Solar hydrogen generation : transition metal oxides in water photoelectrolysis

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Expert techniques for extracting hydrogen from water using transition metal oxides as catalysts Solar Hydrogen Generation details the complex process of separating hydrogen from oxygen--photoelectrolysis. This book comprehensively covers the chemical characteristics of transition metal oxides, explaining how to covert solar energy to electron energy through transition metal oxides. Past experimentations and future directions are discussed. Solar Hydrogen Generation Comprehensively reviews physical characteristics of transition metal oxides both in electrochemical and photocatalytic applications Includes history and future prospects for water photoelectrolysis Reviews state-of-the-art achievements in the fields of condensed matter physics, nanostructured material science, electrochemistry, and photocatalysis Addresses potential problems and solutions In-depth coverage: Hydrogen Production; Electrochemistry and Photoelectrolysis; Transition Metal Oxides; Molecular Structure, Crystal Structure, and Electronic Structure; Optical Properties and Light Absorption; Bandgap, Band Edge, and Engineering; Impurity, Dopants, and Defects; Photocatalytic Reactions, Oxidation and Reduction; Organic and Inorganic Systems; Surface and Interface Chemistry; Nanostructured and Morphology; Synchrotron Radiation and Soft X-Ray Spectroscopy"--Provided by publisher.

"This pioneering guide covers one of the most promising sustainable energy carriers--water hydrogen--and shows how to extract hydrogen from water using transition metal oxides as catalyst.