

**DEACIDIFICATION OF PETROLEUM CRUDE OIL BY USING  
2-METHYLIMIDAZOLE WITH THE AID OF Ca/Cu/Al<sub>2</sub>O<sub>3</sub> CATALYST**

**MUHAMMAD AMIRRUL HAKIM BIN LOKMAN NOLHAKIM**

**Final Year Project Report Submitted in  
Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science (Hons.) Chemistry  
In the Faculty of Applied Sciences  
Universiti Teknologi MARA**

**JANUARY 2017**

## ABSTRACT

### **Deacidification Petroleum Crude Oil Utilizing 2-methylimidazole with Aid of Cu/Ca(10:90)/Al<sub>2</sub>O<sub>3</sub> Catalyst**

The naphthenic acids (NA) found in petroleum may cause serious corrosion problems for processing equipment. To reduce total acid number (TAN) from crude oil sample, catalytic deacidification with the aid of Cu/Ca/Al<sub>2</sub>O<sub>3</sub> catalyst and 2-methylimidazole was introduced. Catalytic deacidification is a method to reduce TAN and reduce the NA concentration on the acidic crude oil sample from PETRONAS Penapisan Melaka with the original TAN of 2.43 mg KOH/g. A basic chemical with dosing 9% of 2-methylimidazole in ethanol solution was used as the acid removal agent. Calcium oxide based catalyst supported onto alumina prepared with different calcination temperature of 900°C, 1000°C and 1100°C. FTIR, TGA-DTG and XRD was used for potential catalyst to observed the physicochemical properties. The result shows TAN reduction from 2.43 mg KOH/g to 0.2 mg KOH/g which 92% reduction for PETRONAS Penapisan Melaka crude oil using Cu/Ca/Al<sub>2</sub>O<sub>3</sub> catalyst calcined at 1000°C, 0.4% of catalyst loading (3 beads), reaction temperature at 27°C and 10 minutes reaction times. The catalyst have the small particle size that provide bigger surface area to enhance the catalytic performance which remove the NA in the PETRONAS Penapisan Melaka crude oil and as a conclusion the TAN value can achieved below than 1 mg KOH/g.

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