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| Sommario/riassunto | "Despite being just a one-atom-thick sheet of carbon, graphene is one of the most valuable nanomaterials. Initially discovered through scotch-tape-based mechanical exfoliation, graphene can now be synthesized in bulk using various chemical techniques. Counted among the contrasting properties of this remarkable material are its lightweight, thinness, flexibility, transparency, strength and resistance, along with superior electrical, thermal, mechanical and optical properties. Due to these novel traits, graphene has attracted attention for use in cutting-edge applications in almost every area of technology, which are projected to change the world. This 5th volume of the Handbook is solely focused on Graphene in Energy, Healthcare, and Environmental Applications. Some of the important topics include but not limited to graphene nanomaterials in energy and environment applications; graphene as nanolubricant for machining, three-dimensional graphene foams for energy storage applications; three-dimensional graphene materials: synthesis and applications in electrocatalysts and electrochemical sensors; graphene and graphene-based hybrid composites for advanced rechargeable battery electrodes; graphene-based materials for advanced lithium-ion batteries; graphene-based materials for supercapacitors and conductive additives |

of lithium ion batteries; graphene-based flexible actuators, sensors, and supercapacitors; graphene as catalyst support for the reactions in fuel cells; nitrogen-doped carbon nanostructures as oxygen reduction reaction (ORR) and oxygen evolution reaction (OER) electrocatalysts in acidic media; graphene-based materials for photocatalytic H2 evolution; graphene thermal functional device and its property characterization; self- and directed-assembly of metallic and nonmetallic fluorophors: considerations into graphene and graphene oxides for sensing; stimuli-responsive graphene-based matrices for smart therapeutics; application of graphene materials in molecular diagnostics; graphene oxide membranes for liquid separation"--