**DESCRIPTION**

The various techniques used to analyze the microstructures of polymers are presented in this book. High resolution and solid state techniques are described, and applications to both synthetic and biological polymers are discussed in detail.

Particular emphasis is placed on the determination of polymer microstructure by NMR spectroscopy. Here attention is drawn to the connection between the microstructures and NMR spectra of polymers, and it is demonstrated that the local polymer conformation provides this link. The numerous examples illustrating this connection are a special feature of the book.

**ABOUT THE AUTHOR**

Alan Tonelli received a B.S. in Chemical Engineering from the University of Kansas in 1964 and a Ph.D. in Polymer Chemistry from Stanford in 1968, where he was associated with the late Professor Paul J. Flory. He was a member of the Polymer Chemistry Research Department at AT&T-Bell Laboratories, Murray Hill, NJ, for 23 years and in 1991 joined the Fiber & Polymer Science Program in the College of Textiles at North Carolina State University in Raleigh, NC, where he is currently the INVISTA Professor of Fiber and Polymer Chemistry. His research interests include the configurations, conformations, and structures of synthetic and biological polymers, their determination, principally by NMR and Kerr effect observations, and establishing their effects on the physical properties of polymer materials. Most recently, the formation of and coalescence from noncovalent crystalline inclusion
compounds (ICs) formed between cyclodextrin (CD) hosts and polymer guests have been used to nanostructure bulk polymers, including homopolymers and their blends, and block copolymers. In addition, small-molecule guest-CD-ICs (crystalline) and -rotaxanes (soluble), and the covalent incorporation of CDs into polymers both during and subsequent to their syntheses, have been used to improve the delivery of additives to polymer materials.