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Surfactant assisted synthesis of cerium oxide nanoparticles and its use with Fenton oxidation for the removal of dye

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Characterization technique is a strong tool for the complete study of the prepared nanoparticles. Synthesis of cerium oxide was assisted by three different surfactants i.e., Cetyl trimethyl ammonium bromide (CTAB), Cetylpyridinium Chloride (CPC) and Sodium Dodecyl Sulfate (SDS). It was further characterized by UV-Visible, X-ray Diffractometer (XRD), scanning electron microscope (SEM), transmission electron microscope (TEM), thermal gravimetric analysis (TGA), etc. Particle size of CeO_2 lies between 2-5 nm by all three surfactant assisted method and highest yield is obtained by synthesis through SDS. Later, the catalytic activity of CeO_2 was successfully investigated in Fenton reaction for the removal of methylene blue dye.

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