Synthesis of ZnO nanoparticles through green route and its application in methylene blue dye degradation

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Zinc oxide nanomaterial, called 'ZnO-G' was synthesised by sol–gel auto combustion method using lemon juice. Synchrotron X-ray diffraction along with Rietveld refinement validated the single-phased hexagonal structure with P63mc wurtzite space group. The estimated average crystallite size of ZnO-G by Williamson–Hall plot was 24 nm and obtained particle size from field emission scanning electron microscopy was 70 nm. Energy dispersive X-ray spectroscopy confirmed the purity of ZnO-G. In the presence of sunlight, maximum photodegradation (94%) of methylene blue dye was obtained by employing ZnO-G because of photo-induced charge carriers in conduction and

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