

**MAGNESIUM DOPED ZINC OXIDE: SYNTHESIS,
CHARACTERIZATION AND CATALYTIC
PHOTODEGRADATION OF METHYLENE BLUE DYE
APPLICATION**

NURUL SYAZWANI BINTI ZAINUDIN

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ABSTRACT

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Pure ZnO and Mg-doped ZnO with different concentration (1 mol %, 3 mol %, 5 mol %, 7 mol% and 10 mol %) nanoparticles were synthesized with sol-gel method. The pure ZnO and Mg-doped ZnO at different concentration was characterized by using XRD, FESEM and UV-visible spectroscopy respectively. The structural characteristics were examined using XRD and SEM with EDS. XRD analysis reveals that all samples crystallizes in polycrystalline nature with wurtzite lattice and exhibit no other impurity phase. The average crystallite size decreases with increase in Mg concentration. The photocatalytic activity of Mg-doped ZnO shows that the photodegradation gradually increases with increasing the concentration of Mg dopant showing to increase the UV absorbance of ZnO nanoparticles. From the photocatalytic activity, the photodegradation constant, k is obtained and showed that the value k of pure ZnO is higher than Mg-doped ZnO.

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