

Book Review

Principles of Polymer Engineering. By N. G. McCrum, C. P. Buckley and C. B. Bucknall. Oxford University Press, Oxford, 1987. ISBN 019 856155 5/019 856152 0. Price: £35.00 Hardback; £15.00 Paperback.

There is increasing recognition that the science and technology of synthetic polymers contain much valuable knowledge which can profitably be employed by those whose main concern is with biopolymers. This is particularly so where the biopolymer is exercising a dominating role in the behaviour of a system as is often the case with foodstuffs.

The volume under review provides a material science framework for the understanding of the behaviour of polymers. It commences with a valuable overview of the principal features of polymers from a chemical standpoint and the physical characteristics which are distinctive of these materials in the solid state. The classical theory of rubber elasticity is then developed and this is followed by an excellent survey of viscoelasticity and stiffness and subsequently by a chapter on yield and fracture of polymers; this latter chapter contains particularly useful sections on crazing and fracture mechanics. These first five chapters are, however, a prelude to the second half of the book which deals with such varied issues as reinforced polymers (both theory and the various processes which are used by industry in forming such reinforced plastics) and then forming, including sections on extrusion, injection moulding, thermoforming and finally a fascinating chapter on materials design for specific uses.

The presentation, both in terms of material and typescript is clear and lucid and the overall value of the book is greatly enhanced by a series of worked examples, problems for solution and a series of notes which are designed to bring the real commercial world to the attention of the reader without unnecessarily disturbing the development of a general argument within any given chapter.

The authors state that the book is primarily designed for third or fourth year undergraduates who already have a material science background. Though it might prove heavy weather for those who have no significant physical background, undoubtedly it is a valuable volume for the physically oriented scientist who wishes to make himself conversant with the theory and practice of manipulating polymer systems. It is to be

hoped, for example, that the know how intrinsic in this book filters into such prosaic areas as the processing of foodstuffs. The information is certainly relevant.

The authors are to be congratulated on performing a difficult task well and providing such a readable text.

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