



Book Reviews

Heat Transfer 1986, *Proceedings of the Eighth International Heat Transfer Conference*, San Francisco, California, August 7-22, 1986, eds., C. L. Tien, V. P. Carey, and J. K. Ferrel, Hemisphere Publishing Corporation.

International heat transfer conferences are held every four years with the purpose of bringing together the international heat transfer community. The conference covers a wide range of both fundamental and applied topics in heat transfer. The Proceedings of the 1986 conference, 7 volumes including 1 volume of abstracts, contain the manuscripts of all general and invited keynote speakers.

Volume 1 contains two plenary papers and all the keynote papers. The first plenary paper is by E.R.G. Eckert and addresses the early history of international heat transfer conferences. The second plenary paper is by Ulrich Grigull and focuses on Daniel G. Fahrenheit as a pioneer of exact thermometry. Among the keynote papers a wide range of topics, such as measurements of thermophysical properties, phase change, and high temperature heat exchangers are included. This first volume also contains manuscripts in the areas of heat transfer in electronic systems, phase change heat transfer in porous media, and radiative heat transfer in scattering media.

Volume 2 includes 89 manuscripts divided almost equally in four areas. The first area with 23 papers discusses numerical techniques and modeling in heat transfer. Twenty-one manuscripts are dedicated to the topic of measurement techniques. The next 22 articles focus on the area of conduction heat transfer and insulation.

Volume 3, 94 articles, contains discussions in the areas of both internal and external forced convection, natural and mixed convection and concludes with jets, wakes, and film cooling.

Volume 4, 107 papers, includes topics in the areas of natural convection in confined spaces, condensation, freezing, melting, and evaporation, interfacial phenomena, and concludes with pool boiling.

Volume 5, 89 manuscripts, deals with flow boiling, two-phase flow, nuclear reactor heat transfer, and particulates and porous media.

Volume 6 contains 68 manuscripts covering heat exchangers, heat transfer augmentation, and special applications in heat transfer.

This reviewer believes that the editors of these proceedings should be congratulated for the selection, organization, and presentation of the conference material. The titles of the conference represent an attractive and varied menu from which the reader interested in heat transfer can select nourishment for his or her greater understanding in almost any area that may excite interest.

Encyclopedia of Fluid Mechanics, *Gas-Liquid Flows*, Vol. 3, ed., N. P. Cheremisinoff, Gulf Publishing Co., 1986, 1535 pp., \$165.

In this book the editor has organized selected contributions by 78 individuals (49 chapters) who have been key players in the fields of hydrodynamics and mass and heat transfer processes involving two-phase (gas-liquid) flows. Through the selection of topics and length of presentation, the editor has chosen to emphasize the current principles and the most up-to-date technological information in the area of two-phase flow. The book is targeted for readers with a reasonably good background in this area of fluid mechanics and who want to become familiar with recent developments in this field.

Divided in three sections, the book examines gas-liquid flow concepts. Section I, "Properties of Dispersed and Atomized Flows," discusses characteristics and physical property estimation of various two-phase flow systems, such as foams, bubbly flows, and dispersed flow particles. Single droplet, bubble dynamics, and bubble-formation phenomenon are rigorously outlined. Hydrodynamic aspects of mass bubbling, plus bubble nucleation phenomena and bubble dynamics in superheated liquid droplets are treated, as well as dynamic two-phase flow formation and the process of liquid atomization.

Section II, "Flow Regimes, Hold-up, and Pressure Drop," discusses complex gas-liquid flows in all tube-flow orientations. It treats interface instability in depth, and presents state-of-the-art flow regime maps. It also gives design procedures for predicting two-phase pressure drop and hold-up along with illustrative examples. In addition, this volume treats two-phase flows in noncircular channels, effects of flow obstructions on flow transitions and pressure drop, and experimental techniques.

Section III, "Reactors and Industrial Applications," provides a unified approach to the design and scale-up of industrial reactors. It includes important topics, such as bed reactors, bubble column design, sieve plate columns, extraction columns, air-lift reactors, and nuclear reactor channels.

The book is a welcome addition to the two-phase flow literature. It is recommended to anyone in hydrodynamics and/or heat and mass transfer in two-phase flow. The editor has successfully addressed important issues in this area of fluid mechanics.

J. A. Orozco
Department of Mechanical Engineering
University of Illinois at Chicago
Chicago, Ill. 60680