areas, and they are worthwhile reading for anyone using laser anemometry. The contributed papers will be of more value on an individual basis.

R. J. Adrian

Heat transfer in high technology and power engineering

Edited by Wen-Jei Wang and Yasuo Mori
Hemisphere Publishing Corporation, New York, 602 pp., $95.00 (U.S. and Canada)

Heat Transfer in High Technology and Power Engineering presents the proceedings of the second United States–Japan binational heat transfer seminar held in San Diego in 1985. The text opens with an excellent overview by Professor Mori of the Japanese heat transfer research carried out in support of their well-organized and well-funded national energy program. The main text is divided into four major sections: Heat Transfer in High Technology, High Heat-Flux Technology, High Performance Heat Exchange Devices, and Radiation Heat Transfer and Solar Energy Utlization.

The first section covers such basic studies as Marangoni convection induced by surface tension forces, heat transfer control techniques including heat pipes for use in space application and in electronic equipment and heat transfer problems connected with crystal growth.

The second section opens with an excellent overview of critical heat flux by Y. Katto followed by a comparison of post dryout prediction methods by Warren Rohsenow and his colleagues. The remainder of the section presents a number of basic studies on boiling heat transfer, including a discussion of techniques to achieve heat transfer enhancement. The conclusion of this section deals with a number of practical applications of high heat flux technology: nuclear power stations, high temperature gas cooled reactors, aeropropulsion systems and incineration of hazardous waste.

The third section opens with five papers devoted to the technically important topic of heat transfer enhancement followed by chapters dealing with somewhat more applied topics such as fouling problems in heat exchangers, automotive heat exchanger design, design of a compact heat exchanger for waste heat recovery and numerical simulation of heat exchangers. The section ends with two basic research studies on the structure of turbulence and its effect on heat transfer. The fourth and final chapter deals with radiation and natural convection in high temperature solar energy applications, the use of radiation heat transfer in industrial processes and the prediction of radiative heat transfer by the Monte Carlo method. A chapter on plasma-surface interactions is also included.

In general, the book can be recommended for researchers and engineers involved in the cooling of electronic equipment and space applications, heat transfer enhancement, boiling and condensation and solar radiation. The majority of the papers present basic research results and the conclusion reached in these papers are still applicable.

J. P. Hartnett

Two phase cooling and corrosion in nuclear power plants

M. A. Styrikovich, V. S. Polansky, G. V. Tsiklauri
Hemisphere Publishing Corporation, New York, 415 pp., $105 (U.S. and Canada)

This book examines the interaction of heat and mass transfer on the behavior of impurities contained in the steam and water mixtures that exist in nuclear power plants. The authors hope that this book will be useful in obtaining a greater degree of understanding between specialists in the fields of heat and mass transfer, multiphase science, corrosion, equipment design and hydrodynamics. This book should accomplish this purpose, as it provides a comprehensive digest of individual articles and reports which focus on different aspects of the problem, and directs attention to the interaction of problems rather than treating them separately. The importance of the topic is clear since high local concentrations of impurities are responsible for many of the outages of large nuclear power plants. The book evaluates these problems in steam generators steam turbines and moisture separators.

The book provides a good review of the work performed in the USSR and combines this with work performed outside the USSR. As stated in the preface, it is natural that in a problem so little explored and complicated, investigators pay the greatest attention to studies performed by themselves and to comparisons of their results with those published by others. This is particularly true since even for some elementary geometries significant differences exist between data of various investigators. The authors put into perspective the database for this area of interest by stating that the data which exists has been taken primarily for equilibrium distribution of impurities and pertain to solutions of single electrolytes. They further state that the applicability of these data to systems having a number of electrolytes that are associated to varying degrees and/or to the behaviour of mixtures in nonequilibrium conditions is unclear.

The first chapter provides an overview of the conditions which exist in the world's nuclear reactor types for cases where heat and mass transfer in two phases flow play an important role. The second through the sixth chapters provide detail in the areas of two phase flow, heat and mass transfer in the pre-dryout and post-dryout regions. There are also specific chapters on boiling mass transfer on impermeable surfaces and in capillary porous structures. Specific chapters are devoted to the cause of the development of high local concentration of corrosion impurities in the liquid phase in steam generators, steam turbines and moisture separators.

The book is written in an interesting and readable style. The illustrations and presentation provide sufficient guidance to enable the text to be understood. It is a book that should be very valuable to the design engineer concerned with the class of problems addressed in the book and to the research engineer who will find basic information on formidable problems under one cover. The emphasis on the research studies performed in the USSR should be very beneficial.

A. S. Rathbun