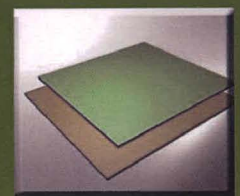


# ADVANCES IN COMPOSITE MATERIALS

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Iskandar Idris Yaacob  
Md Abdul Maleque  
Zahurin Halim



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INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA

# **ADVANCES IN COMPOSITE MATERIALS**

**Iskandar Idris Yaacob  
Md Abdul Maleque  
Zahurin Halim**



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# Table of Content

<b>Chapter 1</b>	1
A Critical Review of Metal Matrix Composite Brake Rotor	
	<i>Md Abdul Maleque</i>
<b>Chapter 2</b>	7
Technology of Moulding for Composite Auto Brake Rotor	
	<i>Md Abdul Maleque</i>
<b>Chapter 3</b>	13
Fabrication of Nickel Aluminide (Ni <sub>3</sub> Al) by Hot Isostatic Pressing (HIP)	
	Faizal Abu Zarim, Iraj Alaei, I.I. Yaacob
<b>Chapter 4</b>	17
Investigation of Mechanically Alloyed Nd-Fe-B Powder	
	I.I. Yaacob and H.K. Jun
<b>Chapter 5</b>	23
Synthesis And Characterization Of Nanocrystalline Ni <sub>3</sub> Al Intermetallic Produced by Mechanical Alloying And Reaction Synthesis	
	<i>R. Ismail and I.I. Yaacob<sup>b</sup></i>
<b>Chapter 6</b>	29
The Effect of Hard Nanofillers on Mechanical Properties of PVC Nanocomposites	
	<i>Noorasikin Samat, Muhammad Alif Mohd Yusoff and Mohd Shahrul Rizal Bin Zakaria</i>
<b>Chapter 7</b>	34
Fatigue Fracture Mechanism of PVC/CaCO <sub>3</sub> nanocomposite	
	<i>Noorasikin Samat, Alan Whittle and Mark Hoffman</i>
<b>Chapter 8</b>	40
Mechanical Behaviour of Eco Core Composite Sandwich Structure	
	<i>Norhasnidawani Johari Safiyah Hazwani Abd. Rahim and Zahurin Halim</i>
<b>Chapter 9</b>	45
Characteristics of Oil Palm Biomass via Mixture of Empty Fruit Bunch (EFB) Fiber and Mesocarp Fiber	
	<i>Zahurin Halim, Nabiha Mohd Noh and Nurshazana Mohamad</i>
<b>Chapter 10</b>	49
Mechanical Behaviour of Oil Palm Empty Fruit Bunch (OPEFB) Alumen-Composites Concrete	

*Afiqah Omar, Nur Humairah A. Razak and Zuraida Ahmad*

<b>Chapter 11</b>	55
The Influence of Biopolymer and Natural Fiber on the Physical and Mechanical Properties of Cement Composite	
<i>Norshahida Sarifuddin and Zuraida Ahmad</i>	
<b>Chapter 12</b>	62
Thermal and Morphological Study of Biopolymer Cotton-Albumen Clay (BCAC) Composites	
<i>Zuraida Ahmad, Teoh Swin Le and Kumaran A/L Samannamuthaliar</i>	
<b>Chapter 13</b>	68
Effect of Compaction Time on the Properties of Coir Fiber Reinforced Cement-Albumen Composite	
<i>Amir Zakwan Roslin, Nur Humairah A. Razak and Zuraida Ahmad</i>	
<b>Chapter 14</b>	74
Oil Palm Empty Fruit Bunch (OPEFB) for Lightweight Composites Concrete	
<i>Afiqah Omar, Nur Humairah A. Razak and Zuraida Ahmad</i>	
<b>Chapter 15</b>	80
Fabrication of Metal Matrix Composite Automotive Brake Rotor (Part 1)	
<i>Md Abdul Maleque</i>	
<b>Chapter 16</b>	86
Fabrication of Metal Matrix Composite Automotive Brake Rotor (Part 2)	
<i>Md Abdul Maleque</i>	
<b>Chapter 17</b>	90
Wear of Aluminium Matrix Composite – Effects of Reinforcement Combination	
<i>Md Abdul Maleque and Rezaul Karim</i>	
<b>Chapter 18</b>	96
Mechanical Properties of Wood Plastic Composites	
<i>Ooi Chong Jin and Shahjahan Mridha</i>	
<b>Chapter 19</b>	101
Properties of Wood Fiber Reinforced Polypropylene Composite	
<i>Shahjahan Mridha and Nafis Sarwar Islam</i>	

<b>Chapter 20</b>		108
The effects of chemical and mechanical treatments on coir fibre to mechanical properties of coir-albumen-concrete		
	<i>Zuraida Ahmad and Nurizan Omar</i>	
<b>Chapter 21</b>		114
Architecture of Chopped Fiber Glass in Plastic Composite Processed Under Different Loads		
	<i>Ahmed Nazrin Md Idriss and Shahjahan Mridha</i>	
<b>Chapter 22</b>		119
Variation of Fiber Architecture on Loads applied in Fabrication of Epoxy/Woven Fiber Glass Composite		
	<i>Ahmed Nazrin Md Idriss and Shahjahan Mridha</i>	
<b>Chapter 23</b>		125
Impact Behavior of Carbon/ Epoxy Composite in Moisture and Temperature environments		
	<i>Shahjahan Mridha</i>	
<b>Chapter 24</b>		132
Impact Strength Behaviour of the Woven and Chopped Fiber Glass Composites at Different Temperatures		
	<i>Ahmed Nazrin Md Idriss and Shahjahan Mridha</i>	
<b>Chapter 25</b>		138
An Investigation of Hybrid Composites Tubes Subjected to Quasi-Static Loading		
	<i>Farrah Yussof<sup>1</sup> and Zuraida Ahmad</i>	
<b>Chapter 26</b>		144
Mechanical Behaviour of Biopolymer Cotton Albumen Clay (BCAC) Composites		
	<i>Teoh Swin Le, Kumaran A/L Samannamuthaliar and Zuraida Ahmad</i>	
<b>Chapter 27</b>		150
The Effect of Processing Parameters on Tensile Properties Empty Fruit Bunch (EFB) Fiber Reinforced Thermoplastic Natural Rubber Composites		
	<i>Noor Azlina Hassan, Norita Hassan, Sahrim Hj. Ahmad and Rozaidi Rasid</i>	
<b>Chapter 28</b>		155
Manganese Doped Hydroxyapatite Powder through Hydrothermal Method		
	<i>Asep Sofwan Faturohman, Alqap, Iis Sopyan and Niur Izzati Mazmaa</i>	

<b>Chapter 29</b>	161
Synthesis and Characterization of Sol-Gel Method Derived Zinc Doped Hydroxyapatite Powder	
<i>Asep Sofwan Faturohman Alqap, Nor Hidayu and Iis Sopyan</i>	
<b>Chapter 30</b>	167
Synthesis and Characterization of Nickel Iron–Silicon Nitride Nanocomposite	
<i>Iskandar I. Yaacob</i>	
<b>Chapter 31</b>	172
Fabrication of Nickel Aluminide Intermetallic-Alumina Nanocomposite	
<i>Roslina Ismail and Iskandar I. Yaacob</i>	
<b>Chapter 32</b>	178
Investigation on the Effect of Water Immersion on Cotton Albumen Composite	
<i>Zahurin Halim, Zuraida Ahmad and Fauziah Md Yusof</i>	
<b>Chapter 33</b>	182
Numerical and Experimental Investigation of Peel Strength of Composite Sandwich Structures	
<i>Zahurin Halim , Shahnor Basri and Mohd Ramli Ajir</i>	
<b>Chapter 34</b>	190
Finite Element Analysis of Interlaminar Stresses in Edge Delamination	
<i>Zahurin Halim and Meor Mohd. Adli Taib</i>	

# The Effect of Processing Parameters on Tensile Properties of Empty Fruit Bunch (EFB) Fiber Reinforced Thermoplastic Natural Rubber Composites

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**Keywords:** Empty fruit bunch, TPNR, processing parameters.

**Abstract:** The effect of processing parameters on tensile properties of thermoplastic natural rubber (TPNR) composite filled empty fruit bunch (EFB) fiber have been investigated. These samples were prepared at various processing conditions (mixing temperature, mixing speed and mixing time). The TPNR matrix was prepared using melt blending method from NR:LNR:PP (20:10:70) in Thermo Haake 600p internal mixer. The results from tensile test showed that the optimum processing conditions were obtained at 175<sup>o</sup>C, 17 rpm with 12 minutes processing time and the maximum strength were obtained at 15% fiber loading.

## Introduction

The used of lignocellulosic material as replacement in composites is currently generating much interest in most application. Lignocellulosic-derived fillers have many advantages compared to inorganic fillers. The advantages of natural filler receiving increasing attention for industrial application due to cost effectiveness, low density, high specific strength, biodegradability and free from health hazards [1,2]. These materials have greater deformability, flexibility during processing and derived from renewable resources [3].

In general, mechanical properties of the composites basically depend on strength and modulus of the fillers, strength and toughness of the matrix and efficiency of interfacial stress transferred [8]. Hottutowa et al. have found that stiffness, hardness and dimensional stability of plastic could be improved by incorporation of these types of filler [4]. Several of functional group available in the organic filler can be used to modify the filler chemically to improve the compatibility between the filler and the matrix [5].

This chapter discusses various processing parameters (mixing temperatures, mixing speeds, total processing times and the % fiber loading.