

**THE MECHANICAL PROPERTIES OF GRAPHENE REINFORCED
POLYSTYRENE**

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**BACHELOR OF CHEMICAL ENGINEERING
UNIVERSITI MALAYSIA PAHANG**

**THE MECHANICAL PROPERTIES OF GRAPHENE REINFORCED
POLYSTYRENE**

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for the award of the degree of
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SUPERVISOR'S DECLARATION

We hereby declare that we have checked this thesis and in our opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Chemical Engineering.

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STUDENT'S DECLARATION

I hereby declare that the work in this thesis is my own except for quotations and summaries which have been duly acknowledged. The thesis has not been accepted for any degree and is not concurrently submitted for award of other degree

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Dedicated to My Parents,

Dr Shaiful Zaidi,

And all of my friends,

Without whom none of my success would be possible

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LIST OF SYMBOLS

$2D$	Two dimensional
D	Diameter
d	The spacing between diffraction lattice planes
EY	Elastic Modulus
K_{ic}	Fracture toughness
L	Length
MPa	mega pascal
n	Positive integer
Rpm	Round per minute
λ	The wavelength of incident
π - π <i>stacking</i>	pi-pi bonding
θ	The measured diffraction angle

LIST OF ABBREVIATIONS

ASTM	American Society for Testing and Materials
CNT	Carbon NanoTube
CVD	Chemical Vapour Deposition
FESEM	Field Emission Scanning Electron Microscopy
GFNs	Graphene Family Nanocomposites
GO	Graphene Oxide
GPS	Graphene Polystyrene Nanocomposite
IUPAC	International Union of Pure and Applied Chemistry
PAA	Polyacrylic acid
PAN	Polyacrylonitrile
PE	Polyethylene
PMMA	Polymethylmethacrylate
PS	Polystyrene
PVA	Polyvinyl alcohol
PVF	Polyvinyl fluoride
rGO	Reduced Graphene Oxide
SAN	Styrene Acrylonitrile
SEM	Scanning Electron Microscopy
TEM	Transmission Electron Microscopy
XRD	X-ray diffraction