

## Preface

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Received: 23 June 2010 / Accepted: 25 June 2010 / Published online: 11 July 2010  
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The Seventeenth Symposium on Thermophysical Properties was held at the University of Colorado, Boulder, Colorado, USA from June 21 to 26, 2009. The Symposium was the seventeenth in the well-established series of conferences held roughly every 3 years since 1959. It brought together leading international experts presenting papers on state-of-the-art research associated with the theoretical, experimental, and applied aspects of the thermophysical properties of gases, liquids, and solids, including biological systems.

This event was organized by the National Institute of Standards and Technology, the American Institute of Chemical Engineers (AIChE), and the Heat Transfer Division of the American Society of Mechanical Engineers (ASME). In addition, joint sessions were held in conjunction with the 3rd Conference on Thermophysical Properties and Transfer Processes of Refrigerants of the International Institute of Refrigeration (IIR).

There were approximately 700 presentations on the program, representing 538 speakers from 52 countries and about 1,500 authors from 57 countries. The participation at the conference was global, with about 75 % of the attendees from outside the United States. The featured work impacts some of the larger themes and policy issues of our time: energy efficiency/self-sufficiency, alternative fuels, global warming, ozone depletion, informatics, simulation, biophysics, etc. The Symposium provided opportunities for researchers and practitioners worldwide to meet and discuss a broad spectrum of scientific problems in the fields of thermodynamics and thermophysical properties for a wide variety of systems, together with applications in chemistry, biology, chemical engineering, mechanical engineering, physics, and other areas of

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science and engineering. Studies of the thermodynamic and transport properties of fluids and solids were broadly represented, as evident from the listing of topic areas, below.

The Touloukian Award, a major honor within ASME and the Symposium on Thermophysical Properties for outstanding achievement in thermophysical properties research, was presented to Professor Andreas Mandelis of the University of Toronto in Canada and Professor Koichi Watanabe of Keio University in Japan. Prof. Mandelis was honored for “his seminal theoretical work in the shaping of thermal-wave sciences and associated instrumentation and measurement technologies ... .” Prof. Watanabe was “cited for significant contributions to the knowledge of thermophysical properties of water substance and environmentally acceptable refrigerants ... .” Before the awards were presented, Dr. Ian Shankland of Honeywell gave the Yeram S. Touloukian Award Lecture, “Low Global Warming Working Fluids—The Frying Pan or the Fire.” The conference was opened with a keynote talk from Dr. Susan Solomon, senior scientist at the National Oceanographic and Atmospheric Administration in the U.S.: “A World of Change: Climate Yesterday, Today, and Tomorrow.”

Selected papers from the Symposium are being published as special issues of this journal and a special issue of *Fluid Phase Equilibria*. Selection of papers for publication is based on established journal policies of favorable independent reviews by referees. A preprint volume of manuscripts and abstracts was prepared on CD-ROM and distributed to participants at the conference. Information on the Seventeenth Symposium is available on the Symposium Website at <http://www.symp17.nist.gov/>. Planning for the Eighteenth Symposium on Thermophysical Properties is already underway, with this event scheduled for June 24–29, 2012 in Boulder, Colorado.

It is a pleasure to acknowledge the expertise and dedication of the many individuals who contributed to the successful organization of the Symposium and to the preparation of these special issues. Among those are the authors and invited speakers, the chairs and organizers of the sessions (listed below), the referees of the papers, and the members of the Standing Committee on Thermophysical Properties of the ASME Heat Transfer Division and the American Institute of Chemical Engineers. We gratefully acknowledge the collegial partnerships with the organizers of the 3rd IIR Conference on Thermophysical Properties and Transfer Processes of Refrigerants, in particular, Mark McLinden and Piotr Domanski. We acknowledge the support of the Thermophysical Properties Division of the National Institute of Standards and Technology and are indebted to many staff members of the Division. Special thanks are due Gary Hardin, Mickey Haynes, Chris Muzny, and Marilyn Yetzbacher for their efforts on behalf of the Symposium: their expertise, dedication, and energetic efforts played major roles in the success of the conference.