

**EFFECT OF CALCINATION TEMPERATURE
ON THE CATALYTIC ACTIVITY OF COBALT
FERRITE CATALYST**

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AUTHOR'S DECLARATION

I declare that the work in the thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the results of my own, unless otherwise indicated or acknowledge as reference work.

I, hereby acknowledge that I have been supplied with the Academic Rules and Regulations, Universiti Teknologi MARA, regulating the conduct of my study and research.

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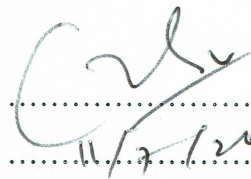
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We declared that we read this thesis and in our point of view this thesis is qualified in terms of scope and quality for the purpose of awarding the Bachelor of Chemical Engineering (Environment) with Honours.

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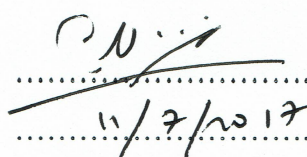
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ABSTRACT

Calcination process is considered as an important step in the preparation of catalyst. The calcination temperature determine resultant catalyst phase which influence the catalyst properties and overall catalytic performance. The calcination temperature also influence the crystalline stage, crystallite size or surface zone of catalyst. The objective of this study was to determine the effect of calcination temperature on the catalytic activity of cobalt ferrite on degradation of Acid Orange 7 dye and to determine the effect of calcination temperature on physico-chemical properties of cobalt ferrite. The cobalt ferrite catalyst were synthesized through co-precipitation methods and resultant catalyst characterized by N₂ sorption and thermal gravimetric analysis (TGA). From N₂ sorption result it showed that the BET surface area decreasing as calcination temperature increase. While the pore diameter of the catalyst increase as temperature increase but decrease drastically when calcine above 600°C as sintering of the catalyst occur. The thermal gravimetric analysis (TGA) result showed weight loss around 4% at the temperature range of 50–150 °C was due to the evaporation of absorbed water stage .For temperature range from 150 °C- 650°C there was no weight percentage detected as the graph showed constant pattern for all cobalt ferrite catalyst sample. This is resulting from the phase transformation of cobalt ferrite catalyst and finally at temperature above range between 650°C – 800°C almost no weight loss was observed as pure cobalt ferrite form. All catalyst sample show different catalytic activity regarding on the degradation of Acid Oranges 7 dye. The result showed uncalcine catalyst produced higher percentage degradation of Acid Oranges 7 dye compared with calcine catalyst.