

Introducing the AIAA *Journal of Thermophysics and Heat Transfer*: A Full-Spectrum Publication

IT is with a great deal of pleasure and excitement that I introduce you to the *Journal of Thermophysics and Heat Transfer (JTHT)*, the newest member of the AIAA family of archival journals. AIAA has a long history in thermophysics and heat transfer. Since 1965, the AIAA Thermophysics Technical Committee (TC) has been strongly committed to the transfer of technical information in the thermophysics and heat transfer community. Every year the Thermophysics TC organizes one of the two major heat transfer conferences held in North America, the AIAA Thermophysics Conference. The TC also organizes sessions at the AIAA Aerospace Sciences Meeting. From these meetings, papers have been published in the *AIAA Progress in Astronautics and Aeronautics* book series, the *AIAA Journal*, and the *Journal of Spacecraft and Rockets*. In fact, there are 28 thermophysics volumes in the *AIAA Progress Series*. Consolidation of such papers into a single archival journal will improve technical exchange in this large and growing field. Engineers, scientists, librarians, and information specialists will find it easier to locate articles and keep track of new developments. In addition, *JTHT* should help to reduce the large backlogs that other, related journals are experiencing, and thus allow important technical information to reach the open literature more rapidly.

The journal will be a full-spectrum publication in the field of thermophysics and heat transfer, a breadth illustrated by the following list of pertinent topics:

Aerothermodynamics	Radiative Heat Transfer
Re-entry	Surface interchange
Thermal protection	Absorbing-emitting media
Low density	Multiple scattering
Laser interaction	Nongray media
Ablation	Multidimensional
Plumes	Coupled with conduction
Computational	Coupled with convection
Thermal Control	Conduction/Phase Change
Heat pipes	Contact conductance
Thermal modeling	Composite materials
Electronics cooling	Inverse problems
Large space structures	Conjugate problems
Contamination	Nonlinear problems
Cryogenics	Analytical techniques
Insulation	Melting/solidification
Nonintrusive Diagnostics	Convective Heat Transfer
IR signatures	Forced convection
Remote sensing	Natural convection
Laser techniques	Mixed convection
Particle sizing	Internal/external flows
Scattering techniques	Boiling/condensation
Thermophysical Properties	Numerical Heat Transfer
Thermodynamic	Finite difference
Transport	Finite element
Optical/radiative	Parallel processing

This is not a wish list. For a number of years, the AIAA Thermophysics TC has been successfully soliciting papers on these topics for Thermophysics Conferences.

The formal scope of the *Journal of Thermophysics and Heat Transfer* appears on the inside front cover and is essen-

tially the scope of the Thermophysics TC. A discipline-oriented publication, *JTHT* will present both original contributions of a fundamental nature and application-type papers. Analytical, numerical, and experimental approaches are all encouraged. Although *JTHT* is published by AIAA, papers are not restricted to aerospace topics.

The new journal has broad support. At the June 1985 AIAA 20th Thermophysics Conference in Williamsburg, Virginia, attendees were given a questionnaire regarding the possibility of a *Journal of Thermophysics and Heat Transfer*. Ninety-one percent of those responding indicated that they favored a new journal; their background was 28% from academia, 23% from government, and 49% from industry. An AIAA Thermophysics Conference elicits a large number of papers from industry and government as well as academia—an advantage not enjoyed by other heat transfer conferences. The many aerospace problems on the cutting edge of heat transfer technology promote this flow. The new journal will encourage this drawing together of work from industry, government, and academia.

Moreover, in addition to its obvious appeal to the thermophysics and heat transfer community, the new journal will interest engineers and scientists working in related areas: chemical engineers, nuclear engineers, energy specialists, laser specialists, optical physicists, numerical specialists, and applied mathematicians.

History

JTHT represents an initiative by the AIAA Thermophysics TC. In January 1983, the TC requested that Dr. Gerald Schneider lead a journal feasibility study. About the same time, the TC began a program to increase the number of thermophysics papers in AIAA journals. Discussions were held with members of the AIAA Publications Committee and with Dr. Martin Summerfield, Editor-in-Chief of the *AIAA Progress Series*. In January 1985, the Thermophysics TC voted to discontinue the thermophysics volumes and to pursue the establishment of a thermophysics journal; and on June 20, 1985, at the AIAA Thermophysics Conference in Williamsburg, the TC voted overwhelmingly for a proposal to establish the new journal. This proposal was presented to the AIAA Publications Committee in July 1985 and was approved by Publications at its October 15, 1985, meeting in Colorado Springs, Colorado. Final approval came from the AIAA Board of Directors at its February 13, 1986, meeting in Los Angeles.

Editorial Process

JTHT will use the proven editorial procedures of the existing AIAA archival journals. As with any other technical publication, the author is the key element. We underscore that point. *JTHT* will be responsive to the needs of the author by making timely professional evaluations of manuscripts. All of the editors for the new journal, being active authors, will be sensitive to the concerns of authors.

The editorial staff includes Associate Editors and members of the Editorial Advisory Board. In starting a new journal, it is very important to put together a team of experts with editorial experience. The *JTHT* staff includes seven recipients of the AIAA Thermophysics Award and four recipients of the ASME Heat Transfer Division's Memorial Award. Twelve of the staff have previous experience as editors.

The Associate Editors are responsible for the technical evaluation of manuscripts. The burden of maintaining the quality of *JTHT* rests predominantly with them. They are assisted by many reviewers, who contribute their time for this important service. I am fortunate in having an outstanding group of eight Associate Editors. Their credentials, which accompany this editorial, should convince readers and authors of our commitment to excellence. The number of Associate Editors and their broad experience will minimize publication delays.

The Editorial Advisory Board of *JTHT* provides guidance in policy matters and identifies new developments in thermophysics and heat transfer. The board consists of six well-respected researchers in thermophysics and heat transfer. Their eagerness to serve is the strongest endorsement that a new journal in this field could receive. A brief biography of each accompanies this editorial.

Alfred L. Crosbie
Editor-in-Chief

Editor-in-Chief



ALFRED L. CROSBIE, Professor of Mechanical Engineering at the University of Missouri—Rolla, received his B.S. in Mechanical Engineering from the University of Oklahoma in 1964, his M.S. in 1966, and his Ph.D. from Purdue University in 1969. He joined the faculty of the University of Missouri—Rolla in 1968, where he was promoted to Professor in 1975. He has been an active researcher in the field of radiative heat transfer since 1964. His current research interests include multidimensional radiative heat transfer, multiple scattering, numerical heat transfer, and laser interaction. Dr. Crosbie was a member of the AIAA Thermophysics Technical Committee (1976-78), Technical Program Chairman for the AIAA 15th Thermophysics Conference (1980), Editor of two thermophysics volumes in the *AIAA Progress in Astronautics and Aeronautics* books series (1981), Associate Editor for the *AIAA Journal* (1981-83), and Chairman of the AIAA Thermophysics Technical Committee (1984-86). He is an Associate Fellow of AIAA and an Associate Editor for the *Journal of Quantitative Spectroscopy and Radiative Transfer* (1979-87). Dr. Crosbie is the author or coauthor of over sixty papers in archival journals.

Associate Editors



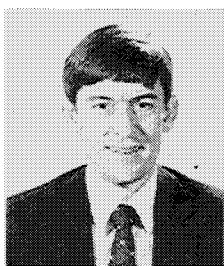
RICHARD P. BOBCO, Senior Scientist with the Space and Communication Group of Hughes Aircraft, received his B.S. in Mechanical Engineering from Northwestern University in 1952 and his M.S. from the University of Colorado in 1955. Prior to joining Hughes Aircraft, he taught at the Colorado School of Mines and was a research specialist with Northrop Corporation. The majority of his work is concerned with the thermal design of spacecraft, particularly the radiant interchange between surfaces. He was a member of the AIAA Thermophysics Technical Committee (1968-70), Technical Program Chairman of the 5th AIAA Thermophysics Conference (1970), General Chairman of the 8th AIAA Thermophysics Conference (1973), and Chairman of the AIAA Thermophysics Technical Committee (1974-75). He is an Associate Fellow of AIAA and a recipient of the AIAA Thermophysics Award (1982). Mr. Bobco is the author or coauthor of more than twenty publications.



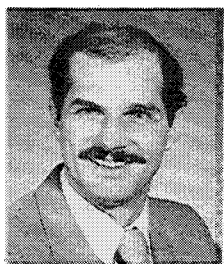
TA-SHEN CHEN, Professor of Mechanical Engineering at the University of Missouri—Rolla, received his B.S. in Mechanical Engineering from National Taiwan University in 1954, his M.S. in Mechanical Engineering from Kansas State University in 1961, and his Ph.D. in Mechanical Engineering from the University of Minnesota in 1966. He joined the faculty of the University of Missouri—Rolla in 1967, where he was promoted to Professor in 1973. Most of his recent research centers around convective heat and mass transfer, natural convection, mixed convection, and wave and thermal instability. He is a member of the AIAA Thermophysics Technical Committee (1986-88) and a Fellow of ASME. Dr. Chen is the author or coauthor of more than 70 journal articles and has contributed a chapter each to two handbooks on heat transfer.



JOHN E. FRANCIS, Associate Dean of Engineering and Professor of Aerospace, Mechanical and Nuclear Engineering at the University of Oklahoma, received his B.S. in 1960, M.S. in 1963, and Ph.D. in 1965 from the University of Oklahoma in Mechanical Engineering. He joined the faculty of the University of Oklahoma in 1966, where he served as Assistant Dean of the Graduate College (1968-71) and was promoted to Professor in 1974. Radiative heat transfer, solar energy, and heat transfer in biosystems are his main research interests. He is a member of the AIAA Thermophysics Technical Committee (1975-78, 84-87) and past Chairman (1978-81). He was General Chairman of the 15th AIAA Thermophysics Conference (1980) and an Associate Editor for the *AIAA Journal* (1984-86). Dr. Francis is the author or coauthor of over thirty publications.



JAMES N. MOSS, Research Leader for Entry Technology at NASA Langley Research Center, received his B.S. in Engineering Science from Tennessee Polytechnic Institute in 1962, his M.S. in Aerospace Engineering from the University of Virginia in 1968, and his Ph.D. in Aerospace Engineering from Virginia Polytechnic Institute in 1972. He joined NASA in 1962, where his early research assignments dealt with ablating systems. His current research concerns the heating and flowfield description for continuum, transitional, and rarefied flows. Dr. Moss has been active in the AIAA thermophysics community: member of the Thermophysics Technical Committee (1978-80), Technical Program Chairman of the 16th Thermophysics Conference (1981), General Program Chairman of the 20th Thermophysics Conference (1985), Co-Editor of a thermophysics volume in the *AIAA Progress in Astronautics and Aeronautics* book series (1986), and Chairman of the AIAA Thermophysics Technical Committee (1986-88). He is the author or coauthor of over sixty publications.



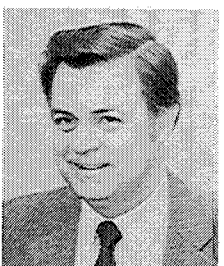
GERALD E. SCHNEIDER, Professor of Mechanical Engineering at the University of Waterloo, Ontario, Canada, received his B.A.Sc. in 1973, M.A.Sc. in 1974, and Ph.D. in 1977 from the University of Waterloo in Mechanical Engineering. He joined the University of Waterloo in 1977 and was promoted to his present rank in 1985. Most of his research work centers around thermal convection resistance, numerical heat transfer, and solid/liquid phase change. He was a member of the AIAA Thermophysics Technical Committee (1977-79, 82-84) and a member of the AIAA Publications Committee (1979-86). Dr. Schneider is the author or coauthor of more than 70 publications. He was guest editor of the July-August 1986 *Journal of Spacecraft and Rockets* special issue on thermophysics and is an editor of the *Handbook of Numerical Heat Transfer*, to be published in 1987.



CARL D. SCOTT, Senior Engineer at NASA Johnson Space Center, received his B.A. in physics from Rice University in 1960 and his Ph.D. in physics from the University of Texas in 1969. He joined NASA Johnson Space Center in 1963 after service in the Navy. In his early years, he did arcjet plasma and flow diagnostics. He has done experimental and theoretical work in aerothermodynamics: catalytic recombination, reacting flowfields, and associated convective heat transfer. Most of this work is directed toward the Space Shuttle effort. Dr. Scott was a member of the AIAA Thermophysics Technical Committee (1984-86) and was Technical Program Chairman for the 20th AIAA Thermophysics Conference (1985). He is an Associate Fellow of AIAA, the author or coauthor of over twenty-five technical publications, and Co-Editor of a thermophysics volume in the *AIAA Progress in Astronautics and Aeronautics* book series (1986).



ROBERT SIEGEL, Research Scientist at NASA Lewis Research Center, received his B.S. in 1950 and M.S. in 1951 from Case Institute of Technology in Mechanical Engineering and his Sc.D. in Mechanical Engineering from Massachusetts Institute of Technology in 1953. Before joining NASA in 1955, he worked for General Electric as a heat transfer engineer and analyst. He has been an active researcher in heat transfer since 1950. The majority of his research is centered around convective heat transfer, radiative heat transfer, and solidification heat transfer. He is a recipient of the ASME Heat Transfer Division's Memorial Award (1970) and is a Fellow of ASME. He has served as an Associate Technical Editor for the *Journal of Heat Transfer* (1973-83). Dr. Siegel is the author or coauthor of over one hundred publications, including a textbook on thermal radiation heat transfer.



ALLIE M. SMITH, Dean of Engineering and Professor of Mechanical Engineering at the University of Mississippi, received his B.S. in Mechanical Engineering from North Carolina State University in 1956, his M.S. in 1961, and his Ph.D. in 1966 from North Carolina State University in Mechanical and Aerospace Engineering. Prior to joining the University of Mississippi in 1979, he worked for ARO for 14 years as a thermal physics supervisor and as a research manager. His research work has been in the area of radiative heat transfer, particularly the experimental and theoretical understanding of cryodeposits. Dr. Smith has been active in the AIAA thermophysics community: member of the AIAA Thermophysics Technical Committee (1973-75, 85-87), Chairman of the AIAA Thermophysics Technical Committee (1976-77), and General Chairman of the 10th AIAA Thermophysics Conference (1975). He served as an Associate Editor of the *AIAA Journal* (1975-77) and Editor for two thermophysics volumes in the *AIAA Progress in Astronautics and Aeronautics* book series (1976, 1977). Dr. Smith is an Associate Fellow of AIAA and recipient of the AIAA Thermophysics Award (1978). He is the author or coauthor of over sixty publications.

Editorial Advisory Board



DONALD K. EDWARDS, Professor of Mechanical Engineering at the University of California, Irvine, received his B.S. in 1954, M.S. in 1956, and Ph.D. in 1959 from the University of California, Berkeley, in Mechanical Engineering. In 1959 he joined the faculty of the University of California, Los Angeles, where he was promoted to Professor in 1968 and served as Chairman of Chemical, Nuclear, and Thermal Engineering (1975-78). He received the ASME Heat Transfer Division's Memorial Award (1973) and was the first recipient of the AIAA Thermophysics Award (1976). He was a Technical Editor for the *Journal of Heat Transfer* (1975-81) and an Associate Editor for the *International Journal of Solar Energy* (1983-85). He is an Associate Fellow of AIAA, a Fellow of ASME, and a member of the Editorial Advisory Board for the *International Journal of Heat and Mass Transfer*.



JOHN T. HOWE, Senior Staff Scientist at NASA Ames Research Center, received his B.S. from the University of Michigan in 1950 and his M.S. from Stanford University in 1956, both in Engineering Mechanics. After a brief period with Stanford Research Institute, he joined the Ames Laboratory of NACA. During his 28 years with NASA, he served as Head of Aerothermodynamics, Assistant Chief for the Physics Branch, and Branch Chief for Fluid Dynamics. He is known for his pioneering research contributions to the aerothermodynamics of atmospheric entry, including radiative energy transfer, reactive gas flows, and innovative thermal protection systems. He was a member of the AIAA Thermophysics Technical Committee (1982-84) and an Associate Editor for the *Journal of Spacecraft and Rockets* (1982-84). He is a recipient of the AIAA Thermophysics Award (1986).



TOM J. LOVE, George Lynn Cross Professor of Aerospace, Mechanical and Nuclear Engineering and Halliburton Professor of Engineering at the University of Oklahoma, received his B.S. from the University of Oklahoma in 1948, his M.S. from the University of Kansas in 1956, and his Ph.D. from Purdue University in 1963, all in Mechanical Engineering. In 1956 he joined the faculty of the University of Oklahoma, where he was promoted to Professor (1965) and served as Director of the School of Aerospace, Mechanical and Nuclear Engineering (1963-72). He was a member of the AIAA Thermophysics Technical Committee (1970-72), an Associate Editor for *AIAA Journal* (1972-75), and an Associate Editor for the *ASME Journal of Bioengineering* (1976-79). He is an Associate Fellow of AIAA and a Fellow of ASME. Dr. Love is a recipient of the AIAA Thermophysics Award (1984).



CHANG-LIN TIEN, Professor of Mechanical Engineering at the University of California, Berkeley, received his B.S. from National Taiwan University in 1955, his M.M.E. from the University of Louisville in 1957, and his M.A. and Ph.D. in 1959 from Princeton University. He joined the University of California, Berkeley, in 1959, where he was promoted to Professor in 1968. He served as Chairman of Mechanical Engineering (1974-81) and as Vice Chancellor-Research (1983-85). He was a member of the AIAA Thermophysics Technical Committee (1970-72), General Chairman of the 7th Thermophysics Conference (1972), General Chairman of the AIAA 12th Aerospace Sciences Meeting (1974), and Editor of a volume in the *AIAA Progress in Astronautics and Aeronautics* book series (1973). He is a recipient of the ASME Heat Transfer Division's Memorial Award (1974), the AIAA Thermophysics Award (1977), and the AIChE-ASME Max Jakob Memorial Award (1981). He is an AIAA Fellow, an ASME Fellow, and a member of the National Academy of Engineering. He is an Editor for the *International Journal of Heat and Mass Transfer* and an Associate Editor for the *Journal of Quantitative Spectroscopy and Radiative Transfer* (1971-86).



RAYMOND VISKANTA, W.F.M. Goss Distinguished Professor of Mechanical Engineering at Purdue University, received his B.S. from the University of Illinois in 1955, and his M.S. in 1956 and Ph.D. in 1960 from Purdue University, all in Mechanical Engineering. After a brief period with Argonne National Laboratory, he joined the faculty of Purdue University, where he was promoted to Professor in 1966. He was a member of the AIAA Thermophysics Technical Committee (1972-75), General Chairman of the 2nd AIAA/ASME Thermophysics and Heat Transfer Conference (1978), and Editor of two volumes in the *AIAA Progress in Astronautics and Aeronautics* book series (1979). He is a recipient of the ASME Heat Transfer Division's Memorial Award (1976) and the AIAA Thermophysics Award (1979). He is an Associate Fellow of AIAA and a Fellow of ASME. He was an Associate Editor for the *Journal of Quantitative Spectroscopy and Radiative Transfer* (1969-72), is a member of the Editorial Board for the *International Journal of Heat and Mass Transfer*, and is a Technical Editor for the *Journal of Heat Transfer* (1981-87).



GERALD D. WALBERG, Chief of the Space Systems Division at NASA Langley Research Center, received his B.S. in 1956 and M.S. in 1961 from Virginia Polytechnic Institute and State University and his Ph.D. in 1974 from North Carolina State University. He heads the organization responsible for aerothermodynamics of advanced space vehicles, research on advanced space energy concepts, and systems analysis of integrated spacecraft and space-transportation concepts for future NASA missions. Dr. Walberg began his NASA career in 1957 and, prior to assuming his present position in 1980, carried out research on transonic aerodynamics and aeroelasticity, re-entry heating, ablation, and hypersonic aerothermodynamics. He is a past Associate Editor of the *Journal of Spacecraft and Rockets* (1980-82). He received the NASA Medal for Outstanding Leadership in 1983.