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Sommario/riassunto	Semiconductor photocatalysts have attracted a great amount of multidiscipline research due to their high potential for solar-to-chemical-energy conversion applications, ranging from water and air purification to hydrogen and chemical fuel production. This unique diversity of photoinduced applications has spurred major research efforts on the rational design and development of photocatalytic materials with tailored structural, morphological, and optoelectronic properties in order to promote solar-light harvesting, easy photogenerated electron-hole recombination and the concomitant low quantum efficiency. This book presents a collection of original research articles on advanced photocatalytic materials, synthesized by novel fabrication approaches and/or innovative modifications that improve their performance in target photocatalytic applications such as water (cyanobacterial toxins, antibiotics, phenols, and dyes) and air (NO _x and volatile organic compounds) pollutant degradation, hydrogen evolution, and hydrogen peroxide production by photoelectrochemical cells.