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Chapter 3 Cellulose Microfibrils Isolated from Musaceae Fibrous Residues3.1 Introduction; 3.2 Vascular Bundles; 3.3 Isolation and Purification of Cellulose Microfibrils from Vascular Bundles; 3.4 Chemical Characterization of Cellulose Microfibrils; 3.4.1 Monosaccharide Composition; 3.4.2 Infrared Spectroscopy Measurements; 3.5 Structure and Morphology of Cellulose Microfibrils; 3.5.1 X-Ray Diffraction Analysis; 3.5.2 Transmission Electron Microscopy; 3.5.3 Solid-State Nuclear Magnetic Resonance Studies; 3.6 Thermal Behavior of Cellulose Microfibrils; 3.7 Conclusions; 3.8 Materials and Methods
3.8.1 Materials3.8.2 Scanning Electron Microscopy; 3.8.3 Anion-Exchange Chromatography; 3.8.4 Attenuated Total Reflection Fourier Transform Infrared Spectroscopy; 3.8.5 Transmission Electron Microscopy; 3.8.6 X-Ray Diffraction; 3.8.7 CP/MAS 13C Nuclear Magnetic Resonance; 3.8.8 Thermogravimetric Analysis; Acknowledgments; Abbreviations; References; Chapter 4 Nanocomposites Based on Matrices Extracted from Vegetable Oils and Bacterial Cellulose; 4.1 Introduction; 4.2 Vegetable Oils; 4.3 Bacterial Cellulose; 4.4 Bacterial and Plant-Based Cellulose Nanocomposites with Polymer Matrices
4.5 ApplicationsReferences; Chapter 5 Nano- and Microfiber Composites Reinforced with Cellulose Nanocrystals; 5.1 Introduction; 5.2 Cellulose Nanocrystals; 5.3 Electrospinning; 5.4 Cellulose Nanocrystals (CNs) for the Production of Composites; 5.5 Electrospun Nanofibers Reinforced with CNs; 5.5.1 CNs in Fibrous Hydrophobic Matrices; 5.5.1.1 Thermomechanical Properties of Electrospun Composite Microfibers; 5.5.2 CNs in Poly(-Caprolactone) Composite Fibers; 5.5.2.1 Surface Grafting; 5.5.2.2 Preparation of Dispersions and Electrospinning
5.5.2.3 Production and Characterization of Composite Nanofibers

Sommario/riassunto

Aimed at researchers involved in this emerging field in both academia and industry, this book is unique in its focus on cellulose nanofibers, especially nano-composites, nanomoities and other plant based-resins and their composites. Despite its concise presentation, this handbook and ready reference provides a complete overview, containing such important topics as electrospinning, isolation, characterization and deposition of metallic nanoparticles.