

Preface

Carbon-based materials ranging from activated carbons and carbon nanotubes (CNTs) to graphene have attracted tremendous attention because of their diversified nanostructures and desirable physical and chemical properties. The study of CNTs started early in 1991, and since then the research in this exciting field has been in continuous evolution. More recently, the two-dimensional crystalline allotrope of carbon, called graphene, has brought a new insight into carbon nanomaterials. However, due to their inert surface structure, graphene or CNTs are prone to agglomerate irreversibly due to strong van der Waals forces between graphene or CNTs themselves, which greatly hampers their practical applications. Hybridization of CNTs with graphene not only can prevent the aggregation of these carbon materials, but also reach full utilization of the synergistic effect between graphene and CNTs. Therefore, strategies for construction of graphene-CNT hybrids as well as their properties should be studied in depth.

This book shows the various carbon nanomaterials and their unique properties, followed by the detailed introduction of graphene-CNT hybrids. The following chapter demonstrates the strategies for the hybridization of CNTs with graphene, reaching full utilization of the synergistic effect between graphene and CNTs. It also includes preparation, structures, and properties of graphene-CNT hybrids, providing interesting examples of three types of graphene-CNT hybrids with different nanostructures. A wide range of applications of graphene-CNT hybrids as novel materials for energy storage and environmental remediation are also presented in this book. “Graphene-Carbon Nanotube Hybrids for Energy and Environmental Applications” reviews the recent advances in the structures, properties, and applications of graphene-CNT hybrids for energy storage and environmental remediation. This book is interesting and useful to a wide readership in various fields of materials science and engineering.

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