

## **Synthesis and characterization of polyurethane thin film from palm oil-based polyol**

### **ABSTRACT**

The depleting resource of petroleum has driven the exploration of the production of polyurethane (PU) films for coatings, sealant and adhesives from non-petroleum based polyol as the raw material. In this study, palm oil polyol (PO-p) was used to produce PU films with various formulation namely PU1, PU2, PU3 and PU4 using pre-polymer process. The polyol to isocyanate ratio was fixed between 1:0.6 and 1:0.5 to results in hard and rigid films as well as soft and flexible PU films. The polymerization reaction was monitored using fourier transform infra-red Spectroscopy and it was found that the peak correspond to NH, C=O and C-N stretching of urethane linkage appear in all the PU films. The surface morphology of the PU films under Scanning Electronic Microscopy (SEM) shows that the rigid films has non-homogen surface while the soft films has homogen surface with difference pore size. Meanwhile, the soft and flexible PU films has high water absorptivity which has the potential to be used as water resistant coating.