

Enhanced magnetic and catalytic properties of copper substituted barium M-hexagonal ferrites synthesized from chemical co-precipitation method

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Discharge of organic chemicals in to the water bodies leads problems to both human and aquatic life. Barium hexaferrite is an effective catalyst in the rapid degradation of methylene blue dye. In this regard, the present study was focused on synthesis of copper substituted barium photocatalyst by co-precipitation method and the as-synthesized materials were calcined at 650 °C for 8 h to form the corresponding ferrites. The obtained ferrites were characterized by UV-DRS, Fourier Transform Infrared (FT-IR), Powder X-ray Diffraction (PXRD), Transmission Electron Microscope (TEM), Vibrating Sample Magnetometer (VSM), Brunauer-Emmett-Teller (BET) techniques to study their structural, optical and magnetic properties respectively. The results indicate the substitution of copper in barium ferrite nanomaterials strongly influences the crystal structure and magnetic properties of the synthesized nanomaterial.

Keywords: Spinel, co-precipitation, hexagonal ferrites, photocatalytic degradation.