

## Book Reviews

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**Solid–Liquid Filtration and Separation Technology.** By A. Rushton, A. S. Ward, and R. G. Holdich. VCH: Weinheim, Germany. 1996. 538 pp. ISBN 3-527-28613-6. £100.00.

This book covers a subject which is frequently dismissed by chemists as low technology with little intellectual attraction. My own experience of solid–liquid separation (SLS) does extend beyond the laboratory, but I had no idea of the vastness of the subject until fairly recently. This book is written by and clearly for chemical engineers and does concentrate heavily on continuous SLS processes and especially the treatment of aqueous systems. This is not surprising since in tonnage terms this is where most SLS processes are found and operators do require specifically designed units for dedicated operation. This book will presumably be invaluable to these industries but does contain valuable information on this important subject for process development chemists. Unfortunately there is a considerable amount of mathematics, which will deter the average chemists from using the book, and a knowledge of chemical engineering is required to make the most of the book itself.

The whole array of SLS techniques is covered, and the book is filled with excellent diagrams, drawings, and photographs of SLS equipment. It is beautifully produced, as with all VCH books, but I was not keen on the method used for references, giving the first author's name and year. This does not allow the location of the relevant text to be found as easily as numerical referencing.

The three authors share the 11 chapters between them, which cover the various pre- and posttreatment processes as well as the particular SLS techniques such as filtration, centrifugation, clarification, sedimentation, and membrane techniques. A good depth of coverage is given to all of these topics. There is a substantial chapter covering large-scale filtration equipment which also covers calculations associated with this topic, but again the mathematics may hinder the usefulness of this chapter to nonengineering readers. There is an appendix containing spreadsheet files for analysing and optimising experimental filtration data, and this looks to be useful. I have not tested these files, but all necessary data are given if the reader is prepared to type in the formulas.

The book will be useful for the many involved in large-scale SLS, but for the majority of readers of OPRD it is not likely to find much of an audience.

**Keith Turner**

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This is described as the second edition of the book *Introduction to the Principles of Heterogeneous Catalysis* first written by the authors in 1967. In reality this long overdue edition is a complete rewrite with less than 10% of the original book remaining. The book is timely and based on courses given to undergraduates at the Universities of Bath and Cambridge in the UK, where the authors teach. Lucky students I say. This is an excellent book which covers just about everything you would want to know about heterogeneous catalysis.

Both authors are well-respected academics with research interests in catalysis, and hence it does contain the theoretical background that you would expect yet covers the laboratory and industry practical aspects equally well. The chapter on catalytic process engineering (CPE) describes the various types of reactors and how they are used to study reaction kinetics. It is stated at the beginning of this chapter that the objective of CPE is to assess the reactor dimensions and catalyst volume. This simple statement is precisely the reason for measuring reaction kinetics and indicates that the authors understand what is important in industrial catalysis. Another chapter describes real-life catalytic case studies and covers a whole range of topics such as why rhodium is used in auto-exhaust catalysts and the role of zinc oxide in methanol synthesis catalysts. It is obvious that a chemist and a chemical engineer have contributed to this book, thus ensuring that both sides of the subject are covered, unlike many other books on catalysis. The authors are to be congratulated on this.

The great strides made over the past 30 years in the study of physical characterisation of catalysts and catalyst surfaces are reflected in an excellent chapter on the techniques now used in research and in industry. Of great value to any newcomer to the field are the extensive list and description of these techniques and the acronyms given to them.

A slight criticism that I have of the book concerns catalyst deactivation and poisoning. As the activity of new catalysts increases, so does their susceptibility to poisons and inhibitors. Theoretical interpretations of this subject are discussed in some detail, but a mention of the efforts spent by industry, in purifying feed streams, to protect valuable catalysts from deactivation would have been advantageous. This is a minor criticism of a book that I would like to have written myself and which I highly recommend.

**Keith Turner**

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**Principles and Practice of Heterogeneous Catalysis.** By J. M. Thomas and W. J. Thomas. VCH: Weinheim, Germany. 1997. 669 pp. Hardcover: ISBN 3-527-29288-8. £55.00. Softcover: ISBN 3-527-29239-X. £32.50.