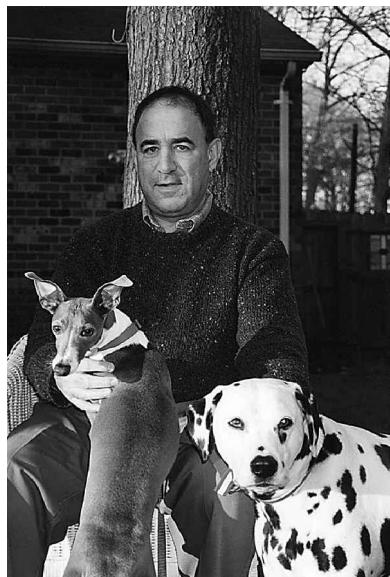


Journal Support

AS Editor-in-Chief, I would like to acknowledge all of the important contributors to this journal and thank them. The contributors are all of the authors, reviewers, Associate Editors, AIAA editorial staff, and TechBooks staff who have been associated with the *Journal of Spacecraft and Rockets (JSR)*. The *JSR* has a diverse scope with application-oriented articles, and I hope that the technical community continues to find papers of interest. I need to thank the authors who have chosen the *JSR* as the means to disseminate their research to the technical aerospace community. I hope that they felt that the peer review process was professional and constructive. The peer review process and the high quality of the AIAA journals would not exist if it were not for the reviewers who voluntarily give of their time and provide in-depth reviews. Although it is only a small token of appreciation, their names are listed in this issue. Hopefully we have successfully included all of them. I do, however, thank all who gave their time. The Associate Editors provide the cornerstone of this peer review process. They have the responsibility for the technical evaluation of the proposed papers and for

maintaining the high quality in the published version. Their biographies are also included in this issue. We are fortunate to have new commitments from Mark Lake, David Edwards, and Basil Hassan to serve as Associate Editors. I want to thank three retiring *JSR* Associate Editors, Alan Tribble, Ramesh Malla, and Manny Torres, for their many contributions. Manny thinks that he will now have more time to rest, but their new baby girl, Julia, will probably have something to say about that. Finally, we arrive at the AIAA editorial staff and the TechBooks staff. I want to thank Ms. Norma Brennan for her terrific help over all of the past years. Her ongoing dedication is invaluable. I truly appreciate Luke McCabe, who always seems willing to make this job a little easier. Also, I want to thank Ms. Carol Neff and her TechBooks staff for their patience and outstanding effort in publishing the special issues and sections.

E. Vincent Zoby
Editor-in-Chief



E. VINCENT ZOBY is employed by NASA and has been at the Langley Research Center since 1962. He received a B.S.M.E. from Virginia Polytechnic Institute and State University and an M.S. in Thermal Engineering from Old Dominion University. Mr. Zoby has been responsible for developing and demonstrating the applicability of approximate codes that define the aerothermal environment about spacecraft at both Earth and planetary entry conditions. This work encompassed preliminary design and/or postflight heating calculations for the RAM C, Re-Entry F, Shuttle, and Venusian and Galileo vehicles. (At this point, it is usually noted that his dogs, Banks and Hokie, have not done a lick of work in their lives! Sad to say, Hokie—the Dalmatian—has passed away, but Hokie will always be his buddy.) Mr. Zoby has over 90 publications in the area of hypersonic aerothermodynamics to his credit, including studies for computing the equilibrium high-temperature properties of gas mixtures and for the heat shield performance of entry probes. He recently served as Langley's Technical Team Leader for the aerothermodynamics tasks in a cooperative effort with Boeing on the X-37 program. Mr. Zoby served on the AIAA Thermophysics Technical Committee and is a Fellow of the AIAA.

Associate Editors



IAIN D. BOYD received a B.S. in Mathematics (1985) and a Ph.D. in Aeronautics and Astronautics (1988) from the University of Southampton in England. He worked for four years as a contractor at NASA Ames Research Center in the area of rarefied gas dynamics. Dr. Boyd was a faculty member in Mechanical and Aerospace Engineering at Cornell University for six years and recently joined the Department of Aerospace Engineering at the University of Michigan. His research interests involve development of physical models and numerical algorithms using particle methods with applications to a variety of nonequilibrium gas and plasma dynamic systems. He has authored over 60 journal articles. He is the recipient of the 1998 AIAA Lawrence Sperry Award and the 1997 AIAA Electric Propulsion Best Paper Award.



DAVID COOKE is currently a Research Scientist at the Air Force Research Laboratory (AFRL), Space Vehicles Directorate, located at Hanscom Air Force Base in Bedford, Massachusetts. Prior to coming to AFRL in 1985, he was employed at Maxwell Technologies of San Diego, California. He earned his doctorate in Space Physics from Rice University in 1981. His hometown is Abilene, Texas, where he attended McMurray University for a B.A. in Physics. His research interests center on space plasma physics and spacecraft environment interactions including theory, numerical models, and the design of space experiments.



RUSSELL M. CUMMINGS graduated from California Polytechnic State University with a B.S. and M.S. in Aeronautical Engineering in 1977 and 1985, respectively, before receiving his Ph.D. in Aerospace Engineering from the University of Southern California in 1988. Before joining the Aeronautical Engineering Department at Cal Poly in 1986, he worked for Hughes Aircraft Company in the Missile Systems Group as a missile aerodynamicist from 1979 through 1986. He completed a National Research Council postdoctoral research fellowship at NASA Ames Research Center in 1990, working on the computation of high-angle-of-attack flowfields in the Applied Computational Fluids Branch. He was named an AIAA Associate Fellow in 1990, received the AIAA National Faculty Advisor Award in 1995, and has served on the AIAA Student Activities Committee since 1990. Dr. Cummings served as the Chairman of the Aeronautical Engineering Department at Cal Poly from 1991 through 1995 and is currently a Professor in that department.



DAVID L. EDWARDS received a Bachelor of Science degree, in Physics, from the University of North Alabama in 1986. In 1989, he received a Masters of Science degree, in Physics, from Auburn University. His research focused on ion beam analysis of the oxide growth on thin silver films. NASA's Marshall Space Flight Center (MSFC) hired Dr. Edwards on 1 May 1989, and he has worked in the discipline of Space Environmental Effects on materials for 12 years. Dr. Edwards was accepted into the Materials Engineering Ph.D. program at Auburn University in 1991 and completed this program in August 1999. He is the Space Environments Team Lead in the Environmental Effects Group of MSFC's Engineering Directorate. He coordinates the activities of engineers, scientists, and technicians conducting basic research as well as program-related testing of space environmental effects on materials and systems. Research interests include quantifying the effects of material exposure to the space environment, ion beam analysis of materials, and investigating the interaction physics associated with advanced propulsion systems. Dr. Edwards is an active member of the committee to generate an International Standard titled "Simulation for Radiation Tests of Materials." This International Standard, when approved, will govern the procedure for performing radiation exposures of materials. Dr. Edwards and his wife, Sandy, live in Huntsville, Alabama, with their two children, Megan and Ashley.



BASIL HASSAN is a Principal Member of the Technical Staff in the Aerosciences and Compressible Fluid Mechanics Department of the Engineering Sciences Center at Sandia National Laboratories, Albuquerque, New Mexico. Dr. Hassan received his B.S. (1988), M.S. (1990), and Ph.D. (1993) in Aerospace Engineering from North Carolina State University and has been at Sandia since 1993. He has primarily worked in research and development in the area of nonequilibrium computational fluid dynamics with application to aerodynamics and aerothermodynamics of high-speed flight vehicles. He has also worked in the areas of drag reduction for low-speed ground transportation vehicles and high-velocity oxygen fuel thermal sprays. Most recently, Dr. Hassan has led an effort to develop a coupled fluid/thermal/trajectory capability for modeling ablation of hypersonic flight vehicles. Dr. Hassan has been active in AIAA technical activities as a member of the AIAA Thermophysics Technical Committee (1994–2003), including serving as the Chair of the Thermophysics Technical Committee (2000–2002). He was the Technical Program Chair of the 7th AIAA/ASME Joint Thermophysics and Heat Transfer Conference (1998) and will be the General Chair of the AIAA Summer Collocated Conferences (Thermophysics, Fluid Dynamics, Plasmadynamics and Lasers, Applied Aerodynamics, Aerodynamics Measurement Technology and Ground Testing) in 2004. Dr. Hassan was named an Associate Fellow in AIAA in 2000 and is also a member of the American Society for Mechanical Engineers. He has been a manuscript reviewer for *AIAA Journal*, the *Journal of Thermophysics and Heat Transfer*, and the *Journal of Spacecraft and Rockets* and has authored or coauthored over 25 journal and conference papers.



CRAIG A. KLUEVER received his B.S. in Aerospace Engineering from Iowa State University in 1986. He worked at Rockwell International from 1986 to 1989 in the Space Shuttle Guidance, Navigation, and Control Group. He returned to Iowa State and completed his M.S. and Ph.D. degrees in Aerospace Engineering in 1990 and 1993, respectively. Since 1993, he has been with the University of Missouri-Columbia and is currently an Associate Professor in the Mechanical and Aerospace Engineering Department. His research interests include mission design and analysis, trajectory optimization, guidance and control of aerospace vehicles, and orbital mechanics. He is an Associate Fellow of AIAA and has served on its Astrodynamics Technical Committee.



MARK S. LAKE is the Director of Technology Programs for Composite Technology Development, Inc., Lafayette, Colorado. He received his B.S. in 1984 from the University of Illinois, his M.S. in 1989 from Old Dominion University, and his Ph.D. in 1992 from North Carolina State University. From 1981 to 2001, he was a Research Engineer with NASA Langley Research Center. From 1999 to 2001, he was a Visiting Researcher at the Jet Propulsion Laboratory. Dr. Lake is an internationally recognized expert in the field of deployable spacecraft structures and an authority on nonlinear mechanics of composite and mechanically jointed structures. He is the author or coauthor of over 40 research publications in the field of spacecraft structures and a reviewer for the *Journal of Shock and Vibration*. He is an Associate Fellow of the AIAA and an Adjunct Member of the Graduate Faculty of the Department of Aerospace Engineering Sciences at the University of Colorado.



TONY C. LIN received his B.S. degree (1964) from National Taiwan University in Civil Engineering and his Ph.D. degree (1969) from Polytechnic Institute of Brooklyn in Aerospace Engineering. Over the years, he has worked at NASA Marshall Space Flight Center, Avco, and The Aerospace Corp. Since 1979, he has been with TRW/SSD and is currently a Department Manager. His primary fields of interest are aerothermodynamics, flight mechanics, computational fluid dynamics, and electromagnetic wave propagation.



JAMES A. MARTIN holds a B.S. degree from West Virginia University, M.S. and Engineer degrees from the Massachusetts Institute of Technology, and a D.Sc. Degree from George Washington University. He has worked at the NASA Langley Research Center, the University of Alabama, and Boeing. His work has mostly involved the design and evaluation of reusable launch vehicles and space transfer concepts. Several of his papers deal with tripropellant rocket propulsion options. He was leader of the Orbit-on-Demand Study at NASA. Some recent work has been on the NASA and Boeing Solar Power Satellite Program, crew escape for the Shuttle, and the use of tethers for launch and orbit transfer.



MARK S. MILLER received his B.S. and M.S. degrees in Aerospace Engineering from Auburn University in 1984 and 1985, respectively. His areas of technical expertise include missile aerodynamic design, wind-tunnel testing, and performance analysis. In 1990, he joined Dynetics, Inc., where he is currently Manager of the Missile Systems Department, directing a group of engineers supporting a variety of missile-related projects for the Department of Defense. He has also been the Principal Investigator for four Small Business Innovative Research Contracts evaluating advanced aerodynamic control technologies for a variety of atmospheric vehicles. Mr. Miller has been a member of both the AIAA Atmospheric Flight Mechanics and the Applied Aerodynamics Technical Committees and served as the Technical Chair of the 1996 AIAA Applied Aerodynamics Conference. Most recently he has served as a Co-Instructor for the AIAA short course on Launch Vehicle and Missile Aerodynamics first offered in 2000.



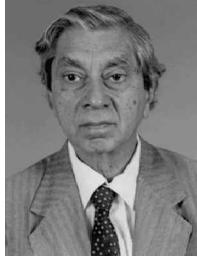
MICHAEL P. NEMETH is a senior Research Engineer at the NASA Langley Research Center, where he served in the Structural Mechanics, Aircraft Structures, and Mechanics and Durability branches since 1983. He received a B.S. in Civil Engineering from North Carolina State University in 1977 and an M.S. in Engineering and Applied Science from the NASA-George Washington University Joint Institute for Advancement of Flight Sciences in 1979. In 1983, he received a Ph.D. in engineering mechanics from the NASA-Virginia Tech Composite Materials Research and Education Program. He has conducted analytical and experimental research on the buckling, postbuckling, and fundamental mechanics of anisotropic plate and shell structures that has resulted in approximately 65 scientific publications. In 1992, he received the NASA Langley Floyd L. Thompson Fellowship Award. He has also conducted extensive studies of the buckling and nonlinear behavior of flight vehicles such as the Space Shuttle solid rocket boosters and the new superlightweight external tank. Recently, he received the NASA astronaut's personal achievement award for his contributions to space flight safety and mission success. He is currently an Associate Fellow of AIAA and a member of the AIAA Structures Technical Committee.



DAVID B. SPENCER is an Assistant Professor of Aerospace Engineering at Pennsylvania State University. He teaches undergraduate and graduate courses in spacecraft dynamics and controls. Additionally, he conducts research in the areas of space debris dynamics, trajectory optimization, guidance, navigation, control, and theoretical and applied astrodynamics. Formerly, he was a member of the Technical Staff at The Aerospace Corporation in Los Angeles and held various technical and management positions at the U.S. Air Force Research Laboratory's Space Vehicles Directorate in Albuquerque, New Mexico. He has a B.S. in Mechanical Engineering from the University of Kentucky, an M.S. in Aeronautics and Astronautics from Purdue University, and a Ph.D. in Aerospace Engineering Sciences from the University of Colorado at Boulder. He was named an AIAA Associate Fellow in 1998, is the author of several technical publications, and serves on both the AIAA Astrodynamics Technical committee and the AAS Space Flight Mechanics Technical Committee.



JEFF C. TAYLOR received B.S. (1987), M.S. (1989), and Ph.D. (1994) degrees from North Carolina State University in Aerospace Engineering with emphasis on nonequilibrium rarefied reentry flows. He joined the Space Department of the Johns Hopkins University Applied Physics Laboratory in 1995 and is currently a Senior Aerospace Engineer conducting applied research on a variety of ballistic-missile-defense-related problems involving nonequilibrium rarefied reacting flows and optical signatures. He is a member of the AIAA Thermophysics Technical Committee and has authored or coauthored over 30 technical papers.



IRWIN E. VAS has been employed by The Boeing Company since 1987. He received his B.M.E. and B.A.E. from the Catholic University of America, his M.S.E. from Princeton University, and his Ph.D. in Aeronautics and Astronautics from New York University. He worked in supersonic and hypersonic experimental gas dynamics at Princeton University for 25 years. The high-Reynolds-number supersonic flows dealt primarily with two- and three-dimensional shock wave/boundary-layer interactions. The hypersonic flows created in helium and heated nitrogen facilities dealt with two-dimensional and axially symmetric phenomena of sharp and blunted shapes, including incidence effects. On leaving Princeton University, he joined the Solar Energy Research Institute (currently the National Renewable Energy Laboratory) as Program Manager for Wind Energy. He later joined Flow Industries/Flowind Corporation in Seattle, Washington, a company that designed and manufactured vertical-axis wind turbines. He is currently working on advanced space transportation technologies and systems for the Defense and Space Group of The Boeing Company. He has published approximately 100 technical papers in the area of gas dynamics, wind energy, and space technologies. He is an Associate Fellow of the AIAA.



PAUL WEINACHT has been a Senior Researcher at the U.S. Army Research Laboratory (ARL) and the former U.S. Army Ballistics Research Laboratory since 1982. His interests include computational fluid dynamics modeling of aerodynamic flows for projectiles and missiles, flight mechanics, and heat transfer. Dr. Weinacht received a B.S. in Aerospace Engineering from the University of Notre Dame (1978), an M.S. in Naval Architecture and Marine Engineering from the Massachusetts Institute of Technology (1980), a Diploma from the von Kármán Institute for Fluid Dynamics (1981), and a Ph.D. in Mechanical Engineering from the University of Delaware (1996). In 1995, Dr. Weinacht received the Louis and Edith Zernow Award for the Most Significant Recent Advancement in Fundamental Ballistics, presented at the 15th International Symposium on Ballistics, Jerusalem, Israel. During the 1999–2000 academic year, Dr. Weinacht served as the ARL Visiting Scientist at the U.S. Military Academy, West Point, New York. He is an Associate Fellow of AIAA and has served on the AIAA Atmospheric Flight Mechanics Technical Committee. He also served as a Technical Program Chair for the 36th AIAA Aerospace Sciences Meeting.



WALT WILLIAMSON is Professor and Chair of the Department of Engineering at Texas Christian University. He received his B.S. in Mechanical Engineering from Stanford University and his M.S. and Ph.D. in Aerospace Engineering from the University of Texas at Austin. He taught for four years at the University of Texas at Austin. He worked for 25 years at Scandia Laboratories in an Advanced and Exploratory Aerospace Systems Department. During that time, he was involved in flight tests of reentry vehicle technologies. He is on the Astrodynamics Technical Committee.