

In Memoriam of Dr. Malcolm J. Andrews (1958–2019)



The fluids engineering community has been shocked and deeply saddened by the news that Dr. Malcolm Andrews, Editor of the *ASME Journal of Fluids Engineering* (JFE) since 2010, passed away on Jan. 27, 2019. His untimely departure is a great loss to his family, the Los Alamos National Laboratory, the fluids engineering community and the publications community of ASME, and to the many colleagues with whom he has collaborated or younger scientists whom he mentored over the years.

After completing his graduate studies at Imperial College in London (1986), Malcolm chose to pursue his scientific career across the Atlantic Ocean. Malcolm started as a postdoctoral fellow at Princeton University (1986–1991), and then as a faculty member at Texas A&M University, where he rose to the rank of a full professor (1991–2005). He then moved to the Los Alamos National Laboratory (2005), where he advanced to a leadership role, initially as a National Security Fellow, and then in a series of roles with ever growing responsibilities, starting from Group Leader, to Project Leader, and then to Center Director, reaching an Executive Adviser Level. He has won numerous awards and recognitions, most notably the E. O. Lawrence Award for National Security (2006).

On the scientific side, Malcolm has been involved in development and applications of computational and experimental methods for analyzing and modeling a variety of complex fluid mechanics and heat transfer problems. His most notable scientific contributions include: (i) leading the effort to elucidate and model buoyancy-driven mixing, especially Rayleigh–Taylor and Richtmyer–Meshkov turbulence, where acceleration destabilizes stratified flows. He applied his understanding to characterize dispersal of contaminants in the atmosphere, reacting flows, and inertial confinement fusion; (ii) characterizing complex multiphase and multicomponent flows using sophisticated computational tools, some invented by his group, integrated with experimental data. He has contributed to our understanding of fragmentation of the liquid core of spray jets, the structure of coal-water slurry sprays, convective transport in transient two-phase flow,

kinematic mixing of two fluids, sediment flows, and dense particulate flows; (iii) studying a variety of aerodynamic flows; (iv) determining the viscosity of microencapsulated proteins and dispersions in proteins and polymers aimed at bridging the gap between engineering and biochemistry; and (v) analyzing and improving the design of a variety of heat exchangers, in particular shell-and-tube exchangers, as well as heat transfer in rotating systems, such as turbine blades. The results of his research have been published in a long series of trend-setting journal, conference papers, and patents.

Malcolm has been a devoted and active member of the ASME Fluids Engineering Division (FED) for three decades, regularly attending the ASME International Mechanical Engineering Congress and Exposition and the FED summer meetings. Most notable was his commitment to the multiphase flow community within FED. In 2000, he began co-organizing the “International Symposium on Numerical Methods for Multiphase Flow” and continued to do so for over 15 years. He further served as Vice Chair and Chair of the Multiphase Flow Technical Committee (MFTC) from 2006 to 2010. Malcolm’s involvement with the *Journal of Fluids Engineering* started with his appointment as Associate Editor in 2003. In overseeing the review of papers dealing with computational analysis of multiphase flow and heat transfer, he became a prominent contributor to the establishment of high standards for the entire journal. “While serving as the Technical Editor at that time (JK), I have learned to rely on his decisions, not only about the papers that he has handled, but also in other cases for which I needed an expert (or second) opinion on controversial issues.” After completing his first three years of appointment, Malcolm graciously agreed to serve a second term in spite of his many other commitments, including his new position at Los Alamos, and serving as Chair of the MFTC. “I felt guilty asking him, but desperately needed his help. So, I overcame my guilt, and shamelessly took advantage of our friendship and his unlimited willingness to contribute.”

Consequently, as nominees for the next JFE Editor were being considered, Malcolm was the natural candidate, and the Fluids Engineering Division Executive Committee readily agreed. “We continued interacting, he as an Editor, and I as the Chair of Board of Editors, as Malcolm elevated the size, quality, and reputation of the JFE to a different level.” He literally reviewed every paper even before forwarding it to the Associate Editors, sustaining this enormous time commitment even when the number of submitted papers doubled. Furthermore, upon realizing that the impact factor (IF) of JFE along with other ASME journals was adversely affected by erroneous accounting, associated in part by inconsistent reporting of the ASME journal names in citations, Malcolm led the effort together with the ASME Publications staff to correct these systematic errors. This effort led to doubling of the IF of many of the ASME journals, including JFE. He did not stop there, and with his tight control of paper quality as well as attention to details, the IF of JFE rose rapidly, and now competes with the best fluid mechanics journals. Malcolm was also an active participant in other discussions brought to the joint meetings of the ASME Board of Editors with the Technical Committee on Publications and Communications (TCPC), such as improvements to the website, requirements for associate editors, ethical issues, etc. Consequently, his absence did not go unnoticed a couple of years ago, when his sickness prevented him from attending the meeting for the first time.

During Malcolm’s role as Editor, he mentored many upcoming associate editors (in particular, FB). He continued managing JFE until he could no longer do it, and for a while, relied on the assistance of the current Editor (FB). In periods of remission, he immediately went back to work. One of his last actions was to nominate FB as co-Editor, officiating their practice of shared responsibility. “I was very honored and humbled that Malcolm thought I was ready to continue his legacy, and that

Contributed by the Fluids Engineering Division of ASME for publication in the *JOURNAL OF FLUIDS ENGINEERING*. Manuscript received February 15, 2019; final manuscript received February 15, 2019; published online March 11, 2019. Editor: Francine Battaglia.

he trusted I would uphold the same rigor and standards in which he managed the Journal.” He was very happy and relieved when the appointment (FB) was approved by the TCPC. Unfortunately, over the last year, his long fight against cancer took a turn for the worse, and our community lost a friend, a scientist, and a leader.

A Special Issue of the ASME *Journal of Fluids Engineering*, commemorating Dr. Malcolm J. Andrews, will appear in July 2020. The special issue will comprise invited review papers and research papers that complement Malcolm’s contributions to experiments and simulations in key areas like Rayleigh–Taylor instabilities, buoyancy-shear-driven flows, multiphase flows, and more. In addition, a celebration of Malcolm’s life and contributions will be held during a special symposium at the ASME–JSME–KSME Joint Fluids Engineering Conference (San Francisco, CA, July 29 to Aug. 1, 2019).

On a more personal note, beyond his professional career, Malcolm was also a devoted husband and father, survived by his wife, Dr. Farzaneh Jebrail, and his daughter, Nasim Andrews. During his personal time, Malcolm enjoyed skiing, hiking, and traveling.

People who know Malcolm will recall his intelligence, wit, humor, care, and compassion. Malcolm clearly had an indelible impact on many lives as a mentor, colleague, and friend. He was a remarkable person and will never be forgotten. We already miss you, Malcolm...

Professor Joseph Katz
JFE Editor (2000-2010)
William F. Ward Sr. Distinguished Professor
Department of Mechanical Engineering,
Johns Hopkins University,
Baltimore, MD 21218
e-mail: katz@jhu.edu

Professor Francine Battaglia
JFE Editor (2017-present)
Department of Mechanical & Aerospace Engineering,
University at Buffalo,
Buffalo, NY 14260
e-mail: fbattagl@buffalo.edu