

## Announcements and Acknowledgments

**Summary.** This editorial announces recent policy and personnel changes and acknowledges service to the *AIAA Journal*.

**Length Limitations.** The *AIAA Journal* is continuing its policy of no length limitations for full-length papers that was begun last year. Thus, longer papers can be accommodated although all manuscripts should be as *brief and concise* as proper presentation of the ideas will allow. Length limitations on Technical Notes (maximum of nine manuscript pages) and Readers' Forum items (maximum of four manuscript pages) continue, however, in keeping with the intent of these publishing vehicles for prompt disclosure of information having relatively limited scope. The detailed requirements for all types of manuscripts can be found in the Information for Contributors to Journals of the AIAA, which appears in each issue of the journal.

**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, thermomechanics, and thermochemistry. Papers also are sought that review in an intensive manner the results of recent research developments on any of the topics listed. 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 Reviewers and Associate Editors.** To assist the review process, authors are asked to include the names and addresses of five suggested reviewers in the covering correspondence for submitted manuscripts. It is also helpful for authors to suggest Associate Editors (AEs) for their submission; such requests are honored whenever possible. To help authors suggest potential AEs, brief biographical sketches providing the background of each AE are published in the first issue of the journal each year; the AE handling each published paper also is noted at the end of the paper, which helps indicate the type of papers that particular AEs are handling.

**Newly Appointed Editors.** I am very pleased to announce the appointment of Eli Livne of the University of Washington as a new Associate Editor. His willingness to undertake editorial activities for the journal is very much appreciated.

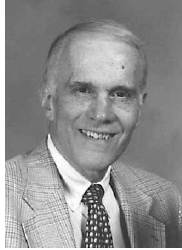
**Continuing Editors.** Individuals who are continuing their service as Associate Editors for the coming year are as follows: Suresh K. Aggarwal, University of Illinois at Chicago; Promode R. Bandyopadhyay, Naval Undersea Warfare Center; Amr R. Baz, University of Maryland; Josette R. Bellen, Jet Propulsion Laboratory;

Alex Berman, Bloomfield, CT; 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; Eric Raymond Johnson, Virginia Polytechnic Institute and State University; K. Kailasanath, Naval Research Laboratory; John Kallinderis, University of Texas at Austin; Robert P. Lucht, Texas A&M University; Achille Messac, Northeastern University; Philip J. Morris, Pennsylvania State University; Anthony N. Palazotto, Air Force Institute of Technology; Allen Plotkin, San Diego State University; Sunil Saigal, Carnegie-Mellon University; Mohammad Samimy, Ohio State University; Martin Sichel, University of Michigan; Ronald M. C. So, Hong Kong Polytechnic University; and Anthony M. Waas, University of Michigan. In addition, Pasquale M. Sforza, University of Florida, is continuing to serve as Book Review Editor for the coming year. The past contributions and continued service of these individuals are very much appreciated.

**Editorial Advisory Board.** The continuing members of the Editorial Advisory Board are as follows: Satya N. Atluri, University of California, Los Angeles; Dennis M. Bushnell, NASA Langley Research Center; Earl H. Dowell, Duke University; Edward M. Greitzer, Massachusetts Institute of Technology; Robert G. Loewy, Georgia Institute of Technology; Robert W. McCormack, Stanford University; Simon Ostrach, Case Western Reserve University; Eli Reshotko, Case Western Reserve University; Anatol Roshko, California Institute of Technology; George W. Springer, Stanford University; Byron D. Tapley, University of Texas; Raymond Viskanta, Purdue University; Forman A. Williams, University of California, San Diego; and Israel J. Wignanski, University of Arizona. The continued willingness of these individuals to help provide editorial guidance to the journal is very much appreciated.

**Acknowledgments.** The editorial staff of the AIAA deserve special mention for effectively dealing with the publication problems of a widely circulated monthly journal, as follows: John D. Anderson (Vice President—Publications); Norma Brennan (Director of Publications); and Mary Ellen Lanham, Deanna Miller, and Brian Haefs (Managing Editors, *AIAA Journal*). The efforts of Jerry M. Seitzman, Georgia Institute of Technology, and Robert P. Lucht, Texas A&M University, who served as Editors of a Special Section on Aerodynamic Measurement Technology, are greatly appreciated. Special thanks also are due to R. Scott McRae, North Carolina State University, who is a retiring Associate Editor. 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 faculty of the University of Illinois at Chicago in 1984. His research interests include gaseous and spray combustion phenomena, direct numerical simulation of multiphase flows, multicomponent fuel droplet modeling, high-pressure droplet phenomena, partially premixed flames, 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 is an Associate Fellow of AIAA and a member of ASME and the Combustion Institute. 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 125 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 eight years at NUWC; nine years as an in-house contractor at the Viscous Flow Branch, NASA Langley Research Center; two years at the Mechanical Engineering Department, University of Houston; and one year in the Engineering Department, Cambridge University. Currently, he is involved in the development of emerging technologies such as Biomimetics, MEMS, biology-based, low-speed maneuvering and quieting of small-undersea vehicles, and undersea turbulence suppression technologies. 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 published 150 articles, about 41 in the archival journals; edited one book; and holds seven patents. Four of his papers have been cited in 12 textbooks. 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, Chennai, 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 has served as the Associate Editor of the ASME *Journal of Fluids Engineering*.



**AMR M. BAZ** is Professor of Mechanical Engineering at the University of Maryland at College Park. He received his B.S. in mechanical engineering from Cairo University, Cairo, Egypt, in 1966 and his M.S. and Ph.D. in mechanical engineering from the University of Wisconsin-Madison in 1970 and 1973, respectively. His research interests include active and passive control of vibration and noise, smart structures, and shape memory composites. His research is funded by ARO, ONR, BMDO, NASA, and NOAA. He has been the recipient of seven awards for excellence in teaching, design, and academic performance, including the Egyptian National Award & First Class Medal for Best Achievements in Science & Arts. He is a Member of AIAA and a fellow of the American Society of Mechanical Engineers (ASME). Dr. Baz served as Chairman of the ASME Washington, D.C., Chapter in 1990–1991 and as a member of the ASME Edwin Church Medal Award Committee (1993–1998). He has been a member of the honorary societies Sigma-Xi, Phi-Kappa-Phi, and Tau-Beta-Pi. He is listed in the *American Men & Women of Science* and *Who's Who of American Inventors*. Dr. Baz is a member of the Editorial Board of *Journal of Vibration and Control* and is the author of over 100 research papers and five U.S. patents.



**JOSETTE BELLAN** is a Senior Research Scientist at the Jet Propulsion Laboratory (JPL) and a Visiting Associate at the California Institute of Technology (Caltech) in the Department of Aerospace Engineering. She has also been a Lecturer at Caltech and a Chancellor's Distinguished Lecturer at the University of California, Irvine. Dr. Bellan obtained her Ph.D. in Aerospace and Mechanical Sciences from Princeton University in 1974; M.S. and M.A. degrees in the same discipline in 1972, also from Princeton; and an M.S. in Applied Mathematics and an A.E.A. in Continuum Mechanics from the University of Sciences of Paris in 1969. Following her Ph.D., she completed one year as a Postdoctoral Fellow at Princeton University and further became a Member of the Research Staff in the same department. Since 1978 she had conducted research at the JPL in a variety of topics. Her current interests include drop and spray evaporation and combustion with emphasis on dense-spray behavior and polydispersity; multicomponent liquid fuels, porous materials, and particularly biomass pyrolysis; granular materials; direct numerical simulation of multiphase flows; large eddy simulations of multiphase flows; and supercritical fluid behavior of isolated drops, drops in clusters, shear layers, jets, and sprays. She is the coauthor of four books and has numerous journal publications. She is also an Amelia Earhart Fellow, is the recipient of the JPL Exceptional Service Award, and has 49 NASA Certificates of Recognition. Dr. Bellan is an AIAA Associate Fellow, an American Society of Mechanical Engineers (ASME) Fellow, and a member of the Combustion Institute and is on the Board of Directors of the Institute for Liquid Atomization and Spray Systems (ILASS). She has been a member of the AIAA Propellants and Combustion Committee during 1984–1987 and from 1995 to now and organized the 30th Aerospace Sciences program for this committee; she was a member of the AIAA National Awards Committee in 1990–1992 and is currently chairing it. In ASME she is a member of the K-11 Committee and organized sessions for the 1984 and 1990 Winter Annual Meetings. In the Combustion Institute she is a member of the Executive Committee of the Western States Section and was Program and Paper Chairperson in 1987–1989 and 1997–1999, respectively. She was Paper Chairperson for ILASS during 1995–1997 and is the general conference chair for the International Conference on Liquid Atomization and Spray Systems in 2000. In addition to the *AIAA Journal*, Dr. Bellan is on the Editorial Boards of *Atomization and Sprays* and *Progress in Energy and Combustion Science*.



**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, respectively. 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. He has been an Associate Editor since 1995. 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. She received her M.S. and Ph.D. degrees from the School of Aerospace Engineering at the Georgia Institute of Technology, Atlanta. Her current research interests include mechanics of composites, adaptive structures, rotary wing dynamics, and multidisciplinary design optimization. Dr. Chattopadhyay is a member of the AIAA Structures Technical Committee (1993–1996, 1997–2000) and is the Chair of the Composite Structures subcommittee. She is a member of the American Helicopter Society Aircraft Design Committee (Chair, 1996–1998) and Education Committee. Dr. Chattopadhyay is an Associate Editor of *Inverse Problems in Engineering* and is a member of the Editorial Board of *Engineering Optimization*. Dr. Chattopadhyay is the recipient of several academic, research, 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 John H. Glenn Research Centers and industries such as The Boeing Company and AlliedSignal Engines. Dr. Chattopadhyay is the author or coauthor of over 200 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 (SUNY) at Buffalo, received the B.E. from the Youngstown State University (Ohio) in 1980 and the Ph.D. from the Carnegie-Mellon University (Pennsylvania) in 1984. He joined the faculty of 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), the 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**, Professor of Mechanical Engineering at Purdue University, received his B.E. (M.E.) degree from the University of Poona, India, in 1978 and his M.S. (1982) and Ph.D. (1986) degrees in Mechanical Engineering from the Pennsylvania State University. He completed a postdoctoral training program in Aerospace Engineering at the University of Michigan, Ann Arbor, prior to joining the University of Maryland in 1987. In 1991, Dr. Gore joined Purdue University as an Associate Professor and was promoted to his present rank in 1995. His research interests include numerical and experimental studies of turbulent combustion, partially premixed flames, flame radiation, chemistry radiation interactions,  $\text{NO}_x$  and soot formation and emission, radiant burner flames, sensors for pollutant control and fire detection, and effervescent atomization. Dr. Gore teaches two graduate courses in combustion and two undergraduate courses in thermodynamics. He is the Chairman of the American Society of Mechanical Engineers (ASME) Committee on Heat Transfer in Fire and Combustion Systems, an Associate Fellow of the AIAA, and Chairman-Elect of the Board of Advisors of the Central States Section of the Combustion Institute. Dr. Gore is an author or coauthor of over 200 articles and papers. He received the 1987 Best Paper in ASME Heat Transfer Literature Award, a 1991 Presidential Young Investigator Award, and faculty sabbatical fellowships from the U.S. Department of Energy and the Japanese Ministry of Education in 1998.



**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 a Ph.D. in 1985, both in Aeronautics from the California Institute of Technology. Before joining the WPI faculty, 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, 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 fuel injection in compressible flow, unsteady diffusion flame combustion in microgravity, lean premixed flames, and condensation phenomena, and he is the Director of the WPI Heat Transfer Laboratory. He is the author or coauthor of over 60 journal articles and papers. Dr. Hermanson is an Associate Fellow of the AIAA, and he served on the Air-Breathing Propulsion Technical Committee from 1994 to 1996. He is also a member of the American Society of Mechanical Engineers, the American Physical Society, and the Combustion Institute.



**ERIC RAYMOND JOHNSON** is a Professor in the Aerospace and Ocean Engineering Department, Virginia Polytechnic Institute and State University, Blacksburg. He earned his doctoral degree in Applied Mechanics from the University of Michigan in 1976 and has been a faculty member at Virginia Tech since then. Prior to his doctorate he worked in industry for four-and-one-half years on the analysis and design of servohydraulic control systems for vehicles and industrial applications. His research interests are in structures, solid mechanics, buckling and postbuckling, composite materials, and optimal design. In particular, his work has concentrated on the response and failure of composite material structures in application to flight vehicles, which includes composite stiffener crippling, failure of dropped-ply laminates, the nonlinear response of stiffened composite shells under internal pressure, and energy absorption of composite structure. Dr. Johnson has written 54 refereed technical publications. He teaches courses in thin-walled structures, elastic instability of structures, variational and energy methods, and optimal design of composite materials and structures. He is a Senior Member of the AIAA and a member of the American Society of Mechanical Engineers.



**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; multiphase flows; fire dynamics and suppression; subsonic and supersonic mixing and noise generation; and the simulation of advanced propulsion system concepts. He is a fellow of the Institute of Physics and an Associate Fellow of the AIAA and has served as Chair of the AIAA Propellants and Combustion Technical Committee (1996–1998). He is also currently on the board of the journal *Combustion Theory and Modeling* and 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 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 MIT 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 NSF, NASA, ARPA, the U.S. AFOSR, the State of Texas, IBM, and a consortium of oil companies. He has also worked as a consultant in industry. John has served as 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 over 80 journal and conference papers, as well as 6 book chapters. He has given 34 invited lectures in industry, government laboratories, and academia in both the United States and Europe. He is an Associate Fellow of the AIAA and has served as Associate Editor since 1996.



**ELI LIVNE** received his B.Sc. and M.Sc. degrees (1974 and 1982, respectively) in aeronautical engineering from the Technion—Israel Institute of Technology. From 1975 to 1984 he served as an engineering officer in the Israeli Air Force, working in the areas of structural dynamics, aeroelasticity and aeroservoelasticity. He returned to academia and received his Ph.D. in aerospace engineering from the University of California, Los Angeles, in 1990. At the end of that year, he joined the faculty in the Department of Aeronautics and Astronautics at the University of Washington in Seattle, where he is currently an Associate Professor. Dr. Livne's research spans the disciplines of structures, structural dynamics, unsteady aerodynamics, flight mechanics, active control, and airplane design optimization, with an emphasis on design-oriented modeling techniques and the associated approximation and sensitivity computational technology necessary for carrying out large-scale design optimization of highly integrated vehicles. This work contributed to the development of efficient computational tools for truly integrated design synthesis of flexible actively controlled aerospace vehicles and to some of the first studies in integrated multidisciplinary aeroservoelastic design of such vehicles. Dr. Livne has additional interests in the areas of airplane design education and aeroelasticity of unconventional configurations. His research has been supported over the years by the U.S. Air Force Office of Scientific Research, the Office of Naval Research, NASA (Langley and Ames Research Centers), the National Science Foundation, and The Boeing Company. He is a former member of the AIAA Multidisciplinary Design Optimization Technical Committee. He was a member of the NASA/Boeing HSCT Aeroelastic Concept Evaluation Team and the Boeing HSCT Aeroservoelastic working group. He is a recipient of a 1987–1988 Josephine de Karman Fellowship, a UCLA School of Engineering and Applied Science 1989–1990 Outstanding Ph.D. Award, and a 1992 NSF National Young Investigator Award. He won the 1998 ASME/Boeing Structures & Materials Award for the best paper given at the 1997 AIAA/ASME/ASCE/AHS/ASC 38th Structures, Structural Dynamics, and Materials Conference. He edited a special Multidisciplinary Design Optimization issue of the *Journal of Aircraft*, published in January–February 1999. He is an Associate Fellow of the AIAA and member of ASME and ASEE.



**ROBERT P. LUCHT** is currently the G. Paul Pepper Professor in the Department of Mechanical Engineering at Texas A&M University. 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. He joined the faculty at Texas A&M University in September 1998. 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 CSA, and the Combustion Institute. He is the author or coauthor of more than 60 articles. He is a Fellow of the OSA and an Associate Fellow of the AIAA.



**ACHILLE MESSAC** received his B.S. (1981), M.S. (1982), and Ph.D. (1986) from the Department of Aeronautical and Astronautical Engineering at the Massachusetts Institute of Technology. He is an Associate Professor in the Mechanical, Industrial, and Manufacturing Engineering Department at Northeastern University. He founded the Multidisciplinary Design Laboratory, where he is leading the development of Physical Programming, a methodology that brings optimization within the easy reach of industry engineers. Physical Programming also facilitates the effective use of optimization by experts by entirely eliminating the use of difficult-to-obtain numerical weights in forming the aggregate objective function. He has led winning student teams in two American Society of Mechanical Engineers (ASME) Motion Control Design Contests. He is Co-Director of the Laboratory for Design and Manufacturing, a state-of-the-art teaching and research laboratory that facilitates the integration of cooperative education, teaching, and research in the area of design and manufacturing. Prior to 1994, he was a Senior Member of the Technical Staff at Draper Laboratory, where he led and participated in numerous research and development efforts. While there, his research topics included deployment and multibody dynamics, structural optimization, optimal control, and control structure integrated design, of which he was a pioneer in the mid-1980s. He led such NASA efforts as the development of a large simulation for the dynamics and control of the Stabilized Payload Deployment System, a two-arm payload manipulator for the shuttle orbiter, for which he received an award. He also led the development of a large simulation to study the dynamics stability, the structural behavior, and the control properties of the space system composed of the space station (SS), the Space Shuttle, and the translating SS mobile transporter. He is an Associate Fellow of the AIAA, a former member of the AIAA Structural Dynamics Technical Committee (TC), and the Chair-Elect of the AIAA Multidisciplinary Design Optimization (MDO) TC. He is an Editorial Board Member of the *Optimization and Engineering Journal* of Kluwer Academic Publishers. He is the MDO Chair for the 38th Aerospace Sciences Meeting and Exhibits. He has authored or coauthored some 70 publications. He is a recipient of the prestigious CAREER grant of the National Science Foundation.



**PHILIP J. MORRIS** is the Boeing/A.D. Welliver Professor of Aerospace Engineering at the Pennsylvania State University. He obtained his B.S. (hons.) in aeronautics and astronautics in 1967, his M.S. in advanced acoustics in 1968, and his Ph.D. in aeronautics and astronautics in 1971, all from the University of Southampton, Southampton, England. His research experience includes two years at the University of Toronto Institute for Aerospace Studies and five years with the Lockheed-Georgia Company prior to joining the faculty of the Department of Aerospace Engineering at Penn State in 1977. He was promoted to the rank of Professor in 1986. His research interests include aeroacoustics, computational aeroacoustics, turbulence modeling, and hydrodynamic stability. Dr. Morris has served as a member of the AIAA Aeroacoustics Technical Committee (1981–1984, 1989–1995) and was chairman (1993–1995). He was General Chairman of the AIAA 13th Aeroacoustics Conference (1990). He has offered an AIAA Professional Short Course on Aircraft Noise annually since 1996. Dr. Morris received the AIAA Aeronautics Award, 1999. He was the recipient of the Best Paper Award at the AIAA 11th Aeroacoustics Conference and received the Distinguished Publication Award from NASA Lewis Research Center in 1997. He has received the Outstanding Teaching (1984), Outstanding Research (1990), and Premier Research (1997) awards from the Penn State Engineering Society. Dr. Morris is a fellow of APS, an Associate Fellow of AIAA, and member of AHS and ASA. He is a member of the Editorial Board of the *Proceedings IMechE. Part G, Journal of Aerospace Engineering*.



**ANTHONY N. PALAZOTTO**, Professor of Aerospace Engineering at the Air Force Institute of Technology, received his M.Sc.E. from Brooklyn Polytechnic Institute in 1961 and Ph.D. from New York University in 1968. Professor Palazotto's interests include nonlinear mechanics, shell analysis, finite elements, composite materials, viscoplasticity, and nonlinear dynamics. Dr. Palazotto is the coauthor of a textbook, *The Nonlinear Analysis of Shell Structures*, published by the AIAA in 1992. He contributed a chapter to the text *Buckling and Post Buckling of Composite Plates* published by Chapman and Hall in 1995. In addition he has authored over 160 archival technical publications and made more than 200 presentations at technical conferences. Dr. Palazotto received the Hetenyi Award in 1982 from the Society of Experimental Mechanics, the Cleary Award in 1981 from the Air Force Material Laboratory, and the Structures, Structural Dynamics, and Material Award from ASCE in 1986. Dr. Palazotto is a fellow of the ASCE and an Associate Fellow of the AIAA. He is a registered professional engineer.



**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 served two terms as 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. A second edition of *Low-Speed Aerodynamics*, published by Cambridge University Press, will be available in 2000. He has been an Associate Editor of the *AIAA Journal* since 1986.



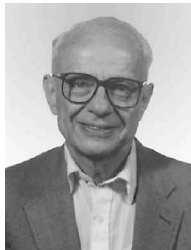
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### Editorial Policy Statement on Numerical Accuracy and Experimental Uncertainty

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<sup>1</sup> with assumed odds 20:1. All reported data must show uncertainty estimates if used in text or tables; for example,  $T = 642 \pm 8$  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.

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