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Nota di contenuto	Progress in Solution Processed Mixed Oxides -- Properties and Applications of the Electrochemically Synthesized Metal Oxide Thin Films -- Structural and Electronic Properties of Various Useful Metal Oxides -- Properties of Metal Oxides: Insights from First Principles Calculations -- Recent Progress in Metal Oxide for Photovoltaic Application -- Structural and Electronic Properties of Metal Oxides and their Applications in Solar Cells -- Optically active Metal Oxides for Photovoltaic Applications -- Metal oxides for Perovskite solar cells -- Doped metal oxide thin films for Dye-Sensitized Solar Cell and other non-dye loaded -- Doped Metal Oxide Thin Films for Enhanced Solar Energy Applications -- Mixed Transition Metal Oxides for Photoelectrochemical Hydrogen Production -- Plasmonic Metal Nanoparticles Decorated ZnO Nanostructures for Photoelectrochemical

(PEC) Applications -- Oxygen-deficient metal oxide nanostructures for photocatalytic activities -- Oxygen-Deficient Iron Oxide Nanostructures for Photocatalytic Activities -- Properties of Titanium Dioxide-Based Nanostructures on Transparent Glass Substrates for Water Splitting and Photocatalytic Application -- Mixed Transition Metal Oxides for Energy Applications -- Nanosheets Derived Porous Materials and Coatings for Energy Storage Applications -- Role of Carbon Derivatives in Enhancing Metal Oxides Performances as Electrodes for Energy Storage Devices -- Hydrothermal synthesis of metal oxide composite cathode materials for high energy -- Metal Oxide Composite Cathode Material for High Energy Density Batteries -- Chemically Processed Transition Metal Oxides for Post-Lithium-Ion Battery Applications -- Nanostructured Metal Oxide-Based Electrode Materials for Ultracapacitors -- Nanoporous Metal Oxides for Supercapacitor Applications -- Nanoporous transition metal oxide-based electrodes for supercapacitor application -- Liquid phase deposition of nanostructured materials for Supercapacitor Applications -- Chemically processed metal oxides for sensing application: Heterojunction room -- Chemically Synthesized Novel Materials for Gas Sensing Applications Based on Metal Oxides Nanostructure -- Low-Temperature Processed Metal Oxides and Ion-exchanging Surfaces as pH Sensor -- Performance Evaluation of P-type Semiconducting Metal Oxides Based Gas Sensors -- Development Of InSb Nanostructures On GaSb Substrate By Metal-Organic Chemical Vapor Deposition: Design Considerations And Characterization.

Sommario/riassunto

This book guides beginners in the areas of thin film preparation, characterization, and device making, while providing insight into these areas for experts. As chemically deposited metal oxides are currently gaining attention in development of devices such as solar cells, supercapacitors, batteries, sensors, etc., the book illustrates how the chemical deposition route is emerging as a relatively inexpensive, simple, and convenient solution for large area deposition. The advancement in the nanostructured materials for the development of devices is fully discussed. Provides detailed and simplified fabrication techniques with images; Includes comprehensive discussion on the structural, optical, morphological, electrical, sensing, and electrochemical properties of the metal oxides; Explains how and where the materials can be used.