

Preface

The Fifteenth Symposium on Thermophysical Properties was held at the University of Colorado, Boulder, Colorado, U.S.A. from June 22–27, 2003. The Symposium was organized by the Standing Committee on Thermophysical Properties of the Heat Transfer Division of the American Society of Mechanical Engineers and was sponsored by the Physical and Chemical Properties Division of the National Institute of Standards and Technology.

The Symposium was the fifteenth in the well established series of conferences held roughly every three 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.

Studies of the thermodynamic and transport properties of fluids and solids were broadly represented. For important areas of current scientific and technological interest, experts were asked to organize special sessions, to propose key invited speakers, to encourage presentation of contributed papers, and to organize the review process for contributors in their respective areas. Sessions at the Fifteenth Symposium focused on various classes of materials—solids, aqueous systems, fuels (including natural gas systems), polymers and mesoscopic systems, working fluids (including refrigerants), biomaterials, ionic liquids (and other solvents), and thin films; properties for chemical and metallurgical process design as well as for environmental applications; techniques, including those based on molecular simulation, novel instrumentation and measurement, and photothermal/photoacoustic methods; phenomena such as those related to subsecond time scales, ultrashort time/length scales, wetting and interfaces, phase transitions/metastability/criticality; optical and thermal radiative properties; tools and processes related to biothermophotonic diagnostics and imaging, inverse problems, non-destructive evaluation; and, finally, sessions devoted to such broad areas as fluid property measurements, theory and modelling, and property data, databases, and database demonstrations. The Fifteenth Symposium featured the presentation of the Yeram S. Touloukian Award

by the ASME Heat Transfer Division to Prof. Dr.-Ing. Wolfgang Wagner from Germany and Dr. Raymond E. Taylor from the U.S.A., and Nobel laureate Eric Cornell of NIST presented the Touloukian Memorial Lecture.

The Fifteenth Symposium attracted about 450 participants from more than 40 countries, with about half from outside the United States. The authorship of more than 660 technical contributions—oral presentations, posters, and software exhibitions—comprised more than 1500 individuals from 49 countries.

The Proceedings of the Symposium are being published as special issues of this journal and *Fluid Phase Equilibria*. This issue is the first in the series for the *International Journal of Thermophysics*; additional papers presented at the Symposium will appear in subsequent issues. Selection of papers for publication is based on established journal policies of favorable independent reviews by referees.

Approximately 215 manuscripts were submitted for publication in the Proceedings. A preprint volume of all manuscripts was prepared on CD-ROM and distributed to participants at the conference. Information on the Fifteenth Symposium is available on the Symposium Website at <http://www.symp15.nist.gov/>.

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 the Proceedings. Among those are the authors and invited speakers, the chairs and organizers of the sessions (listed on page 295), the referees of the papers, and the members of the Standing Committee on Thermophysical Properties of the ASME Heat Transfer Division. We acknowledge the support of the Physical and Chemical Properties Division of the National Institute of Standards and Technology and are indebted to many staff members of the Division. We would like to express our appreciation to Sara Tanner (University of Colorado); Sue Mathison (Mathison Consulting); Marilyn Yetzbacher, Jacki Gosselin, and Diana Tracy (NIST) for their contributions to the organization of the conference. Special thanks are due Marcia Huber (NIST) for editing the abstract volume; Gary Hardin (NIST), Symposium Webmaster and Editor of the CD-ROM volume; and Mickey Haynes (NIST) for his work on these Proceedings and assistance with conference planning: their expertise, dedication, and energetic efforts played major roles in the success of the Symposium.

D. G. Friend

A. Mandelis

*Chairs of the 15th Symposium
on Thermophysical Properties*