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The optical properties of nanoscale composite materials are often quite different from the properties of the constituent materials from which the composite is constructed. The formation of composite materials thus constitutes a means for engineering new materials with desired optical properties. In this paper we review theories and models that have been devised for relating the linear and

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~~Optical, mechanical, and electrical properties of nano...~~

In the past twenty years, a combination of these two methods has developed to design nanostructured materials with desired electronic and optical properties. At the same time, as the material sizes decrease, the surface plays a major role in

their physical properties, and specific attention should be paid to take into account these effects and/or to passivate the surface.

A nanostructure is a structure of intermediate size between microscopic and molecular structures. Nanostructural detail is microstructure at nanoscale. In describing nanostructures, it is necessary to differentiate between the number of dimensions in the volume of an object which are on the nanoscale. Nanotextured surfaces have one dimension on the nanoscale, i.e., only the thickness of the surface of an object is between 0.1 and 100 nm. Nanotubes have two dimensions on the nanoscale, i.e., the

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Usually the nanomaterial properties differ in its size and shape, so the accurate measurement of size and shape is critical for their biomedical applications. The optical properties of nanomaterials are determined based on the measurement of surface plasmon resonance (Kreibig and Vollmer, 1995). In case of metal nanoparticles, the maximum absorbance, which determines the surface plasmon resonance, lies in the ultraviolet region of the electromagnetic spectrum.

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In recent years, the photonics community has shown a keen interest in the optical properties of nanostructured materials, owing to their capability to manipulate light.

[Electronic and optical properties of nanostructured MoS2 ...](#)

Optical, mechanical, and electrical properties of nano-structured materials. Page 1: Save page Previous: 1 of 151: Next :

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[Abstract.](#) We theoretically study the electronic and optical properties of nanostructured MoS₂ systems focusing on the influence of reduced spatial dimensions and edge effects, which lead to the change in character from semiconducting to metallic. For nanowires, we identify edge types which lead to the creation of a bandgap, reflecting the effect of confinement: with increasing the size of the wire in lateral direction and/or number of MoS₂ layers, the gap reduces. This book focuses on functional aspects of nanostructured materials that have a high relevance to immediate applications, such as catalysis, energy harvesting, energy storage, optical properties and surface functionalization via self-assembly. Additionally, there are chapters devoted to massive nanostructured materials and composites and covering basic properties and requirements of this new ...

Nanostructured materials may be defined as those materials whose structural elements - clusters, crystallites or molecules - have dimensions in the 1 to 100 nm range. The explosion in both academic and industrial interest in these materials over the past decade arises from the remarkable variations in fundamental electrical, optical and magnetic properties that occur as one progresses from an 'infinitely extended' solid to a particle of material consisting of a countable number of atoms.

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<P>This book, based on the lectures and contributions of the NATO ASI on "Functional Properties of Nanostructured Materials", gives a broad overview on its topic, as it combines basic theoretical articles, papers dealing with experimental techniques, and contributions on advanced and up-to-date applications in fields such as microelectronics, optoelectronics, electrochemistry, sensorics ...

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