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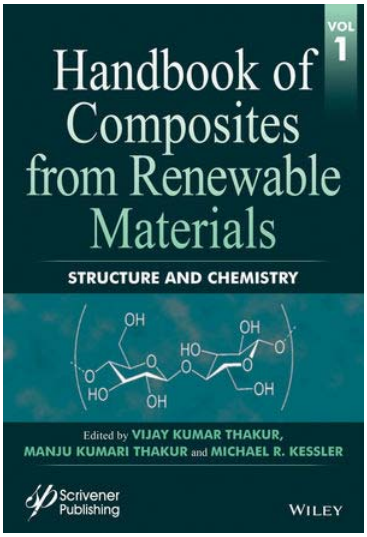

再生可能材料による複合材料･全 8 巻

Handbook of Composites from Renewable Materials

8 Volume Set

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再生可能な材料から製造する複合材に関するハンドブックです。全 8 巻／5000 ページ以上からなり、最先端の複合材料の合成、構造、特性、プロセシング、応用、性能などについて、学際的な視野から詳述します。このハンドブックは、数多くの天然ポリマー、強化法、充填法、生分解可能素材などについてカバーしております。

Volume 1, Structure and Chemistry 978-1-119-22362-7
Volume 2, Design and Manufacturing 978-1-119-22365-8
Volume 3, Physico-Chemical and Mechanical Characterization 978-1-119-22366-5
Volume 4, Functionalization 978-1-119-22367-2
Volume 5, Biodegradable Materials 978-1-119-22379-5
Volume 6, Polymeric Composites 978-1-119-22380-1
Volume 7, Nanocomposites: Science and Fundamentals 978-1-119-22381-8
Volume 8, Nanocomposites: Advanced Applications 978-1-119-22383-2

Volume 1 is solely focused on the *Structure and Chemistry* of renewable materials. Some of the important topics include but not limited to: carbon fibers from sustainable resources; polylactic acid composites and composite foams based on natural fibres; composites materials from other than cellulosic resources; microcrystalline cellulose and related polymer composites; tannin-based foam; renewable feedstock vanillin derived polymer and composites; silk biocomposites; bio-derived adhesives and matrix polymers; biomass based formaldehyde-free bio-resin ; isolation and characterization of water soluble polysaccharide; bio-based fillers; keratin based materials in biotechnology; structure of proteins adsorbed onto bioactive glasses for sustainable composite; effect of filler properties on the antioxidant response of starch composites; composite of chitosan and its derivate; magnetic biochar from discarded agricultural biomass; biodegradable polymers for protein and peptide conjugation; polyurethanes and polyurethane composites from bio-based / recycled components.

This 2nd volume of the Handbook is solely focused on the *Design and Manufacturing* of renewable materials. Some of the important topics include but not limited to: design and manufacturing of high performance green composites; manufacturing of high performance biomass-based polyesters by rheological approach; components design of fibrous composite

materials; design and manufacturing of bio-based sandwich structures; design and manufacture of biodegradable products from renewable resources; manufacturing and characterization of quicklime filled metal alloy composites for single row deep groove ball bearing; manufacturing of composites from chicken feathers and poly (vinyl chloride); production of porous carbons from resorcinol-formaldehyde gels: applications; composites using agricultural wastes; manufacturing of rice wastes-based natural fiber polymer composites from thermosetting vs. thermoplastic matrices; thermoplastic polymeric composites; natural fiber reinforced PLA composites; rigid closed-cell PUR foams containing polyols derived from renewable resources; preparation and application of the composite from alginate; recent developments in biocomposites of bombyx mori silk fibroin; design and manufacturing of natural fiber/ synthetic fiber reinforced polymer hybrid composites; natural fibre composite strengthening solution for structural beam component for enhanced flexural strength; high pressure resin transfer molding of epoxy resins from renewable sources; cork based structural composites; the use of wheat straw as an agricultural waste in composites for semi-structural applications and design/ manufacturing of sustainable composites.

This 3rd volume of the Handbook is solely focused on the *Physico-Chemical and Mechanical Characterization* of renewable materials. Some of the important topics include but not limited to: structural and biodegradation characterization of supramolecular PCL/HAP nano-composites; different characterization of solid bio-fillers based agricultural waste material; poly (ethylene-terephthalate) reinforced with hemp fibers; poly (lactic acid) thermoplastic composites from renewable materials; chitosan –based composite materials: fabrication and characterization; the use of flax fiber reinforced polymer (FFRP) composites in the externally reinforced structures for seismic retrofitting monitored by transient thermography and optical techniques; recycling and reuse of fiber reinforced polymer wastes in concrete composite materials; analysis of damage in hybrid composites subjected to ballistic impacts; biofiber reinforced acrylated epoxidized soybean oil (AESO) biocomposites; biopolyamides and high performance natural fiber-reinforced biocomposites; impact of recycling on the mechanical and thermo-mechanical properties of wood fiber based HDPE and PLA composites; lignocellulosic fibers composites: an overview; biodiesel derived raw glycerol to value added products; thermo-mechanical characterization of sustainable structural composites; novel pH sensitive composite hydrogel based on functionalized starch/clay for the controlled release of amoxicillin; preparation and characterization of biobased thermoset polymers from renewable resources; influence of natural fillers size and shape into mechanical and barrier properties of biocomposites; composite of biodegradable polymer blends of PCL/PLLA and coconut fiber - the effects of ionizing radiation; packaging composite materials from renewable resources; physicochemical properties of ash based geopolymer concrete; a biopolymer derived from castor oil polyurethane; natural polymer based biomaterials; physical and mechanical properties of polymer membranes from renewable resources

This 4th volume of the Handbook is solely focused on the *Functionalization* of renewable materials. Some of the important topics include but not limited to: Chitosan-based bio sorbents: oil spill clean-up by textiles; pyridine and bipyridine end-functionalized polylactide; functional separation membranes from chitin and chitosan derivatives; acrylated epoxidized flaxseed oil bio-resin and its biocomposites; encapsulation of inorganic renewable nanofiller; chitosan coating on textile fibers for functional properties; surface functionalization of cellulose whiskers for nonpolar composites; impact of chemical treatment and the manufacturing process on mechanical, thermal and rheological properties of natural fibers based composites; bio-polymers modification; review on fibers from natural resources; strategies to improve the functionality of starch based films; the effect of gamma-radiation on biodegradability of natural fibers; surface functionalization through vapor-phase assisted surface polymerization (VASP) on natural materials from agricultural by-products; okra bast fiber as potential reinforcement element of biocomposites; silane coupling agent used in natural fiber/plastic composites; composites of olefin polymer /natural fibers: the surface modifications on natural fibers; surface functionalization of biomaterials; thermal and mechanical behaviors of bio-renewable fibres based polymer composites; natural and artificial diversification of starch; role of radiation and surface modification on bio-fiber for reinforced polymer composites.

This 5th volume Handbook is solely focused on Biodegradable Materials. Some of the important topics include but not limited to: Rice husk and its composites; biodegradable composites based

on thermoplastic starch and talc nanoparticles; recent progress in biocomposites of biodegradable polymer; microbial polyesters: production and market; biodegradable and bio absorbable materials for osteosynthesis applications; biodegradable polymers in tissue engineering; composites based on hydroxyapatite and biodegradable polylactide; biodegradable composites; development of membranes from bio-based materials and their applications; green biodegradable composites based on natural fibers; fully biodegradable all-cellulose composites; natural fiber composites with bio-derivative and/or degradable polymers; synthetic biodegradable polymers for bone tissue engineering; polysaccharides as green biodegradable platforms for building-up electroactive composite materials; biodegradable polymer blends and composites from seaweeds; biocomposites scaffolds derived from renewable resources for bone tissue repair ; pectin-based composites; recent advances in conductive composites based on biodegradable polymers for regenerative medicine applications; biosynthesis of PHAs and their biomedical applications; biodegradable soy protein isolate/poly (vinyl alcohol) packaging films and biodegradability of bio-based polymeric materials in natural environment.

This 6th volume Handbook is solely focused on Polymeric Composites. Some of the important topics include but not limited to: Keratin as renewable material for developing polymer composites; natural and synthetic matrices; hydrogels in tissue engineering; smart hydrogels: application in bioethanol production; principle renewable biopolymers; application of hydrogel biocomposites for multiple drug delivery; nontoxic holographic materials; bioplasticizer - epoxidized vegetable oils-based poly (lactic acid) blends and nanocomposites; preparation, characterization and adsorption properties of poly (DMAEA) – cross-linked starch gel copolymer in waste water treatments; study of chitosan crosslinking hydrogels for absorption of antifungal drugs using molecular modelling; pharmaceutical delivery systems composed of chitosan; eco-friendly polymers for food packaging; influence of surface modification on the thermal stability and percentage of crystallinity of natural abaca fiber; influence of the use of natural fibers in composite materials assessed on a life cycle perspective; plant polysaccharides-blended ionotropically-gelled alginate multiple-unit systems for sustained drug release; vegetable oil based polymer composites; applications of chitosan derivatives in wastewater treatment; novel lignin-based materials as a products for various applications; biopolymers from renewable resources and thermoplastic starch matrix as polymer units of multi-component polymer systems for advanced applications; chitosan composites: preparation and applications in removing water pollutants and recent advancements in biopolymer composites for addressing environmental issues.

This 7th volume Handbook is solely focused on Nanocomposites: Science and Fundamentals. Some of the important topics include but not limited to: preparation, characterization and applications of nano materials from renewable resources; hydrogels and its nanocomposites from renewable resources: preparation of chitin-based nanocomposite materials through gelation with ionic liquid; starch based bionanocomposites; biorenewable nanofiber and nanocrystal; investigation of wear characteristics of dental composite reinforced with rice husk derived nanosilica filler particles; performance of regenerated cellulose/vermiculite nanocomposites fabricated via ionic liquid; preparation, structure, properties and interactions of the PVA/cellulose composites; green composites with cellulose nano-reinforcements; biomass composites from bamboo-based micro/nano fibers; synthesis and medicinal properties of polycarbonates and resins from renewable sources; nanostructured polymer composites with modified carbon nanotubes; organic-inorganic nanocomposites derived from polysaccharides; natural polymer based nanocomposites; cellulose whisker based green polymer composites; poly (lactic acid) nanocomposites reinforced with different additives; nanocrystalline cellulose; halloysite based bionanocomposites; nanostructurated composites based on biodegradable polymers and silver nanoparticles; starch-based biomaterials and nanocomposites; green nanocomposites based on PLA and natural organic fillers; chitin and chitosan based nanocomposites.

This 8th volume of the Handbook is solely focused on the Nanocomposites: Advanced Applications. Some of the important topics include but not limited to: virgin and recycled polymers applied to advanced nanocomposites; biodegradable polymer-carbon nanotube composites for water and wastewater treatment; eco-friendly nanocomposites of chitosan with natural extracts, antimicrobial agents and nanometals; controllable generation of renewable nanofibrils from green materials and their application in nanocomposites; nanocellulose and

nanocellulose composites; poly (lactic acid) biopolymer composites and nanocomposites for biomedical and biopackaging applications; impact of nanotechnology in water treatment: carbon nanotube and graphene; nanomaterials in energy generation; sustainable green nanocomposites from bacterial bioplastics for food packaging applications; PLA-nanocomposites: a promising material for future from renewable resources; bio-composites from renewable resources: preparation and applications of chitosan-clay nanocomposites; nano materials: an advanced and versatile nano additive for kraft and paper industries; composites and nanocomposites based on polylactic acid obtaining; cellulose-containing scaffolds fabricated by electrospinning: applications in tissue engineering and drug delivery; biopolymer-based nanocomposites for environmental applications; calcium phosphate nanocomposites for biomedical and dental applications: recent developments; chitosan-metal nanocomposites: synthesis, characterization and applications; multi-carboxyl functionalized nano-cellulose/nano-bentonite composite for the effective removal and recovery of metal ions; biomimetic gelatin nanocomposite as a scaffold for bone tissue repair; natural starches-blended ionotropically-gelled microparticles/beads for sustained drug release and ferrogels: smart materials for biomedical and remediation applications.