

**EPOXIDIZED NATURAL RUBBER-BASED NANOSTRUCTURED
POLYMER BLENDS**



**INSTITUT PENGURUSAN PENYELIDIKAN
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM, SELANGOR
MALAYSIA**

DISEDIAKAN OLEH :

CHAN CHIN HAN

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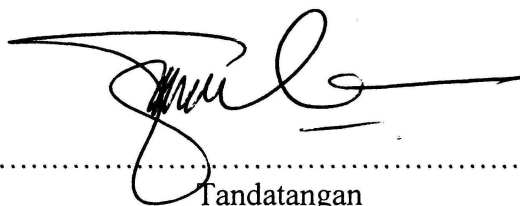
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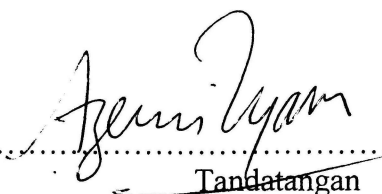
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PROF. DR. MOHAMAD KAMAL HARUN
Ahli



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Tandatangan

PROF. MADYA DR. AZEMI SAMSURI
Ahli



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Tandatangan

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Abstract

Blends of poly(3-hydroxybutyrate-co-3-hydroxyvalerate) (PHBV) with 12 mol% hydroxyvalerate (HV) content and epoxidized natural rubber (ENR) with 50 mol% epoxidation level were studied along with the thermal properties and morphologies. Glass transition temperatures reveal immiscibility of the polymers over the entire composition range. The equilibrium melting point (T_m^0) of PHBV in blends was determined applying Hoffman-Weeks step-wise annealing procedure. There is no significant variation of T_m^0 for PHBV with blend composition. Also the crystallinity of PHBV stays approximately constant in the blends, only a slight decrease might be recognized with increasing ENR content. The rate of crystallization of PHBV decreases with PHBV content according to a power law. Morphological studies by polarizing optical microscopy reveal a fine intraspherulitic dispersion of ENR in volume-filling PHBV spherulites, which develop during isothermal crystallization.

Keywords: isothermal crystallization, morphology, poly(3-hydroxybutyrate-co-3-hydroxyvalerate), epoxidized natural rubber