

1. Record Nr.	UNINA9910789969103321
Titolo	Intelligent nanomaterials [[electronic resource] ] : processes, properties, and applications // edited by Ashutosh Tiwari ... [et al.]
Pubbl/distr/stampa	Hoboken, NJ, : John Wiley & Sons Salem, Mass., : Scrivener Pub., c2012
ISBN	1-280-67478-4 9786613651716 1-118-31196-5 1-61344-891-0 1-118-31197-3 1-118-31194-9
Descrizione fisica	1 online resource (866 p.)
Classificazione	TEC021000
Altri autori (Persone)	TiwariAshutosh <1978->
Disciplina	620.1/15
Soggetti	Nanostructured materials Smart materials
Lingua di pubblicazione	Inglese
Formato	Materiale a stampa
Livello bibliografico	Monografia
Note generali	Description based upon print version of record.
Nota di bibliografia	Includes bibliographical references and index.
Nota di contenuto	Intelligent Nanomaterials: Processes, Properties, and Applications; Contents; Preface; PART I Inorganic Materials; 1. Synthesis, Characterization, and Self-assembly of Colloidal Quantum Dots; 1.1 Introduction; 1.2 Size-dependent Optical Properties of Quantum Dots; 1.2.1 Band Gap Energies; 1.2.2 Absorption Spectra; 1.3 Procedures for Synthesis of Colloidal Quantum Dots; 1.3.1 Synthesis of Quantum Dots in Reverse Micelles; 1.3.2 Synthesis of Quantum Dots in Aqueous Media; 1.3.3 Hot-matrix Synthesis of Quantum Dots; 1.4 Types of Semiconductor Quantum Dots; 1.4.1 Binary Quantum Dots 1.4.2 Alloyed Quantum Dots 1.4.3 Core/shell Quantum Dots: ""Type-I""; 1.4.4 Core/shell Quantum Dots: ""Type-II""; 1.4.5 Quantum Dot/quantum Well Nanocrystals; 1.4.6 Transition-element-doped Quantum Dots; 1.5 Surface Functionalization of Quantum Dots; 1.5.1 Self-assembly of Colloidal Quantum Dots; 1.6 Conclusions; References; 2. One-dimensional Semiconducting Metal Oxides: Synthesis, Characterization and Gas Sensors Application; 2.1 Introduction; 2.2

Synthesis of 1-D Metal Oxide; 2.2.1 Vapor Phase Growth; 2.2.2 Vapor-liquid-solid Mechanism; 2.2.3 Vapor Solid Mechanism; 2.3 Solution Phase Growth

2.3.1 Template Assisted Synthesis 2.3.2 Template Free Synthesis; 2.4 Gas Sensor Applications; 2.4.1 SnO<sub>2</sub> NWs Based Gas Sensors; 2.4.2 WO<sub>3</sub> NWs Based Gas Sensors; 2.4.3 ZnO NWs Based Gas Sensors; 2.4.4 TiO<sub>2</sub> NWs Based Gas Sensor; 2.4.5 CuO NWs Based Gas Sensors; 2.4.6 In<sub>2</sub>O<sub>3</sub> NWs Based Gas Sensors; 2.5 Conclusions; Acknowledgement; References; 3. Rare-earth Based Insulating Nanocrystals: Improved Luminescent Nanophosphors for Plasma Display Panels; 3.1 What is Plasma Display Panel? An Introduction and Overview; 3.2 History of Plasma Display Panel; 3.3 Working of Plasma Display Panel

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3.8 Green Nanophosphors 3.8.1 Yttrium Aluminum Garnet Y<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>:Tb<sup>3+</sup> (YAG:Tb<sup>3+</sup>) Nanophosphors; 3.8.2 Synthesis of Y<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>:Tb<sup>3+</sup> (YAG:Tb<sup>3+</sup>) Nanophosphors by Sol-gel Method; 3.8.3 Chemicals Used; 3.8.4 Methodology; 3.8.5 Characterization of Prepared Y<sub>3</sub>Al<sub>5</sub>O<sub>12</sub>:Tb<sup>3+</sup> (YAG:Tb<sup>3+</sup>) Nanophosphors; 3.8.6 Results and Discussion; 3.9 Terbium Doped Yttrium Ortho-borate (YBO<sub>3</sub>:Tb<sup>3+</sup>) Nanophosphors; 3.9.1 Synthesis of Terbium Doped Yttrium Ortho-borate (YBO<sub>3</sub>:Tb<sup>3+</sup>) Nanophosphors; 3.9.2 Chemicals Used; 3.9.3 Methodology; 3.9.4 Characterizations Used; 3.9.5 Result and Discussion

3.10 Red Nanophosphors: Yttrium Aluminum Garnet Y<sub>3</sub>AlO<sub>12</sub>:Eu<sup>3+</sup> (YAG:Eu<sup>3+</sup>) Nanophosphors

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Sommario/riassunto

Intelligent Nanomaterials comprehensively provides up-to-date material of this fascinating field. The last three decades have seen extraordinary advances in the generation of new materials based on both fundamental elements and composites, driven by advances in synthetic chemistry and often drawing inspiration from nature. The concept of an intelligent material envisions additional functionality built into the molecular structure, such that a desirable response occurs under defined conditions. Divided into 4 parts: Inorganic Materials; Organic Materials; Composite Materials; and

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