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Nota di contenuto	Part 1: Introduction -- Graphene: A wonder material of the 21st century -- Photocatalysis: Mechanism, classification and basic principles -- Historical overview and future prospects of photocatalysis -- Part 2: Synthesis and Characterization -- Graphene synthesis and characterization techniques for photocatalytic applicants -- Controlling factors for graphene synthesis -- Graphene unique properties for photocatalytic activities -- Part 3: Applications -- Photocatalytic degradation of pollutants -- Photocatalytic hydrogen generation -- Photocatalytic Water Splitting -- Photocatalytic disinfection -- Other photocatalytic applications -- Part 4: Concluding Thoughts -- Strategies for enhancement of photocatalytic activity /Factors affecting

the photocatalytic activity -- Economic perspective (Cost benefits analysis) -- Life Cycle assessment.

## Sommario/riassunto

This book provides a comprehensive overview of graphene-based photocatalysts, from the fundamentals to the applications. Graphene, the special material of the twenty-first century, has unique properties that make it an ideal candidate for use in photocatalytic activities. The book explores the basic principles of photocatalysis, including its mechanism and classification, and provides a historical overview and future prospects for the field. The synthesis and characterization of graphene for photocatalytic applications are discussed in detail, including controlling factors for graphene synthesis and its unique properties that make it an effective photocatalyst. It also covers a range of applications for graphene-based photocatalysts, including photocatalytic degradation of pollutants, hydrogen generation, water splitting, disinfection, and other potential uses. In addition, the book addresses strategies for enhancing photocatalytic activity and the factors that affect it. The economic perspective of cost-benefit analysis and life cycle assessment are also discussed. It is a valuable resource for researchers, academics, and professionals working in the field of photocatalysis and ideal for those interested in the latest developments in graphene-based photocatalysts and their potential applications, including researchers, academics, and professionals in the fields of materials science, chemistry, and chemical engineering.