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## PROMOTING EFFECT OF CERIA ON THE CATALYTIC ACTIVITY OF CeO<sub>2</sub>-ZnO POLYCRYSTALLINE MATERIALS

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### **Abstract**

A polycrystalline CeO<sub>2</sub>-ZnO catalyst was prepared by using a hydrothermal procedure in order to improve the structural properties. This polycrystalline material was then used to remove organic pollutants from aqueous solutions by the means of photocatalysis. The structural, morphological and optical properties of as-prepared materials were characterized by several techniques, such as UV-visible spectroscopy, SEM, FTIR, XRD. The SEM analysis shows that the crystallite size sample varies in the range of 0.3-2 μm. The photocatalytic activity under UV irradiation was estimated by measuring the degradation rate of aqueous solutions of methylene blue (MB, 0.01mM/L) and 4'-(1-methyl-benzimidazol-2)-phenylazo-2''-(8''-amino-1''-hydroxy-3'', 6''-disulphonic)-naphthalene acid (PMBH, 0.05mM/L). The effect of catalyst content on the photocatalytic activity was also studied. The results confirm that this material can be potentially applied for the treatment of water contaminated by organic pollutants.

*Key words:* band gap energy, CeO<sub>2</sub>-ZnO nanoparticles, photocatalytic degradation

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