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Book Reviews

Dispersion of Powders in Liquids, 3rd Edn, by G. D. Parfitt. Applied Science Publishers, London, 1981. 518 pp. ISBN 0-85334-990-8. Price: £40·00.

The process of dispersion bears the same relationship to pigments as does the process of dyeing to dyes. Each process began as a craft practised from the earliest times and has been raised to some extent to the status of a science in the past century or so, with the expansion and industrialisation of the process. With these last changes has come an almost complete switch from natural products to synthetic materials, themselves products of an expanding chemical industry. Dispersion and dyeing are thus the current technologies for the use of pigments and dyes and consequently of the greatest importance in the commercial exploitation of these colourants.

The third edition of this book is an expanded and re-arranged version of the 1969 edition presenting the material in a more logical sequence. There is one completely new chapter on the Fundamentals of the Breakdown of Solids. Whether this is necessary and relevant seems debatable, since pigments are not generally made by the fracture of large particles, though the separation of aggregates and agglomerates into their constituent particles by intensive mechanical dispersion methods and their stabilisation is of the very essence of dispersion practice. The methods available for carrying this out are set out in the chapter on Technical Aspects of Dispersion which has been completely re-written,

but not improved. The range of machinery discussed is smaller and mention of high shear rate mixers virtually eliminated. This seems to overlook the widespread use of such methods in the manufacture of many types of inks. It would be an exaggeration to say that it is essential for all owners of the first edition to change it for a copy of the third, but nevertheless anyone wishing to understand and engage in the practice of pigment dispersion should have a copy readily to hand. It remains the best book on the subject.

David Patterson

Developments in Polymer Photochemistry—3. Edited by N.S. Allen. Applied Science Publishers Ltd, London. 1982. 353 pp. ISBN 0-85334-978-9. Price: £40·00.

My first reaction to the price of this book was one of discomfort. However, considering the length and high quality of the contents, I am happy to conclude that the text represents value for money. It is clearly printed and reasonably free from trivial errors.

This book is the third in a succession of texts within this developments series. As such, we are offered eight chapters of varying length, each being self-contained with a prolific and up-to-date bibliography.

The first chapter (by V. D. McGinniss, on Aromatic Carbonyl and Alkyl-Phenyl Ketone Photoinitiation, 52 pages, 108 references) provides a detailed insight into photoactive catalyst molecules designed for the photopolymerisation of vinyl and acrylic monomers. The approach is kinetic and mechanistic in style and is thorough in its consideration of fundamental principles.

Chapter 2 (S. Tazuke, Photocrosslinking of Polymers, 48 pages, 132 references) is a gem. It contains details of both the basic and the applied aspects of the photocrosslinking of polymers, in review style. In addition to conventional bond forming reactions, crosslinking by cationic mechanisms is discussed and the various photocurable functional groups are tabulated. The effect of photocrosslinking on various physical properties is given detailed scrutiny. This leads to suggestions of new methodology for the design of specific photopolymers, based on an understanding of the polymer structure–polymer functionality correlation.

In Chapter 3 (Y. Takai and M. Ieda, Photoconduction Processes in Polymers, 30 pages, 117 references) we are treated to a consideration of