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Titolo	Interfacial Bonding Characteristics in Natural Fiber Reinforced Polymer Composites [[electronic resource]] : Fiber-matrix Interface In Biocomposites / / edited by Senthilkumar Krishnasamy, Mohit Hemath Kumar, Jyotishkumar Parameswaranpillai, Sanjay Mavinkere Rangappa, Suchart Siengchin
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Altri autori (Persone)	Hemath KumarMohit ParameswaranpillaiJyotishkumar Mavinkere RangappaSanjay SiengchinSuchart
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Nota di contenuto	Introduction to interfacial bonding characteristics of natural fiber reinforced composites -- New methodologies to improve the interfacial interaction in natural fiber polymer composites -- Morphology of the interfacial interface of the natural fiber reinforced polymer composites -- Spectroscopic analysis of interfacial adhesion in natural fiber polymer composites -- Effect of interfacial bonding characteristics on the tensile properties of kenaf fiber reinforced composites -- Effect of interfacial bonding characteristics of flexural fractured pineapple leaf fiber reinforced composites -- Effect of interfacial bonding characteristics on impact strength of jute fiber reinforced composites -- Effect of interfacial bonding characteristics of inter-laminar shear strength of date palm fiber reinforced composites -- Effect of

interfacial bonding characteristics on thermomechanical properties of luffa fiber reinforced composites -- Effect of interfacial bonding characteristics on dynamic mechanical analysis of cotton fiber reinforced composites -- Effect of interfacial bonding characteristics on fatigue behavior of hemp fiber reinforced composites -- Effect of interfacial bonding characteristics on free vibration behavior of wood fiber reinforced composites -- Effect of interfacial bonding characteristics on physical performance of bamboo fiber reinforced composites -- Effect of interfacial bonding characteristics on fire performance of flax fiber reinforced composites -- Effect of interfacial bonding characteristics on electrical properties of natural fiber reinforced polymeric matrix composites -- Effect of interfacial bonding characteristics of chemically treated straw fiber reinforced polymeric matrix composites -- Modeling of interfaces of natural fiber reinforced composites using finite element analysis -- The future challenges of using natural fiber reinforced polymeric matrix composites.

Sommario/riassunto

This book provides a general overview of the importance of fibre-matrix interfacial bonding characteristics in natural fibre-based composites to obtain optimal material properties for a specific application. Composites materials are prepared by combining fibres and polymers to achieve superior materials properties than those of the individual components. Composite materials are used to produce lightweight components with increased stiffness and strength; their properties can also be tailored for any specific applications. The glass fibre reinforced composites dominate 95% of the thermoplastic and thermoset-based composites. However, the natural fibre reinforced composites can give competition to the glass fibres due to their advantages such as biodegradability, low density, low cost, and good mechanical properties. This book looks into biocomposites and its important aspect of optimization of materials' performance by fine-tuning the fibre-matrix bonding characteristics. The chapters in the book look at different plant fibres such as kenaf, pineapple leaf, jute, date palm, luffa, cotton, hemp, wood, bamboo, flax, and straw and the different approaches to enhance the fibre-matrix interfacial bonding through physical and/or chemical treatment methods. It demonstrates that the nature of fibre-matrix bonding has a significant effect on the properties such as tensile, flexural, impact, inter-laminar shear strength, moisture absorption, thickness swelling, thermal, chemical, damping, creep, and fatigue. Its content appeals to academics, students, researcher, and scientist who are working in the field to produce biodegradable and recyclable materials in the composite industry.