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6. Fundamentals of Fracture in Bio-Based Polymers6.1 fracture of polymers: fundamental theory; 6.2 applications of fracture theory; 6.3 microscopic to macroscopic fracture relations; 6.4 polymer-polymer interfaces; 6.5 polymer-solid interfaces; 6.6 summary of fractures in bio- based polymers; 7. Porperties of Triglyceride-Based Thermosets; 7.1 introduction; 7.2 distribution of fatty acids and unsaturation sites in triglycerides; 7.3 distribution of functional groups on triglycerides; 7.4 cross- link density; 7.5 tensile properties
7.6 computer simulations of triglyceride structure and strength7.7 glass transition temperature versus structure; 7.8 rheology of triglyceride resins; 7.9 results and discussion; 7.10 summary of triglyceride rheology; 8. Pressure-Sensitive Adhesives, Elastomers, and Coatings from Plant Oil; 8.1 introduction to pressure- sensitive adhesives; 8.2 macroemulsion and miniemulsion polymerization; 8.3 polymer characterization; 8.4 polymer properties; 8.5 polymer-solid adhesion modification of psas; 8.6 bio- based elastomers; 8.7 bio-based coatings
9. Thermal and Mechanical Properties of Soy Proteins9.1 structure and thermal behavior of soy protein; 9.2 curing strength of soy proteins; 9.3 mechanical properties of soy proteins; 9.4 physical aging of soy protein plastics; 9.5 compatibility of soy protein with polyester; 9.6 water absorption of soy protein; 9.7 summary; 10. Soy Protein Adhesives; 10.1 protein adhesion mechanism; 10.2 protein unfolding and adhesive properties; 10.3 effects of curing temperature; and pressure on adhesive strength; 10.4 viscosity of soy protein adhesives 10.5 natural straw composites with soy protein adhesives

Sommario/riassunto

Bio-Based Polymers and Composites is the first book systematically describing the green engineering, chemistry and manufacture of biobased polymers and composites derived from plants. This book gives a thorough introduction to bio-based material resources, availability, sustainability, biobased polymer formation, extraction and refining technologies, and the need for integrated research and multi-disciplinary working teams. It provides an in-depth description of adhesives, resins, plastics, and composites derived from plant oils, proteins, starches, and natural fibers in terms of struc

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