International Journal of Heat and Mass Transfer 54 (2011) 4459–4461

Contents lists available at ScienceDirect

International Journal of Heat and Mass Transfer

journal homepage: www.elsevier.com/locate/ijhmt

In Celebration

Professor Amir Faghri on his 60th birthday

This article is in commemoration of the 60th birthday of Professor Amir Faghri, his outstanding scholarly contributions to the heat transfer community, and his distinguished leadership in engineering education as a teacher, mentor, researcher and administrator. He is a scholar of the first rank and among the top in his field of heat transfer. Professor Faghri has made significant fundamental contributions in the field of transport phenomena in multiphase and energy systems, with applications in heat exchangers, heat pipes, energy storage, electronics cooling and fuel cells. Professor Faghri is arguably the world's leading expert in the area of heat pipes and a significant contributor to thermal-fluids engineering in energy systems. In this commemorative note, it is our great pleasure and privilege to present to the global engineering colleagues some of the highlights of his career so that all can appreciate the true importance of his contributions.

Professor Amir Faghri was born in Isfahan, Iran on April 16, 1951. He was raised by his father who was a veterinarian since his mother died when he was five years old. His father played a major role in developing Professor Faghri's analytical and mathematical interests with a penchant for curiosity from an early age, and in encouraging him to pursue his higher education in the United States. Professor Faghri started undergraduate education with a full scholarship in Mechanical Engineering at Oregon State University in 1970, and received the B.S degree with highest honors in 1973. While being an undergraduate student, he was mentored and introduced to the field of heat and mass transfer by Professor James Welty, a recognized leader in heat transfer and then Head of the Mechanical Engineering Department. Upon graduation from Oregon State University, Professor Faghri went to the University of California at Berkeley with a full graduate fellowship to work with the late Professor Ralph Seban, a renowned scientist in the field of heat transfer who established Berkeley as a world-class center of excellence in the field by recruiting distinguished heat transfer faculty members including the late Professor Chang-Lin Tien. Professor Faghri received his M.S. and Ph.D. degrees in Mechanical Engineering from the University of California at Berkeley in 1974 and 1976, respectively. He clearly showed his creativity, hard work and innovation from the start by completing all his higher education degrees, B.S, M.S. and Ph.D., with distinction in six years.

Professor Faghri returned to Iran in 1976 and taught at Aryamehr University (now Sharif University of Technology). He was one of the founding faculty members and administrators who established Isfahan University of Technology in 1977. He served on the faculty until 1980 (shortly after the revolution) as the founding director of its Energy Division (now separated into Mechanical and Chemical Engineering Departments). In 1981, the late Chancellor of the University of California, Professor Chang-Lin Tien, personally invited Professor Faghri to join the University of California at Berkeley as a visiting professor to teach thermodynamics and energy courses. Following Berkeley, Professor Faghri joined the faculty of Wright State University (WSU) in 1982 and

doi:10.1016/j.ijheatmasstransfer.2011.05.025

was promoted to Brage Golding Distinguished Professor in 1989. He developed a nationally-recognized heat transfer group and laboratory at WSU, interacting extensively with the National Aeronautics and Space Administration (NASA) and the US Air Force.

Professor Faghri joined the University of Connecticut (UConn) in 1994 and served as Head of the Mechanical Engineering Department from 1994–1998, United Technologies Corporation Chair Professor in Thermal-Fluids Engineering from 2004–2010, and Dean of the School of Engineering from 1998–2006. During his tenure as Dean, Professor Faghri developed initiatives that elevated UConn's School of Engineering to unprecedented levels of faculty productivity, and standing in the field of engineering. He successfully attracted corporate and alumni support to establish 17 endowed professorships, including 11 chair professorships. He increased total enrollment by 106%, significantly raised the number of valedictorians and salutatorians admitted per year to the School of Engineering, increased the number of merit scholarships by approximately 200%, and added three new buildings/facilities. He also doubled the number of undergraduate degree programs from 6 to 12. Professor Faghri was the founder (along with Professor Ted Bergman) of the Connecticut Global Fuel Cell Center (recently renamed as the Center for Clean Energy Engineering) at the University of Connecticut, with significant external support secured from private, state, and federal agencies.

Professor Faghri is the sole or leading author of four major books and has published more than 300 archival technical publications including 200 journal papers. He has eight US patents related to heat pipes, energy storage devices and fuel cells. Professor Faghri is presently serving on the editorial boards of eight scientific journals, including roles as executive editor, editor-in-chief, founding editor, and honorary editorial board member, including the *International Journal of Heat and Mass Transfer* and the *International Communications in Heat and Mass Transfer*. He has received many national and international honors and awards, including the American Institute of Aeronautics Astronautics (AIAA) Thermophysics Award in 1988, the American Society of Mechanical Engineering (ASME) Heat Transfer Memorial Award in 1988, the ASME James Harry Potter Gold Medal in 2005, and the ASME/AIChE Max Jakob Memorial Award in 2010, which is the highest honor in the field of heat transfer given annually, without regard to society affiliation or nationality, to an eminent scholar for distinguished scholarly achievements and leadership in the field of heat transfer. Professor Faghri has been a longtime fellow of the ASME and an elected member of the Connecticut Academy of Science and Engineering; he, in turn, has nominated and supported many colleagues for these and other fellowships and honors. He was also inducted to the Oregon State University Council of Distinguished Engineers in 1999.

Professor Faghri has served as a consultant to several major research centers and corporations, including Los Alamos and Oak Ridge National Laboratories, Exxon Mobil, Fujikura LTD, and Intel Corporation. He currently serves on the board of directors of RBC Bearings Inc., and on the School of Engineering external advisory board at the University of California, Riverside. Professor Faghri has received numerous external research contracts and grants from the National Science Foundation, US Departments of Energy, Defense, and Education, NASA, and industry including General Electric, United Technologies, Exxon Mobil, and Boeing.

Professor Faghri's most profound scholarly contributions relate to his development of the fundamental theories that have enabled today's widespread deployment of macro- and micro-two-phase energy systems including heat pipes, heat exchangers and fuel cells. His research showed, for the first time, the promise of heat pipes as integral cooling devices for microelectronic equipment. In the 1990s, he developed high heat flux miniature heat pipes for commercial cooling of laptop computer chips, which have been a principal contributor to the ubiquitous presence of heat pipes for cooling microprocessors in present-day laptop computers.

Professor Faghri's other significant fundamental technical contributions are in the areas of heat and mass transfer of thin film liquids, solidification and melting, evaporation and condensation, microgravity convection, and liquid jet impingement. His early work in the 1970s characterized the role of interfacial waves on thin film evaporation and condensation, and is now routinely cited in literature on the topic. In the 1980s, he unraveled complex problems, including convection in the presence of phase-change materials for thermal energy storage in outer space. This breakthrough led to rational design of these cooling systems for NASA and the US Air Force. Over the last decade, Professor Faghri has focused his efforts on fundamental and applied research related to advanced micro- and macro-energy systems including fuel cells, heat pipes and energy storage systems.

Also notable is his distinguished record of professional service and leadership to the heat transfer and engineering communities. In May 2007, Professor Faghri organized and chaired (with Professors Raymond Viskanta and Ted Bergman as co-chairs) the National Science Foundation sponsored workshop entitled "NSF Workshop for Frontiers in Transport Phenomena Research and Education: Energy Systems, Biological Systems, Security, Information Technology Nanotechnology," which was attended by over 300 invited active members of the world's heat transfer community, to chart a roadmap for emerging research and education opportunities in transport phenomena. Most recently, he acted as the founding editor-in-chief of *Frontiers in Heat and Mass Transfer* and *Thermal-FluidsPedia* through the thermal fluids central website (https://www.thermalfluidscentral.org). *Frontiers in Heat and Mass Transfer* is a premiere open-access and peer-reviewed e-journal available at no cost to authors or users, serving the needs of the thermal-fluids community. *Thermal-FluidsPedia* is a free electronic comprehensive encyclopedia for professionals and students requiring information about thermal-fluids science and engineering. It is authored and continuously updated by qualified contributors and editors.

Professor Faghri has authored four major books: his signature sole-author work, *Heat Pipe Science and Technology* (Taylor and Francis, 1995), is acclaimed for its depth and breadth of coverage, and ranks as the most widely cited book on the subject of heat pipes by Google scholar. His textbook (co-authored with Professor Yuwen Zhang), *Transport Phenomena in Multiphase Systems* (Elsevier, 2006), presented, for the first time, a unified fundamental treatise on all three forms of phase change—boiling and evaporation, melting and solidification, and sublimation and vapor deposition. Most recently, he coauthored (with Professors Yuwen Zhang and John R. Howell) *Advanced Heat and Mass Transfer* (Global Digital Press, 2010), which is an excellent intermediate and advanced textbook that covers the subject of heat and mass transfer with a focus on the significant advances in the field during the last decade. The textbook combines treatment of fundamental principles with practical and modern applications.

Despite his numerous and lasting commitments as an administrative leader for over 15 years, Professor Faghri has simultaneously made major contributions to both personal research and professional service, including his continuous record of research funding and scholarship through journal publications, books and patents. In recognition of the impact of his work, Elsevier awarded him a certificate in 2009 for the most citations of one of his articles in the *International Journal of Heat and Mass Transfer* for the years from 2005 to 2008. His technical and administrative contributions make him a true role model for future young engineers and faculty members.

Many of the graduate students and post-doctoral fellows who worked under Professor Faghri's guidance hold key positions as professors, presidents of companies, and chief scientists and technical mangers in leading companies and government laboratories. Most who have been mentored by him or worked with him, admire his exceptional intellect, integrity, generosity, civility, fairness, caring attitude and high expectations.

On behalf of his former students, colleagues and friends throughout the world including the editors of this journal, we are all very grateful for his exemplary technical contributions and tremendous professional service, visionary leadership, encouraging support, collegiality, and generosity to the heat transfer community and engineering profession. We enthusiastically wish him continued professional success, happiness and good health for many years to come.

C. Thomas Avedisian
Cornell University

Adrian Bejan
Duke University

Yiding Cao
Florida International University

Vijay Dhir
University of California at Los Angeles

John R. Howell
University of Texas at Austin

Frank. P. Incropera
University of Notre Dame

W.J. Minkowycz
Department of Mechanical and Industrial Engineering (M/C 251), University of Illinois at Chicago, 842 West Taylor Street, Room 2049 ERF, Chicago, IL 60607-7022, United States Tel.: +312 996 3467; fax: +312 413 0447
E-mail address: wjm@uic.edu

G.P. "Bud" Peterson
Georgia Institute of Technology

Raymond Viskanta
Purdue University

Yuwen Zhang
University of Missouri

Available online 27 June 2011