Price $49.75

Reviewer Joel Weisman

This work is planned as the first volume of a multivolume series on multiphase flow. The editors have as their objective publication of authoritative reviews of what they see as important areas in multiphase systems. They hope that the series will enable the nonspecialist to learn the present state-of-the-art in the areas reviewed.

The first volume deals with four subjects. In Chap. 1, Bolle and Moureau review "Spray Cooling of Hot Surfaces." After a brief introduction, characteristics of sprays and atomizers are discussed. This is followed by an examination of the hydrodynamics of drop impingement and heat transfer during impact. The chapter concludes with a comparison of theoretical models and experiments.

Gyarmathy considers "Spherical Droplets in Gaseous Carrier Streams" in Chap. 2. The author begins with a dimensional analysis of the problem and follows this with an analysis of heat, mass, and momentum to a sphere. The last sections of the chapter discuss droplet equilibrium and stability, growth and vaporization, and various applications.

In Chap. 3, the focus of the book changes. R. Shock reviews "Boiling in Multicomponent Fluids." After considering phase equilibrium and nucleation, bubble growth is examined. The remaining sections of the chapter are then devoted to an examination of nucleate boiling, film boiling, and the critical heat flux.

In the final chapter, J. Chappuis examines "Contact Angles." The review begins with an examination of liquid and solid surfaces and adsorption in solid surfaces. Contact angles on ideal and real solid surfaces are then considered. Reviews of measurement methods and interpretation of contact angles follow.

All of the authors are well qualified to review the subjects to which they have been assigned. While some minor flaws exist, the reviews are thorough, scholarly, and generally well written. Engineers and scientists who are interested in a comprehensive review of any of the subject areas covered would find this volume useful.

The major fault with the current volume is its relative lack of focus. While it is true that this volume is restricted to vapor-liquid flow, this in itself is such a wide area that the individual interested in boiling of multicomponent fluids is not likely to be concerned with the spherical drop in a gaseous carrier. In this reviewer's opinion, the series would be much more useful if each individual volume had a particular focus. For example, the focus of the first two articles on droplet behavior could have continued with reviews of such subjects as droplet entrainment and mist flow in pipelines. It is believed that monographs of such a nature would be purchased more readily and be more valuable as an addition to an individual reference library.

Dr. J. Weisman is professor of nuclear engineering and director of the nuclear engineering program at the University of Cincinnati. Prior to joining the university in 1968, Dr. Weisman spent 18 years in industry. His last industrial position was that of manager of thermal analysis for the Westinghouse Pressurized Water Reactor Division.

Dr. Weisman is perhaps best known as editor of Elements of Nuclear Reactor Design, *Elsevier (1977) and as co-author of the ANS monograph* Thermal Analysis of Pressurized Water Reactors *(2nd ed., 1980).*

Handbook of Materials Testing Reactors and Associated Hot Laboratories in the European Community

Editors Peter von der Hardt and Heinz Röttger

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Reviewer B. L. Shriver

The *Handbook of Materials Testing Reactors and Associated Hot Laboratories in the European Community* was originally published in 1974 to provide technical information on large [>5-MW(thermal)] materials test reactors, related laboratories, and research programs. The 1981 revision to the handbook continues this objective by providing current data on 19 facilities in the seven countries of the European Communities.

The 1981 revision includes data on three reactors, the 58-MW(thermal) KNK-II in Karlsruhe, Federal Republic of Germany, the 14-MW(thermal) ORPHEE in Saclay, France, and the 57-MW(thermal) High Flux Reactor in Grenoble, France, not listed in the previous edition. In addition many of the other facilities have or are planning significant modifications which are noted in the handbook.

The information provided for each facility is in the form of eight data sheets completed by the owners of the facility. The information provided includes information on the reactor (type, power, neutron spectra), irradiation facilities, hot cells, and general information on active research programs. In many cases references are included, which direct the reader to more detailed information.

The handbook is a useful reference for people interested in the European research reactors much as the *Research, Training, Test and Production Reactor Directory* published by the American Nuclear Society is for U.S. nonpower reactors. Due to its format and limited scope, it is not likely to be of interest to general readers. For example, the description of experimental facilities is typically too brief to be of use to people not generally familiar with research reactors.

It is interesting to note that two major test or research reactors have been built in Europe in the late 1970s. In addition, several others have increased power or made improvements to their research capabilities. Unfortunately, the U.S. trends are also starting to surface. Two of the reactors are scheduled to be shut down, and two others listed their only future modifications as the use of low enrichment fuel.

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