

**PHOTOCATALYTIC STUDIES OF ZINC OXIDE (ZnO) / NICKEL (Ni) /  
GRAPHENE OXIDE (GO) NANOCOMPOSITE FOR THE  
DEGRADATION OF METHYL ORANGE DYE UNDER ULTRAVIOLET  
(UV) LIGHT IRRADIATION**

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## ABSTRACT

### **PHOTOCATALYTIC STUDIES OF ZINC OXIDE (ZNO) / NICKEL (NI) / GRAPHENE OXIDE (GO) NANOCOMPOSITE FOR THE DEGRADATION OF METHYL ORANGE DYE UNDER ULTRAVIOLET (UV) LIGHT IRRADIATION**

Recently, ZnO was received more attention as promising photocatalyst for the treatment of dyes an organic pollutant. However, rapid recombination of photogenerated electron hole pairs is the one of major limitation of ZnO that can be influenced on the photocatalytic activity efficiency. In this study, modification of ZnO by co-doped with nickel (Ni) and graphene oxide (GO) at variation weight of 0.1 to 0.4 g can increase the efficiency of photocatalytic activity. The evaluation of photocatalytic activity has been done using methyl orange dye at concentration of 10mg /L under UV light irradiation. Moreover, recyclability of the highest efficiency photocatalyst also has been tested. Results indicate that ZnO / Ni / GO<sub>0.4g</sub> photocatalyst exhibits the highest percentage of photodegradation of 74.06 % and photodegradation rate constant, k of 0.0201 min<sup>-1</sup> for degradation of methyl orange for 60 min under UV irradiation. The present of GO as co-doped to ZnO described the contribution for enhancement of photocatalytic activity due to increasing of photogenerated electron-hole pair period during photocatalysis process. Also, this photocatalyst also can maintain 59.60 % of percentage photodegradation after five cycles in the recyclability test due to great photostability.