Void Fraction on Pressure Drop in Upward Vertical Two-Phase Gas-Liquid Pipe Flow,” *ASME Journal of Gas Turbines and Power*, vol. 135, pp. 022901-1- 022901-7, 2013.
16. **Ghajar, A.J.** and Bhagwat, S. M., “Effect of Void Fraction and Two-Phase Dynamic Viscosity Models on Prediction of Hydrostatic and Frictional Pressure Drop in Vertical Upward Gas-Liquid Two-Phase Flow,” *Heat Transfer Engineering*, Vol. 34, No. 13, pp. 1044-1059, 2013.
17. Cheng, L. and **Ghajar, A. J.**, “In Celebration of Professor John Richard Thome on His 60th Birthday,” Editorial, *Heat Transfer Engineering*, Vol. 34, No. 13, pp. 1013–1015, 2013.
18. Tam, H. K., Tam, L. M., and **Ghajar, A. J.**, “Effect of Inlet Geometries and Heating on the Entrance and Fully-Developed Friction Factors in the Laminar and Transition Regions of a Horizontal Tube,” *Experimental Thermal and Fluid Science*, Vol. 44, pp. 680-696, 2013.
19. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Tam, S. C., and Zhang, T., “Experimental Investigation of Heat Transfer, Friction Factor, and Optimal Fin Geometries for the Internally Microfin Tubes in the Transition and Turbulent Regions,” *Journal of Enhanced Heat Transfer*, Vol. 19, No. 5, pp. 457-476, 2012.
20. Bhagwat, S. M. and **Ghajar, A. J.**, “Similarities and Differences in the Flow Patterns and Void Fraction in Vertical Upward and Downward Two Phase Flow,” *Experimental Thermal and Fluid Science*, Vol. 39, pp. 213-227, 2012.
21. Cremaschi, L., Cai, S., Worthington, K. M., and **Ghajar, A. J.**, “Measurements of Pipe Insulation Thermal Conductivity at Below Ambient Temperatures Part 1: Experimental Methodology and Dry Tests,” *ASHRAE Transactions*, CH-12-030 (RP-1356), Vol. 118, Part 1, pp. 1061-1076, 2012.
22. Tam, H. K., Tam, L. M., Tam, S. C., Chio, C. H., and **Ghajar, A. J.**, “New Optimization Method, the Algorithms of Changes, for Heat Exchanger Design,” *Chinese Journal of Mechanical Engineering*, Vol. 25, No. 1, pp. 55-62, 2012. (DOI: 10.3901/CJME.2012.01.055)

Publications (Journal Articles), cont'd.

23. Tam, H. K., Tam, L. M., and **Ghajar, A. J.**, “Heat Transfer Correlation for Two-Phase Flow in Vertical Pipes Using Support Vector Machines,” *Heat Transfer Engineering*, Vol. 32, No. 11-12, pp. 1047-1052, 2011.
24. Godbole, P. V., Tang, C. C., and **Ghajar, A. J.**, “Comparison of Void Fraction Correlations for Different Flow Patterns in Upward Vertical Two-phase Flow,” *Heat Transfer Engineering*, Vol. 32, No. 10, pp. 843-860, 2011.
25. **Ghajar, A. J.** and Tang, C. C., “Importance of Non-Boiling Two-Phase Flow Heat Transfer in Pipes for Industrial Applications,” *Heat Transfer Engineering*, Vol. 31, pp. 711-732, No. 9, 2010.
26. **Ghajar, A. J.**, Tang, C. C., and Cook, W. L., “Experimental Investigation of Friction Factor in the Transition Region for Water Flow in Minutubes and Microtubes,” *Heat Transfer Engineering*, Vol. 31, No. 8, pp. 646-657, 2010.
27. Tang, C. C. and **Ghajar, A. J.**, “A Mechanistic Approach for Heat Transfer Estimation in Horizontal and Vertical Non-Boiling Two-Phase Pipe Flow,” *Chemical Engineering Transactions*, vol. 18, pp. 123-128, 2009. (DOI: 10.3303/CET0918018)
28. Tam, L. M., **Ghajar, A. J.**, and Tam, H. K., “Contribution Analysis of Dimensionless Variables for Laminar and Turbulent Flow Convection Heat Transfer in a Horizontal Tube Using Artificial Neural Network,” *Heat Transfer Engineering*, Vol. 29, No. 9, pp. 793-804, 2008.
29. **Ghajar, A. J.** and Tang, C. C., “Heat Transfer Measurements, Flow Pattern Maps and Flow Visualization for Non-Boiling Two-Phase Flow in Horizontal and Slightly Inclined Pipe,” *Heat Transfer Engineering*, Vol. 28, No. 6, pp. 525-540, 2007.
30. Woldesemayat, M. A. and **Ghajar, A. J.**, “Comparison of Void Fraction Correlations for Different Flow Patterns in Horizontal and Upward Inclined Pipes,” *International Journal of Multiphase Flow*, Vol. 33, No. 4, pp. 347-370, 2007.
31. Kim, J. and **Ghajar, A. J.**, “A General Heat Transfer Correlation for Non-Boiling Gas-Liquid Flow with Different Flow Patterns in Horizontal Pipes,” *International Journal of Multiphase Flow*, Vol. 32, No. 4, pp. 447-465, 2006.
32. Tam, L. M. and **Ghajar, A. J.**, “Transitional Heat Transfer in Plain Horizontal Tubes,” *Heat Transfer Engineering*, Vol. 27, No. 5, pp. 23-38, 2006.
33. Kim, J., **Ghajar, A. J.**, Tang, C., and Foutch, G. L., “Comparison of Near-Wall Treatment Methods for High Reynolds Number Backward-Facing Step Flow,” *International Journal of Computational Fluid Dynamics*, Vol. 19, No. 7, pp. 493-500, 2005.
34. **Ghajar, A. J.**, “Non-Boiling Heat Transfer in Gas-Liquid Flow in Pipes – A Tutorial,” *Journal of the Brazilian Society of Mechanical Sciences and Engineering*, Vol. XXVII, No. 1, pp. 46-73, 2005.
35. **Ghajar, A. J.**, Tam, L. M., and Tam, S. K., “Improved Heat Transfer Correlation in the Transition Region for a Circular Tube with Three Inlet Configurations Using Artificial Neural Networks,” *Heat Transfer Engineering*, Vol. 25, No. 2, pp. 30-40, 2004.
36. Sofyan, Y., **Ghajar, A. J.**, and Gasem, K. A. M., “Multiphase Equilibrium Calculations Using Gibbs Minimization Techniques,” *Industrial & Engineering Chemistry Research*, Vol. 42, No. 16, pp. 3786-3801, 2003.

Publications (Journal Articles), cont'd.

37. Sofyan, Y., **Ghajar, A. J.**, and Gasem, K. A. M., "A Systematic Method to Predict Cloud Point Temperature and Solid Precipitation," *Petroleum Science and Technology*, Vol. 21, Nos. 3 & 4, pp. 409-424, 2003.
38. Kim, D. and **Ghajar, A. J.**, "Heat Transfer Measurements and Correlations for Air-Water Flow of Different Flow Patterns in a Horizontal Pipe," *Experimental Thermal and Fluid Science*, Vol. 25, No. 8, pp. 659-676, 2002.
39. **Ghajar, A. J.**, "Sir Isaac Newton: The Man," Editorial, *Heat Transfer Engineering*, Vol.22, No. 5, pp. 1-2, 2001.
40. Kim, D., **Ghajar, A. J.**, and Dougherty, R. L., "Robust Heat-Transfer Correlations for Turbulent Gas-Liquid Flow in Vertical Pipes," *Journal of Thermophysics and Heat Transfer*, Vol. 14, No. 4, pp. 574-578, 2000.
41. Whitelock, D. P., Brusewitz, G. H. and **Ghajar, A. J.**, "Thermal/Physical Properties Affect Predicted Weight Loss of Fresh Peaches," *Transactions of the ASAE*, Vol. 42, No. 4, pp. 1047-1053, 1999.
42. Kim, D., **Ghajar, A. J.**, Dougherty, R. L., and Ryali, V. K., "Comparison of 20 Two-Phase Heat Transfer Correlations with Seven Sets of Experimental Data, Including Flow Pattern and Tube Inclination Effects," *Heat Transfer Engineering*, Vol. 20, No. 1, pp. 15-40, 1999.
43. Tam, L. M. and **Ghajar, A. J.**, "The Unusual Behavior of Local Heat Transfer Coefficient in a Circular Tube with a Bell-Mouth Inlet," *Experimental Thermal and Fluid Science*, Vol. 16, No. 3, pp. 187-194, 1998.
44. **Ghajar, A. J.**, "Some Thoughts on the Future of the Journal," Editorial, *Heat Transfer Engineering*, Vol. 18, No. 2, p. 3, 1997.
45. Tam, L. M. and **Ghajar, A. J.**, "Effect of Inlet Geometry and Heating on the Fully Developed Friction Factor in the Transition Region of a Horizontal Tube," *Experimental Thermal and Fluid Science*, Vol. 15, No. 1, pp. 52-64, 1997.
46. **Ghajar, A. J.**, Tang, W. C. and Beam, J. E., "Methodology for Comparison of Hydraulic and Thermal Performance of Alternative Heat Transfer Fluids in Complex Systems," *Heat Transfer Engineering*, Vol. 16, No. 1, pp. 60-72, 1995.
47. **Ghajar, A. J.** and Tam, L. M., "Flow Regime Map for a Horizontal Pipe with Uniform Heat Flux and Three Different Inlet Configurations," *Experimental Thermal and Fluid Science*, Vol. 10, No. 3, pp. 287-297, 1995.
48. Bang, K., **Ghajar, A. J.** and Komanduri, R., "The Effect of Substrate Surface Temperature on the Morphology and Quality of Diamond Films Produced by the Oxy-Acetylene Combustion Method," *Thin Solid Films*, Vol. 238 pp. 172-183, February 1994.
49. **Ghajar, A. J.** and Tam, L. M., "Heat Transfer Measurements and Correlations in the Transition Region for a Circular Tube with Three Different Inlet Configurations," *Experimental Thermal and Fluid Science*, Vol. 8, No. 1, pp. 79-90, 1994.
50. **Ghajar, A. J.** and Bang, K., "Parametric Effects on the Substrate Temperature Profile in Oxy-Acetylene Flames," *Heat Transfer Engineering*, Vol. 14, No. 3, pp. 48-59, 1993.
51. **Ghajar, A. J.** and Bang, K., "Experimental and Analytical Studies of Different Methods for Producing Stratified Flows," *Energy - The International Journal*, Vol. 18, No. 4, pp. 323-334, 1993.

Publications (Journal Articles), cont'd.

52. **Ghajar, A. J.** and Madon, K. F., "Pressure Drop Measurements in the Transition Region for a Circular Tube with Different Inlet Configurations," *Experimental Thermal and Fluid Science*, Vol. 5, No. 1, pp. 129-135, 1992.
53. Abu-Hamdan, M. G., Zurigat, Y. H. and **Ghajar, A. J.**, "An Experimental Study of a Stratified Thermal Storage Under Variable Inlet Temperature for Different Inlet Designs," *International Journal of Heat and Mass Transfer*, Vol. 35, No. 8, pp. 1927-1934, 1992.
54. Zurigat, Y. H., Liche, P. R. and **Ghajar, A. J.**, "Influence of Inlet Geometry on Mixing in Thermocline Thermal Energy Storage," *International Journal of Heat and Mass Transfer*, Vol. 34, No. 1, pp. 115-125, 1991.
55. **Ghajar, A. J.** and Zurigat, Y. H., "Microcomputer-Assisted Heat Transfer Measurements/Analysis in a Circular Tube," *International Journal of Applied Engineering Education*, Vol. 7, No. 2, pp. 125-134, 1991.
56. **Ghajar, A. J.** and Zurigat, Y. H., "Numerical Study of the Effect of Inlet Geometry on Stratification in Thermal Energy Storage," *Numerical Heat Transfer*, Part A: Applications, Vol. 19, No. 1, pp. 65-83, 1991.
57. Zurigat, Y. H. and **Ghajar, A. J.**, "Comparative Study of Weighted Upwind and Second Order Upwind Difference Schemes," *Numerical Heat Transfer*, Part B: Fundamentals, Vol. 18, No. 1, pp. 61-79, 1990.
58. Zurigat, Y. H., Bang, K. and **Ghajar, A. J.**, "Methods for Producing Linear Density Gradients in Laboratory Tanks," *Energy – The International Journal*, Vol. 15, No. 1, pp. 23-34, 1990.
59. **Ghajar, A. J.** and Raza, K., "Mass Transfer Analogy for Heat Transfer Experiments in Thermal Storage," *International Communications in Heat and Mass Transfer*, Vol. 17, No. 1, pp. 79-91, 1990.
60. Zurigat, Y. H., Maloney, K. J. and **Ghajar, A. J.**, "A Comparison Study of One-Dimensional Models for Stratified Thermal Storage Tanks," *ASME Journal of Solar Energy Engineering*, Vol. 111, No. 3, pp. 204-210, 1989.
61. **Ghajar, A. J.** and Yoon, H. K., "A Heat Transfer Correlation for Viscoelastic Turbulent Pipe Flows," *Chemical Engineering Communications*, Vol. 78, pp. 167-177, 1989.
62. **Ghajar, A. J.** and Azar, M. Y., "Empirical Correlations for Friction Factor in Drag-Reducing Turbulent Pipe Flows," *International Communications in Heat and Mass Transfer*, Vol. 15, No. 6, pp. 705-718, 1988.
63. Toh, K. H. and **Ghajar, A. J.**, "Heat Transfer in Thermal Entrance Region for Viscoelastic Fluids in Turbulent Pipe Flows," *International Journal of Heat and Mass Transfer*, Vol. 31, No. 6, pp. 1261-1267, 1988.
64. Zurigat, Y. H., **Ghajar, A. J.** and Moretti, P. M., "Stratified Thermal Storage Tank Inlet Mixing Characterization," *Applied Energy*, Vol. 30, No. 2, pp. 99-111, 1988.
65. Rao, K. S. S., Zurigat, Y. H. and **Ghajar, A. J.**, "A Microcomputer-Based Data Acquisition System and Software for Thermal Studies," *Heat Transfer Engineering*, Vol. 9, No. 2, pp. 58-66, 1988.
66. Yoon, H. K. and **Ghajar, A. J.**, "A Note on the Powell-Eyring Fluid Model," *International Communications in Heat and Mass Transfer*, Vol. 14, No. 4, pp. 381-390, 1987.

Publications (Journal Articles), cont'd.

67. Yoon, H. K. and **Ghajar, A. J.**, "Heat Eddy Diffusivity for Viscoelastic Turbulent Pipe Flows," *International Communications in Heat and Mass Transfer*, Vol. 14, No. 3, pp. 237-249, 1987.
68. Jakobsson, H. Th. and **Ghajar, A. J.**, "Numerical Solutions of Heat Conduction and Simple Fluid Flow Problems," *International Communications in Heat and Mass Transfer*, Vol. 14, No. 1, pp. 67-79, 1987.
69. **Ghajar, A. J.** and Asadi, A., "Improved Forced Convective Heat Transfer Correlations for Liquids in the Near-Critical Region," *AIAA Journal*, Vol. 24, No. 12, pp. 2030-2037, 1986.
70. Yoon, H. K. and **Ghajar, A. J.**, "A New Heat Eddy Diffusivity Equation for Calculation of Heat Transfer to Drag Reducing Turbulent Pipe Flows," *International Communications in Heat and Mass Transfer*, Vol. 13, No. 4, pp. 449-464, 1986.
71. Zurigat, Y. H. and **Ghajar, A. J.**, "Computer Simulation of Woodstove Thermal Storage System," *Energy Conversion and Management*, Vol. 26, No. 2, pp. 165-173, 1986.
72. Oppel, F. J., **Ghajar, A. J.** and Moretti, P. M., "A Numerical and Experimental Study of Stratified Thermal Storage," *ASHRAE Transactions*, Vol. 92 (part 2), pp. 293-309, 1986.
73. Oppel, F. J., **Ghajar, A. J.** and Moretti, P. M., "Computer Simulation of Stratified Heat Storage," *Applied Energy*, Vol. 23, No. 3, pp. 205-224, 1986.
74. Asgeirsson, L. S. and **Ghajar, A. J.**, "Prediction of Thermal Conductivity and Viscosity for Some Fluids in the Near-Critical Region," *Chemical Engineering Communications*, Vol. 43, Nos. 1-3, pp. 165-184, 1986.
75. Kanchanalakshana, D. and **Ghajar, A. J.**, "An Improved Falling Sphere Viscometer for Intermediate Concentrations of Viscoelastic Fluids," *International Communications in Heat and Mass Transfer*, Vol. 13, No. 2, pp. 219-233, 1986.
76. Maxwell, M. J. and **Ghajar, A. J.**, "Laminar Forced Convective Heat Transfer with Varying Properties in the Entrance Region of Flat Rectangular Ducts," *Heat Transfer Engineering*, Vol. 6, No. 4, pp. 31-38, 1985.
77. Ghorbani-Tari, S. and **Ghajar, A. J.**, "Improved Free Convective Heat Transfer Correlations in the Near-Critical Region," *AIAA Journal*, Vol. 23, No. 10, pp. 1647-1649, 1985.
78. Pilcher, K. R. and **Ghajar, A. J.**, "Thermal Storage Mass Enhances Woodstove Combustion and Reduces Pollution," *Energy – The International Journal*, Vol. 10, No. 10, pp. 1151-1157, 1985.
79. Yoon, H. K. and **Ghajar, A. J.**, "An Analysis of the Heat Transfer to Drag Reducing Turbulent Pipe Flows," *ASME Journal of Heat Transfer*, Vol. 106, No. 4, pp. 898-900, 1984.
80. **Ghajar, A. J.** and Parker, J. D., "Reference Temperatures for Supercritical Laminar Free Convection on a Vertical Flat Plate," *ASME Journal of Heat Transfer*, Vol. 103, No. 4, pp. 613-616, 1981.
81. **Ghajar, A. J.** and Tiederman, W. G., "Prediction of Heat Transfer Coefficients in Drag Reducing Turbulent Pipe Flows," *AIChE Journal*, Vol. 23, No. 1, pp. 128-131, 1977.

PUBLICATIONS (CONFERENCE PROCEEDINGS)

1. Tam, H. K., Ji, J. Q., Tam, L. M., and Ghajar, A. J., “Experimental Investigation of the Isothermal Pressure Drops in the Mini-Elbows,” *Proceedings of the Second international Symposium on Thermal-Fluid Dynamics (ISTFD2021)*, Beijing, China, July 31- August 3, 2021.
2. Tam, H. K., Xu, Y-X, Tam, L. M., and **Ghajar, A. J.**, “Effect of Heating on the Fully-Developed Friction Factors in Horizontal Mini-Tubes,” *Proceedings of the 5th-6th Thermal and Fluid Engineering Conference (TFEC2020)*, New Orleans, Louisiana (USA), May 26-28, 2021
3. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Wang, Q. Chen, X. W., and Lei, W. C., “Experimental Investigation of Single-Phase Heat Transfer in Horizontal Mini-Tubes with Different Bending Inlets”, *Proceedings of the 5th International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT2019)*, Novosibirsk, Russia, August 13-16, 2019.
4. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, and Wang, Q., “Experimental Investigation of the Heat Transfer in a Horizontal Mini-Tube with Three Different Inlet Configurations,” *Proceedings of the 2nd Thermal and Fluid Engineering Conference (TFEC2017) and 4th International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT2017)*, Las Vegas, Nevada (USA), April 2-5, 2017.
5. Bhagwat, S. M. and **Ghajar, A. J.**, “Effect of Pipe Surface Roughness on Frictional Pressure Drop in Gas-Liquid Two Phase Flows,” *Proceedings of the 12th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2016)*, Malaga, Costa del Sol, Spain, July 11-13, 2016.
6. Bhagwat, S. M. and **Ghajar, A. J.**, “Measurements of Void Fraction, Pressure Drop and Heat Transfer in Horizontal and Downward Inclined Gas-Liquid Stratified Flow,” *Proceedings of 9th International Conference on Multiphase Flow (ICMF-2016)*, Florence, Italy, May 22-27, 2016.
7. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Kuok, C. F., and Sun, C., “Experimental Investigation for the Forced and Mixed Convection Heat Transfer inside the Macro- and Mini-tubes,” *Proceedings of 3rd International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT2015)*, Taipei, Taiwan, October 16-19, 2015.
8. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, and Chen, I. P., “Experimental Study of Ultrasonic Effect on Heat Transfer Inside a Horizontal Mini-Tube in the Laminar Region,” *Proceedings of 3rd International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT2015)*, Taipei, Taiwan, October 16-19, 2015.
9. Korivi, R. N. K., Bhagwat, S. M. and **Ghajar, A. J.**, “Heat Transfer Measurements and Correlations Assessment for Upward Inclined Gas-Liquid Two Phase Flow,” *Proceedings of the 1st Thermal and Fluid Engineering Summer Conference, TFESC*, New York City, New York, August 9-12, 2015.
10. John, T. J., Bhagwat, S. M. and **Ghajar, A. J.**, “Heat Transfer Measurements and Correlations Assessment for Downward Inclined Gas-Liquid Two-Phase Flow,” *Proceedings of the 1st Thermal and Fluid Engineering Summer Conference, TFESC*, New York City, New York, August 9-12, 2015.
11. Tam, L. M., Tam, H. K., **Ghajar, A. J.**, Ng, W. S., and Wu, C. K., “The Effect of Inner Surface Roughness and Heating on Friction Factor in Horizontal Mini-Tubes,” *Proceedings of the 15th International Heat Transfer Conference, IHTC-15*, Kyoto, Japan. August 10-15, 2014.
12. Hossainy, T. A., Bhagwat, S. M., and **Ghajar, A. J.**, “Non-Boiling Heat Transfer in Horizontal and Near Horizontal Downward Inclined Gas-Liquid Two Phase Flow,” *Proceedings of the 10th*

Publications (Conference Proceedings), cont'd.

- International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2014)*, Orlando, Florida, July 14-16, 2014.
13. Kalapatapu, S., Bhagwat, S. M., Oyewole, A. L., and **Ghajar, A. J.**, “Non-Boiling Heat transfer in Horizontal and Near Horizontal Upward Inclined Gas-Liquid Two Phase Flow,” *Proceedings of the 10th International Conference on Heat Transfer, Fluid Mechanics and Thermodynamics (HEFAT2014)*, Orlando, Florida, July 14-16, 2014.
 14. **Ghajar, A. J.** and Bhagwat, S. M., “Non-Boiling Gas-Liquid Two Phase Flow Phenomenon in Near Horizontal Upward and Downward Inclined Pipe Orientations,” Keynote Paper, *ICFDT 2014 (International Conference on Fluid Dynamics and Thermodynamics)*, Copenhagen, Denmark, June 12-13 2014.
 15. Still, A. L., **Ghajar, A. J.**, and O’Hern, T. J., “Effect of Amplitude on Mass Transport, Void Fraction and Bubble Size in a Vertically Vibrating Liquid-Gas Bubble Column Reactor”, *Proceedings of the ASME Fluids Engineering Summer Meeting (FEDSM2013)*, Incline Village, Nevada, July 7-11, 2013.
 16. **Ghajar, A. J.** and Bhagwat, S. M., “Flow Patterns, Void Fraction, Pressure Drop and Convective Heat Transfer in Two Phase Gas-Liquid Flow for Various Pipe Inclinations,” Keynote Paper, *ICMF 2013 (8th International Conference on Multiphase Flow 2013)*, Jeju, Korea, May 26-31, 2013.
 17. **Ghajar, A. J.**, “Gas-Liquid Two Phase Flow Phenomenon in Vertical Upward and Downward Pipe Orientations,” Keynote Lecture, *14th Brazilian Congress of Thermal Sciences and Engineering (ENCIT 2012)*, Rio de Janeiro, Brazil, November 18-22, 2012.
 18. Tang, C. C., Tiwari, S., and **Ghajar, A. J.**, “Effect of Void Fraction on Pressure Drop in Upward Vertical Two-Phase Gas-Liquid Pipe Flow,” *Proceedings of the 20th International Conference on Nuclear Engineering (ICONE20)*, Anaheim, California, July 30-August 3, 2012.
 19. Cai, S., Cremaschi, L., and **Ghajar, A. J.**, “Moisture Accumulation and Its Impact on the Thermal Performance of Pipe Insulation for Chilled Water Pipes in High Performance Buildings,” *Proceedings of the 2nd International High Performance Buildings Conference at Purdue*, West Lafayette, Indiana, July 16-19, 2012.
 20. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Sun, C., and Lai, W. K., “Experimental Investigation of Single-Phase Heat Transfer in a Horizontal Micro-Fin Tube with Three Different Inlet Configuration,” *Proceedings of the ASME 2012 Summer Heat Transfer Conference (HT2012)*, Rio Grande, Puerto Rico, July 8-12, 2012.
 21. Bhagwat, S. M., Mollamahmutoglu, M., and **Ghajar, A. J.**, “Experimental Investigation and Empirical Analysis of Non-Boiling Gas-Liquid Two Phase Heat Transfer in Vertical Downward Pipe Orientation,” *Proceedings of the ASME 2012 Summer Heat Transfer Conference (HT2012)*, Rio Grande, Puerto Rico, July 8-12, 2012.
 22. Bhagwat, S. M., Mollamahmutoglu, M., and **Ghajar, A. J.**, “Experimental Investigation and Performance Evaluation of Isothermal Frictional Two Phase Pressure Drop Correlations in Vertical Downward Gas-Liquid Two-Phase Flow,” *Proceedings of the ASME 2012 Summer Heat Transfer Conference (HT2012)*, Rio Grande, Puerto Rico, July 8-12, 2012.
 23. Bhagwat, S. M. and **Ghajar, A. J.**, “Flow Pattern and Pipe Orientation Independent Semi-Empirical Void Fraction Correlation for a Gas-Liquid Two-Phase Flow Based on the Concept

Publications (Conference Proceedings), cont'd.

- of Drift Flux Model,” *Proceedings of the ASME 2012 Summer Heat transfer Conference (HT2012)*, Rio Grande, Puerto Rico, July 8-12, 2012.
24. Tam, L. M., Tam, H. K., **Ghajar, A. J.**, and Ng, W. S., “Heat Transfer Measurements for a Horizontal Micro-Tube Using Liquid Crystal Thermography,” *Proceedings of ISHTEC2012, the 4th International Symposium on Heat Transfer and Energy Conservation*, Paper no. TC02-007, pp. 62-66, Guangzhou, China, January 6-9, 2012.
 25. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Fu, P. H., and Cheong, S., “Development of Friction Factor Correlations for Single-phase Flow in Micro-Fin Tube using Logistic Does Curve Fitting Method,” *Proceedings of ISHTEC2012, the 4th International Symposium on Heat Transfer and Energy Conservation*, Paper no. TC02-012, pp. 81-84, Guangzhou, China, January 6-9, 2012.
 26. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Tam, S. C., and Zhang, T., “Use of Algorithms of Changes for Optimal Fin Geometries of the Internally Micro-fin Tubes in the Turbulent Region,” *Proceedings of 2011 International Workshop on Heat Transfer Advances for Energy Conservation and Pollution Control (IWHT2011)*, Xi’an, China, October 17-20, 2011.
 27. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Ng, W. S., Wong, I. W., Leong, K. F., and Wu, C. K., “The Effect of Inner Surface Roughness and Heating on Friction Factor in Horizontal Micro-Tubes,” *Proceedings of ASME-JSME-KSME Joint Fluids Engineering Conference 2011(AJK2011-FED)*, Hamamatsu, Shizuoka, Japan, July 24-29, 2011.
 28. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, Sun, C., and Leung, H. Y., “Experimental Investigation of the Single-Phase Friction Factor and Heat Transfer Inside the Horizontal Internally Micro-Fin Tubes in the Transition Region,” *Proceedings of ASME-JSME-KSME Joint Fluids Engineering Conference 2011(AJK2011-FED)*, Hamamatsu, Shizuoka, Japan, July 24-29, 2011.
 29. Bhagwat, S.M. and **Ghajar, A. J.**, “Flow Patterns and Void Fraction in Downward Two Phase Flow,” *Proceedings of the ASME Early Career Technical Conference (2011ECTC)*, Fayetteville, Arkansas, March 31-April 2, 2011.
 30. Tang, C. C. and **Ghajar, A. J.**, “A Mechanistic Heat Transfer Correlation for Non-Boiling Two-Phase Flow in Horizontal, Inclined and Vertical Pipes,” *Proceedings of ASME/JSME 2011(AJTE2011) 8th Thermal Engineering Joint Conference*, Honolulu, Hawaii, March 14-17, 2011.
 31. Tam, L. M., Tam, H. K. and **Ghajar, A. J.**, “Simultaneous Heat Transfer and Pressure Drop Measurements for a Horizontal Micro-Tube,” *Proceedings of ASME/JSME 2011(AJTE2011) 8th Thermal Engineering Joint Conference*, Honolulu, Hawaii, March 14-17, 2011.
 32. Tam, H. K., Tam, L. M. and **Ghajar, A. J.**, “Experimental Analysis of the Single-Phase Heat Transfer and Friction Factor inside the Horizontally Micro-Fin Tube,” *Proceedings of ASME/JSME 2011(AJTE2011) 8th Thermal Engineering Joint Conference*, Honolulu, Hawaii, March 14-17, 2011.
 33. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, and Chu, W. W., “Experimental Analysis of the Single-Phase Heat Transfer and Friction Factor inside the Horizontal Internally Micro-Fin Tube,” *Proceedings of 2nd International Conference on Mechanical and Electronics Engineering (ICMEE 2010)*, Vol. 1, pp. 44-48, Kyoto, Japan, August 1-3, 2010.
 34. **Ghajar, A. J.**, Tam, L. M., Tam, H. K., and Wen, Q., “The Effect of Inner Surface Roughness on Friction Factor in Horizontal Micro-tubes,” *Proceedings of 2nd International Conference on*

Publications (Conference Proceedings), cont'd.

- Mechanical and Electronics Engineering (ICMEE 2010)*, Vol. 1, pp. 59-63, Kyoto, Japan, August 1-3, 2010.
35. **Ghajar, A. J.** and Tang, C. C., “Void Fraction and Flow Patterns of Two-phase Gas-Liquid Flow in Various Pipe Inclinations,” Keynote Paper, *Proceedings of the 7th International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics (HEFAT 2010)*, pp. 115-129, Antalya, Turkey, July 19-21, 2010.
 36. Yeunyongkul, P., Sakulchangsattajai, P., and **Ghajar, A. J.**, “Experimental Investigation of Closed Loop Oscillating Heat Pipe as the Condenser for Vapor Compression Refrigeration,” *Proceedings of the 13th International Refrigeration and Air Conditioning Conference at Purdue*, Paper # 2102 (8 Pages), West Lafayette, Indiana, July 12-15, 2010.
 37. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, and Cheong, C. W., “Development of a Unified Flow Regime Map for a Horizontal Pipe with the Support Vector Machines,” *Proceedings of 2nd International Symposium on Computational Mechanics (ISCM II) and 12th International Conference on Enhancement and Promotion of Computational Methods in Engineering and Science (EPMESC XII)*, Hong Kong – Macau, China, November 30-December 3, 2009.
 38. Tam, H. K., Tam, L. M., **Ghajar, A. J.**, and Lei, C. U., “Comparison of Different Correlating Methods for the Single-Phase Heat Transfer Data in Laminar and Turbulent Flow Regions,” *Proceedings of 2nd International Symposium on Computational Mechanics (ISCM II) and 12th International Conference on Enhancement and Promotion of Computational Methods in Engineering and Science (EPMESC XII)*, Hong Kong – Macau, China, November 30-December 3, 2009.
 39. **Ghajar, A. J.** and Tang, C. C., “Recent Developments in Non-Boiling Two-phase Flow Heat Transfer and Void Fraction in Various Pipe Inclinations,” *Proceedings of the 6th International Symposium on Multiphase Flow, Heat and Mass Transfer, and Energy Conversion (ISMF2009)*, Xi’an, China, July 11-15, 2009.
 40. Tam, H. K., Tam, L. M., and **Ghajar, A. J.**, “Heat Transfer Correlation for Two-Phase Flow in Vertical Pipes Using Support Vector Machines,” *Proceedings of the 6th International Symposium on Multiphase Flow, Heat and Mass Transfer, and Energy Conversion (ISMF2009)*, Xi’an, China, July 11-15, 2009.
 41. **Ghajar, A. J.** and Tang, C. C., “Importance of Non-Boiling Two-Phase Flow Heat Transfer in Pipes for Industrial Applications” *Proceedings of the 11th Conference on Process Integration, Modeling and Optimization for Energy Saving and Pollution Reduction (PRES’08)*, Prague, Czech Republic, August 24-28, 2008.
 42. Tam, L. M., **Ghajar, A. J.**, Tam, H. K., and Tam, S. C., “Development of a Heat Transfer Correlation for the Transitional Flow in a Horizontal Tube using Support Vector Machines,” *Proceedings of the 2008 ASME Summer Heat Transfer Conference*, Jacksonville, Florida, August 10-14, 2008.
 43. Tam, L. M., **Ghajar, A. J.**, Tam, H. K., and Tam, S. C., “Development of a Flow Regime Map for a Horizontal Pipe with the Multi-Classification Support Vector Machines,” *Proceedings of the 2008 ASME Summer Heat Transfer Conference*, Jacksonville, Florida, August 10-14, 2008.
 44. **Ghajar, A. J.** and Tang, C. C., “Recent Advances in Non-Boiling Two-Phase Flow Heat Transfer in Pipes,” Keynote Paper, *Proceedings of the 5th International Conference on Transport Phenomena in Multiphase Systems (HEAT 2008)*, Bialystok, Poland, June 30-July 3, 2008.

Publications (Conference Proceedings), cont'd.

45. **Ghajar, A. J.**, Rao, R. P., Cook, W. L., and Tang, C. C., “An Experimental Study of Friction Factor in the Transition Region for Single Phase Flow in Mini-and Micro-Tubes,” *Proceedings of the 6th International Conference on Nanochannels, Microchannels and Minichannels*, Darmstadt, Germany, June 23-25, 2008.
46. Tang, C. C. and **Ghajar, A. J.**, “Validation of a General Heat Transfer Correlation for Non-Boiling Two-Phase Flow with Different Flow Patterns and Pipe Inclination Angles,” *Proceedings of the 2007 ASME-JSME Thermal Engineering Summer Heat Transfer Conference*, Vancouver, British Columbia, Canada, July 8-12, 2007.
47. Tam, L. M., Tam, H. K., **Ghajar, A. J.**, and Tam, S. C., “Factor Analysis for Forced and Mixed Convection Laminar Heat Transfer in a Horizontal Tube Using Artificial Neural Network,” *Proceedings of the 2007 ASME-JSME Thermal Engineering Summer Heat Transfer Conference*, Vancouver, British Columbia, Canada, July 8-12, 2007.
48. Krishnamoorthy, C., Rao, R. P., and **Ghajar, A. J.**, “Single-Phase Heat Transfer in Micro-Tubes: A Critical Review,” *Proceedings of the 2007 ASME-JSME Thermal Engineering Summer Heat Transfer Conference*, Vancouver, British Columbia, Canada, July 8-12, 2007.
49. Krishnamoorthy, C. and **Ghajar, A. J.**, “Single-Phase Friction Factor in Micro-Tubes: A Critical Review of Measurements, Instrumentation and Data Reduction techniques from 1991-2006,” *Proceedings of the 5th International Conference on Nanochannels, Microchannels and Minichannels*, Puebla, Mexico, June 18-20, 2007.
50. Tam, H. K., Tam, S. C., **Ghajar, A. J.**, and Tam, L. M., “Factor Analysis of Convective Heat Transfer for a Horizontal Tube in the Turbulent Flow Region Using Artificial Neural Network,” *Proceedings of the International Conference on Computational Methods in Engineering and Science (EPMESC X)*, Sanya, Hainan, China, August 21-23, 2006.
51. **Ghajar, A. J.** Kim, J., and Tang, C., “Two-phase Flow Heat Transfer Measurements and Correlation for the Entire Flow Map in Horizontal Pipes,” *Proceedings of the Thirteenth International Heat Transfer Conference*, Sydney, Australia, August 13-18, 2006.
52. **Ghajar, A. J.**, Delahoussaye, R. D., and Al-Matar, H., “Development and Implementation of Interactive/Visual Software for Steady State and Transient Heat Conduction Problems,” *Proceedings of the 2006 American Society of Engineering Education Annular Conference and Exposition*, Chicago, Illinois, June 18-21, 2006.
53. **Ghajar, A. J.** and Kim, J., “A Non-Boiling Two-Phase Flow Heat Transfer Correlation for Different Flow Patterns and Pipe Inclination Angles,” *Proceedings of the 2005 ASME Summer Heat Transfer Conference*, San Francisco, California, July 17-22, 2005.
54. **Ghajar, A. J.**, Delahoussaye, R. D., and Nayak, V. V., “Development and Implementation of Interactive/Visual Software for Simple Aircraft Gas Turbine Design,” *Proceedings of the 2005 American Society of Engineering Education Annular Conference and Exposition*, Portland, Oregon, June 12-15, 2005.
55. **Ghajar, A. J.**, “Non-Boiling Heat Transfer in Gas-Liquid Flow in Pipes – A Tutorial,” Invited Tutorial, *Proceedings of the 10th Brazilian Congress of Thermal Sciences and Engineering – ENCIT 2004*, Rio de Janeiro, Brazil, November 29-December 3, 2004.

Publications (Conference Proceedings), cont'd.

56. **Ghajar, A. J.**, Kim, J., Malhotra, K., and Trimble, S. A., "Systematic Heat Transfer Measurements for Air-Water Two-Phase Flow in a Horizontal and Slightly Upward Inclined Pipe," *Proceedings of the 10th Brazilian Congress of Thermal Sciences and Engineering – ENCIT 2004*, Rio de Janeiro, Brazil, November 29-December 3, 2004.
57. **Ghajar, A. J.**, Malhotra, K., Kim, J., and Trimble, S. A., "Heat Transfer Measurements and Correlations for Air-Water Two-Phase Slug Flow in a Horizontal Pipe," *Proceedings of the 2004 ASME Heat Transfer/Fluids Engineering Summer Conference*, Charlotte, North Carolina, July 11-15, 2004.
58. **Ghajar, A. J.**, "Two-Phase Heat Transfer in Gas-Liquid Non-Boiling Pipe Flows," Keynote Paper, *Proceedings of the 3rd International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics*, Cape Town, South Africa, June 21-24, 2004.
59. **Ghajar, A. J.**, Kim, J., Durrant, W. B., and Trimble, S. A., "An Experimental Study of Heat Transfer in Annular Two-phase Flow in a Horizontal and Slightly Inclined Tube," *Proceedings of the 3rd International Conference on Heat Transfer, Fluid Mechanics, and Thermodynamics*, Cape Town, South Africa, June 21-24, 2004.
60. **Ghajar, A. J.**, Tam, L. M., and Tam, H. K., "Heat Transfer Correlation for Two Phase Flow in Vertical Pipes Using Artificial Neural Network," *Proceedings of Congress 2003 ASME International Mechanical Engineering Congress and R&D Expo*, November 15-21, 2003, Washington, D.C.
61. **Ghajar, A. J.**, Tam, L. M., and Tam, S.C., "A Simple Heat Transfer Correlation for Three Inlet Configurations Using Artificial Neural Network in the Complex Transition Flow Regime," *Proceedings of the 2003 ASME Summer Heat Transfer Conference*, Las Vegas, Nevada, July 20-23, 2003.
62. Trimble, S., Kim, J., and **Ghajar, A. J.**, "Experimental Heat Transfer Comparison in Air-Water Slug Flow in a Slightly Upward Inclined Tube," Heat Transfer 2002, *Proceedings of the Twelfth International Heat Transfer Conference*, Elsevier, pp. 569-574, 2002.
63. **Ghajar, A. J.**, Tam, L. M., and Tam, S. K., "A New Heat Transfer Correlation in the Transition Region for a Horizontal Pipe with a Reentrant Inlet – Using Artificial Neural Network," Heat Transfer 2002, *Proceedings of the Twelfth International Heat Transfer Conference*, Elsevier, pp. 189-194, 2002.
64. Sofyan, Y., **Ghajar, A. J.**, and Gasem, K. A. M., "A Systematic Method to Predict Cloud Point Temperature and Solid Precipitation," In the *Proceedings of the 3rd International Conference on Petroleum Phase Behavior and Fouling – 4th International Symposium on Wax Thermodynamics and Deposition*, AIChE, pp. 172-178, 2002.
65. Kim, J., Trimble, S., and **Ghajar, A. J.**, "Heat Transfer of Slug Air-Water Flow in a Slightly Upward Inclined Tube," In the *Proceedings of the Heat Transfer Division – 2001*, editors B. Yang et al., ASME, IMECE 2001/HTD-24162, 2001.
66. Tam, L. M., **Ghajar, A. J.**, and Pau, C. W., "Compressible Flow Software for Properties Calculations and Airfoil Analysis," *Proceedings of the 8th International Conference of Enhancement and Promotion of Computing Methods for Engineering and Science (EPMESC' VIII)*, editors L. Shaopei et al., Shanghai, China, July 25-28, 2001.
67. Kim, D., Kim, J., **Ghajar, A. J.**, and Dougherty, R. L., "Heat Transfer Correlations for Air-Water Two-Phase Flow of Different Flow Patterns in a Horizontal Pipe," *Proceedings of the Heat Transfer Division – 2000*, editor J. H. Kim, ASME, HTD-Vol. 366-4, pp. 295-308, 2000.

Publications (Conference Proceedings), cont'd.

68. Kim, D., **Ghajar, A. J.** and Dougherty, R. L., “Development of Improved Two-Phase Two-Component Pipe Flow Heat Transfer Correlations from Existing Correlations and Published Data,” *Proceedings of the 5th ASME/JSME Joint Thermal Engineering Conference*, March 15-19, 1999, San Diego, California, Paper No. AJTE99-6122.
69. Tang, W. and **Ghajar, A. J.**, “Experimental Study of Conjugate Heat Transfer in a Horizontal Channel with Discrete Heated Cubic Blocks,” In *Thermal Management of Hand-Held, Wearable, and Portable Electronics*, eds. C. H. Amon et al., ASME, HTD-Vol. 343, pp. 91-102, 1997.
70. Kim, D., Sofyan, Y., **Ghajar, A. J.** and Dougherty, R. L., “An Evaluation of Several Heat Transfer Correlations for Two-Phase Flow with Different Flow Patterns in Vertical and Horizontal Tubes,” In *Fundamentals of Bubble and Droplet Dynamics; Phase Change and Two Phase Flow*, eds. S. G. Kandlikar et al., ASME, HTD-Vol. 342, pp. 119-130, 1997.
71. Tam, L. M. and **Ghajar, A. J.**, “Effect of Heating and Inlet Disturbance on the Fully Developed Pressure Drop Measurements in the Transition Region for a Horizontal Tube,” In *Fundamentals of Heat Transfer Augmentation*, eds. P. H. Oosthuizen et al., ASME, HTD-Vol. 324, pp. 165-174, 1996.
72. Tam, L. M. and **Ghajar, A. J.**, “Experimental Investigation of the Unusual Behavior of Local Heat Transfer Coefficient in the Transition Region of a Circular Tube with a Bell-Mouth Entrance,” In *Fundamentals of Augmented Single Phase Convection*, eds. J. Bogart et al., ASME, HTD-Vol. 330, pp. 115-123, 1996.
73. Cutbirth, J. M. and **Ghajar, A. J.**, “Thermal and Hydraulic Analysis of a High Flux Heat Exchanger,” In *Thermal Management of Commercial and Military Electronics*, eds. R. Schmidt et al., ASME, HTD-Vol. 329, pp. 187-196, 1996.
74. Arabzadeh, M., Kim, D. and **Ghajar, A. J.**, “Experimental Study of Geometric Effects on Forced Air-Cooling of Regular In-Line Array of Electronic Components,” In the *Proceedings of the ASME/JSME Thermal Engineering Joint Conference*, eds. L. S. Fletcher and T. Aihara, ASME, Vol. 4, pp. 231-239, 1995.
75. Bang, K. and **Ghajar, A. J.**, “Prediction of Temperature Distribution at the Substrate Surface in Diamond Synthesis Using Oxy-Acetylene Combustion Method,” In the *Proceedings of the ASME/JSME Thermal Engineering Joint Conference*, eds. L. S. Fletcher and T. Aihara, ASME, Vol. 4, pp. 159-167, 1995.
76. **Ghajar, A. J.**, Tam, L. M. and Achmadi, F., “An Experimental Investigation on the Effects of Heating on Fully Developed Pressure Drop in a Horizontal Tube,” In the *Proceedings of the ASME/JSME Thermal Engineering Joint Conference*, eds. L. S. Fletcher and T. Aihara, ASME, Vol. 1, pp. 277-284, 1995.
77. Arabzadeh, M., Ogden, E. L. and **Ghajar, A. J.**, “Conduction Heat Transfer Measurements for an Array of Surface Mounted Heated Components,” In *Enhanced Cooling Technologies for Electronics Applications*, eds. S. V. Garimella, et al., ASME, HTD-Vol. 263, pp. 69-78, 1993
78. **Ghajar, A. J.** and Tam, L. M., “Flow Regime Map for a Horizontal Pipe with Uniform Wall Heat Flux and Three Different Inlet Configurations,” In *Mixed Convection Heat Transfer*, eds. M. Keyhani and R. Kumar, ASME, HTD-Vol. 247, pp. 43-51, 1993.

Publications (Conference Proceedings), cont'd.

79. **Ghajar, A. J.** and Bang, K., "Effect of Several Parameters on the Substrate Temperature Profile by Oxy-Acetylene Combustion Method: An Experimental Study," In *Heat Transfer in Materials Processing*, eds. J. C. Khanpara and P. Bishop, ASME, HTD-Vol. 224, pp. 51-59, 1992.
80. **Ghajar, A. J.** and Tam, L. M., "Correlations for Forced and Mixed Convection in Straight Duct Flows with Three Different Inlet Configurations," In *General Papers in Heat Transfer*, eds. M. Jensen, et al., ASME, HTD-Vol. 204, pp. 49-56, 1992.
81. **Ghajar, A. J.** and Bang, K., "Experimental and Analytical Study of Different Methods for Producing Stratified Flow," In *General Papers in Heat Transfer and Heat Transfer in Hazardous Waste Processing*, eds. A. S. Lavine, et al., ASME, HTD-Vol. 212, pp. 105-112, 1992.
82. **Ghajar, A. J.** and Tam, L. M., "Laminar-Transition-Turbulent Forced and Mixed Convective Heat Transfer Correlations for Pipe Flows with Different Inlet Configurations," In *Fundamentals for Forced Convection Heat Transfer*, eds. M. A. Ebdian and D. A. Kaminski, ASME, HTD-Vol. 181, pp. 15-23, 1991.
83. Wang, Y. and **Ghajar, A. J.**, "Effect of Component Geometry and Layout on Flow Distribution for Surface Mounted Electronic Components: A Smoke Flow Visualization Study," In *Heat Transfer Enhancement in Electronics Cooling*, eds. S. H. Bhavnani and M. Greiner, ASME, HTD-Vol. 183, pp. 25-31, 1991.
84. **Ghajar, A. J.**, Strickland, D. T. and Kuppuraju, S., "Forced and Mixed Convective Heat Transfer Measurements in A Circular Tube with Different Inlets," In *Mixed Convection*, eds. R. L. Mahajan and R. D. Boyd, ASME, HTD-Vol. 152, pp. 37-45, 1990.
85. **Ghajar, A. J.** and Zurigat, Y. H., "Microcomputer-Assisted Heat Transfer Measurement/Analysis in a Circular Tube," In *Computers in Engineering* 1990, eds. G. L. Kinzel and S. M. Rohde, ASME, Vol. 2, pp. 259-268, 1990.
86. **Ghajar, A. J.** and Zurigat, Y. H., "A Numerical Study of the Effect of Inlet Geometry on Stratification in Thermal Energy Storage," In *Computers in Engineering* 1990, eds. G. L. Kinzel and S. M. Rohde, ASME, Vol. 2, pp. 325-334, 1990.
87. Zurigat, Y. H., **Ghajar, A. J.** and Lilley, D. G., "Comparison of Weighted Upwind and Second Order Upwind Difference Schemes," In *Computers in Engineering* 1989, eds. D. R. Riley and T. J. Cokonis, ASME, Vol. 2, pp. 135-143, 1989.
88. Abu-Hamdan, M. G., Zurigat, Y. H. and **Ghajar, A. J.**, "An Experimental Study of a Stratified Thermal Storage Under Variable Inlet Temperature for Different Inlet Designs," In *AIChE Symposium Series*, ed. S. B. Yilmaz, AIChE, 269, Vol. 85, pp. 166-171, 1989.
89. Zurigat, Y. H., Liche, P. R. and **Ghajar, A. J.**, "Turbulent Mixing Correlations for a Thermocline Thermal Storage Tank," In *AIChE Symposium Series*, ed. S. B. Yilmaz, AIChE, No. 263, Vol. 84, pp. 160-168, 1988.
90. Yoon, H. K. and **Ghajar, A. J.**, "A Heat Transfer Correlation for Viscoelastic Turbulent Pipe Flows Under Constant Wall Heat Flux," In *Fundamentals of Convection in Non-Newtonian Fluids*, eds. J. L. S. Chen, J. M. Ekmann, and G. P. Peterson, ASME, HTD-Vol. 79, pp. 9-15, 1987.
91. Zurigat, Y. H., Rao, K. S. S. and **Ghajar, A. J.**, "A Microcomputer-Based Data Acquisition System for Thermal Studies," In *Computers in Engineering* 1987, eds. R. Raghavan and T. J. Cokonis, ASME, Vol. 3, pp. 57-63, 1987.

Publications (Conference Proceedings), cont'd.

92. Zurigat, Y. H., Maloney, K. J., **Ghajar, A. J.** and Moretti, P. M., "A Comparative Study of Stratified Thermal Storage Tank Models," with Y. H. Zurigat, In *Computers in Engineering* 1987, eds. R. Raghavan and T. J. Cokonis, ASME, Vol. 3, pp. 101-109, 1987.
93. Zurigat, Y. H., Bang, K. and **Ghajar, A. J.**, "Analysis of Methods for Producing Linear Density Stratification in Laboratory Tanks," In the *Proceedings of the 22nd Intersociety Energy Conversion Engineering Conference*, AIAA, Vol. 3, pp. 1293-1301, 1987.
94. Yoon, H. K. and **Ghajar, A. J.**, "A New Heat Eddy Diffusivity Equation for Calculation of Heat Transfer to Drag Reducing Turbulent Pipe Flows," In *Heat Transfer* 1986, eds. C. L. Tien, V. P. Carey, and J. K. Ferrell, Hemisphere Publishing Corporation, Vol. 3, pp. 937-942, 1986.
95. Zurigat, Y. H., Hanna, G. M., **Ghajar, A. J.** and Moretti, P. M., "Stratified Thermal Storage Tank Inlet Characterization Using Computer Simulation and Experiments," In *Computers in Engineering* 1986, ed. G. Gupta, ASME, Vol. 3, pp. 285-289, 1986.
96. Maxwell, M. J. and **Ghajar, A. J.**, "Laminar Forced Convective Heat Transfer with Varying Properties in Straight Duct Inlets," In *Computers in Engineering* 1985, eds. R. Raghavan and S. M. Rohde, ASME, Vol. 3, pp. 293-298, 1985.
97. Oppel, F. J., Yoon, H. K., **Ghajar, A. J.** and Moretti, P. M., "Computer Simulation of Stratified Thermal Storage," In *International Symposium on Modeling Environment Flows*, eds. D. J. Norton and R. A. Bajura, ASME, pp. 127-135, 1985.
98. Yoon, H. K. and **Ghajar, A. J.**, "Analytical Study of Turbulent Heat Transfer to Polymer Solutions in Tubes with Constant Heat Flux," In *Laminar/Turbulent Boundary Layers*, eds. E. M. Uram and H. E. Weber, ASME, FED-Vol. 11, pp. 17-21, 1984.
99. Zurigat, Y. H. and **Ghajar, A. J.**, "Computer Simulation of Woodstove Thermal Storage System," In *Computers in Engineering* 1984, ed. W. A. Gruver, ASME, Vol. 2, pp. 175-183, 1984.
100. Jakobsson, H. Th. and **Ghajar, A. J.**, "Control Volume-Based Finite Difference Formulation for Heat Conduction and Simple Fluid Flow Problems," In *Computers in Engineering* 1984, ed. W. A. Gruver, ASME, Vol. 2, pp. 242-246, 1984.
101. **Ghajar, A. J.** and Parker, J. D., "Laminar-Free Convection in the Supercritical Region with Variable Properties," In the *Proceedings of the 1980 Heat Transfer and Fluid Mechanics Institute*, eds. M. Gerstein and P. R. Choudhury, Stanford University Press, pp. 196-208, 1980.

PUBLICATIONS (CONFERENCE PAPERS)

1. Cutbirth, J. M. and **Ghajar, A. J.**, "An Investigation of a Novel Heat Exchanger for High Heat Fluxes," with J. M. Cutbirth. AIAA Paper No. 96-1908 presented at the *31st AIAA Thermophysics Conference*, New Orleans, LA, June 17-20, 1996.

Publications (Conference Papers), cont'd.

2. **Ghajar, A. J.**, Tang, W. C. and Beam, J. E., "Comparison of Hydraulic and Thermal Performance of PAO and Coolanol 25R Liquid Coolants," AIAA Paper No. 94-1965 presented at the *6th AIAA/ASME Joint Thermophysics and Heat Transfer Conference*, Colorado Springs, Colorado, June 20-23, 1994.
3. Kong, S. C., Tam, L. M. and **Ghajar, A. J.**, "Intermittency Factor Measurements in the Transition Region for a Circular Tube with Two Different Inlet Configurations," AIAA Paper No. 93-3073 presented at the *AIAA 24th Fluid Dynamics Conference*, Orlando, Florida, July 6-9, 1993.
4. **Ghajar, A. J.** and Augustine, J. R., "Pressure Drop Measurements in the Transition Region for a Circular Tube with a Square-Edged Entrance," AIAA Paper No. 90-1500 presented at the *AIAA 21st Fluid Dynamics, Plasmadynamics and Lasers Conference*, Seattle, Washington, June 18-20, 1990.
5. **Ghajar, A. J.** and Strickland, D. T., "Forced and Mixed Convective Heat Transfer Correlations in the Laminar-Transition-Turbulent Regions for a Circular Tube with a Square-Edged Entrance," AIAA Paper No. 90-1762 presented at the *AIAA/ASME 5th Joint Thermophysics and Heat Transfer Conference*, Seattle, Washington, June 18-20, 1990.
6. **Ghajar, A. J.** and Raza, K., "Mass Transfer Analogy for Heat Transfer Experiments in Thermal Storage," AIAA Paper No. 89-1757 presented at the *AIAA 24th Thermophysics Conference*, Buffalo, New York, June 12-14, 1989.
7. Yoon, H. K. and **Ghajar, A. J.**, "A Method for Correlating the Diameter and Concentration Effects on Friction and Heat Transfer in Drag-Reducing Flows," AIAA Paper No. 88-2622 presented at *AIAA Thermophysics, Plasmadynamics, and Lasers Conference*, San Antonio, Texas, June 27-29, 1988.
8. Toh, K. H. and **Ghajar, A. J.**, "An Experimental Study of Heat Transfer in the Thermal Entrance Region for Polymer Solutions in Turbulent Pipe Flows Under Constant Wall Heat Flux," AIAA Paper No. 88-0747 presented at the *AIAA 26th Aerospace Sciences Meeting*, Reno, Nevada, January 11-14, 1988.
9. Yoon, H. K. and **Ghajar, A. J.**, "Eddy Diffusivity of Heat for Drag Reducing Turbulent Pipe Flows," AIAA Paper No. 87-1640 presented at the *AIAA 22nd Thermophysics Conference*, Honolulu, Hawaii, June 8-10, 1987.
10. **Ghajar, A. J.**, Moretti, P. M. and Zurigat, Y. H., "Eddy Diffusivity Model for a Stratified Thermal Storage Tank," AIAA Paper No. 87-1593 presented at the *AIAA 22nd Thermophysics Conference*, Honolulu, Hawaii, June 8-10, 1987.
11. Asadi, A. and **Ghajar, A. J.**, "Improved Forced Convective Heat Transfer Correlations in the Near-Critical Region," AIAA Paper No. 85-0982 presented at the *AIAA 20th Thermophysics Conference*, Williamsburg, Virginia, June 19-21, 1985.
12. Ghorbani-Tari, S. and **Ghajar, A. J.**, "Improved Free Convective Heat Transfer Correlations in the Near-Critical Region," AIAA Paper No. 84-1705 presented at the *AIAA 19th Thermophysics Conference*, Snowmass, Colorado, June 25-28, 1984.
13. Asgeirsson, L. S. and **Ghajar, A. J.**, "Prediction of Thermal Conductivity and Viscosity for Some Fluids in the Near-Critical Region," AIAA Paper No. 83-1475 presented at the *AIAA 18th Thermophysics Conference*, Montreal, Canada, June 1-3, 1983.

Publications (Conference Papers), cont'd.

14. Najjar, T. S. and **Ghajar, A. J.**, “Prediction of Density and Constant Pressure Specific Heat for Several Fluids in the Near-Critical Region,” AIAA Paper No. 83-1476 presented at the AIAA 18th Thermophysics Conference, Montreal, Canada, June 1-3, 1983.
15. **Ghajar, A. J.** and Parker, J. D., “Physical Property Expressions for Some Fluids in the Supercritical Region,” AIAA Paper No. 80-1533 presented at the AIAA 15th Thermophysics Conference, Snowmass, Colorado, July 14-16, 1980.

PUBLICATIONS (EDUCATIONAL SOFTWARE)

COMPROP2 Software for compressible flow calculation is an intuitive, easy to learn tool that allows students to do compressible flow problem modeling and computation. The software was developed in collaboration with Dr. L. M. Tam (a former Ph.D. student and now Professor and Chairman of the Mechanical Engineering at University of Macau). There are six modules in this computer program. The first five modules calculate the properties for: **Isentropic Flow, Normal Shock Wave, Oblique Shock Wave, Fanno Flow, and Rayleigh Flow**. The last module is for **Supersonic Airfoil Analysis**. For the first five modules, the user can input data and obtain output through a dialog box or from a graph, which is generated using the flow equations. For the supersonic airfoil analysis, a CAD environment is developed for the user to define the dimensions and shape of an airfoil. The software can then calculate the lift force, the drag force, and the pressure distribution of the airfoil according to the flow Mach number and the airfoil angle of attack. The first version of the software (COMPROP) was developed to support the textbook “Compressible Fluid Flow” by Oosthuizen and Carscallen, McGraw-Hill, 1997. The second version of the software (COMPROP2) was finalized in May 2003 and was made available as a CD ROM with the 3rd edition of “**Modern Compressible Flow with Historical Perspective**” by Anderson, McGraw-Hill, 2003. The latest version of the software (COMPROP2) is also available with the 2nd edition of “Introduction to Compressible Fluid Flow” by Oosthuizen and Carscallen, CRC Press, 2014.

COMPROP2 User Guide is a 45-page document and was completed in December of 2003. The document is post on the McGraw-Hill/Anderson site. This web-based resource for **COMPROP2** links the program directly to selected topics, examples, and problems in the Anderson book. An updated version of the user guide (updated in June 2013) is posted on the CRC Press website for “Introduction to Compressible Fluid Flow” by Oosthuizen and Carscallen.

Simple Aircraft Gas Turbine Design (SAGTD) is an interactive computer program and can be used for analysis and design of a turbojet engine. This software was developed in collaboration with Dr. R. D. Delahoussaye (a colleague in the OSU’s School of Mechanical and Aerospace Engineering) and Mr. V. V. Nayak (former MS student). The program has modules for the analysis/design of the six major components of a turbojet engine (Inlet, Diffuser, Compressor, Combustor, Turbine, and Nozzle). The analysis can be performed under both constant and variable specific heats assumption. The software was used for several semesters in the Gas Power Systems course taught at Oklahoma State University.

PUBLICATIONS (FEATURED RESEARCH)

Steady State and Transient Heat Conduction (SS-T-CONDUCT) is an interactive computer program and can be used for solving one and two dimensional steady state and transient heat conduction problems. This software was developed in collaboration with Mr. H. Al-Matar (former MS student). The program can handle variety of boundary conditions (constant temperature, specified heat flux, convection). For the transient solution, both implicit and explicit schemes can be used. The software is available with the 4th edition of “Heat and Mass Transfer – Fundamentals and Applications,” by Çengel and Ghajar, McGraw-Hill, 2010.

My research in “Two-Phase Flow” and “Heat Transfer and Pressure Drop in the Transition Region” has been selected to be featured in the recent edition of the *Engineering Data Book III of Wolverine Tube, Inc.* To access the data book go to <http://www.wlv.com/products> under the heading Design Tools and click on Wolverine Engineering Data Book III. The works selected for inclusion in the Engineering Data Book are:

Chapter 1: Video Gallery of Flow Phenomena – This chapter will feature three video clips (Flow patterns in a horizontal tube as a function of gas superficial Reynolds number, Annular flow in horizontal and slightly inclined tubes, and Slug flow in horizontal and slightly inclined tubes) based on our recent and ongoing studies on two-phase flow in horizontal and inclined pipes. These videos appear in Chapter 1 under Section 1.2 (Two-Phase Flow Patterns in Horizontal Tubes) as video clips 1.2.14, 1.2.15, and 1.2.16 on pages 1-5 to 1-6 (<http://www.wlv.com/products/databook/db3/DataBookIII.pdf>).

Chapter 5: Enhanced Single-Phase Turbulent Tube-Side Flows and Heat Transfer – This chapter will feature a detailed summary of our work in the transition region, it appears in Section 5.2 (Turbulent and Transition Flows and Heat Transfer in Plain Tubes). The material is based on the six key journal articles we have published in this area from 1994-2004. I personally wrote several sections of the material that appears in this chapter and provided editorial comments on the rest. The write up on our work is about ten book pages long (fairly substantial) with two detailed worked out example problems showing the application of the proposed heat transfer and pressure drop correlations. See pages 5-4 to 5-13 of Chapter 5 (<http://www.wlv.com/products/databook/db3/DataBookIII.pdf>).

PUBLICATIONS (SPECIAL)

1. Oppel, F. J., **Ghajar, A. J.** and Moretti, P. M., “Thermal Storage: Keep Hot and Cold Fluids from Blending,” *Consulting-Specifying Engineer*, pp. 68-73, March 1987.
2. Oppel, F. J., **Ghajar, A. J.** and Moretti, P. M., “A Numerical and Experimental Study of Stratified Thermal Storage,” *ASHRAE Technical Data Bulletin*, “Cool Storage,” pp. 57-73, 1987.

PUBLICATIONS (ENGINEERING CASES)

Knovel Engineering Cases – where theory meets practice – tell the stories of engineers who have applied innovative theories and new technologies to both common and uncommon challenges.

1. **Ghajar, A. J.**, "Transitional Flow in Tubes: Recommended Correlations for Calculation of Pressure Drop and Heat Transfer", 2014.
2. **Ghajar, A. J.** and **Bhagwat, S. M.**, "Recommended Void Fraction Correlations for Vertical Upward and Downward Two-Phase Flow in Pipes", 2012.
3. **Ghajar, A. J.** and **Tang, C. C.**, "Void Fraction Correlations for Vertical Upward Two-Phase Flow in Pipes", 2011.
4. **Ghajar, A. J.** and **Tang, C. C.**, "General Void Fraction Correlation in Two-Phase Flow for Various Pipe Orientations", 2011.
5. **Ghajar, A. J.** and **Tang, C. C.**, "Estimations of Heat Transfer in Nonboiling Two-Phase Flow with a General Correlation", 2011.
6. **Ghajar, A. J.** and **Tang, C. C.**, "Correlating Heat Transfer with Pressure Drop for Nonboiling Two-Phase Flow in Horizontal, Inclined and Vertical Pipes", 2010.
7. **Ghajar, A. J.** and **Tang, C. C.**, "Practical Illustrations of Using A General Two-Phase Heat Transfer Correlation", 2010.

PUBLICATIONS (THESES)

1. **Ghajar, A. J.**, "Prediction of Heat Transfer Coefficient in Drag Reducing Turbulent Pipe Flows," M.S. Thesis, Advisor: Dr. W. G. Tiederman, School of Mechanical and Aerospace Engineering, Oklahoma State University, Stillwater, Oklahoma, 1975.
2. **Ghajar, A. J.**, "Laminar Free Convective Heat Transfer in the Supercritical Region with Variable Fluid Properties," Ph.D. Thesis, Advisor: Dr. J. D. Parker, School of Mechanical and Aerospace Engineering Oklahoma state University, Stillwater, Oklahoma, 1979.

SUPERVISION OF STUDENT RESEARCH

Masters' Research Students Completed – 61

T. S. **Najjar** (1982), S. **Asgeirsson** (1982), H. Th. **Jakobsson** (1982), Y. H. **Zurigat** (1984), S. **Ghorbani-Tari** (1984), A. **Asadi** (1984), C. C. **Eberle** (1984), K. R. **Pilcher** (1985), M. J. **Maxwell** (1985), F. J. **Oppel** (1985), D. **Kanchanalashana** (1985), G. M. **Hanna** (1986), Y. **Azar** (1987), K. H. **Toh** (1987), K. J. **Maloney** (1987), P. R. **Liche** (1987), M. **Abu-Hamden** (1988), K. **Raza** (1988), M. A. **Darwish** (1989), K. **Bang** (1989), D. T. **Strickland** (1990), J. R. **Augustine** (1990), S. C. **Kong** (1990), K. F. **Madon** (1990), S. **Kuppuraju** (1990), L. M. **Tam** (1990), Y. **Wang** (1990), M. **Rajagopalan** (1991), E. **Ogden** (1992), F. **Achmadi** (1993), A. **Febransyah** (1994), D. **Kim** (1994), M. M. **Laurens** (1995), C. D. **Warnecker** (1995), Y. **Sofyan** (1996), J. M. **Cutbirth** (1996), B. L. **Foster** (1999), Z. **Nikolic** (2000), V. V. **Nayak** (2000), M. **Garge** (2000), H. **Al-Matar** (2001), S. A. **Trimble** (2001), W. B. **Durant** (2003), K. **Malhotra** (2004), M. **Woldesemayat** (2006), R. P. **Rao** (2008), W. L. **Cook** (2008), P. V. **Godbole** (2009), N. N. **Mathure** (2010), S. **Bhagwat** (2011), A. **Singh** (2011), Q. **Li** (2012), A. L. **Still** (2012), M. **Mollamahmutoglu** (2012), H. **Mekisso** (2013), A. L. **Oyewole** (2013), S. B. **Kalapatapu** (2014), T. A. **Hossainy** (2014), E. I. **Lares Barboza** (2014), T. **John** (2015), R. **Korivi** (2015).

Doctoral Research Students Completed – 10

- Bhagwat**, S. M., 2015, “Experimental Measurements and Modeling of Void Fraction and Pressure Drop in Upward and Downward Inclined Non-Boiling Gas-Liquid Two-Phase Flow.”
- Tang**, C. C., 2011, “A Study of Heat Transfer in Non-Boiling Two-Phase Gas-Liquid Flow in Pipes for Horizontal, Slightly Inclined, and Vertical Orientations.”
- Kim**, J., 2006, “Heat Transfer Studies in Non-Boiling Two-Phase Flow.” *He was six months away from completing his PhD dissertation and had to quit due to family problems.
- Sofyan**, Y., 2001, “Development of Multiphase Equilibrium Algorithms: Cloud Point Temperature and Solid Precipitation Predictions.”
- Kim**, D., 2000, “An Experimental and Empirical Investigation of Convective Heat Transfer for Gas-Liquid Two-phase Flow in Vertical and Horizontal Pipes.”
- Tang**, W. C., 1997, “An Experimental Study of Heat Transfer of a Single Heated Module on Conductive Boards in the Turbulent Region for an In-Line Array of Surface Mounted Cubic Modules in a Horizontal Rectangular Channel.”
- Tam**, L. M., 1995, “An Experimental Investigation of Heat Transfer and Pressure Drop in the Transition Region for A Horizontal Tube with Different Inlets and Uniform Wall Heat Flux.”
- Bang**, K., 1994, “Experimental and Computational Investigation of the Thermal Effects on CVD Diamond Films by Oxy-Acetylene Combustion Method.”
- Arabzadeh**, M., 1993, “Experimental Study of Geometric Effects and Conduction Loss on Forced Air-Cooling of Regular In-Line Array of Electronic Components.”
- Zurigat**, Y. H., 1988, “An Experimental and Analytical Examination of Stratified Thermal Storage.”
- Yoon**, H. K., 1986, “An Experimental and Analytical Study of Heat Transfer to Polymer Solutions in Turbulent Pipe Flows Under Uniform Wall Heat Flux.”

Supervision of Student Research, cont'd.

International Collaboration: Co-Advisor of the following Doctoral Research Students – 3

Cheong, S., University of Macau, PhD studies was initiated in August 2013 and is in progress.

Tam, H. K., University of Macau (The student was at OSU-MAE for two weeks in February 2006), the PhD degree was granted in June 2013.

Yeunyongkul, P., Chiang Mai University Thailand and Rajamangala University of Technology Lanna, Thailand (The student was at OSU-MAE from January to July 2010), the PhD degree was granted in September 2012.

Postdoctoral Students – 2

Bhagwat, S. M. (2015-2016)

Zurigat, Y. H. (1988 – 1990)

M.S./Ph.D. Committee Membership (excluding the above) – 110/50

INDUSTRY SHORT COURSE TAUGHT

“Computation of Heat Transfer and Fluid Flow,” A four-day course offered in 1997 to the employees of Tulsa Heaters, Inc. and In Fin, Inc., Tulsa, Oklahoma.

COURSES TAUGHT AT OKLAHOMA STATE UNIVERSITY

Introduction to Engineering (Freshman Level)
Thermodynamics I (Sophomore Level)
Thermodynamics II (Junior Level)
Fluid Mechanics (Junior Level)
Fluid Mechanics and Heat Transfer (Junior Level)
Heat Transfer (Junior Level)
Heat Transfer and Fluid Flow (Senior Level)
Experimental Fluid Mechanics (Senior Level)
Mechanical Engineering Applications (Senior Level Project Course)
Gas Power Systems (Senior Level)
Design Projects (Senior Level Capstone Design)
Seminar (Senior Level)
Viscous Fluid Dynamics (Graduate Level)
Intermediate Heat Transfer (Graduate Level)
Computational Heat Transfer (Graduate Level)
Convective Heat and Mass Transfer (Graduate Level)

SERVICES/COMMITTEES AT OKLAHOMA STATE UNIVERSITY

Departmental Services/Committees

Member of MAE Executive Committee (2014- Present).
Chairman of Search Committee for Tenure Track Manufacturing Faculty Member, 2017-2019.
Chairman of Search Committee for Tenure Track Thermal Science Faculty Member, 2014-2015.
Member of Search Committee for Tenure Track Thermal Science Faculty Member, 2015-2016.
Graduate Director of the School of Mechanical and Aerospace Engineering, 1998-2013.
Chairman of Graduate Advisory Committee, 1998-2013.
Chairman of Search Committee for Tenure Track Fluid Mechanics Faculty Member, 2012-2013
Member of Search Committee for Tenure Track Petroleum Engineering (Drilling and Production) Faculty Member, 2011-2012.
Chairman of Mechanical and Aerospace Engineering Advisory Committee on Reappointment, Promotion, and Tenure, August 2000-2010.
Supervisor of Graduate Academic Secretary, 1998-2013.
Chairman of Search Committee for Tenure Track Nanotechnology and Bioengineering Faculty Member (2005-2007)
Member of Search Committee for Non-Tenure Track OSU Tulsa Faculty Member (2005-2006)
Member of Search Committee for Tenure Track Thermal Sciences Faculty Member, 2000-2005.
Chairman of Search Committee for Tenure Track Fluid Mechanics Faculty Member, 2001-2003.
Member of Aerospace Curriculum Committee, 1984-1987, and 1999-2000.
Member of Advisory Committee on Promotion, Reappointment, and Tenure, 1992-2000.
Chairman of Undergraduate Curriculum Committee, 1989–1998.
Member of Laboratory Committee, 1983-1997.
Chairman of Search Committee for Tenure Track Thermal Sciences Faculty Member, 1989-1990.
Member of Search Committee for Tenure Track Thermal-Fluids Faculty Member, 1988-1989.
Member of Graduate Advisory Committee, 1981-1989.
Member of Undergraduate Curriculum Committee, 1987-1988.

College of Engineering, Architecture, and Technology (CEAT)

Services/Committees

Member of CEAT Hall of Fame and Lohmann Award Selection Committee, 2014 & 2017.
Member of CEAT Engineering Science Oversight Committee – ENSC 3233, 1991-present.
Member of Search Committee for CEAT Career Services Specialist, 2005
Member of CEAT Mathematics in the Engineering Common Curriculum Committee, 1997-1999.
Member of Selection Committee for Halliburton Excellent Teacher Award, 1998-1999.
CEAT Interviewer for CEAT Scholars Enrichment Program, 1997-1999.
Member of CEAT Task Force to Recommend a Position Recognition of Outstanding Teaching Assistants, 1997-1998.
Member of Selection Committee for Halliburton Excellent Teacher Award, 1997-1998.
Member of CEAT Hall of Fame Selection Committee, 1997-1998.
Member of CEAT Core Course Review Committee, 1994-1995.
Chairman of Thermal Sciences Working Group for ATRC (Advanced Technology Research Center) Space Programming, 1991-1995.
Member of Engineering Science Course Review Committee, 1990-1991.
CEAT Faculty Council Representative, 1988-1990.

University Services/Committees

Regents Professor Selection Committee, 2007-2010.

Teaching in American Classrooms – A Panel for International Professors, Sponsored by the Institute for Teaching and Learning Excellence, OSU, March 29, 2007.

CEAT Representative on OSU General Education Advisory Council, 1994–2000.

Member of Selection Committee for the AMOCO Foundation Outstanding Undergraduate Teaching Award, 1996-1997.

Member of Phi Kappa Phi Graduate Fellowship Committee, 1987-1994.

SERVICES AT OTHER UNIVERSITIES (NATIONAL & INTERNATIONAL)

External Evaluator for the scientific work performed in the thermal sciences area for the College of Engineering for the Imperial College London, United Kingdom, University of Missouri, City University of New York, Staten Island, New York; Stony Brook, State University of New York; Concordia University, Montreal Quebec, Canada; University of Hawaii at Manoa; the American University of Beirut, Beirut, Lebanon; Jordan University of Science & Technology, Irbid, Jordan; Kuwait University, Safat Kuwait; College of Technological Studies, Shuwaik, Kuwait; National University of Singapore, Singapore, Sultan Qaboos University, Sultanate of Oman, United Arab Emirates University, and King Fahd University of Petroleum & Minerals.

Graduate Research Theses (MS & PhD) Evaluator in Mechanical and Chemical Engineering for the College of Graduate Studies, Kuwait University, Safat, Kuwait; Indian Institute of Technology Roorkee, Roorkee, India; University of Pretoria, South Africa; Tel Aviv University, Tel Aviv, Israel, and Indian Institute of Technology Mandi, Mandi, India.

External PhD examiner for the Department of Mechanical & Aerospace Engineering, University of Pretoria, Pretoria, South Africa and Indian Institute of Technology Mandi, Mandi, India.

PhD Faculty opponent for the Department of Energy Sciences, Lund University, Lund, Sweden.

Research Proposal Evaluator for the Sultan Qaboos University, Sultanate of Oman; Kuwait University, Safat, Kuwait; King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia; Qatar National Research Fund, Qatar Fund, Doha, Qatar; and the American Association for the Advancement of Science, New York.

Graduate Program Evaluator for the Mechanical Engineering Department, University of Texas, Lubbock, Texas.

SUMMARY

Dr. Afshin J. Ghajar is *Regents and John Brammer Endowed Professor* in the School of Mechanical and Aerospace Engineering at Oklahoma State University, Stillwater, Oklahoma, USA and an Honorary Professor of Xi'an Jiaotong University, Xi'an, China. He received his BS, MS, and Ph.D. all in Mechanical Engineering from Oklahoma State University. His expertise is in experimental heat transfer/fluid mechanics and development of practical engineering correlations. Dr. Ghajar has secured research grants and awards from government agencies and industrial sponsors. His current research is in two-phase flow heat transfer/pressure drop studies in pipes with different orientations, heat transfer/pressure drop in mini/micro tubes, and heat transfer/pressure drop in the transition region (plain and enhanced tubes). Dr. Ghajar has been a Summer Research Fellow at Wright Patterson AFB (Dayton, Ohio) and Dow Chemical Company (Freeport, Texas). He and his co-workers have published over 200 reviewed research papers. He has delivered numerous keynotes and invited lectures at major technical conferences and institutions. Dr. Ghajar's research in "Two-Phase Flow" and "Heat Transfer and Pressure Drop in the Transition Region" has been featured in the recent edition of the *Engineering Data Book III of Wolverine Tube, Inc.* and the recent 2nd edition of *Handbook of Multiphase Flow*. He has been the author/co-author of nine book chapters and has developed three interactive/visual educational software packages: **COMP2** for compressible flow modeling and computation, **SAGTD** for simple gas turbine design, and **SS-T-CONDUCT** for steady state and transient heat conduction calculations. He has received several outstanding teaching/service awards, such as the Regents Distinguished Teaching Award, Halliburton Excellent Teaching Award; Mechanical Engineering Outstanding Faculty Award for Excellence in Teaching and Research; Golden Torch Faculty Award for Outstanding Scholarship, Leadership, and Service by the Oklahoma State University/National Mortar Board Honor Society, and the College of Engineering Outstanding Advisor Award. His latest significant awards are the 75th Anniversary Medal of the ASME Heat Transfer Division "*in recognition of his service to the heat transfer community and contributions to the field*", awarded in 2013, the ASME ICNMM 2016 Outstanding Leadership Award, this award recognizes a person whose service within the ICNMM (International Conference on Nanochannels, Microchannels, and Minichannels) is exemplary; the recipient of the award contributed significantly to the lasting success of the conference, and the 2017 Donald Q. Kern Award "*in recognition of his outstanding leadership in the field of heat exchangers and two-phase flow, book and archival publications, and service to the academic and industrial professionals*". Dr. Ghajar is a *Fellow* of the American Society of Mechanical Engineers (ASME) and the American Society of Thermal and Fluids Engineers (ASTFE), *Heat Transfer Series Editor* for CRC Press / Taylor & Francis (he has edited 13 books to date) and *Editor-in-Chief* of *Heat Transfer Engineering*, an international journal published twenty-two times per year by Taylor and Francis. *Heat Transfer Engineering* is aimed at practicing engineers and specialists in heat transfer. Dr. Ghajar is also the co-author of the 4th (2011), 5th (2016), and 6th (2020) Editions of Cengel and Ghajar, *Heat and Mass Transfer – Fundamentals and Applications*, McGraw-Hill Education and the *Fundamentals of Thermal-Fluid Sciences*, 6th edition, McGraw-Hill, 2022. He is also the author of the *Two-Phase Gas-Liquid Flow in Pipes with Different Orientations*, SpringerBriefs in Applied Sciences and Technology, Springer, Cham, Switzerland, 2020 and *Single- and Two-Phase Flow Pressure Drop and Heat Transfer in Tubes*, Mechanical Engineering Series, Springer, Cham, Switzerland (in press).

Last update: Sept. 2021