

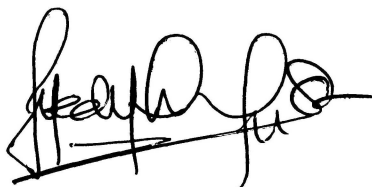
**EFFECTS OF TREATED FIBER ON MECHANICAL PROPERTIES OF  
THERMOPLASTIC NATURAL RUBBER,  
POLYSTYRENE/NATURAL RUBBER**

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**Final Year Project Report Submitted in  
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in the Faculty of Applied Sciences  
Universiti Teknologi MARA**

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## ABSTRACT

### THE EFFECTS OF TREATED FIBER ON MECHANICAL PROPERTIES OF THERMOPLASTIC NATURAL RUBBER, POLYSTYRENE/NATURAL RUBBER

The effects of treated fiber on mechanical properties of thermoplastic natural rubber which is polystyrene/natural rubber were ascertained. Treated fibers were respect to fiber surface modification. Silane coupling agent, 3-(Trimethoxysily) propyl methacrylate with commercial name Silane A-174 and also sodium hydroxide, NaOH were utilized in surface modification. The effects of treated fibers on tensile strength, young modulus, breaking elongation and impact strength of different composites were determined. The evaluation was done by comparing the mechanical properties of treated composites versus untreated composites. Composites had different fiber loading started from 10%, 15%, 20% and 25%. The composites were prepared by blending oil palm fiber with the thermoplastic natural rubber at 200°C with rotor speed 40 rpm according to ratio. The standard size of specimens were tested using Testometric Tensile Tester (Micro 500) and Ray-Ran Impact Tester with ASTM D638 and ASTM D256 respectively. Results showed that impact strength and tensile strength of treated composites were enhanced which contributed by the better chemical and mechanical bonding. Only silanated composites enhanced the young modulus while NaOH treated was not. The breaking elongation showed that both treatment possessed higher elongation than untreated one.