hexagonal and cubic stages with a normal crystalline size of 34 nm. FTIR demonstrates the distinctive vibrational frequencies of ZnO-MgO at 454 and 524 cm^{-1}. The SEM micrographs represented nanoparticles with a flower-like structure. The bandgap value (E_g) was found as 4.5 eV for the ZnO-MgO nanocomposite. The photocatalytic efficiency of the ZnO-MgO nanocomposite has been investigated for the photodegradation of Congo red under daylight illumination. The obtained Congo red degradation results showed good performance under solar light irradiation. The antibacterial properties of ZnO-MgO nanocomposite have been assessed versus G+ and G- bacteria. The outcomes of antibacterial performance designated that ZnO-MgO nanocomposite has bacteriostatic behavior versus Staphylococcus aureus, Aeromonashydrophila and Escherichia coli, Micrococcus luteus, Shigella, Staphylococcustyphi, Staphylococcus epidermis, Vibrio cholera, Pseudomonas aeruginosa. Furthermore, this work (ZnO-MgO nanocomposite) offers significant insights into more efficient environmental and biomedical applications. © 2024 The Author(s)

Author keywords

Metal oxide nanoparticles; Nanohybrids; Organic dye degradation; Photocatalysis

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