Study of Structural and Optical Properties of Zirconium Oxide Nanoparticles

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**Abstract**. In present study Zirconium dioxide (ZrO2) nanoparticles (NPs) were synthesized by using the chemical method. For the synthesis of desired NPs, oleyl amine (OA) was used as a surfactant material. OA plays a crucial role in inhibiting the aggregation of ZrO2 nanocrystals. Particle surface stabilisation is facilitated by it. The average crystallite size estimated from X-ray diffraction (XRD) using Scherrer equation, to be 6.15nm. UV-vis absorption spectra in the wavelength range of 200-900 nm were obtained; energy band gap obtained approximately 2.52 eV in as prepared ZrO2 NPs. Using FT-IR, the functional group and band structure of ZrO2 were studied.

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