

staple. The druggist's well-thumbed pharmaceutical index revealed that kudzu broth, made from the dried root, quenches thirst and accelerates perspiration in a feverish patient, combats alcoholism and soothes headaches. "My 30¢ purchase there was the best souvenir of our trip to Taiwan I could buy," Bob admits with a smile. "It's the kind of discovery that adds an extra dimension of pleasure to my research."

Conversation reveals that Bob very much enjoys local events. He has traveled around Tennessee attending local festivities, such as old-time fiddlers' contests and performances at bluegrass music parlors. Civil War history also captures his interest. He and his family particularly enjoy visiting national and state parks, from battlefields to Mississippian Indian digs and ante-bellum homes ornamented with battlescars.

A glance at the books on his shelves shows Bob's eclectic nature. Apart from engineering and related scientific titles, he has volumes dealing with geology, fibers, medicine, and China, as well as magazines such as *Mother Earth News* within reach. This eclectic approach to life and science characterizes him as a scientist and researcher. □

## Process Flowsheeting

**A. W. Westerberg, H. P. Hutchison,  
R. L. Motard, and P. Winter**

"From a definition of the process units and their interconnection, the authors show how the computer can be used to develop and solve equations based on chemical components and operating conditions and model the steady-state performance of the plant by generating the heat and mass balance. . . . It fills a gap in the literature and gives a sound account of . . . the underlying technology of process flowsheeting systems and the mathematics needed for modelling a process."  
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## ChE book reviews

### TURBULENT MIXING IN NON-REACTIVE AND REACTIVE FLOWS

*Edited by S. N. B. Murthy*

*Plenum Press, New York (1975). 464 pages*

Reviewed by William E. Ranz

University of Minnesota

This volume, intended to be a good sampling of science and art in 1974, consists of twenty-four papers by separate authors prepared as proceedings of a Project Squid Workshop on Turbulent Mixing in Non-reactive and Reactive Flows, held at Purdue University, May 20-21, 1973. The workshop was sponsored by the Office of Naval Research and the Air Force Office of Scientific Research.

Content is dominated by continuing developments in statistical fluid mechanics, supported by a modest amount of experimental measurement and by engineering modeling. The next largest group of papers represents rising interest in large scale structures which persist at high Reynolds numbers and resist analysis by probability concepts. Edited discussions which follow each paper help to unify the disparate presentations. They also show a growing division between two schools of thought, those who advocate probability distribution functions and those who chase eddies to achieve better understanding of a mixed-up subject.

Species concentration, diffusion, variation, and structure in mixing flows and with chemical

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industrial atmosphere, but restrict the problem statements to one page. Statements, therefore, are sometimes awkward and problems often appear to be artificial. Furthermore, we tacitly assume a level of knowledge about equipment or processes which not all students have. As a result, the quality of the solutions submitted varies widely.

From an instructor's standpoint, the disadvantage of this brief treatment of problem solving is that we cannot develop adequate problem solving skills. At best we can only pass on the flavour of problem solving. We do give notice that orderly trouble shooting—problem solving procedures exist. We also illustrate how these procedures are applied. We believe that this is sufficient to justify trouble shooting in our curriculum. □

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## BOOK REVIEW: Turbulent Mixing

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reaction are not particularly emphasized. These subjects appear in a context of fluid mechanical or heat transfer analogs and as additions to analysis of fluid mechanical mixing in turbulent shear flows. As might be expected there are no discussions of laminar shear or mixing in periodic flows.

This volume can be recommended for discover-

ing the state of research and for reading what workers in the area think about the topics presented. It tends to discourage a casual reader by showing great complexity, but at the same time it lays out a considerable portion of the problem for consideration by those who may not yet be lost in a maze of eddies. Of particular value are the experimental papers which give enough sampling of direct observation for a reader to ponder his own explanations and make his own uses of the information. Results from several types of novel experiments are presented, and these evoke interest not so much by the heuristic explanations given but by the nature of the experimental results. As with most proceedings the report is more valuable than the comment.

A review paper by the editor with an extensive bibliography and lists of references enhance the volume's purpose as a statement of position of a field of research and study. However, reading of this group of papers leaves the impression that mixing is not yet a discipline and that many of the approaches to quantitative understanding are giving diminishing returns for more effort. □

## ChE book reviews

### ELEMENTARY PRINCIPLES OF CHEMICAL PROCESSES

By R. M. Felder and R. W. Rousseau  
*John Wiley & Sons* 1978, 576 pp, \$21.95

Reviewed by John D. Stevens  
Iowa State University

This textbook by R. M. Felder and R. W. Rousseau of North Carolina State University is aimed at traditional mass and energy balance courses and contains heavy emphasis on engineering techniques used to solve process-related problems. This book has already made considerable inroads on the market most recently dominated by Himmelblau's stoichiometry text.

The book is divided into fourteen chapters. Part 1 consists of the first four chapters which introduce basic concepts on units, variables and data representation. Some sections of this, particularly Chapter 4 on data representation and analysis, may be skipped depending on the students' background. Part 2 covers material balances and Part 3 covers energy balances. Part 4 (Chapters 12-14) consists of three case studies

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