Green Chemistry, Nanotechnology, and Sustainable Materials for Climate Action and Circular Economy

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Preface

The rapid pace of technological and industrial advancement has brought tremendous benefits to society, yet it has also generated pressing environmental challenges. Issues such as plastic pollution, resource depletion, and climate change highlight the urgent need for innovative materials and sustainable solutions. Against this backdrop, Green Materials and Sustainable Applications has been conceived as a collective effort to showcase the latest developments, methodologies, and applications of environmentally friendly materials and technologies.

This volume brings together interdisciplinary contributions from researchers and practitioners working across key domains of sustainable materials science, including nanomaterials, biopolymers, photocatalysts, thermodynamic modeling, biomass valorization, and green composites. Each chapter not only explores the scientific principles underlying these technologies but also emphasizes their practical and societal implications, particularly in reducing environmental impact, enhancing material efficiency, and supporting the global shift toward a circular economy.

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