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of the diffraction pattern 3.5 Measure of the integrated intensities of the reflections and corrections for geometrical (Lorentz), polarization and absorption factors 3.6 Calculation of Structure Factors 3.7 Structural refinement 3.8 Form of diffraction pattern and broadening due to the Laue function References Chapter 3 Chapter 4 Defects and Disorder in Polymer Crystals 4.1 Classification of different types of structural disorder 4.2 Crystals with partial three-dimensional order (Class A) Disorder with three-dimensional periodicity maintained only for some characterizing points of the structure 4.3 Solid mesophases References Chapter 4 Chapter 5 Methods of Analysis of Diffuse Scattering from Disordered Structures of Polymers 5.1 Structural disorder and diffuse scattering 5.2 Methods of diffraction analysis from disordered crystals 5.3 Long Range Order in Disordered Lattices of Class A 5.4 Short Range Order in Disordered Crystals of Class A 5.5 Short Range Order in Disordered Crystals with Substitution type Disorder 5.6 Short Range vs Long Range Order in Disordered Crystals of Class B and C (Solid Mesophases) 5.7 Disordered Models with Perturbations Occurring over Continuous Ranges 5.8 Basic formulas for the calculation of X-ray Diffraction Intensity from Disordered Model Structures of Polymers 5.9 Examples of calculation of average diffracted intensity of structures disordered in one dimension 5.10 Integration method of diffraction intensity for cylindrically and spherical surfaces in the reciprocal space References Chapter 5 Chapter 6 Crystal habit 6.1 Basic remark 6.2 Rounded lateral habits 6.3 Chain folding, molecular orientation and sectorization 6.4 Twinning and secondary nucleation theory 6.5 Homoepitaxy, morphology, stem orientation and polymorphism References Chapter 6 Chapter 7 Influence of Crystal Defects and Structural Disorder on the Physical and Mechanical Properties of Polymeric Materials 7.1 Introduction 7.2 Stress induced phase transformations during deformation 7.3 Isotactic polypropylene 7.4 Syndiotactic Polypropylene References Chapter 7.

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### Sommario/riassunto

"Polymeric crystals are more complex in nature than other materials' crystal structures due to significant structural disorder present. In fact, they actually exist in a semicrystalline state where the crystals are embedded in an amorphous phase to create a highly interconnected network. Presenting an in-depth and current overview of polymer crystals, Crystals and Crystallinity in Polymers provides researchers, engineers, and graduate students with guidelines to help select the proper crystallization method, evaluate polymer crystallization data, determine which methods to utilize for particular cases, and understand the different analytical techniques utilized"--

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