

## Book Reviews \*

**The Engineering of Chemical Reactions.** By L. D. Schmidt. Publisher: Oxford University Press: New York. 1998. 536 pp. £25.95. ISBN 0-19-510588-5.

Chemical reaction engineering has acquired a reputation as a theoretical subject. It has been treated thoroughly by, for example, Levenspiel in his book *Chemical Reaction Engineering*. However, also for the latter book, elementary calculus and the linear first-order differential equation are all that is needed. That does not mean that the material is particularly simple.

Schmidt has written a teaching book that discusses a selection of the cases treated in the aforementioned book. The cases are alternated with descriptions of industrial processes. The author introduces the student into the fascinating world of industrial chemistry. In addition, attention is paid to special types of chemical reactions such as polymerizations. Part 1 of the book is called Fundamentals, and Part 2 is termed Applications. The book can be used in chemical reactors courses, and it can serve to introduce chemists into chemical reaction engineering. It contains many worked examples and problems. The addition of the solutions to the problems would have been a bonus. Schmidt's book is an introductory book, and the pace is leisurely.

The book is a first edition and not yet perfect. Some of the derivations are incorrect or contain flaws. A typical example is the integration of the differential equation on page 47. Although the majority of the descriptions is clear, some descriptions of industrial chemistry are not unambiguous. For some descriptions, a more in-depth study would have been required. For example, in mentioning the active components of FCC catalysts on page 62, the author has forgotten zeolite. A second example is the serious Texas City accident with ammonium nitrate in 1947. It is stated on page 434 that, up until 1947, 'no one had "done the experiment"'. However, there were comparable earlier tragic accidents with large amounts of this chemical: at Oppau in Germany in 1921 and at Tessenderloo in Belgium in 1942.

In some instances, the information provided is incorrect. For example, in Table 10-4, the serious accident at Flixborough did not involve 0 fatalities but 28, and it did not occur in 1947 but in 1974.

Many of the discussions have been restricted more or less to the situation in the U.S.A. For example, Table 3-5 gives

the top 20 U.S. chemical companies listed by 1995 sales. The two or three largest chemical companies worldwide are German.

The index should be extended. Perhaps, an index for names should be included.

The book should be checked concerning the correct spelling of European names. Two examples: Fisher Tropsch should be Fischer Tropsch and Le Chatalier should be Le Chatelier.

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**Chemistry of Fragrances.** Edited by D. Pybus and C. Sell. Royal Society of Chemistry: London, UK. 1999. 276 pp. Price £16–95. ISBN 0-85404-528-7.

The stated aim of the book is to show the use of chemistry in an exciting and rewarding business environment. Modern perfumery is a blend of art, science, and technology with chemistry—synthetic, physical, and analytical—as the central science. For process chemists, this slim paperback contains an outstanding chapter (by C. Sell) on ingredients for the modern perfumery industry, in which the economics of industrial scale synthesis and the choice of synthetic route and reagents are demonstrated to be key issues in the manufacture of both simple and complex molecules. For example, the options for the synthesis of molecules such as linalool, menthol, carvone, etc. are discussed with a process chemist's eye towards manufacturing cost. Chemists will be frustrated by the lack of comprehensive references to papers and patents, but this is a minor criticism.

The other chapters in the work (by scientists from Quest International) are of general interest (history of aroma chemistry, perfumery materials of natural origin, perfume creation, measurement of fragrance perception, safety and toxicology, chemoreception, electronic odour sensing, etc.) and are very readable as well as being educational.

Highly recommended!

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\*Unsigned book reviews are by the Editor.