GRAPHENE OXİDE SUPPORTED ZnO AND TiO_2 NANOCOMPOSITES

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ZnO and TiO_2 are most extensively used photocatalysts in the advance oxidation processes owing to their complementary psychochemical propeties, low cost, non-toxicity and high efficacy [1]. However, poor adsorption capacity, formation of rapid aggregates in suspension systems and recycling problems limit the utilization of bare ZnO and TiO_2. Higher specific surface area and more effective adsorption sites are being elucidating advantages of using supported catalysts. The enhanced degradation rates can be attributed to the increased condensation of pollutants on the supported catalysts by adsorption and the reduced electron-hole recombination process on the surface. Therefore, in practical applications, attempts have been made to use porous adsorbent materials for supporting catalyst nanoparticles.

Graphene is a two-dimensional material, composed of single-, bi- and few- ($\leq$10) layers of carbon atoms forming six-membered rings [2]. In recent years, graphene-related materials have been used in the adsorption processes due to the large surface area and ordered layered structure. In addition, graphene oxide possesses the ability to accept the electrons from semiconductors and to prevent recombination of photo generated electron hole in semiconductor [3].

In the present study, we have attempted to synthesize graphene oxide supported ZnO and TiO_2 nanocomposite materials. The as-prepared nanocomposites were characterized by using X-Ray Diffraction (XRD) Analysis and Scanning Electron Microscopy with Enegy Disperse X-Ray Analysis (SEM-EDX). Photocataytic activity of the composites were examined for degradation process of methyl orange (MO) as a probe compound under UV irradiation.

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