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Facile Hydrothermal Synthesis and Characterization of the CeO_2 Nanorings

N. Sabari Arul[1], Tae Whan Kim[1], Devanesan Mangalaraj[2]

[1]Department of Electronic Engineering, Hanyang University, Korea,
[2]Devanesan Mangalaraj and Technology, Bharathiar University, India

CeO_2 nanorings were synthesized by using a surfactant free hydrothermal method. The surface morphology, structural and optical properties of the synthesized CeO_2 was investigated by using scanning electron microscopy (SEM), X-ray diffraction (XRD), and ultraviolet-visible (UV) spectroscopy measurements. SEM images showed that the surface morphology of the formed CeO_2 appeared as nanorings. The XRD pattern of CeO_2 nanorings showed the presence of the polycrystalline CeO_2 phase readily indexed to the cubic fluorite structure of the CeO_2. The mean crystallite size of the CeO_2 was calculated using the Scherrer equation from the XRD line broadening of the (111) planes of the cubic CeO_2. The UV-Visible spectroscopy spectrum of the CeO_2 nanorings exhibited a strong UV absorption band around 350 nm.

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