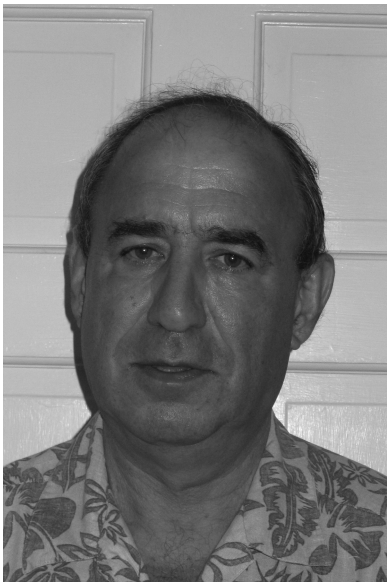
JOURNAL OF SPACECRAFT AND ROCKETS
Vol. 48, No. 1, January–February 2011

# Another Thanks to All *JSR* Supporters

DOI: 10.2514/1.53480

AS EDITOR-IN-CHIEF, I have another opportunity to acknowledge all of the important contributors to this journal and thank them. These contributors are the authors, reviewers, Associate Editors (AEs), and AIAA editorial staff who have been associated with the *Journal of Spacecraft and Rockets* (*JSR*). The *JSR* has a diverse scope with probably a larger percentage of application-oriented articles, and I hope that the technical community continues to find the 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. Hopefully, the authors 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 technical reviews. Although it is only a small token of appreciation, their names are listed in this issue. I hope that we have successfully included all of them. I do, however, thank all who gave their time. The AEs 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. If anyone has ever had the responsibility of an AE position, a simple thank you probably seems insufficient. It is very difficult trying to balance your real job with one in which you offer your services to your profession with no question as to "what am I getting out of it?" The biographies of the AEs are included in this issue. We were fortunate to add two new associate editors: David Geller and Timothy Minton. I do appreciate their willingness to make a contribution to the *Journal of Spacecraft and Rockets*. Unfortunately, Belinda Marchand decided to move on to other endeavors. I thank her for her tireless efforts to ensure quality papers for the journal. I need to also thank Ms. Amanda Maguire, whose great help is always greatly appreciated, as well as the support of Ms. Becky Rivard who must be wearing out with all my questions .

E. Vincent Zoby
*Editor-in-Chief*



**E. VINCENT ZOBY** was employed by NASA and had been at Langley Research Center (LARC) since 1962. He received a B.S. in mechanical engineering from Virginia Polytechnic Institute and State University and an M.S. in thermal engineering from Old Dominion University. He will be ending his civil service career of 53 years on 31 December 2010. During his tenure, Mr. Zoby was responsible for developing and demonstrating the applicability of approximate codes that define the aeroheating 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, and space shuttle, as well as the Pioneer Venus and Galileo probes. 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 surface catalytic effects. His recent assignments included the LARC technical team, Aerothermodynamic Lead for the X-37 vehicle, Peer Evaluator for the HYPERX-X43A return to flight studies, and Member of the NASA Engineering and Safety Center Aerothermodynamics panel for the Return to Flight investigation. He was the lead for several U.S. Air Force Research Laboratory programs and was the LARC Aerothermal Technical Manager for the Crew Exploration Vehicle program. He was awarded the NASA Distinguished Service Medal and the 2009 Thermophysics Award. He is a Fellow of the AIAA and the Editor-in-Chief of the *Journal of Spacecraft and Rockets.*

# Associate Editors

**GREGORY S. AGNES** is the Group Lead for Precision Deployable Structures at the Jet Propulsion Laboratory (JPL). Before coming to the JPL, he served 11 years in the U.S. Air Force, achieving the rank of Major. He conducted research at the U.S. Air Force Research Laboratory and taught at the Air Force Institute of Technology. He received his B.S. in aeronautical engineering from Rensselaer Polytechnic Institute, his M.S. in aerospace engineering from the University of Maryland, and his Ph.D. in engineering mechanics from Virginia Polytechnic Institute and State University. His research interests include vibrations, precision structures, nonlinear dynamics, and adaptive structures. Dr. Agnes is an Associate Fellow of the AIAA and serves on the Adaptive Structures Technical Committee.

**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 papers. He is the recipient of the 1998 AIAA Lawrence Sperry Award and the 1997 AIAA Electric Propulsion Best Paper Award.

**ROBERT D. BRAUN** is the David and Andrew Lewis Professor of Space Technology in the Daniel Guggenheim School of Aerospace Engineering at the Georgia Institute of Technology. He leads an active research program focused on the design of advanced flight systems and technologies for planetary exploration and is responsible for undergraduate and graduate instruction in the areas of space systems design, astrodynamics, and planetary entry. Before joining Georgia Tech, Dr. Braun worked for 16 years at NASA, where he contributed to the design, development, testing, and operation of several robotic spaceflight systems, including entry, descent, and landing systems for the Mars Pathfinder, Mars Microprobe, and Mars Sample Return missions. He is an AIAA Fellow and the primary author or coauthor of over 175 technical publications in the fields of planetary exploration, atmospheric entry, multidisciplinary design optimization, and space systems engineering.

**MARK COSTELLO** is the Sikorsky Associate Professor, School of Aerospace Engineering, Georgia Institute of Technology. He received his B.S. in aerospace engineering from Pennsylvania State University (1987) and his M.S. and Ph.D. in aerospace engineering from the Georgia Institute of Technology (1989 and 1992). From 1993 to 1997, Prof. Costello served on the faculty of the Department of Civil and Mechanical Engineering at the U.S. Military Academy at West Point, and from 1998 to 2006, he served on the faculty of the Department of Mechanical Engineering at Oregon State University. He worked as a Research Engineer in the Helicopter Division of The Boeing Company and in the Aerospace Laboratory at Georgia Tech Research Institute. His research group is focused on the development of innovative flight mechanics and control technologies for a variety of flight vehicles, including projectiles, rockets, micro air vehicles, and rotorcraft. He has authored or coauthored over 100 publications. Prof. Costello is an Associate Fellow of the AIAA.

**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. He was recently named Professor of Aeronautics at the U.S. Air Force Academy. Before that, he was Professor of Aerospace Engineering at California Polytechnic State University from 1986 through 2004, where he served as Department Chair for four years. 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 Associate Fellow of the AIAA in 1990, received the AIAA National Faculty Advisor Award in 1995, and is the past chairman of the AIAA Student Activities Committee. In addition, he has been awarded the Northrop Grumman Excellence in Teaching and Applied Research, the TRW Excellence in Teaching, and the Litton Excellence in Research and Development awards. He received a B.A. in music from California Polytechnic State University in 1999.

**OLIVIER L. DE WECK** is an Associate Professor of aeronautics and astronautics and engineering systems at the Massachusetts Institute of Technology (MIT). He holds degrees in industrial engineering from the Swiss Federal Institute of Technology, Zurich (1993) and aerospace systems engineering from Massachusetts Institute of Technology (MIT) (1999 and 2001). Before joining MIT, he was a Liaison Engineer and later an Engineering Program Manager on the F/A-18 aircraft program at McDonnell Douglas (1993–1997). His research interests, teaching emphasis, and professional experience are mainly in two areas: systems engineering for changeability and commonality, as well as space logistics. He currently serves as Chair of the AIAA Space Logistics Technical Committee. Prof. de Weck is an Associate Fellow of the AIAA, winner of the 2007 Best Paper Award from the journal *Systems Engineering* and the 2006 Frank E. Perkins Award for Excellence in Graduate Advising, and recipient of the 2007 AIAA Multidisciplinary Design Optimization Technical Committee Outstanding Service Award. His research has been funded by General Motors, NASA, BP, the Jet Propulsion Laboratory, ArvinMeritor, the Defense Advanced Research Projects Agency, and the Alfred P. Sloan Foundation. He served as the General Chair for the Second AIAA Multidisciplinary Design Optimization Specialist Conference in May 2006.

**DAVID L. EDWARDS** has served as the Branch Chief of the Natural Environments Branch in the Engineering Directorate at NASA Marshall Space Flight Center (MSFC) since December 2005. Dr. Edwards started his career as an Engineer in May of 1989 with the Environmental Effects Branch in the Materials and Processes Laboratory. During his career, he has served in a variety of positions, including Team Lead of the Space Environments Effects Team, Branch Chief of the Environmental Effects Branch, and MSFC Coresident Manager at the Jet Propulsion Laboratory for the Jupiter Icy Moons Orbiter Program. Dr. Edwards received his B.S. from the University of North Alabama in physics in 1985, his M.S. from Auburn University in physics in 1989, and his Ph.D. in materials engineering from Auburn University in 1999. Dr. Edwards has served as Associate Editor for the *Journal of Spacecraft and Rockets* for seven years.

**PETER GAGE** is President of Neerim Corporation, which provides aerospace design and systems engineering consulting services to government agencies and industry. He currently supports development of the thermal protection subsystem for Orion and performs unmanned air vehicle project management for the MLB Company. He previously worked with Valador and ELORET, supporting NASA in systems architecture, space vehicle design, and design software development. He has a B. Eng. degree from the University of Sydney and an M.Sc. and a Ph.D. from Stanford University. He is a member of the International Council On Systems Engineering and the Association for Unmanned Vehicle Systems International, and he is an Associate Fellow of AIAA. He is a past member of the Multidisciplinary Design Optimization Technical Committee.

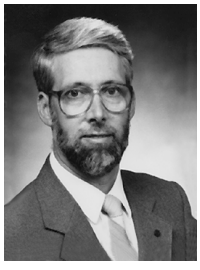
**DAVID K. GELLER** is an Associate Professor of mechanical and aerospace engineering at Utah State University. Previously, he worked at the U.S. Air Force Research Laboratory and at NASA headquarters. He received his B.S. and M.S. degrees in aerospace engineering and engineering mechanics from the University of Texas at Austin and his Ph.D. in space physics and astronomy from Rice University. Dr. Geller's research interests are in spacecraft guidance, navigation, and control systems, as well as trajectory design for space missions. His expertise includes orbital rendezvous maneuvering and navigation, atmospheric entry guidance and navigation, spacecraft trajectory design, powered flight guidance, linear covariance analysis, closed-loop dynamics simulation development using graphical programming languages, astrodynamics, and optimization theory. Recently, Dr. Geller was awarded an Outstanding Teacher Award and a Teacher of the Year Award from Utah State University. He is a Senior Member of the AIAA and an author or coauthor on more than 40 publications, papers, and presentations.

**ANDREW D. KETSDEVER** is currently a Group Leader and Senior Research Engineer at the U.S. Air Force Research Laboratory's (AFRL) Propulsion Directorate at Edwards Air Force Base. He has worked in the areas of nonequilibrium flows, rarefied gas dynamics, microfluidics, spacecraft–thruster interactions, and microspacecraft propulsion since starting at AFRL in 1992. Dr. Ketsdever received a Ph.D. in aerospace engineering from the University of Southern California (USC) in 1995, where he is currently a Research Professor in the Department of Aerospace and Mechanical Engineering. He regularly teaches graduate and undergraduate courses in rarefied gas dynamics, planetary atmospheres, microspacecraft design, and spacecraft–environment interactions, and he is the Director of the USC Student Microsatellite Program. He has been a Member of the AIAA Thermophysics Technical Committee, has been involved with the AIAA Fluid Dynamics Technical Committee's Working Group in Microfluidics, has authored or coauthored over 50 technical papers, and has coedited an AIAA Progress in Astronautics and Aeronautics series book titled *Micropropulsion for Small Spacecraft*.

**ROGER L. KIMMEL** is a Principal Aerospace Engineer in the U.S. Air Force Research Laboratory Air Vehicles Directorate. He received his B.S. from Pennsylvania State University in 1982 and his Ph.D. from Princeton University in 1987. He was employed by the Hughes Aircraft Company Missile Systems Group before his employment with the U.S. Air Force. In addition to being Principal Investigator for boundary-layer transition on the HIFiRE program, he coordinates wind-tunnel testing for several programs on hypersonic vehicles. His professional interests include boundary-layer transition, shock boundary-layer interactions, and plasmadynamics. He is an American Society of Mechanical Engineers Fellow and an Associate Fellow of the AIAA.

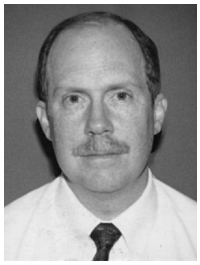
**CRAIG A. KLUEVER** is the C.W. LaPierre Professor of mechanical and aerospace engineering at the University of Missouri–Columbia. He received his B.S. in aerospace engineering from Iowa State University in 1986 and worked at Rockwell International from 1986 to 1989 in the Space Shuttle Guidance, Navigation, 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. His research interests include mission design and analysis, trajectory optimization, guidance and control of aerospace vehicles, reentry flight mechanics, and orbital mechanics. An Associate Fellow of the AIAA, he has served on its Astrodynamics and Atmospheric Flight Mechanics Technical Committees.

**TONY C. LIN** received his B.S. in civil engineering from the National Taiwan University (1964) and his Ph.D. in aerospace engineering from the Polytechnic Institute of Brooklyn (1969). Over the years, he has worked at NASA Marshall Space Flight Center, Avco, and The Aerospace Corporation. 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. from West Virginia University, an M.S. and engineering degrees from the Massachusetts Institute of Technology, and a D.Sc. from George Washington University. His work has mostly involved the design and evaluation of reusable launch vehicles and in-space propulsion. Dr. Martin retired from Boeing when the Launch vehicle business was sold. He continues to be active in aerospace, doing consulting as an Associate Editor for the *Journal of Spacecraft and Rockets* and acting as Chair of the local AIAA Orange County Section.

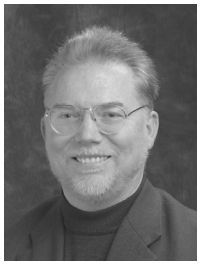
**CRAIG A. MCLAUGHLIN** is Assistant Professor of aerospace engineering at the University of Kansas. He received his B.S. in aeronautical engineering from Wichita State University and his M.S. and Ph.D. in aerospace engineering sciences from the University of Colorado at Boulder. His research interests are in astrodynamics, with emphasis on orbit determination and prediction, upper atmospheric density, and spacecraft formation flying. Dr. McLaughlin was previously in the Space Studies Department at the University of North Dakota and at the U.S. Air Force Research Laboratory, Space Vehicles Directorate. He has served on the AIAA Astrodynamics Technical Committee since 2000.



**MARK S. MILLER** received his B.S. and M.S. in aerospace engineering from Auburn University and is an Associate Fellow of the AIAA. His areas of technical expertise include missile aerodynamic design, wind-tunnel testing, and performance analysis. He is currently Manager of the Missile Systems Department at Dynetics, Inc., where he directs a group of engineers supporting a variety of missile-related projects for the U.S. Department of Defense. He has also been the Principal Investigator on several 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, was the Technical Chair of the 1996 AIAA Applied Aerodynamics Conference, and has served as a co-instructor for the AIAA Short Course on Launch Vehicle and Missile Aerodynamics, first taught in 2000.

**TIMOTHY K. MINTON** is a faculty member in the Department of Chemistry and Biochemistry at Montana State University. He is a Senior Editor for the Journal of Physical Chemistry, a Senior Member of the AIAA, and a Fellow of the American Chemical Society. Prof. Minton earned his B.S. in chemistry from the University of Illinois in 1980 and his Ph.D. in chemistry in 1986. Following two postdoctoral positions at the University of Illinois and at the University of Zürich, he became a Member of the Technical Staff at the Jet Propulsion Laboratory in 1989. In 1995, Prof. Minton moved to Montana State University, where he has built a program in molecular beam reaction dynamics. Specifically, crossed-beam and beam-surface scattering methods are used to study energy transfer and reaction dynamics at hyperthermal energies, with applications to materials and low-Earth-orbit chemistry. Prof. Minton is particularly well known for his research on reaction dynamics involving hyperthermal atomic oxygen, which is produced with a laser-detonation beam source. In addition to fundamental studies of atomic-oxygen reaction dynamics, Prof. Minton actively participates in applied laboratory and space experiments to probe the durability of materials in space environments and to develop new and more durable materials for use on spacecraft.

**GRANT PALMER** works for ERC Incorporated. He received his B.S. in mechanical engineering from the University of California, Berkeley, and a M.S. in aeronautical engineering from Stanford University. He worked at NASA Ames Research Center as a Civil Servant for 15 years and has been with ELORET for the past eight years. He has authored or coauthored 55 technical papers in the fields of computational fluid dynamics, thermal protection system design, and transport property modeling. Mr. Palmer has also written six books on the Java and C# computer programming languages.



**LEE D. PETERSON** is Associate Professor of aerospace engineering sciences at the University of Colorado. He has been an Associate Professor or Assistant Professor at the University of Colorado since 1991. Dr. Peterson is also Director of the McDonnell Douglas Aerospace Structural Dynamics and Control Laboratory and is a Member of the Center for Aerospace Structures. From 1989 to 1991, Dr. Peterson was Assistant Professor of aeronautics and astronautics at Purdue University. Before his work at Purdue, Dr. Peterson was a member of the technical staff at Sandia National Laboratories. He obtained his B.S. (1982), M.S. (1983), and Ph.D. (1987) in aeronautics and astronautics from the Massachusetts Institute of Technology. He has authored or coauthored more than 100 publications in the areas of space structure mechanics, dynamics, control, and design. His research interests are in the development of large, lightweight, precision space structures for optical telescopes and interferometers. This includes experimental and theoretical research in the stability of structures and structural components at nanometer scales of deformation.

**DAVID B. SPENCER** is an Associate 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 systems design and engineering, trajectory optimization, guidance, navigation, control, and theoretical and applied astrodynamics. Formerly, he was a member of the technical staff at The Aerospace Corporation and held various technical and management positions at the U.S. Air Force Research Laboratory's Space Vehicles Directorate. 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. Dr. Spencer is an Associate Fellow of the AIAA, the author of several technical publications, and Vice President of Publications for the American Astronautical Society. He also serves on the AIAA Astrodynamics Technical Committee.

**KATHRYN E. WURSTER** is a Senior Research Engineer in the Vehicle Analysis Branch at NASA Langley Research Center, where she has been employed for approximately 30 years since receiving her degrees from Rensselaer Polytechnic Institute. Ms. Wurster has an extensive background in engineering methods for aerothermodynamic predictions and thermal analysis and serves as the U.S. Government's point of contact for the MINIVER code, a suite of aerothermodynamic and thermal protection system (TPS) analysis and design tools used throughout the industry. She is responsible for the continued development and validation of the code's prediction methods, using computational fluid dynamics and experimental data, and she is also responsible for the enhancements necessary to accommodate increasingly complex advanced space transportation configurations and materials technologies. Her early work focused on methods development for the tailoring of entry trajectories for reusable launch vehicles, subject to aeroheating and TPS requirements, including turbulent heating constraints. She has provided the transient heating environment basis for TPS design for numerous conceptual and test demonstrator programs, including the HL-20 personnel launch system, the Access to Space winged-body concept, the X33 lifting body, and the X34. Ms. Wurster's current focus is the integration of computational, experimental, and engineering methods for the prediction of the transient aeroheating environments required for TPS analysis and design. She has served on numerous peer-review panels, including the NASA Engineering and Safety Center evaluation of the damage assessment tools for the shuttle return-to-flight and the X43A return-to-flight peer-assessor teams. Most recently, her work has concentrated on the development of engineering methods for aeroheating environment prediction for ballistic return vehicles, such as NASA's Crew Exploration Vehicle, as well as several deployable heat-shield concepts for unmanned return vehicles.