

# book reviews

## Advances in the Controlled Degradation and Stabilization of Polymers: Vols I and II

A. Patsis (Ed)

Technomic, Lancaster, PA, USA, 241 pp. (Vol I) and 122 pp. (Vol II) ISBN 0-87762-572-7 (Vol I) and 0-87762-588-3 (Vol II)

The international meetings held annually in Lucerne in recent years under the above title have secured a high reputation, due in part to the format, consisting of authoritative invited papers or lectures presented by acknowledged leaders in their research areas. It is therefore useful to have these presentations recorded in a convenient format for reference.

Collections of conference papers are not infrequently presented in a rather unattractive format based on photocopies of manuscripts, which always vary in the quality of the typescript etc. The presentation in these volumes, however, deserves favourable comment for the attractive printed page layout and the clear and tidy display of tables, diagrams and reaction mechanisms.

Volume I consists of material from the 1985 and 1986 meetings (25 articles) and Volume II records the 1987 proceedings (12 articles). Topics cover the entire spectrum of photo-, thermal and oxidative degradation and associated stabilization interests and provide a valuable record of the most recent developments. Research workers in the fields of degradation and stabilization will wish to have these volumes available for reference.

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## Atlas of Polymer Morphology A. E. Woodward

Hanser Publishers, Munich, 1988, 231 pp., \$175.45/£109.40, ISBN 0-44615-175-3

One of the major themes in the study of materials has always been the investigation of microstructure, since without an adequate knowledge of this, a comprehensive understanding of macroscopic properties is impossible. In this respect polymers are no different to many other classes of materials. However, where polymers do differ is in the range and complexity of the morphologies which they can exhibit. Indeed a frequent

problem encountered when examining polymer microstructures in real space, be it at optical or electron resolutions, is the sheer quantity of information that can be contained within a single micrograph. This Atlas sets out to address this problem by showing the range of microstructural features that can develop in polymeric materials under different circumstances.

The book begins with a short introduction to polymer science and proceeds with a section that surveys the range of sample preparation techniques and investigative methods relevant to the subsequent chapters. This experimental section includes outlines of many different procedures, such as laboratory and industrial processing methods and sample preparation techniques for microscopy, together with appropriate references. Thereafter, a range of morphological topics are surveyed under various headings, each chapter commencing with a brief introductory section in which the general concepts relevant to the subsequent figures are discussed. The first subjects considered are the classical areas of semi-crystalline polymer morphology, namely crystallization from solution and from the melt. These chapters consider the habit of individual monolayers, more complex multilayered forms, and an array of spherulitic microstructures. The author then proceeds to consider structural features that develop in other systems. These include phase segregation effects in block copolymers and liquid crystalline textures, amongst others. Finally the Atlas contains a number of chapters devoted to a consideration of processing effects. In addition to the obvious areas, such as crystallization in flow fields or the effects of mechanical deformation, these chapters also consider a number of interesting subjects that lie at the boundary of conventional polymer morphology. Such topics include fractography, the effect of exposure to reactive environments and structural changes induced by exposure to ionizing radiation.

In total the Atlas of Polymer Morphology contains over 400 figures, all of which are of the highest quality and superbly reproduced. However it is not just the number and scope of the micrographs that makes this work such a valuable addition to any collection since, in addition to the figures, the *Atlas of Polymer Morphology* also contains clear introductory sections and comprehensive references, both of which greatly increase the usefulness of this work.

In conclusion, the *Atlas of Polymer Morphology* comprehensively surveys this complex area in such a way as to be invaluable to both the specialist and non-specialist alike. Indeed, there are few readers with an interest in any of the above topics who will not find something intriguing with even the most cursory examination. As such this book is strongly recommended to anyone actively involved in areas where a consideration of polymer microstructure is important.

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## Principles of Polymer Systems, (3rd Ed.)

Ferdinand Rodriguez  
Hemisphere Publishing Corp.,  
Bristol, PA, USA, 1989,  
640 pp., £35.00  
ISBN 0-89116-176-7

The author, in his preface to the 3rd edition, refers to 'the broad world of polymers (which is organized) in a way so that it makes sense to a person with no previous polymer experience'. The textbook covers a wide range of topics on polymer systems with an impressive number of references, but is written by a chemical engineer for those with some background in chemistry, if not in polymer systems. Students of engineering are usually exposed to a course in Materials Science within the context of engineering, and a consideration of polymers forms only part of such a course. The book, therefore, is hardly an introductory text for such students. However, having said that, the book will appeal to a wider readership.

Problems are set at the end of each chapter, but neither outline nor specific solutions are given. The laboratory experiments provide valuable experience of the reality of some of the theoretical concepts. A more comprehensive use of SI units would be helpful.

The 15 chapter headings reflect the breadth of material that is covered, but the depth varies from chapter to chapter and subsection to subsection. Creep failure and fatigue are covered in one page, while 75 pages are devoted to fabrication processes. One small typographical error is a reference to Figure 8-9 when it should be Figure 8-11.