

## **Novel palm oil based polyols with amine functionality synthesis via ring opening reaction of epoxidized palm oil**

### **ABSTRACT**

In polymer chemistry, polyol usually used as starting materials for polyurethane (PU) production in which upon reacted with isocyanate will affect the physical and chemical properties of the obtained PU. Polyols that are mostly derived from petrochemical resources are facing issues such as depletion of petroleum sources as well as the increasing in market price. Ring opening reaction (ROR) of epoxidized palm oil (EPO) had been carried out using isopropanolamine (IPA) to impart polyol with amine functionality. The effect of reaction time on the opening of oxirane ring was investigated. FTIR spectra showed that the oxirane ring opening of EPO can occur at 6 hours reaction time, corresponding to the decreasing intensity of oxirane COO twin band at 824-830  $\text{cm}^{-1}$ . The OH value of the amine- functionalized-polyol was calculated at around 240-253 mg KOH/g. By prolonging the reaction time the OH value has slightly reduced. Mass spectroscopy analysis revealed that the polyol has a molecular weight in the range of oligo-polyols (400 – 500 Da).