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Reactions; 2.8 Conclusion; References; Chapter 3 Addition of Organic Groups through Reactions with Oxygen Species of Graphene Oxide; 3.1 Introduction; 3.1.1 Graphene/Polymer Nanocomposites; 3.2 The Role of Carboxylic Acids of GO; 3.2.1 Organic Functionalization through Amide Bond Formation; 3.2.1.1 Lipophilic Derivatives; 3.2.1.2 Hydrophilic - Biocompatible Derivatives; 3.2.1.3 Addition of Chromophores; 3.2.1.4 Polymer Graphene Composite; 3.2.2 Esterification of GO
3.2.3 Functionalization of GO through Heterocyclic Ring Formation3.3 The Role of Hydroxyl Groups of GO; 3.4 Miscellaneous Additions; 3.4.1 Reaction of Carboxylic Acid and Hydroxyl Groups with Isocyanate Derivatives; 3.4.2 Reaction of Epoxides with Carboxylic Acids or Hydroxyl Groups; 3.4.3 Interaction of Ammonia with Carboxylic Acids and Epoxides of GO; 3.4.4 Enrichment of GO in Carboxylic Acids; 3.4.5 Addition of Gallium-Phthalocyanine (Ga-Pc) to GO through Ga-O Covalent Bond; 3.5 The Role of Epoxide Groups of GO; 3.5.1 Nucleophilic Addition of Amine to Epoxides
3.5.2 Addition of Chromophores3.5.3 Addition of Polymers; 3.6 Post Functionalization of GO; 3.6.1 Post Functionalization of Organically Modified GO via Click Chemistry; 3.6.2 Counter Anion Exchange; 3.7 Conclusions; References; Chapter 4 Chemical Functionalization of Graphene for Biomedical Applications; 4.1 Introduction; 4.2 Covalent Functionalization of Graphene Nanomaterials; 4.2.1 Synthesis of GO and rGO; 4.2.1.1 Synthesis of Graphene Oxide; 4.2.1.2 Reduction of Graphene Oxide; 4.2.2 Functionalization of Graphene Oxide with Polymers; 4.2.2.1 PEGylated-GO Conjugates
4.2.2.2 Covalent Linkage of Biopolymers

Sommario/riassunto

All set to become the standard reference on the topic, this book covers the most important procedures for chemical functionalization, making it an indispensable resource for all chemists, physicists, materials scientists and engineers entering or already working in the field. Expert authors share their knowledge on a wide range of different functional groups, including organic functional groups, hydrogen, halogen, nanoparticles and polymers.