|  |
| --- |
| **SYNTHESIS AND CHARACTERIZATION OF POLYURETHANE ACRYLATE JATROPHA OIL ELECTROLYTE BY UV IRRADIATION TECHNIQUE** |
| Tuan Syarifah Rossyidah Tuan Naiwi1, Min Min Aung1,2\*  *1Department of Chemistry, Faculty of Science,*  *2Institute of Tropical Forestry and Forest Products, University Putra Malaysia, 43400 UPM Serdang, Selangor, Malaysia*    *\*Corresponding author: minmin\_aung@upm.edu.my* |
| Biopolymer electrolyte based on Jatropha curcas L. oil has been prepared by doping with lithium salt via UV irradiation technique. The biodegradable polymer electrolyte films which were synthesized from jatropha oil through the ultraviolet radiation and their stability against thermal degradation was studied. Polyurethane acrylate jatropha oil (PUAJO) has been carried out by epoxidation, hydroxylation and introducing isocyanate and hydroxylethylmethylacrylate (HEMA) in urethanation process. The reaction was confirmed by analytical data in terms of oxirane oxygen content, acid value, hydroxyl value and spectral analysis by Fourier Transform Infrared (FTIR) and Nuclear Magnetic Resonance (NMR). Further, different concentration of lithium salt in PUAJO was investigated. The effect of lithium salt was analysed by FTIR, Electrochemical Impedance Spectroscopy (EIS) and Thermogravimetric Analysis (TGA). Hexanediol diacrylate (HDDA) bifunctional monomer were used as crosslinkable active diluent and Darocure was used as photoinitiator. The mixtures were cured to make thin polymeric films under UV radiation with optimum irradiation dosing time to produce excellent cured films which exhibits good thermal stability and obtaining high ionic conductivity value. |
| **Keywords**: Polyurethane acrylate, jatropha oil, UV irradiation, Impedance analysis, FTIR, NMR |