

## Batch Processes

By E. Korovessi and Andreas Linninger (Editors), CRC Taylor & Francis, 2005, 560 pp., \$169.95.

This book is a collection of articles written by different authors. Each article is interesting in its own right, but the book does not give a coherent picture of a rather large subject.

There are two chapters on crystallization, one more theoretical and the other on industrial practice. These two chapters link nicely with the chapter on conceptual design, which emphasizes crystallization. These cover a wide spectrum of applications.

The chapter on distillation is more limited, but does compare operating strategies of constant and variable reflux. There is a longer discussion

on multivessel columns and optimization. This discussion seems in conflict with the introductory chapter's discussion of the value of flexibility in batch processing. There is a very brief discussion of the features available in today's batch-distillation simulation, but no examples of the software in use.

The chapter on batch reactors is limited strictly to bioreactors, in particular fermenters. It provides a theoretical framework for design, but fails to look more broadly at batch reactors. The chapter also does not mention the current industrial state of these reactors and what might be necessary to make them an economic powerhouse.

On the other hand, the chapter on pollution prevention provides a focus on traditional chemical synthesis, especially in pharmaceutical plants. This chapter shows the rather difficult

challenges these plants present. The examples are quite descriptive.

The chapters on planning and scheduling and on supply-chain represent industrial practice today. While those on modeling and optimization and on monitoring and control represent a forward look at what might be possible in the future.

This is a useful collection on a subject that has not been adequately reviewed. The book is worth looking for on your library shelf. Let us hope that more books on batch processing will come to that shelf as time goes on.

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## Statistics for Experimenters, Design, Innovation and Discovery

By Box, Hunter & Hunte, 2nd ed. Wiley-Interscience, Hoboken, NJ, 2005, 633 pp., \$105.00.

Today, we have so many computer tools available for statistical experimental design, why would you want to buy a textbook? Indeed, that is precisely the value of this book! There can be too much magic in the black box, and too little understanding in the user. BH&H succeeds in demystifying experimental design and at the same time serving as a reference for people knowledgeable in the field.

BH&H has been a staple on our bookshelves since 1978, and of particular value in the chemical industry due to their examples from the process industries. However, why trade in the ear-worn copy on your desk for a new edition? Here are a few of the reasons.

The second edition has added a section to introduce basic statistical concepts. It is sufficient to introduce an experimenter, who has not had

formal statistics, to the concepts needed for the book.

Several topics are now in their own chapters arranged by the application instead of the method. This is much more readable. Indeed, the new edition seems more accessible and less didactic. Introductory chapters to EVOP, time series and robust process design are stepping off points to other books the authors have written on the topics. Indeed, for many of us, the discussion in this book is adequate.

BH&H is still the preferred reference for the process industry. The authors recognize that we generally have one facility and do our experiments in sequence. The experimental design must account for this and not assume we are testing "treatments" all at the same time. They recognize that some experiments in the formal design simply can not be done. And, they recognize that we often must apply a mathematical transform to the data and do not regress raw data. The traditional methods which have served well for product evaluations are still clear in the book.

If I were to hope for two improvements in the book it would be these:

- The text is independent of any computer program, but mentions the CRAN project. Some very limited appendix showing an example in the several statistical systems now available would be most useful.
- A list of the examples in the book would be most helpful. We often remember methods by the problem we saw solved and use those examples to guide us through a problem.

However, these are minor points and the new edition is a significant improvement on what was already a classic.

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