

BOOK REVIEW

Handbook of Multiphase Systems (Edited by G. Hetsroni), Hemisphere (McGraw-Hill), New York (1982), 1536 pp., \$64.50.

The existence of this handbook, conceived, organized and edited by the well-known editor of the *International Journal of Multiphase Flow*, reflects the current maturity of the subject. In effect, the time has come to attempt to delineate its boundaries. As such, the volume under review represents a milestone in the history of multiphase flow. Forty-three outstanding scholars were somehow persuaded, threatened, bribed or cajoled by Professor Hetsroni into distilling their secrets into the heady essence found between the covers of this book. They can all be pleased with the end result, both individually and collectively.

The *Handbook* contains 10 chapters beginning with a 273 page chapter on "Basic Principles", continuing on sequentially with generic "Liquid-Gas", "Gas-Solid" and "Liquid-Liquid Systems" chapters. Next, multiphase heat and mass transfer is covered in the two chapters on "Condensation" and "Boiling", followed by contributions respectively entitled "Conveying" and "Fluidization". Concluding the volume are authoritative chapters on "Separation" and "Measurement Techniques", followed by a 37 page index for the entire volume. Each chapter possesses its own table of contents. Extensive references (employing, not surprisingly, the IJMF citation format) follow each chapter separately, as also do separate tables of nomenclature (in SI units where appropriate). Obvious efforts have been expended by authors, editor and publisher alike to provide an attractive, technologically useful and accessible format, set in easily readable typography.

Throughout, emphasis has been placed upon critical concepts—however subjective this choice must necessarily be—rather than upon mere tabulations that one would normally expect to encounter in a volume labelled as a handbook.

At least several of the ten chapters could have stood on their own as state-of-the-art monographs. Typical of these is the section on boiling, consisting of 259 pages of highly authoritative text, ranging from fundamentals at the hands of such experts as Warren Rohsenow of M.I.T. and Geoffrey Hewitt of Harwell, to a 42 page subsection on (nuclear reactor) "Accident Analysis" by Stanislav Fabric of the U.S. Nuclear Regulatory Commission.

Through personal bias, one of my favorite subsections (in the introductory chapter on "Basic Principles") was the 81 page review article on low Reynolds number flow by Michael O'Neill and Keith Ranger, respectively of the Mathematics Departments of University College London and the University of Toronto. One cannot help but be impressed at the diversity of authorship background, representing an interesting mix of different academic departments, industry, government laboratories and independent industrial research foundations. While one could legitimately question whether a critical discussion of the Three Mile Island nuclear reactor accident belongs in the same volume as one concerned with the esoterics of Stokes flow separation phenomena occurring during axisymmetric flow past a closed torus, in my opinion this reflects favorably upon the healthy breadth of applicability of multiphase flow phenomena—and is certainly not surprising in a volume that unashamedly advertises itself as a "handbook". In any event, an overriding criterion is that of the economics of publication. Can we afford to pay for this kind of intellectual schizophrenia? Here, the publisher has implicitly answered in the affirmative. In terms of cost per page, this book is clearly one of the bargains of the current

overpriced specialized technological book era. *Handbook of Multiphase Systems* will long serve as a valuable reference source to engineers and scientists in their struggles against Nature in the difficult, but ever-fascinating, area of multiphase flows. Rather than belonging on the shelf of every . . . , *Handbook* would prove vastly more useful on their desks.

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