

Effect of Yttrium Doping on Structural, Optical and Morphological Properties of ZrO₂ Nanoparticles

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JOURNAL OF ADVANCED PHYSICS

Volumen: 5

Número: 4

Páginas: 316-323

DOI: 10.1166/jap.2016.1273

Fecha de publicación: DEC 2016

Resumen

In this study, pure and Y-doped ZrO₂ nanoparticles were prepared by a simple microwave irradiation method. The nanoparticles were characterized by thermogravimetric and differential thermal analysis (TG-DTA), X-ray diffraction (XRD), fourier transform infra-Red spectroscopy (FTIR), field emission scanning electron microscopy (FESEM), transmission electron microscopy (TEM) and energy dispersive spectrum (EDS). XRD patterns of Y-doped ZrO₂ nanoparticles confirmed the cubic structure, while FESEM results showed that the synthesized nanoparticles have polycrystalline nature and spherical morphology. TEM images of pure ZrO₂ nanoparticles showed agglomerated spherical nanoparticles with sizes that ranged between 18 and -52 nm; whereas the Y-doped ZrO₂ (15 wt%) nanoparticles showed sphere-like shape with sizes in the range of 38 and -64 nm. The optical properties of pure ZrO₂ and Y-doped ZrO₂ nanoparticles were characterized by UV-Vis diffuse reflectance (DRS) and photoluminescence (PL) spectroscopy.

Palabras clave

Palabras clave de autor: [Y-Doped ZrO₂](#); [Sphere Shape](#); [DRS](#); [Optical Properties](#)

KeyWords Plus: [MICROWAVE-ASSISTED SYNTHESIS](#); [GATE](#)

[DIELECTRICS](#); [ZNO](#); [ZIRCONIA](#); [OXIDE](#); [NANOSTRUCTURES](#); [FABRICATION](#); [ROUTE](#); [AL](#)

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Editorial

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USA

Categorías / Clasificación

Áreas de investigación:Physics

Categorías de Web of Science:Physics, Multidisciplinary

Información del documento

Tipo de documento:Article

Idioma:English

Número de acceso: [WOS:000376210400005](#)

ISSN: 2168-1996

eISSN: 2168-2003

Otra información

Número IDS: DM2XC

Referencias citadas en la Colección principal de Web of Science: **30**

Veces citado en la Colección principal de Web of Science: **0**