

**LIGNIN AND CELLULOSE WOOD FOR  
POLYMERIC ELECTROLYTE**

**KOD PROJEK 03-01-10-SF0007**

**FAUZIAH BINTI HAJI ABDUL AZIZ**

**PROGRAM FIZIK DENGAN ELEKTRONIK  
SEKOLAH SAINS DAN TEKNOLOGI  
UNIVERSITI MALAYSIA SABAH**

**2009**



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## SYNOPSIS

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FT-IR Spectroscopy, XPS and XRD works have been used to characterize lignin and cellulose from several hardwoods of Sabah. The FT-IR has revealed that all of the five hardwoods lignin had a common pattern of spectra, but only the Kapur and Belian lignin have shown lower intensities of bands compared to the Keranji, Merbau and Nyatoh lignin between 3460 – 1300 cm region. All lignin have shown a broad band at 34100-3460 cm, attributed to the hydroxyl groups in phenolic and aliphatic structures (OH stretching).

Solid polymer electrolytes (SPE) produced using lignin / cellulose sample - was partially dissolved in the THF solvent and prior to blend with ENR-50 rubber. Ionic conductivity measurements at various temperatures were also obtained over the range of 25-80<sup>0</sup>C. The electrochemical stability of polymer electrolytes were also obtained; impedance measurement were taken for several days. Ionic conductivity were also determined. DSC analyzer was used to determine thermal properties of the polymer electrolyte samples. All samples display a single glass transition temperature, T<sub>g</sub>. The changes T<sub>g</sub> values were observed when different weight per cent of Li salt and lignin/cellulose added into the systems

