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Nota di contenuto	Frontmatter -- Contents -- Common abbreviations -- Preface -- Section 1: Overview of nanoscience and nanochemistry -- Chapter 1 Nanochemistry: development of nanomaterials -- Section 2: Focus on synthesis methods -- Chapter 2A Wet-chemistry-derived nanomaterials and their multidisciplinary applications -- Chapter 2B Bottom-up synthesis of nanomaterials -- Chapter 2C Green pathways to synthesize nanomaterials -- Chapter 2D Synthesis and stabilization of metallic nanoparticles -- Section 3: Focus on characterization methods -- Chapter 3A Advances in understanding electrochemical reaction mechanisms of highly dispersed metal sites using X-ray absorption spectroscopy -- Chapter 3B In situ spectroscopic studies of the electrochemistry -- Chapter 3C Integrated X-ray scattering and molecularscale simulation approaches to probe the behavior of confined fluids for a sustainable energy future -- Section 4: Focus on select example applications of nanoscience in energy, environment, and health -- Chapter 4A Electrocatalytic hydrogen production -- Chapter 4B Nanostructured materials for electrocatalytic hydrogen

evolution reaction -- Chapter 4C Recent progress in cobalt-based nanosheets for electrochemical water oxidation -- Chapter 4D Nanoapplication: carbon capture and conversions -- Postface: social impact, consequences, and results of nanotechnology -- Biography of the editors -- Biography of the authors -- Author list -- Index

Sommario/riassunto

The modernization of science and technology using nanomaterials will open a new paradigm to meet the increasing energy demand. This book provides an in-depth understanding of theoretical perspectives from molecular and atomic levels. The modern analytical techniques explored provide an understanding of the interactions of particles at interfaces. This book gives a holistic view of materials synthesis, analysis, application, and safe handling.