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Sommario/riassunto	"The transformation of titanium dioxide (TiO ₂) nanomaterials from white to black using disorder engineering has meant a dramatic increase in their performance in photocatalytic experiments. The efficiency with which black TiO ₂ nanomaterials can use sunlight to split water molecules for the production of hydrogen is significantly improved compared to using white crystals, and this pure hydrogen can then be used in batteries and fuels. The black TiO ₂ nanomaterials are also very promising in CO ₂ conversion, water treatment, and in air quality control. This book aims to present the recent progress on the research of black TiO ₂ nanomaterials, and how they can be used in a number of clean energy applications. The text covers a number of research topics, including the synthesis of black TiO ₂ nanomaterials (nanoparticles, nanowires and nanotubes) and their properties, the effect of point defects and ordered/disordered morphology, the applications in charge storage and photoelectrochemical water splitting, use in lithium ion batteries and in microwave absorption. Also included is a theoretical analysis of this research, thereby providing a comprehensive review of the subject for students, researchers and

practitioners in catalytic science, materials science, nanotechnology,
green technology, and chemistry."--Publisher's website.
