

Polymer Degradation and Stabilisation

N. Grassie and G. Scott
Cambridge University Press,
Cambridge, 1988,
viii + 222 pages, £11.95
ISBN 0-521-35797-7

This is a paperback issue of a previously hardback edition of the book and consequently, is now available at a much reduced price and more readily accessible to undergraduate and postgraduate students who may require a basic grounding in this subject. In this respect, the book serves an invaluable purpose and it was written, according to the authors, with this aim in mind. Polymer degradation and stabilization is a complex field of research and to compile a student-based text on the subject is quite some feat. On this point I must congratulate the authors on a well-written and very readable text, and the publishers on a fine presentation.

The book is divided into seven chapters. The first covers and highlights the practical problems encountered in polymer degradation, from outdoor durability through recycling to scientific test procedures. The second chapter covers thermal degradation processes and is orientated more towards mechanisms and product identification, and assumes that the reader has some prior knowledge of degradation techniques, such as t.g.a. and d.s.c. Photodegradation then follows in Chapter 3 and here only the very basics are considered—all controversies being left to the more advanced research texts. Oxidation processes are then dealt with in Chapter 4, and structure-stability relationships, kinetics and mechanisms are covered. Antioxidants and light stabilizers are dealt with in Chapter 5 and here again only the established mechanisms are covered although the reader is brought up-to-date with current theories but only up to the time of printing the original hardback. Flammability follows in Chapter 6 and then degradation processes in special environments in Chapter 7.

I found the contents of each chapter easy to follow, even in areas that I am not familiar with, and the reader is given suggested further reading after each chapter. In general, I feel, taking into account the voluminous literature, that the authors have presented a well-balanced and simple picture of all the main subject areas in polymer degradation and stabilization. This should

provide a valuable educational text for academics, postgraduate students and industrialists who are interested in learning about the field, as well as for the undergraduate student taking specialised lectures in the subject. In conclusion, the book would be an invaluable addition to libraries in educational institutions.

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Dynamics of Polymeric Liquids (Second Edition)

Volume 1: Fluid Mechanics
XXI + 649 pages, £64.15
ISBN 0-471-80245X

Volume 2: Kinetic Theory
XXI + 437 pages, £59.65
ISBN 0-471-802441

*R. Byron-Bird, R. C. Armstrong
and O. Hassager (Eds.)*
John Wiley and Sons Ltd,
Chichester, 1987

A number of readers will be familiar with the first edition of 'Dynamics of Polymeric Liquids' and will welcome the appearance of the second edition. It is now almost a decade since the first edition was published, and in the ensuing period significant advances have been made in the understanding and modelling of polymer fluid dynamics. These texts are written as teaching texts and lead the reader through the complexities of fluid dynamics of polymeric liquids. The text is clearly presented and well written. As with many classic texts; the serious reader will find the footnotes a fascinating comment and a promoter of thoughts on the unanswered questions on polymer fluid dynamics. The two volumes represent a tour de force in terms of a course on polymer fluids and contain a very useful collection of problems classified according to their type and degree of difficulty. The text is divided into eight parts; Volume 1 dealing with Newtonian *versus* non-Newtonian behaviour, elementary constitutive equations, non-linear viscoelastic constitutive equations and continuance mechanics, and Volume 2 covers polymer models and equilibrium properties, kinetic theory, phase space-kinetic theory and network models. The preface indicates the many colleagues consulted in the

presentation of these texts and whose valued criticism has added richly to the value of these volumes as teaching texts. The only criticism which could be raised of these texts is that they do not cover adequately detailed molecular models of polymer dynamics and as a result the connection between conformational and overall polymer dynamics is, as with many other texts on the dynamics of polymers, left as a topic of some mystery.

These volumes will become frequently consulted references on polymer fluid dynamics and, whilst expensive as course texts, will be consulted avidly by academics trying to improve their course material. May I congratulate the authors on a difficult task successfully completed.

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Polymers for High Technology: Electronics and Photonics

M. J. Bowden and S. R. Turner (Eds.)
American Chemical Society,
Washington DC, 1987, X + 631
pages, US \$109.95
ISBN 0-8412-1406-9

This publication, No. 346 in the ACS Symposium Series, has been developed from a symposium sponsored by the Division of Polymeric Materials: Science and Engineering at the 192nd Meeting of the American Chemical Society held at Anaheim, California, in September 1986. The book contains 50 papers which emphasize the considerable contributions that polymer scientists are making to advances in electronics and photonics. It is organized into eight sections with each section having an introduction, written by the chair of that session at the symposium, which provides an interesting and informative commentary on the state of development of each field covered.

The first four sections cover aspects of concern to the science and technology of microlithography. These sections complement and develop the topics introduced in 'Introduction to Microlithography' (No. 219, ACS Symposium Series) and extended in 'Materials for Microlithography' (No. 226, ACS Symposium Series). These three books