

Nanocomposites and nanomaterials

Parameters affecting the photocatalytic degradation of dye Orange II using nanocomposites of MgO/ZnO-based photocatalysts

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Abstract:

MgO/ZnO nanocomposites were synthesized by a co-precipitation method and were applied to degraded an organic azo dye orange II under UV-light irradiation. X-ray diffraction reveals that all powders have been hexagonal wurtzite structure. The grains size of ZnO increased in the presence of MgO phases from 14 to 23 nm.

The effects of dosage of catalyst amount, and the temperature on the photocatalytic degradation of orange II (20mg/L) were analyzed. The best conditions for the dye decomposition by MgO/ZnO nanocomposites were found for 5 g/L dosage of catalyst at room temperature (20 C°).

Under the above conditions, nearly 81% decolorization efficiency of OII was achieved by MgO/ZnO nanocomposites within 20 min of reaction time and this efficiency was much higher than that of either pure ZnO.

Keys words: photocatalytic, MgO/ZnO, UV- light, orange II.

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