THE PREPARATION AND OPTIMIZATION OF CNTs/PVA COMPOSITE THIN FILM FOR MILD STEEL COATING APPLICATION
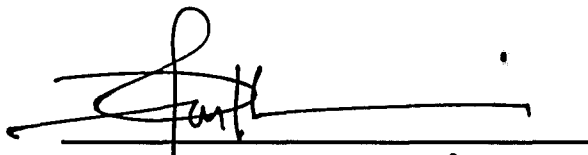
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Final Year Project Report Submitted in
Partial Fulfillment of the
Requirements for the
Bachelor of Science (Hons.) Physics
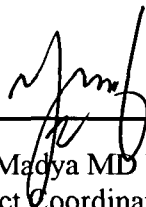In The Faculty of Applied Science
Universiti Teknologi Mara

JUN 2012

This Final Year Project entitled "**The Preparation And Optimization Of CNTs/PVA Composite Thin Film For Mild Steel Coating Application** " was submitted by Noor Mohd Ashraf Affendy B.Ibrahim, fulfillment of the requirement for the Degree of Bachelor of Sciences (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by

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ACKNOWLEDGEMENT

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ABSTRACT

THE PREPARATION AND OPTIMIZATION OF CNTs/PVA COMPOSITE THIN FILM FOR COATING APPLICATION

Carbon nanotubes and polyvinyl alcohol (CNTs/PVA) nanocomposite were prepared by using sol-gel method and thin film was prepared by using spin coating technique on mild steel substrate. Sol-gel is a convenient technique used for the production of nanocomposite aqueous solution and spin coating is a simple method that is widely used for producing a very thin organic thin film. Five samples were prepared at the different concentration of CNTs/PVA to verify the corrosion rate application. The samples were then characterized by Field Emission Scanning Electron Microscopy (FESEM) and Atomic Force Microscopy (AFM) obtaining the structural properties, surface morphology and topography of samples. Raman spectroscopy was used to determine the microraman spectra of CNTs which showed the crystalinity and purity of samples. Finally, corrosion test was done to measure the corrosion rate of samples at the different concentration of CNTs/PVA nanocomposite. Based on the work, sample with 0.03g CNTs likely the optimum sample which suitable for coating application.