

Metal oxides powder technology in dielectric materials

Absract

This chapter centers around the portrayal of metal oxides powder which represents the one of the foremost common and diverse category of materials with respect to their mechanical, chemical, and electrical properties. The material characteristics such as electric, magnetic, optical, and thermal behaviors are being versatile for technological advancements. In this chapter the fundamentals of dielectric materials and nanostructured metal oxides powder (dependent on titanium dioxide, zinc oxide, alumina, copper oxide, and tin oxide) are mentioned and discussed. In terms of future application, these nanostructured metal oxides powder are very vital for novel devices after a gracious controlled care of composition, structure, and surface properties. These metal oxides are treasure for their applications in versatile scope of industries such as water purification and medical. As metal oxide powder exhibits mentioned special properties, its consideration can be advantageous especially to cosmetics industry and personal care products. Along with described benefits, these oxides may also have hazardous effects on people, amphibian, and environment. Discussion of all applications and effects of metal oxide nanomaterials is very vast and cannot be cove at once. Hence, a summarized literature review of metal oxide nanomaterial's ecotoxicological effects is considered as main focus. Moreover, nanoscaled surface functionalization of these oxides will also be discussed.

Keywords

Dielectric materials; Metal oxide powder; Nanomaterials; Properties and behaviors; Structural and electronic properties; Toxicity