

Synthesis and Characterization of $\text{CoFe}_2\text{O}_4/(\text{SiO}_2 - \text{CaO} - \text{P}_2\text{O}_5)$ Magnetic Bioactive Glass Nanoparticles for Biomedical Applications

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Editor's note: Magnetic bioactive glass nanoparticles (MBGs) are a promising system for targeted biomedical applications, such as bone regeneration and controlled drug delivery. Thenmozhi T. et al. synthesized MBGs composed of 60% SiO_2 , 36% CaO , and 4% P_2O_5 , with the addition of CoFe_2O_4 at concentrations of 2% (MBG2) and 4% (MBG4) for biomedical applications. Structural analysis revealed that MBG4 exhibited a 50% increase in UV absorption and a higher saturation magnetization compared to MBG2. These results suggest that incorporating up to 4% CoFe_2O_4 enhances the properties of MBGs for targeted therapies and magnetic hyperthermia.

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100nm

A petri dish containing dark, spherical nanoparticles, placed on a grid with a 100nm scale bar.