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environmental remediation applications -- Chapter 15: Advanced composites for drug adsorption -- Chapter 16: Advances in manufacturing and processing of discontinuous particle reinforced titanium matrix composites (TMCs) -- Chapter 17: Metal based Electrical Contact Materials -- Chapter 18: Organosulfur polymer composites by free radical polymerization of sulfur with vegetable oils -- Index.

Sommario/riassunto

This book presents a comprehensive collection of reviews and experimental research findings in the realm of composite materials. It explores manufacturing technologies and applications, as well as recent breakthroughs in nanomaterial-based composites, polymer-based composites, titanium matrix composites (TMCs), conducting polymers, natural polymers, graphene polymers, graphene composites, and organosulfur polymeric composites, alongside reinforced aluminum matrix composites. The mechanical and tribological aspects take center stage, with a focus on aluminum alloy composites as a superior alternative to traditional gear materials. The book also addresses cutting-edge composite materials developed for drug removal via adsorption techniques, radiation shielding, and their use as shielding absorbers for ionizing radiation. Furthermore, the significance of electrical contact materials and their performance is explored. The book unveils fabrication methods, sample preparation techniques, properties, and various applications of these remarkable composites. Topics range from additive manufacturing to solid-phase extraction and solid-phase microextraction utilizing diverse composites as adsorbents. Additionally, the inverse vulcanization process, a novel technique involving the copolymerization of elemental sulfur with different monomers based on their resource origins, is discussed. Technologies such as powder metallurgy (PM), mechanical alloying (MA), self-propagating high-temperature synthesis (SHS), and rapid solidification processing (RSP) are described. The book further delves into the preparation techniques of zeolite using both conventional and advanced methods, along with the synthesis of various zeolite-based composites, particularly their application in environmental remediation. The book culminates with a summary of analysis and modeling techniques used in composite materials, including those employed in ballistic applications.
