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ORIGINAL ARTICLE

Enhanced Sunlight driven photocatalytic performance and visualization of latent fingerprint by green mediated $ZnFe_2O_4$–RGO nanocomposite

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Abstract The present study reveals a simple and efficient method for the green reduction of graphene oxide (GO) employing *Emblica officinalis* fruit extract as a reducing agent. Here, a green sol–gel method has been reported for the preparation of $ZnFe_2O_4$ and $ZnFe_2O_4$-reduced graphene oxide (RGO) nanocomposite (NCO) using Aloe Vera extract as a capping agent. PXRD, FT-IR, SEM, TEM and HRTEM confirmed the analytical aspects of synthesized samples. The band gaps of prepared samples were estimated by UV–Vis analysis. PL quenching appears due to the interaction between the surface of the $ZnFe_2O_4$ and RGO sheets. The photoluminescence analysis indicates that the present NCO is an effective white component in display applications. The NCO was found to be an alternate to traditional luminescent powder for a safe detection and qualitative improvement of latent fingerprints deposited onto different surfaces. Further, excellent photocatalytic properties of NCO when compared to that of the commercial P25 for various other dye degradation under Sunlight can be attributed to its specific electrical properties and well connected arrangement

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