1. Record Nr. UNINA9910346686603321

Autore	Dal Santo Vladimiro
Titolo	Titanium Dioxide Photocatalysis / Vladimiro Dal Santo, Alberto Naldoni
Pubbl/distr/stampa	MDPI - Multidisciplinary Digital Publishing Institute, 2019 Basel, Switzerland : , : MDPI, , 2019
ISBN	9783038976950 3038976954
Descrizione fisica	1 electronic resource (208 p.)
Soggetti	Chemistry
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Sommario/riassunto	Although the seminal work of Fujishima et al. dates back to 1971, TiO2 still remains the most diffused and studied semiconductor, employed in photo-oxidation processes for cleantech (i.e., polluted water and air treatment), in solar fuel production (mainly hydrogen production by water photo splitting), and in Carbon Capture and Utilization (CCU) processes by CO2 photoreduction. The eleven articles, among them three reviews, in this book cover recent results and research trends of various aspects of titanium dioxide photocatalysis, with the chief aim of improving the final efficiency of TiO2-based materials. Strategies include doping, metal co-catalyst deposition, and the realization of composites with plasmonic materials, other semiconductors, and graphene. Photocatalysts with high efficiency and selectivity can be also obtained by controlling the precise crystal shape (and homogeneous size) and the organization in superstructures from ultrathin films to hierarchical nanostructures. Finally, the theoretical modeling of TiO2 nanoparticles is discussed and highlighted. The range of topics addressed in this book will stimulate the reader's interest as well as provide a valuable source of information for researchers in academia and industry.