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Nota di contenuto	Advanced Oxidation Processes leading to nanomaterials -- Environmental Photocatalysis -- Photocatalytic Decontamination -- Water Splitting -- Hydrogen Generation -- Hydrogen Production -- P Photocatalysts -- Water Treatment using nanomaterials -- Photolysis and Photoelectrochemistry -- Heterogeneous Catalysis -- Photochemical Processes -- Nanomaterials Synthesis -- Wastewater Treatment and Purification Technologies -- Thin Films and Nanotechnology -- Porous Materials -- Artificial photosynthesis -- Hydrogen storage -- Materials with noise-reduction properties -- Construction materials reinforced with natural products -- Nano-Catalysis -- Degradation of pollutants -- Mesoporous Materials -- Oil Pollutants Degradation -- Titanium Dioxide Films -- Photochemical Oxidants -- Biomass -- Glass ceramics from wastes -- Recycled

plastics -- Silica fertilizer -- Wood ceramics -- Non-Metallic Building Materials -- Marine block -- Soil ceramics -- Stabilization of heavy metals from industrial wastes into ceramic matrices -- Biobased & biodegradable plastics -- Wear resistant metals and composites -- Pre-paint steel and alloys -- Hydrogen absorbing alloys and materials -- Gas separation membranes -- Ion-exchange resin for wastes treatment -- Microbial enzymes -- Absorbents for oil and grease removal -- Catalysts for fuel cells -- Coating materials for construction -- Functionally graded materials -- Lead-free solders -- Halogen flame retardant-free plastics -- Chromium-free steel -- Heavy metal free polyesters -- Vibration dumping steels -- Antibacterial coating materials -- Bone-cream for orthopedic and brain surgery -- Ultra-light steels -- Light-weight alloys -- Heat resistant alloys -- Heat mirror films -- Chromophobic fibers -- Endothermic steels -- High magnetic induction steels -- Silicon for solar cells -- Thermoelectric conversion materials -- Special glasses -- Sealing sheets for solar cells -- Materials for CO2, SOx, NOx emission reduction -- Materials for fixation and removal of radioactive wastes -- Sensors for nanoparticle detection -- Sensors for hazardous gases detection -- “Greener” aspects of materials synthesis -- “Greener” fabrication of nanomaterials -- Energy Harvesting -- Solar Fuel Production from CO2 and Water -- Lithium-Ion Batteries -- Electrochemical Capacitor Applications -- Catalysts in Biofuel Production.

Sommario/riassunto

This exhaustive Handbook covers the synthesis and applications of nanomaterials that can be used in energy and environmental science applications. Given the pressing need for more efficient energy sources at lower costs, this book will help to provide a more cohesive understanding of nanocomposites and nanomaterials. Each chapter in this handbook is written by an expert in his or her field, and topics ranging from energy efficiency to material performance are presented. Catalysis, ceramic science, metallurgy, coatings, and green, sustainable materials are included. This Handbook provides a comprehensive guide to the field of applied nanomaterials. It will drive interest and research in the use of nanocomposites and nanomaterials for energy and environmental applications.