

**OPTIMIZATION OF ACID ORANGE 7
DEGRADATION IN HETEROGENEOUS FENTON-
LIKE USING $\text{Fe}_{3-x}\text{Co}_x\text{O}_4$ CATALYST**

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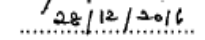
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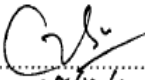
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ABSTRACT

The oxidation process such as heterogeneous Fenton and/or Fenton-like reactions were considered as an effective and efficient method for treatment of dye degradation. In this study, the degradation of Acid Orange 7 (AO7) was investigated by using $\text{Fe}_{3-x}\text{Co}_x\text{O}_4$ as a heterogeneous Fenton-like catalyst. Response surface methodology (RSM) was used to optimize the operational parameters condition and the interaction of two or more parameters. The parameter that have been studied were catalyst dosage (X_1), pH (X_2) and H_2O_2 concentration (X_3) towards AO7 degradation. Based on analysis of variance (ANOVA) analysis, the derived quadratic polynomial model was significant whereby the predicted values matched the experimental ones reasonably well with regression coefficient of $R^2 = 0.9399$. Through the optimization study, the optimum condition for AO7 degradation was obtained at catalyst dosage of 0.84 g/L, pH of 3.14 and H_2O_2 concentration of 46.70 mM which resulted in 86.30% removal of AO7 dye. These findings present new insights into the influence of operational parameters in the heterogeneous Fenton-like oxidation of AO7 using $\text{Fe}_{3-x}\text{Co}_x\text{O}_4$ catalyst.