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Effect of Fe doping on Structural and Transport Properties of inverse spinel Zn_2TiO_4

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Abstract:Undoped and Fe(II)doped Zinc titanate samples were prepared by microwave assisted solvothermal method. Structural and optical properties were carried by XRD, SEM, EDS, FTIR, UV-Vis and Raman Spectra. Transport properties were also carried on the prepared samples. Randomly oriented rodlike nanostructures were observed from SEM studies. Fe addition was evident from the EDS profiles. FTIR and Raman Studies confirmed the Fe^{2+} ions and a slight increase of absorption were observed from Uv-Vis Spectra. Dependence of Electrical conductivity and Thermopower on Fe content and Temperature were reported in this paper. The increase of conductivity from 1.8×10^{-3} to $2.2 \times 10^{-3} \Omega^{-1}cm^{-1}$ and thermopower from 40 to 60 $\mu V/K$ with doping of Fe at room temperature was observed.

Keywords: TiO_2 , EDAX, XRD, SEM, Zinc Titanate, Photocatalyst.

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