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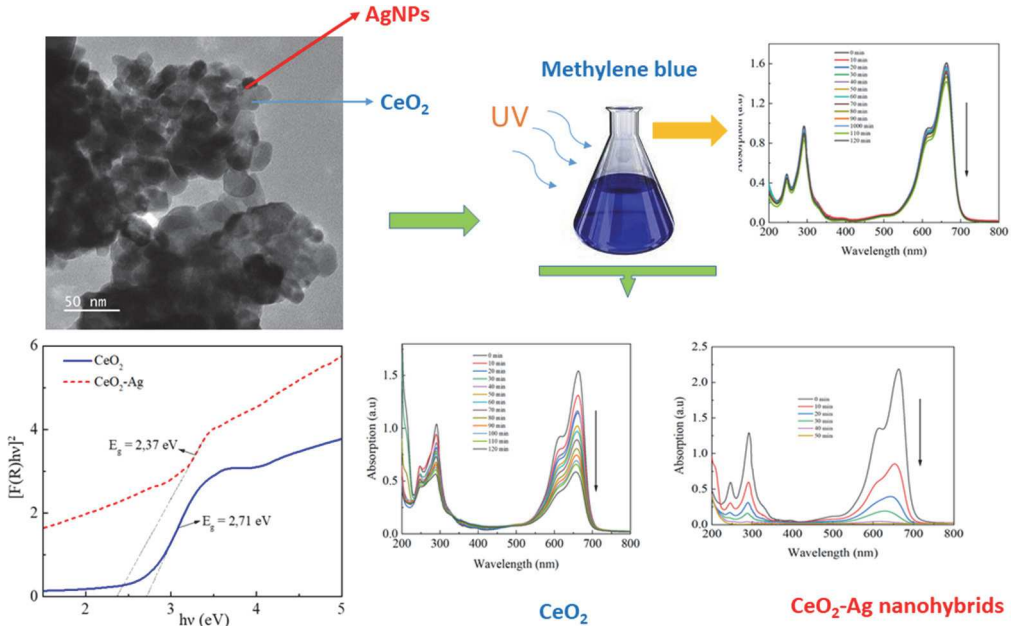
CEO_2-AG HYBRID NANOPARTICLES FOR PHOTOCATALYTIC REMEDICATION OF WASTEWATER

This study aims to explore how CeO_2-Ag hybrid nanoparticles can be used for wastewater treatment via photocatalytic degradation. CeO_2-Ag hybrid nanoparticles have been synthesized by seed-mediated growth method, via the reducing Ag^+ precursor on the as-received nano-CeO_2 using sodium borohydride in aqueous medium. Transmission electron microscope (TEM) images indicated that the AgNPs (5 nm) were deposited on the surface of nano-CeO_2 (30–40 nm). Nano-CeO_2 hybridized with AgNPs resulted in a decrease in the energy gap (Eg) of CeO_2 from 2.71 eV to 2.37 eV, as observed by diffuse reflectance UV–Vis spectrum analysis. Photocatalytic degradation tests have been examined with methylene blue (MB) solution under UV irradiation. The data showed that CeO_2-Ag nanohybrids have totally removed MB after 50 minutes of exposure to UV light radiation, while only 30% of MB was removed by nano-CeO_2 after 120 minutes under UV light irradiation.



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