SYNTHESIS OF Fe(III)/ZnO AS COMPOSITE CATALYST USING CO – PRECIPITATION METHOD FOR SONOCATALYTIC DEGRADATION IN TEXTILE WASTEWATER TREATMENT

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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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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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ABSTRACT

Composite catalyst, Fe(III)/ZnO) were synthesized by using co - precipitation method and analyzed in the degradation of textile wastewater treatment. The results from the chemical and physical properties shown that it were successfully prepared. The characterizations of the composite catalyst and the effect of ultrasonic irradiation in dyes degradation have been studied. Three systems were carried out in order to determine the feasibility of the composite catalyst.There were sonocatalytic without catalyst (US), sonocatalytic with ZnO catalyst (US + ZnO) and sonocatalytic with composite catalyst, (US + Fe(III)/ZnO). The reactions were conducted in an ultrasonic bath with 50 kW and 35 ppm of dye concentration. 1 g/L of catalyst dosage added into the dye solution and the experiments carried out up to 120 minutes. The percentage of dye degradation between the bare catalyst, ZnO is 12% compared to composite catalyst. Composite catalyst, Fe(III)/ZnO has the higher performance (62%) in dye degradation. This shows that the composite catalyst can potentially be effective catalyst compared to ZnO for dye degradation in the textile wastewater treatment.