

# Foreword

This special volume entitled “Recent Advances in Heat Transfer” is based on the Keynote papers presented at the 14th International Heat Transfer Conference, held during August 8–13, 2010, in Washington, D.C. These conferences are organized by the Assembly for International Heat Transfer Conferences (AIHTC), which represents some 25 professional engineering societies active worldwide in thermal science and engineering, and are held every 4 years in different countries around the world. The previous conference was held in Sydney, Australia, in 2006 and the next one will be held in Kyoto, Japan, in 2014. The last one in the United States was held in 1986 in San Francisco. Thus, these conferences are a major venue for the presentation of research in traditional, as well as new and emerging, areas in the field of thermal science and engineering. At the Washington conference, about 800 papers were presented, along with many panel discussions and forums. Of these papers, 40 were Keynotes that were presented by well-known research leaders from various countries. The speakers were recommended by the members of the Assembly and selected by the organizing committee, represented by the Guest Editors of this volume. During this process of selection, particular emphasis was placed on covering the wide range of topics, from classical to current, of interest to the heat transfer community around the world.

Heat transfer has been an active area of research for many decades and its importance has grown in the recent years due to greater interest in energy, environmental processes, new materials and devices, advanced transportation, biological processes, thermal management, and micro/nanoscale systems. Significant advances have been made in both basic areas such as convection and radiation as well in such applications, where thermal aspects govern the dominant underlying transport mechanisms. Important numerical and experimental techniques have been developed to tackle

complex problems that arise in the wide range of thermal systems of practical interest. This special issue contains most of the Keynote papers from IHTC-14. These papers were shortened, updated, and modified to focus on the current state of the art in various areas. Besides those mentioned above, the topics include turbulent flows, porous media transport, experiments in space, multiscale problems, computational heat transfer, food processing, transport in microchannels, inverse problems, phase-change, and many others. Clearly, a vast array of topics and areas is covered by international experts.

Organizing this special volume has been a long process and involved the committed effort of many people. We greatly appreciate the help and support of Professor T. Simon, the editor of the *ASME Journal of Heat Transfer*, and Lesley Hancock, Assistant to the Editor. We would also like to thank all the authors and the reviewers for their relentless efforts to ensure that the papers meet the established high standards of the *Journal of Heat Transfer*.

We hope this special volume will serve to indicate the main areas of research interest at the present time as well as establish the current state of the art in this exciting and important field.

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