

<<高分子物理导论>>

图书基本信息

书名：<<高分子物理导论>>

13位ISBN编号：9787502554170

10位ISBN编号：7502554173

出版时间：2004-5

出版时间：化学工业出版社发行部

作者：化学工业出版社发行部

页数：444

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

<<高分子物理导论>>

内容概要

No Previous knowledge of polymers is assumed in this book which provides a general introduction to the physics of solid polymers. The book covers a wide range of topics within the field of polymer physics, beginning with a brief history of the development of synthetic polymers and an overview of the methods of polymerisation and processing. In the following chapter, David Bower describes important experimental techniques used in the study of polymers. The main part of the book, however, is devoted to the structure and properties of solid polymers, including blends, copolymers and liquid-crystal polymers. With an approach appropriate for advanced undergraduate and graduate students of physics, materials science and chemistry, the book includes many worked examples and problems with solutions. It will provide a firm foundation for the study of the physics of solid polymers.

作者简介： DAVID BOWER received his D.Phil. from the University of Oxford in 1964. In 1990 he became a reader in the Department of Physics at the University of Leeds, retiring from this position in 1995. He was a founder member of the management committee of the IRC in Polymer Science and Technology (Universities of Leeds, Durham and Bradford), and co-authored *The Vibrational Spectroscopy of Polymers* with W.F. Maddams (CUP, 1989). His contribution to the primary literature has included work on polymers, solid-state physics and magnetism.

<<高分子物理导论>>

书籍目录

Preface Acknowledgements 1 Introduction 1.1 Polymers and the scope of the book 1.2 A brief history of the development of synthetic polymers 1.3 The chemical nature of polymers 1.4 Properties and applications 1.5 Polymer processing 1.6 Further reading 2 Some physical techniques for studying polymers 2.1 Introduction 2.2 Differential scanning calorimetry (DSC) and differential thermal analysis (DTA) 2.3 Density measurement 2.4 Light scattering 2.5 X-ray scattering 2.6 Infrared and Raman spectroscopy 2.7 Nuclear magnetic resonance spectroscopy (NMR) 2.8 Optical and electron microscopy 2.9 Further reading 3 Molecular sizes and shapes and ordered structures 3.1 Introduction 3.2 Distributions of molar mass and their determination 3.3 The shapes of polymer molecules 3.4 Evidence for ordered structures in solid polymers 3.5 Further reading 3.6 Problems 4 Regular chains and crystallinity 4.1 Regular and irregular chains 4.2 The determination of crystal structures by X-ray diffraction 4.3 Information about crystal structures from other methods 4.4 Crystal structures of some common polymers 4.5 Further reading 4.6 Problems 5 Morphology and motion 5.1 Introduction 5.2 The degree of crystallinity 5.3 Crystallites 5.4 Non-crystalline regions and polymer macro-conformations 5.5 Spherulites and other polycrystalline structures 5.6 Crystallisation and melting 5.7 Molecular motion 5.8 Further reading 5.9 Problems 6 Mechanical properties I-time-independent elasticity 6.1 Introduction to the mechanical properties of polymers 6.2 Elastic properties of isotropic polymers at small strains 6.3 The phenomenology of rubber elasticity 6.4 The statistical theory of rubber elasticity 6.5 Modifications of the simple molecular and phenomenological theories 6.6 Further reading 6.7 Problems 7 Mechanical properties II-linear viscoelasticity 7.1 Introduction and definitions 7.2 Mechanical models 7.3 Experimental methods for studying viscoelastic behaviour 7.4 Time-temperature equivalence and superposition 7.5 The glass transition in amorphous polymers 7.6 Relaxations for amorphous and crystalline polymers 7.7 Further reading 7.8 Problems 8 Yield and fracture of polymers 8.1 Introduction 8.2 Yield 8.3 Fracture 8.4 Further reading 8.5 Problems 9 Electrical and optical properties 9.1 Introduction 9.2 Electrical Polarisation 9.3 Conducting polymers 9.4 Optical properties of polymers 9.5 Further reading 9.6 Further reading 10 Oriented polymers I-production and characterisation 10.1 Introduction-the meaning and importance of orientation 10.2 The production of orientation in synthetic polymers 10.3 The mathematical description of molecular orientation 10.4 Methods of representing types of orientation 10.5 The combination of methods for two-phase systems 10.6 Methods of representing types of orientation 10.7 Further reading 10.8 Problems 11 Oriented polymers II-models and properties 11.1 Introduction 11.2 Models for molecular orientation 11.3 Comparison between theory and experiment 11.4 Comparison between predicted and observed elastic properties 11.5 Takayanagi composite models 11.6 Highly oriented polymers and ultimate moduli 11.7 Further reading 11.8 Problems 12 Polymer blends, copolymers and liquid-crystal polymers 12.1 Introduction 12.2 Polymer blends 12.3 Copolymers 12.4 Liquid-crystal polymers 12.5 Further reading 12.6 Problems Appendix: cartesian tensors Solutions to problems Index

<<高分子物理导论>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介, 请支持正版图书。

更多资源请访问:<http://www.tushu007.com>