

**ELECTROCOAGULATION PROCESS FOR
REMOVAL OF EMULSION OIL USING ZINC
ELECTRODE VIA RESPONSE SURFACE
METHODOLOGY**

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**BACHELOR OF CHEMICAL ENGINEERING
(ENVIRONMENT) WITH HONOURS**

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EMULSION OIL USING ZINC ELECTRODE VIA
RESPONSE SURFACE METHODOLOGY**

By

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ABSTRACT

Emulsion oil is two immiscible liquids that need to be treated before being discharged to the receiving water. It can lead to environmental problem, effect human health and inhibit plant process. There are several ways to treat emulsion oil from wastewater such as chemical, biological, mechanical, membrane and electrochemical process. Among those process. electrocoagulation process is the most suitable process to treat emulsion oil from wastewater. This study was carried out to evaluate the effect of pH, voltage and reaction time on emulsion oil removal efficiency using zinc electrode and to determine the optimum condition for electrocoagulation process to remove oil using RSM approach. Based on Central Composite Design (CCD) method, 20 experiments were designed to evaluate the response on emulsion oil removal efficiency via Design Expert 13 software. From this study, the capability of zinc electrode and the effect of operating parameter such as pH, voltage and reaction time on emulsion oil removal efficiency could be evaluated. Based on the result, 100% emulsion oil removal efficiency and 99.4% of COD removal efficiency were achieved at pH of 8.9, applied voltage of 2.13 V and 28.84 minutes of reaction time. Thus, it can be concluded that the EC process using Zinc electrode was an effective technology in treating the emulsion oil wastewater.