

book reviews

Chemical Reactions of Natural and Synthetic Polymers

M. Lazar, T. Bleha and J. Rychly
Ellis Horwood, Chichester, 1989,
250 pp.
ISBN 0-7458-0193-5

Since Merrifield introduced the idea of polymer-supported peptide synthesis in 1963, organic chemists have been making an increasingly large contribution to polymer science. This is not to imply that they did not contribute significantly before, but simply that the contribution has increased greatly. Contributions have included studies of reactive polymers such as resists for microelectronics and lithographic materials, studies of polymer-supported organic reactants, the development of a wide range of separation media, and various applications in biological systems and medicine. In many cases the reactive polymers have been prepared by the chemical modification of natural polymers or pre-formed synthetic polymers. Despite all this activity most current textbooks of polymer science contain relatively little coverage of these topics. The present book, which is written by a well-known Czech group, is an introduction to the subject of the chemical reactions of macromolecules and is particularly valuable in that it fills the gaps left by many textbooks.

The book contains 10 chapters including ones on the following topics: 'Characteristic features of chemical reactions of macromolecules', 'Modification of structural units in the polymer chain', 'Branching of macromolecules', 'Linking and crosslinking of macromolecules',

'The degradation of macromolecules', 'Novel properties of modified polymers' and 'Current and potential applications of the chemical transformation of polymers'. The first of these is particularly valuable as researchers carrying out reactions on polymers for the first time often underestimate the difficulty and the problems involved.

Clearly in 250 pages it is only possible for the above topics to be discussed briefly. Nevertheless, the coverage of each topic is a valuable and compact introduction and it is supported by a short list of references which lead the reader to the original literature.

It is a book which should be accessible to all teachers and researchers of polymer science.

P. Hodge

University of Manchester

Functionalised Polymers and Their Applications

A. Akelah and A. Moet
Chapman and Hall, London, 1990,
354 pp.
ISBN 0-412-30290-X

In the early years of polymer science most synthetic polymers were prepared and studied principally for their mechanical properties. Chemical inertness was a desirable property. However, in recent years other properties of polymers have been of increasing interest and often the polymers are reactive. This has led to applications in organic chemistry, in biological systems and in microelectronics. This book provides an introduction to these and other areas of study.

The book is divided into four parts. The first part (41 pages) deals with the chemical modification, characterization and general properties of synthetic organic polymers, biopolymers and inorganic supports. The second (177 pages) is devoted to polymer-supported reagents, catalysts and other types of reactants used in organic chemistry, plus the use of functional polymers in separations. The third (56 pages) describes biological applications such as controlled release formulations and food additives. The final part (80 pages) is very diverse and covers amongst other topics conductive polymers, polymers for the collection and storage of solar energy, lithographic polymers, liquid crystals and polymeric stabilizers.

It is clear from the preceding paragraph that the ground covered in the book is very broad indeed and that in the space available many topics can only be covered very briefly. However, a valuable feature of the book is the extensive compilations of results in tables and the large number of references (over 2000) to the original literature. The book will be valuable as an introduction to the many areas of polymer science which have been, and still are being, intensively studied but which have not yet been found a place in the many very traditional textbooks of polymer chemistry or polymer science.

The book is nicely presented though there are more typographical errors than one would expect and occasionally there are strange chemical bedfellows, for example, polymeric pH indicators and polymeric initiators are included in a chapter on 'Polymeric Catalysts'.

P. Hodge

University of Manchester