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| Nota di contenuto | Chapter 1. Current progress and difficulties in the application of nanomaterials for biodiesel production -- Chapter 2. Green diesel: a sustainable hydrotreated vegetable oil-based biofuel -- Chapter 3. Potential nanomaterial stimulants for the development and application of biofuels -- Chapter 4. Nanocomposites/nanomaterials for bioethanol production -- Chapter 5. Nanocomposites/nanomaterials for biohydrogen production -- Chapter 6. Natural nanomaterial production for bioenergy -- Chapter 7. Nanocomposites/Nanomaterials and the Risk Management of Biofuels Production -- Chapter 8. Nanomaterial/nanocomposite synthesis, types, and applications -- Chapter 9. Green synthesis of nanomaterials and their characterization -- Chapter 10. Nanomaterial/nanocomposite for environmental |

remediation -- Chapter 11. Nanomaterial/ nanocomposite for green energy Application -- Chapter 12. Current status and future prospect of bioremediation using green synthesis of nanoparticle/ nanomaterials -- Chapter 13. Application of Bioremediation using nanoparticle/ nanocomposite.

Sommario/riassunto

This contributed volume addresses several environmental problems using nanoparticles/nanomaterials for renewable energy and biofuel production. It presents nanomaterials as catalysts that can enable better selectivity, yield, and quality in renewable energy and biofuel production. The rapid expansion of industries and human population has resulted in a significant increase in the generation of waste and environmental pollution, posing a significant threat to the environment and human health. People are looking for safer and more eco-friendly fuels to meet energy demand and preserve the world for future generations. Renewable energy and biofuels are alternative techniques that reduce fossil fuel consumption. The advancement in the field of nanotechnology has led to the development of nanocomposites/nanomaterials, which are composed of nanoscale particles and polymers. Their application in the environment has shown great potential in addressing environmental issues such as pollution control and waste management. Nanocomposites are advanced materials with unique properties, such as improved mechanical strength, thermal stability, and flame resistance, making them attractive for a wide range of applications, including environmental applications. Nanomaterials show great potential for sustainable biofuel production with commercial feasibility. Nanotechnology-based various conversion routes effectively convert waste biomass into value-added biofuels, such as syngas, biodiesel, and HVO. This book discusses the green synthesis of nanocomposites/nanomaterials for biofuel production and renewable energy. Additionally, it covers techno-economic analysis of bioremediation using green-synthesized nanoparticles/nanomaterials. This book will be helpful for researchers, engineers, and scientists working in the areas of environmental biotechnology, materials science, nanotechnology, environmental science, and engineering.