

This is altogether a very comprehensive and informative book which will be of interest to those interested in polymer materials, surface and colloidal science, as well as analytical chemistry, chromatography and applied spectroscopy.

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NMR Spectroscopy of Polymers. Edited by R.N. Ibbett, Blackie Academic & Professional. xiii + 362 pp. Price £79.00. ISBN 075140005X.

The advent of superconducting magnets has greatly enhanced the resolving power of NMR spectroscopy allowing a greater level of stereochemical and sequence information to be accessed. This has meant the study of polymers has become no different from any other type of chemical NMR, in that the technical advances have revolutionised the ease of acquisition and content of spectroscopic data. The numerous multi-pulse techniques now available have been applied to polymer problems and these techniques have now become standard spectroscopic methods for the polymer spectroscopist. This has allowed identification of added ingredients down to very low levels, as well as the assortment of impurities that may be present in industrial polymers, thus making NMR an invaluable tool in the synthetic polymer scientist's arsenal. The development of techniques for the identification of end groups and minor architectural structures has developed in its own right and has progressed to the stage where the information obtainable can be used in establishing polymer reaction mechanisms and kinetics.

This book deals with both solution and solid state NMR and loosely divides the text between the two. In recent years rapid progress has been made in the field of high resolution solid state NMR culminating in a technique that can now be applied routinely. It provides high chemical resolution and can provide insight into polymer chain packing and morphology. Often it is the physical heterogeneity of the solid rather than instrumental effects that lead to spectral broadening. Rather

than limiting the information content, these physical influences can often be interpreted in terms of chain arrangements. As well as making an impact in the study of intractable polymers it has made equal impact as a tool for determining solid-state polymer dynamics. Thus NMR has taken on the role of a molecular scale tool for mechanical analysis, with the additional chemical dimension. These are just some of the important themes this text embraces; each chapter author has been chosen on the basis of their expertise in the given field and has contributed their knowledge on the subject, with the underlying principal of each chapter forming a building block for the next to reinforce.

The objective of the book is to provide a source of information on all major aspects of NMR spectroscopy of synthetic polymers by housing numerous strands of the subject under one roof — as a single comprehensive volume. It identifies with the readership at every scientific level and aims to be useful to the majority of polymer scientists and NMR spectroscopists. The text contains full analysis of available techniques and full exploration of many polymer science applications, thus providing a guide to the practical study of polymers and interpretation of experimental data. Specialists will find it a dictionary of proven methodologies as well as a sourcebook for dealing with the very latest developments in the subject.

The reader is gently introduced to the subject of each chapter by an explanation of the basic principles which then goes on to discuss the most recent experimental and theoretical developments. The authors selflessly make the reader aware of alternative texts whether they cover general NMR or simply treat NMR as one of the range of spectroscopic techniques available for polymer characterisation.

This book achieves its objectives admirably with uniform text and clear diagrams throughout. Each chapter includes a cited literature index, and the book itself contains an extensive subject index. In conclusion, this book is invaluable to those working in the polymer or NMR field.

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