

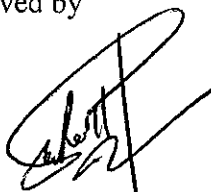
**CONDUCTIVITY, THERMAL BEHAVIOUR AND FTIR STUDIES
ON DIFFERENT MODIFIED NATURAL RUBBERS**

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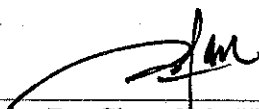
**BACHELOR OF SCIENCE (Hons.)
CHEMISTRY
FACULTY OF APPLIED SCIENCES
UNIVERSITI TEKNOLOGI MARA**

APRIL 2009

This Final Year Project Report entitled “**Conductivity, Thermal Behaviour and FTIR Studies on Different Modified Natural Rubbers**” was submitted by Nur Atiqah binti Hamidun, in partial fulfillment of the requirements for the Degree of Bachelor of Sciences (Hons.) Chemistry in the Faculty of Applied Sciences, and was approved by



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Date: 06 MAY 2009

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ABSTRACT

CONDUCTIVITY, THERMAL BEHAVIOUR AND FTIR STUDIES ON DIFFERENT MODIFIED NATURAL RUBBERS

Epoxidized natural rubbers (ENR-25 and ENR-50), methylated grafted natural rubbers (MG-30 and MG-49) and deproteinized natural rubber (DPNR) doped with 0 - 30 wt % of LiClO_4 were prepared by solution casting technique. Thermal stability (T_d) and glass transition temperature (T_g) of all the rubber samples were investigated by Thermogravimetric Analysis (TGA) and Differential Scanning Calorimetry (DSC), respectively. Quantities T_d show that ENR-25 and ENR-50 are thermally more stable than that of DPNR, MG-30 and MG-49. The T_g values of all the rubber samples show no significant variation with ascending salt content after 5 wt % of LiClO_4 added. Ionic conductivity (σ) studied by impedance spectroscopy show that MG-49 and ENR-25 exhibit higher σ values of 8.8×10^{-8} and $9.5 \times 10^{-8} \text{ S cm}^{-1}$ than MG-30 and ENR-50, respectively. ATR-FTIR was applied to examine the ion-dipole interactions between the LiClO_4 salt and the rubber samples. It is observed that the Li^+ ions preferentially coordinated to the epoxy oxygen of the ENR. For MG-30 and MG-49, the Li^+ ions are mainly coordinated to the C-O and the C=O of the ester groups.