

**PREPARATION AND CHARACTERIZATION OF HYBRID TiO₂/PVA
NANOFIBER BY ELECTROSPINNING**

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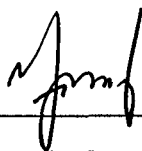
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This Final Year Project Report entitled “**Preparation and Characterization of hybrid TiO₂/PVA nanofiber by electrospinning**” was submitted by Noor Amalina binti Ahmad, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by



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ABSTRACT

PREPARATION AND CHARACTERIZATION OF HYBRID TiO₂/PVA NANOFIBER BY ELECTROSPINNING

In this study, the hybrid TiO₂/PVA nanofiber by electrospinning technique was successfully synthesized. The TiO₂ particle was prepared by sol-gel method and heated at 800°C for three hours. The size of TiO₂ particle was not even and bigger. Other than that, the TiO₂ particle was also agglomerate. The size of TiO₂ particle was approximate 818.8 nm. The solution concentrations of PVA was prepared at various solution concentrations which were 6 wt%, 7 wt%, 8 wt%, 9 wt% and 10 wt%. All the PVA solution has been electrospin to produce nanofiber and investigate the relationship between the solution concentration of PVA and the diameter of nanofiber produced by electrospinning technique. The average diameter at the lowest concentration (6 wt%) was at 147 nm whereas at the highest concentration (10 wt%) was at 253 nm. It showed that the diameter of PVA nanofiber influenced by the solution concentration of PVA. The hybrid TiO₂/PVA solution was prepared by dissolving the TiO₂ particle with the PVA solution at 10 wt%. The hybrid TiO₂/PVA solution was prepared at several concentrations which were 1 wt%, 3 wt% and 5 wt% and has been electrospin to produce nanofiber. It showed that as the TiO₂ particle loaded in the PVA nanofiber increased, the size of the nanofiber decrease from 300 nm to 279 nm from 1 wt% to 5 wt%. The characterization was carried out by XRD, FESEM, EDX and Image J in this study.