AIAA JOURNAL
Vol. 36, No. 1, January 1998

Announcements and Acknowledgments

Summary. This editorial announces some recent policy and personnel changes and acknowledges service to the journal for 1997.

Two-Track Publication. I am very pleased to announce that the AIAA has ended its two-track policy of publishing accepted papers that varied depending on payment of publication charges. Accepted papers are now prepared for publication without consideration of the payment of publication charges; this implies publication of papers in the order that they are received at headquarters, aside from variations due to different production times, the layout requirements of the journal, etc. To control costs to our subscribers, noting that price increases tend to reduce circulation and thus the visibility of papers published in the journal, publication charges should be paid whenever possible.

Length Limitations. As specified in the "Information for Contributors to Journals of the AIAA," which appears on the back inside cover of each issue, the various types of manuscripts that we publish, e.g., full-length papers, Technical Notes, etc., each have length limitations. Our current policy is to return manuscripts that are more than a few pages overlong to authors for reduction prior to review; in this way, the manuscripts that we evaluate for publication better approximate their potentially published form. Naturally, requests to place longer manuscripts under review will be considered, and extra length is normally allowed for special publications, such as invited and review articles.

Scope. The statement of scope of the *AIAA Journal* appears on the front inside cover of each issue. The topics within our scope include aeroacoustics, aerodynamics, combustion, fundamentals of propulsion, fluid mechanics and reacting flows, fundamental aspects of the aerospace environment, hydrodynamics, lasers and associated phenomena, plasmas, research instrumentation and facilities, structural mechanics and materials, optimization, and thermochemistry. Every effort is made to accommodate the decision of authors that the *AIAA Journal* is the most appropriate journal for their manuscript. Manuscripts that depart excessively from the scope, however, are returned to authors along with suggestions about more appropriate alternative journals.

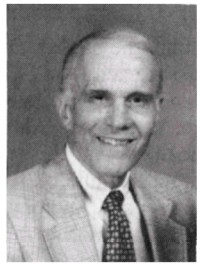
Suggested Associate Editors. To assist the review process, authors are asked to include the names and addresses of five suggested reviewers, if possible, in the covering correspondence for submitted manuscripts. It also is helpful for authors to suggest potential Associate Editors (AEs) for their work; such requests generally are honored to the extent that reasonable workloads, etc., can be maintained for the AEs. To help authors suggest potential AEs, two new features have been introduced to the journal, as follows: the AE handling each published paper is now noted at the end of the paper, which helps indicate the types of papers that the AE is handling; and short biographical sketches providing the background of each AE will now be published in the first issue each year.

Reappointed Editors. Several individuals have agreed to serve as Associate Editors for another term, as follows: Alex Berman, Bloomfield, Connecticut; K. Kailasanath, Naval Research Laboratory; George A. Kardomateas, Georgia Institute of Technology; Allen Plotkin, San Diego State University; and Anthony M. Waas, University of Michigan. In addition, Pasquale M. Sforza, Polytechnic University, has agreed to serve another term as Book Review Editor. The past service of these individuals, and their willingness to continue to serve in order to help maintain the editorial continuity of the journal, is very much appreciated.

Newly Appointed Editors. I am very pleased to announce the appointment of several new Associate Editors, as follows: Suresh K. Aggarwal, University of Illinois at Chicago; Aditi Chattopadhyay, Arizona State University; Peyman Givi, State University of New York at Buffalo; Jayavant P. Gore, Purdue University; James C. Hermanson, Worcester Polytechnic Institute; Robert P. Lucht, University of Illinois; Sunil Saigal, National Science Foundation; and Mohammad Samimy, Ohio State University. In addition, Mary Ellen Lanham has recently accepted the position of Managing Editor of the journal. The willingness of these individuals to help fill the editorial needs of the journal is very much appreciated.

Acknowledgments. The efforts of many individuals should be acknowledged for continuing and past service to the journal. The editorial staff of the AIAA deserve special mention for effectively dealing with the publication problems of a widely circulated monthly journal, as follows: Norma Brennan (Director of Publications), Saturia Lake (past Managing Editor, *AIAA Journal*), and Adrian Chindgren (interim Managing Editor, *AIAA Journal*). Special thanks are also due to our retiring Associate Editors, as follows: Frank W. Chambers, Oklahoma State University; Sanford Fleeter, Purdue University; Stewart Glegg, Florida Atlantic University; Rakesh K. Kapania, Virginia Polytechnic Institute and State University; Gabriel Laufer, University of Virginia; William Oberkampf, Sandia National Laboratories; and Richard W. Wlezien, NASA Langley Research Center. Among these, Frank W. Chambers, Sanford Fleeter, and Stewart Glegg deserve particular mention for serving an extra year as Associate Editors in order to assist the transition to a new Editor-in-Chief. In addition, the valuable advice and instruction of the past Editor-in-Chief (now Editor Emeritus), George W. Sutton, is gratefully acknowledged for assisting the transition of his duties to me. Finally, we all owe a debt of gratitude to the individuals who reviewed papers for the journal this year: their names follow.

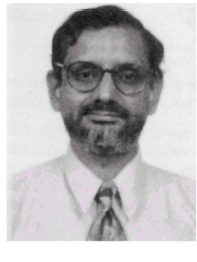
G. M. Faeth
Editor-in-Chief



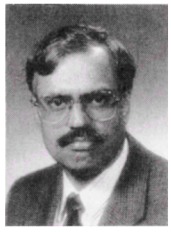
GERARD M. FAETH, A.B. Modine Professor of Aerospace Engineering and Head of the Gas Dynamics Laboratories at the University of Michigan, received the B.M.E. from Union College (New York) in 1958 and the M.S. in 1961 and Ph.D. in 1964 from the Pennsylvania State University, both in mechanical engineering. He joined the faculty of the Department of Mechanical Engineering at the Pennsylvania State University in 1958, where he was promoted to the rank of Professor in 1975 before retiring as Professor Emeritus upon assuming his present position in 1985. His current research interests include homogeneous and heterogeneous combustion phenomena, multiphase flows, radiation in participating media, optical properties of particulate matter, and buoyant and nonbuoyant turbulent flows. Dr. Faeth has served as a Member of the AIAA Propellants and Combustion Technical Committee (1976–1978, 1979–1984, and 1994–2000). He is a recipient of the American Society of Mechanical Engineers (ASME) Heat Transfer Division's Memorial Award (1988) and the AIAA Propellants and Combustion Award (1993). He is corecipient of best paper awards from ASME in 1984, 1985, 1987, and 1993; from AIAA in 1984 and 1994; and from the Combustion Institute in 1996. He is a Fellow of AIAA, ASME, and the American Association for the Advancement of Science and a member of the National Academy of Engineering and the Combustion Institute. He was an Associate Technical Editor (1981–1985) and the Technical Editor (1985–1990) of the *Journal of Heat Transfer* of the ASME and a Deputy Editor (1984–1990) and the U.S. Editor (1990–1996) of *Combustion and Flame*, the journal of the Combustion Institute. He is a member of the Editorial Advisory Boards of *Combustion Science and Technology*, *Progress in Energy and Combustion Science*, *Atomization and Sprays*, and the *Annual Review in Numerical Fluid Mechanics and Heat Transfer*. Dr. Faeth is author or coauthor of more than 350 articles and papers.

Associate Editors

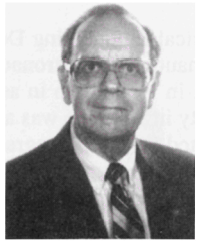
SURESH K. AGGARWAL is Professor of Mechanical Engineering at the University of Illinois at Chicago and received his Ph.D. in aerospace engineering from the Georgia Institute of Technology in 1979. Since then, he has served on the Professional Research Staff at Princeton University and as a Senior Research Engineer at Carnegie Mellon University. He joined the University of Illinois at Chicago faculty in 1984. His research interests include gaseous and spray combustion phenomena, direct numerical simulation of multiphase flows, dynamics of droplet–vortex interactions, multicomponent fuel droplet modeling, high-pressure droplet ignition, and microgravity combustion. Dr. Aggarwal has served as a Member of the AIAA Propellants and Combustion Technical Committee (1985–1989 and 1991–1994). He is currently serving as a Member of the AIAA Terrestrial Energy Technical Committee and the American Society of Mechanical Engineers (ASME)–IGTI Fuels and Combustion Technical Committee. He has been a Technical Organizer for the Propellants and Combustion Technical Committee at the AIAA Aerospace Sciences Meeting (1989) and Joint Propulsion Conference (1993) and for the ASME Turbo Expo-Fuel and Combustion Program (1994). He has also served on numerous occasions as a consultant to government and industrial organizations. Dr. Aggarwal is a recipient of the University of Illinois Scholar Award and a biographee in *Who's Who in Science and Engineering* and *Who's Who in America*. He is an Associate Fellow of AIAA and a Member of ASME and the Combustion Institute. He has authored or coauthored more than 120 articles and papers.



PROMODE R. BANDYOPADHYAY is a Research Scientist at the U.S. Naval Undersea Warfare Center (NUWC) at Newport, Rhode Island. His research experience includes six years at NUWC, nine years as an in-house contractor at the Viscous Flow Branch, NASA Langley Research Center, two years in the Mechanical Engineering Department, University of Houston, and one year in the Engineering Department, Cambridge University. Currently, he is involved in the development of new hydrodynamics technology, particularly in drag reduction in salt water employing Lorentz force and in low-speed maneuvering hydrodynamics including applied biolocomotion. He has conducted research on the organized nature of turbulence in turbulent boundary layers, trailing vortices, effects of roughness, transitional pipe flows, wall jets, the effects of pressure gradients, freestream turbulence, multiple curvatures in turbulent boundary layers, and vortex flows in gas–liquid separators. He has developed a structural model of the turbulent boundary layer and several hydrodynamic devices and instrumentation: a brisk maneuvering device and a dual flapping foil device for maneuvering and propulsion of small underwater bodies at low speeds, an internal reflection-type skin friction meter, and a stepped axisymmetric nose for drag reduction. He has published 150 articles, edited 1 book, and holds 5 patents. He received his B.S. in mechanical engineering in 1968 from the University of North Bengal, an M.S. in mechanical engineering in 1970 from the University of Calcutta, a Ph.D. in applied mechanics in 1974 from the Indian Institute of Technology, Madras, and a Ph.D. in aerodynamics in 1978 from the University of Cambridge, Cambridge, England, United Kingdom. He was an Adjunct Professor in the Electrical Engineering Department, University of Rhode Island, and in the Mechanical Engineering Department, Old Dominion University, Norfolk, Virginia. He has received a NASA award for Technology Utilization and Application and an American Society of Mechanical Engineers (ASME)–NUWC award for developing emerging technologies. He is an Associate Fellow of AIAA, a Fellow of ASME, a Life Member of the American Physical Society, and a Fellow of Wolfson College, University of Cambridge. He has served as a Member of the Fluid Dynamics Technical Committee of the AIAA and ASME. He is serving as Associate Editor of the ASME *Journal of Fluids Engineering* and the *AIAA Journal*.



ASHOK D. BELEGUNDU received a B.Tech. from the Indian Institute of Technology, Madras (India) in 1977 and M.S. and Ph.D. from the University of Iowa in 1979 and 1982, respectively. He taught at the General Motors Institute for four years and then joined the Pennsylvania State University in 1986. He is an Associate Professor of Mechanical Engineering at Pennsylvania State University. He spent a sabbatical at Cranfield University in 1994–1995. His areas are linear and nonlinear finite element analysis and optimization techniques in engineering design. He has worked on various projects in these areas for government and industry, including the National Science Foundation, NASA Lewis Research Center, NASA Langley Research Center, the MacNeal–Schwendler Corporation, and the Gentex Corporation. He has authored the textbook, *Introduction to Finite Elements in Engineering* (Prentice–Hall), now in its second edition. He is a Senior Member of the AIAA. He has also taught several short courses for industry. In March 1997, he organized the conference "Optimization in Industry" with emphasis on industry and international participation.



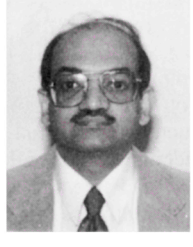
ALEX BERMAN is a retired aerospace engineer. He received a B.A. and an M.A. in physics from the University of Connecticut in 1949 and 1952. He was employed by Kaman Aerospace Corporation from 1951 until 1991, when he retired. At that time, he was the head of the Research Department as Assistant Director for Research. He was responsible for projects that included advanced structural dynamics, vibration analysis, structural system identification, generalized component synthesis, and advanced computer program architecture. He directed and was a major participant in numerous research projects funded by NASA, the U.S. Army, and the U.S. Air Force. He has published over 50 technical papers. He has made presentations at numerous technical conferences and workshops and has given seminars at universities in his fields of expertise. Samples, since his retirement, include a workshop at the Technion—Israel Institute of Technology and a seminar at the School of Aerospace Sciences of the University of Maryland. In December 1996 he was an invited participant in the Second International Workshop on Structural Control held at the Hong Kong University of Science and Technology. He will be presenting an invited paper at the International Modal Analysis Conference in February of 1998. He is a Member of the AIAA and the American Helicopter Society.

ADITI CHATTOPADHYAY is a Professor in the Department of Mechanical and Aerospace Engineering at Arizona State University (ASU). She received her M.S. (1981) and Ph.D. (1984) degrees from the School of Aerospace Engineering at the Georgia Institute of Technology, Atlanta, Georgia. She was a Research Scientist with Analytical Services and Materials, Inc., Hampton, Virginia, and worked at the Interdisciplinary Research Office at NASA Langley Research Office prior to joining the faculty at ASU in 1990. She received a NASA Certificate of Excellence in recognition of her work in the multidisciplinary design optimization area in 1989. Her current research interests include mechanics of composites, adaptive structures, rotary wing dynamics, and multidisciplinary design optimization. Dr. Chattopadhyay has served as a Member of the AIAA Structures Technical Committee (1993–1996 and 1997–2000). She is the Chair of the American Helicopter Society (AHS) Aircraft Design Committee and a Member of the AHS Education Committee. Dr. Chattopadhyay is an Associate Editor of Inverse Problems in Engineering. She has served on the program committee for various national and international conferences, including the AIAA Structures, Structural Dynamics, and Materials Conference. Dr. Chattopadhyay has received several academic awards and best paper awards. She was inducted into the Georgia Institute of Technology Hall of Fame and received the Outstanding Engineering Alumni Award in 1995. Dr. Chattopadhyay is currently the Principal Investigator of several research grants funded by agencies such as U.S. Army Research Office, Air Force Office of Scientific Research, NASA (Langley, Ames, and Lewis Research Centers) and industries such as The Boeing Company and AlliedSignal Engines. Her research has received several citations in *Aerospace America*. Her research was highlighted at the U.S. Army Research Office's Annual Review through an invited talk in 1997. Dr. Chattopadhyay is the author or coauthor of more than 160 technical papers and articles. She is an Associate Fellow of AIAA.

PEYMAN GIVI, Professor of Mechanical and Aerospace Engineering and Director of the Computational Fluid Dynamics Laboratory at the State University of New York at Buffalo, received the B.E. from the Youngstown State University (Ohio) in 1980 and Ph.D. from the Carnegie Mellon University (Pennsylvania) in 1984. He joined the faculty of the State University of New York (SUNY) at Buffalo in 1988. Prior to that he was a Research Scientist at Flow Industries, Inc., in Kent, Washington, and had visiting appointments at the NASA Langley Research Center and the NASA Lewis Research Center. His current research interests include turbulence, combustion, computational methods, multiphase transport, magnetohydrodynamics, theoretical statistics, spectral analysis, stochastic processes, and systems analysis and controls. He is a recipient of the Presidential Faculty Fellowship from President George Bush (1992), Young Investigator Award of the Office of Naval Research (1990), and the Presidential Young Investigator Award of the National Science Foundation (1990). He also received the Outstanding Educator of the Year Award from SUNY at Buffalo in 1994. Givi is a member of the editorial boards of *Progress in Energy and Combustion Science* and *Computers and Fluids*.

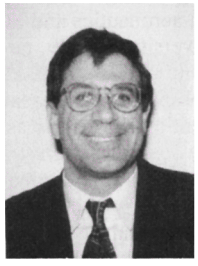
JAYAVANT (JAY) P. GORE received his B.E. (M.E.) degree from the University of Poona, India, in 1978 and the M.S. (1982) and Ph.D. (1986) degrees in mechanical engineering from the Pennsylvania State University. He completed a postdoctoral training program at the University of Michigan prior to joining the faculty at the University of Maryland in 1987. In 1991, Dr. Gore joined the School of Mechanical Engineering at Purdue University as an Associate Professor. Jay was promoted to the rank of Full Professor in 1995. His research interests include numerical and experimental studies of turbulent combustion, partially premixed flames, flame radiation, chemistry–radiation interactions, NO_x and soot formation and emission, radiant burner flames, sensors for pollutant control, fire detection, and effervescent atomization. Dr. Gore teaches two graduate courses in combustion and two undergraduate courses in thermodynamics. He is the Vice Chairman of the American Society of Mechanical Engineers (ASME) K–11 Committee on heat transfer in fire and combustion, a Senior Member of the AIAA, a Member of the AIAA Propellants and Combustion Committee, and a Member of the Combustion Institute. He serves on the Board of Advisors of the Central States Section of the Combustion Institute. Dr. Gore is an author or coauthor of over 150 articles and papers. He received the 1987 Best Paper in Heat Transfer Literature Award from the ASME and the Presidential Young Investigator Award in 1991.

JAMES C. HERMANSON is an Associate Professor in the Mechanical Engineering Department at Worcester Polytechnic Institute (WPI). He received a B.S. in aeronautics and astronautics from the University of Washington in 1977 and an M.S. in 1980 and Ph.D. in 1985, both in aeronautics at the California Institute of Technology. Before joining the WPI faculty in 1995, he was a Research Scientist at United Technologies Research Center, where he conducted research programs in the areas of compressible mixing, combustion, and heat transfer. Prior to this, Dr. Hermanson was on the staff of the University of Washington Applied Physics Laboratory, where he performed research in hydrodynamics and marine propulsion. He also held a postdoctoral appointment at the Universität Göttingen, Göttingen, Germany, where he studied soot formation in premixed flames. After the B.S. degree he spent two years at the Boeing Aerospace Company, where he worked in cruise missile aerodynamics and solid rocket propulsion. Professor Hermanson's current research interests and activities include compressible turbulent flow, unsteady diffusion flame combustion, turbulent jet mixing, and heat transfer, and he is the Director of the WPI Heat Transfer Laboratory. He is the author or coauthor of over 40 journal articles and papers. Dr. Hermanson is a Senior Member of the AIAA, and he served on the Airbreathing Propulsion Technical Committee from 1994 to 1996. He is also a Member of the American Society of Mechanical Engineers, the American Physical Society, the Combustion Institute, and the National Space Society.

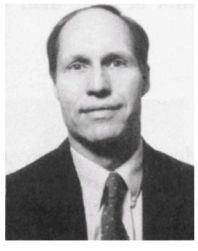


K. KAILASANATH is the Head of the Center for Reactive Flow and Dynamical Systems at the U.S. Naval Research Laboratory. He received his Ph.D. from the Georgia Institute of Technology in 1980 and has been at the U.S. Naval Research Laboratory since then. Prior to that, he received his M.S.A.E. from the Georgia Institute of Technology in 1979 and his B.Tech. in aeronautical engineering from the Indian Institute of Technology (Madras) in 1976. His research interests include the structure, stability, and dynamics of flames and detonations; combustion instabilities in ramjets; multiphase flows; subsonic and supersonic mixing and noise generation; and the simulation of advanced propulsion system concepts. He is an Associate Fellow of the AIAA. He is also currently on the board of the journal *Combustion Theory and Modeling*, Chair of the AIAA Propellants and Combustion Technical Committee, and on the board of the Eastern States Section of the Combustion Institute. Dr. Kailasanath is author or coauthor of more than 150 journal articles and conference papers.

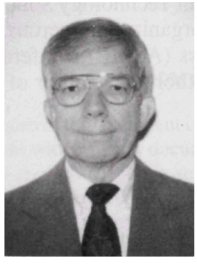
JOHN KALLINDERIS is an Associate Professor at the Department of Aerospace Engineering and Engineering Mechanics of the University of Texas at Austin. He received a Diploma in mechanical engineering from the National Technical University of Athens, Greece, and a Ph.D. degree in aeronautics and astronautics from the Massachusetts Institute of Technology in 1989. His main research interests are in the areas of adaptive numerical methods for engineering simulations, parallel computation, and computational grid generation, as well as large-scale flow simulations. He has received several research grants from sources including the National Science Foundation (NSF), NASA, ARPA, the U.S. Air Force Office of Scientific Research, the State of Texas, and IBM. He has also worked as a consultant in industry. John has served as a conference session organizer and reviewer of papers and proposals, as well as member of various panels at NSF and NASA. In 1993 he received the NSF Young Investigator Award, as well as the Teaching Excellence Award for the Department of Aerospace Engineering and Engineering Mechanics. In 1997, he received the AIAA Lawrence Sperry Award for a notable contribution to the advancement of aeronautics or astronautics. John has authored 26 archival journal papers, while 42 have appeared in proceedings or presented at conferences. He has also authored 5 book chapters. He has given 31 invited lectures in industry, government laboratories, and academia in both the United States and Europe.



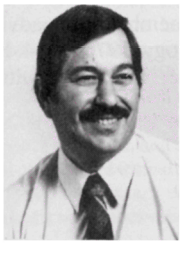
GEORGE A. KARDOMATEAS is Professor of Aerospace Engineering at the Georgia Institute of Technology and was educated at the National Technical University of Athens (B.S., 1981) and at the Massachusetts Institute of Technology (M.S., 1982; Ph.D., 1985, Mechanical Engineering). He has over 15 years of research experience in failure mechanics and structural behavior of both advanced (composite) and conventional (metallic) material and structural systems. He is the author (together with R. L. Carlson) of the recent book, *An Introduction to Fatigue in Metals and Composites*, published by Chapman and Hall, 1996, as well as of numerous refereed journal and conference proceedings papers. Dr. Kardomateas is an Associate Fellow of the AIAA and has served on the AIAA Technical Committee on Structures. Prior to joining the academic faculty at the Georgia Institute of Technology, he performed industrial research at the General Motors Research Laboratories. His research has spanned a wide range of topics, including thick composite shells, crack behavior in composites, closure models in metallic materials, buckling and postbuckling of structures, and environmental effects in composites.



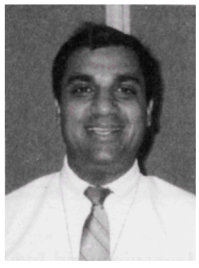
ROBERT P. LUCHT is currently a Professor in the Department of Mechanical and Industrial Engineering at the University of Illinois at Urbana–Champaign. He received his B.S. degree in nuclear engineering in 1977 and his M.S. and Ph.D. degrees in mechanical engineering in 1979 and 1981, all from Purdue University. After a year of postdoctoral research at Purdue University, he joined the Combustion Research Facility at Sandia National Laboratories and worked there as a member of the technical staff and then as a department manager until 1992, when he became a faculty member at the University of Illinois. The focus of his research is the development and application of laser diagnostic techniques for combustion systems and for nonreacting flows. Currently, his research group is developing dual-pump and high-resolution coherent anti-Stokes Raman scattering (CARS) techniques for multiparameter measurements, using planar laser-induced fluorescence (PLIF) methods for visualizing molecular mixing and studying the physics of degenerate four-wave mixing (DFWM) and polarization spectroscopy. His group is also applying CARS, DFWM, and PLIF techniques for measurements in diamond-forming flames, in spark ignition and compression ignition engines, and in a gas turbine combustion simulator. He was the Program Chair for the 1996 Optical Society of America (OSA) Topical Meeting on Laser Applications in Chemical and Environmental Analysis and is the General Chair for the same meeting in 1998. He is a Member of AIAA, American Society of Mechanical Engineers, the Society of Automotive Engineers, the OSA, and the Combustion Institute. He is the author or coauthor of more than 50 articles.



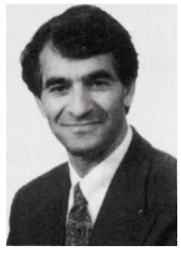
D. SCOTT McRAE is Professor of Aerospace and Mechanical Engineering at North Carolina State University (NCSU). His current research interests are in computational fluid dynamics, including analysis and development of numerical methods and accuracy enhancement of both steady and unsteady numerical solutions through the application of dynamic solution adaptive meshing. Recent applications have been high-speed inlet unstart, compressor cascades, shock tunnels, and air pollution modeling. Dr. McRae serves on the Allocations Committee of the North Carolina Supercomputing Center and is active in campus computing issues. Prior to joining the NCSU faculty in 1981, Dr. McRae retired from the U.S. Air Force after 20 years of service. His Air Force assignments included the SR-71 Operational Engineering Section from 1966 to 1969 and computational fluid dynamics research assignments at the Hypersonics Research Laboratory (later Theoretical Aerodynamics Laboratory) of the Air Force Aerospace Research Laboratories from 1971 to 1975 and the Air Force Flight Dynamics Laboratory from 1975 to 1981, where he headed the Laboratory's Flight Vehicle Technology Office at NASA Ames Research Center from 1977 to 1981. Dr. McRae received his B.S. from NCSU in 1961 and his M.S. from the University of Missouri in 1966, both in mechanical engineering. He received the Ph.D. in aerospace engineering from the Air Force Institute of Technology in 1976.



ALLEN PLOTKIN is Professor of Aerospace Engineering and Engineering Mechanics at San Diego State University, where he has been a faculty member since 1985. He received B.S. and M.S. degrees from Columbia University and a Ph.D. from the Division of Engineering Mechanics at Stanford University in 1968. From 1968 to 1985 he was a faculty member in the Department of Aerospace Engineering of the University of Maryland, where he was promoted to the rank of Professor in 1977. During 1975–1976 he was a Visiting Associate in Engineering Science at the California Institute of Technology. His research interests are aerodynamics, hydrodynamics, and basic incompressible fluid mechanics. The research has emphasized the blending of analytical and computational techniques for the solution of a wide variety of flow problems, including fluid jets, airfoil and hydrofoil theory, ground effect, separation, and vortex modeling. He is currently a Member of the AIAA Fluid Dynamics Technical Committee. He is an American Society of Mechanical Engineers Fellow and an AIAA Associate Fellow and a Member of the Society of Naval Architects and Marine Engineers and the American Society for Engineering Education. He is the coauthor (with J. Katz) of *Low-Speed Aerodynamics: From Wing Theory to Panel Methods*, published in 1991 in the McGraw–Hill Series in Aeronautical and Aerospace Engineering and the author of approximately 40 journal articles. He has been an Associate Editor of the *AIAA Journal* since 1986.

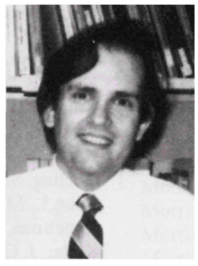


SUNIL SAIGAL, Professor of Civil and Environmental Engineering at Carnegie Mellon University, received his B.S. in civil engineering in 1978 from Punjab Engineering College, M.S. in structural engineering in 1980 from the Indian Institute of Science, and Ph.D. in aeronautics and astronautics in 1985 from Purdue University. Before joining Carnegie Mellon University in 1989, he served on the faculty of Mechanical Engineering at Worcester Polytechnic Institute (1986–1989). He has held summer assignments at Hibbitt, Karlsson, and Sorensen, Inc. (1987), NASA Lewis Research Center (1990 and 1991), and Oak Ridge National Laboratory (1993) and spent a year (1992) as a visiting engineer at Mercedes Benz A.G. in Stuttgart, Germany. His primary research interest lies in the area of computational solid and structural mechanics. He has contributed to developments in finite elements, boundary elements, and the element-free Galerkin methods with applications in shape optimization, inverse problems, mechanics of materials, and probabilistic analysis. Dr. Saigal is an Associate Fellow of AIAA and has served on the AIAA Technical Committee for Structures since 1992. He is the recipient of the 1987 Worcester Engineering Society Admiral Ralph Earle medal, the 1988 Society of Automotive Engineers Ralph R. Teetor Educational Award, the 1990 National Science Foundation Presidential Young Investigator Award, the 1990 Carnegie Mellon University George Tallman Ladd Research Award, the 1994 American Society of Civil Engineers (ASCE) Pittsburgh Section Professor of the Year Award, and the 1996 Carnegie Mellon University Richard Teare Award for excellence in teaching. He is the Associate Editor for Computational Mechanics for the ASCE *Journal of Engineering Mechanics* and on the Advisory Editorial Board for the *International Journal for Numerical Methods in Engineering*. Dr. Saigal is author and coauthor of more than 75 journal articles.

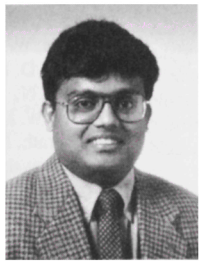


MOHAMMAD (MO) SAMIMY is Professor and Associate Chair of Mechanical Engineering at the Ohio State University. He received his B.S. in 1978 from Arya-Mehr (currently Sharif) University of Technology in Tehran, Iran, and his M.S. in 1981 and Ph.D. in 1984, all in mechanical engineering, from the University of Illinois at Urbana–Champaign. He spent one year as a visiting Assistant Professor at the University of Illinois before joining the faculty of the Ohio State University in 1985. His current research interests are gas dynamics, compressible turbulence, optical diagnostics, flow control, and mixing and combustion processes in natural-gas-powered internal combustion engines. Dr. Samimy has been a visiting research fellow at NASA Lewis Research Center, Wright Laboratories, the NASA Ames Research Center/Stanford Center for Turbulence Research, and CEAT/LEA Laboratories at the University of Poitiers in France and has lectured extensively in the United States and abroad. He was an Associate Editor of the *Journal of Propulsion and Power* (1993–1996), has served as a Member of the AIAA Airbreathing Technical Committee (Chair of Ramjet/Scramjet Subcommittee), is currently serving as a Member of the AIAA Aerodynamic Measurement Technology Subcommittee (Chair of Honors and Awards Subcommittee), and has organized or coorganized numerous meetings and sessions in AIAA and American Society of Mechanical Engineers (ASME) Conferences. Dr. Samimy is a Fellow of ASME, an Associate Fellow of AIAA, and author or coauthor of over 100 technical papers.

PASQUALE M. SFORZA is Professor of Aerospace Engineering at Polytechnic University of Brooklyn and has been on the faculty there since 1965. He attended Polytechnic as a student, receiving a B.Ae.E. in 1961 and an M.S. and Ph.D. in astronautics in 1962 and 1965, respectively. He was Head of Mechanical and Aerospace Engineering from 1983 to 1986 and Head of Aerospace Engineering from 1987 to 1995. He is an Associate Fellow of AIAA and served as Editor in Chief of the *AIAA Student Journal* from 1969 to 1970, AIAA National Lecturer in Wind Engineering 1976, Associate Editor of the *AIAA Journal* from 1980 to 1983, and Book Review Editor of the *AIAA Journal* since 1983. His research in turbulent jet mixing, vortex aerodynamics, and energy transfer led to 3 patents and over 75 publications. He received the Technology Achievement Award from the AIAA Long Island Section in 1977 and an Outstanding Paper Award from AIAA in 1992. He is a member of the editorial board of the *Journal of Applied Fire Science* and was a member of the advisory board of the New York State Legislative Commission on Science and Technology, 1978–1984. He is active in consulting for industry and government agencies through Flowpower, Inc., a consulting firm he founded in 1978.



CHARLES G. SPEZIALE is a Professor of Aerospace and Mechanical Engineering at Boston University. He received his Ph.D. in aerospace and mechanical sciences from Princeton University in 1978. Prior to joining Boston University in 1992, Dr. Speziale was a Senior Staff Scientist at the Institute for Computer Applications in Science and Engineering (ICASE), NASA Langley Research Center (1987–1992); he has also been a faculty member at the Georgia Institute of Technology (1985–1987) and the Stevens Institute of Technology (1978–1985). Dr. Speziale has been involved in research on turbulence, nonlinear instabilities, non-Newtonian fluids, and the kinetic theory of gases—subjects on which he has published over 100 journal and book articles, along with 3 edited books. His primary research interest has been on turbulence modeling, and he has developed turbulence models that are widely utilized by government, industry, and academia. He has received two NASA Group Achievement Awards (1989 and 1994) for his fluid mechanics research at ICASE, and during the past two decades his research has been funded by NASA, the Office of Naval Research, the Army Research Office, the National Science Foundation, and Los Alamos National Laboratory. Dr. Speziale is an Associate Editor of both the *AIAA Journal* and the *International Journal of Engineering Science*, and has been a Guest Editor of *Theoretical and Computational Fluid Dynamics*. He has served on the Board of Directors of the Society of Engineering Science, is a Fellow of the American Physical Society, and is a Member of the AIAA, the American Academy of Mechanics, and the Society for Natural Philosophy.



ANTHONY M. WAAS, Associate Professor of Aerospace Engineering and Director, Composite Structures Laboratory, at the University of Michigan, received his B.S. with first-class honors from Imperial College, the University of London, London, in 1982 and the M.S. in 1983 and Ph.D. in 1988 with a minor in applied mathematics from the California Institute of Technology, all in aeronautics. He joined the faculty of the Department of Aerospace Engineering at the University of Michigan in 1988, where he was promoted to the rank of Associate Professor in 1994. His current research interests include mechanics of composite structures and composite materials, structural stability, optical methods for experimental stress analysis, biomechanics, and smart materials and structures. Dr. Waas has served as a Member of the AIAA Structures Technical Committee (1991–1994 and 1997–2000), the American Society of Mechanical Engineers (ASME), Technical Committee on Instability of Solids and Structures (1995–2000), and the ASME Technical Committee on Experimental Mechanics (1996–1999). He is a recipient of the Royal Aeronautical Society Prize of Imperial College (1982), the William Balhaus Prize in Aeronautics at GALCIT (1988), a Rackham Faculty Fellowship (1990), the University of Michigan Aerospace Department Teaching Award (1995), and the Society of Automotive Engineers Ralph Teetor Award (1995). He is an Associate Fellow of AIAA and a Member of ASME, ASC, and the American Academy of Mechanics. He is an Associate Editor of the *Journal Composites: B* and serves on the Editorial Advisory Board of the AIAA *Journal of Aircraft*. He is author or coauthor of more than 50 articles and papers.

Editorial Policy Statement on Numerical Accuracy and Experimental Uncertainty

The purpose of this statement is to reiterate the desire to have high-quality investigations with properly documented results published in the AIAA journals, and to clarify acceptable standards for presentation of numerical and experimental results. Recently there has been considerable concern with the quality of published numerical solutions. Also the practice of including error bars on experimental results is often lacking. In response to these problems, a succinct policy statement on these items is as follows:

> *The AIAA journals will not accept for publication any paper reporting (1) numerical solutions of an engineering problem that fails adequately to address accuracy of the computed results or (2) experimental results unless the accuracy of the data is adequately presented.*

The implementation of this policy will be at the discretion of the Editors and Associate Editors of the journals.

The accuracy of the computed results is concerned with how well the specified governing equations in the paper have been solved numerically. The appropriateness of the governing equations for modeling the physical phenomena and comparison with experimental data is not part of this evaluation. Accuracy of the numerical results can be judged from grid refinement studies, variation of numerical parameters that influence the results, comparison with exact solutions, and any other technique the author selects. The validity of the accuracy estimation will be judged by the reviewers of the paper. An estimate of accuracy of the numerical results must be presented when comparisons with other numerical and experimental results are given, and when new results of the author will likely become data for future comparisons. Since accuracy of various computed results obtained from a numerical solution can vary significantly, the accuracy of the result being used must be stated. Accuracy of results from a validated code must still be established to show that proper input parameters have been used with the code.

Estimates of experimental uncertainty are required for all plotted or tabulated data obtained by authors. If data from other workers are used, they require no uncertainty. Unless otherwise stated and properly referenced, it is assumed that the uncertainty of authors' output data is estimated by the small-sample method[1] with assumed odds 20:1. All reported data must show uncertainty estimates if used in text or tables; for example, $T = 642 + 8$ K. All figures reporting new data should contain uncertainty estimates either on the figure with error bars in both coordinate directions or in the caption; for example, uncertainty in $T = \pm 8$ K at 20:1 odds. Investigations with limited data should present tabulated results in the paper while extensive data should be available elsewhere in tabulated form for use by other workers.

Finally, the accepted documentation procedures for a technical investigation must be used. For computational papers, the author must provide an adequate description of the numerical solution procedure, if not documented elsewhere. In addition, the complete governing equations must be specified with sufficient detail along with the input parameters to the code so that a reader could reproduce the results of the paper. For papers concerned with experimental test, thorough documentation of the experimental conditions, instrumentation, and data reduction techniques is required.

[1] Kline, S. J., and McClintock, F. A., "Describing Uncertainties in Simple-Sample Experiments," *Mechanical Engineering*, Jan. 1953, pp. 3–8.