A STUDY OF STRUCTURAL AND PHYSICAL PROPERTIES OF PMMA/TiO_2 COMPOSITE POLYMER

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A study of structural and physical properties of pva/tio2 composite polymer / Mohd Khazimie Mahsan.

Lihat sebelah

A STUDY OF STRUCTURAL AND PHYSICAL PROPERTIES OF PVA/TiO_2 COMPOSITE POLYMER

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk A STUDY OF STRUCTURAL AND PHYSICAL PROPERTIES OF PVA/TiO2 COMPOSITE POLYMER oleh MOHD KHAZIMIE BIN MAHSAN no. matrik: UK14283 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Gunaan (Fizik Elektronik & Instrumentasi), Fakulti Sains dan Teknologi, UMT.

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DECLARATION

I hereby declare that this thesis entitled A Study Of Structural And Physical Properties

Of Pva/Tio2 Composite Polymer is the result of my own research except as cited in the references.

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A STUDY OF STRUCTURAL AND PHYSICAL PROPERTIES OF PVA/TiO_2 COMPOSITE POLYMER

ABSTRACT

Polyvinyl alcohol (PVA) is one of the promising representatives of polymeric material. There are numerous proposals for its application in electronics, as well as packaging textiles and food products, due to its high clarity, lack of charge densities properties and excellent durability. The application of polymer especially polyvinyl alcohol (PVA) has generated much interest in various industries. In this polymer study, the main purpose of this study is to measure and understand the structural and physical properties and also the characterization of PVA/TiO_2 composite polymer. In this research, properties of PVA/TiO_2 composite polymers have been studied by several techniques. The samples were prepared by using solution casting technique. Then after that was the measurement to reveal the surface morphology of PVA/TiO_2 composite polymer thin film. The image of the both PVA surface has been carried out by Scanning Electron Microscope (SEM). Infrared spectrometer was used to demonstrate the structure of PVA and whether the complexion that occur in the composite polymer structure. The result showed the bond group of PVA in range between 500 cm^{-1} and 4000 cm^{-1}. Then the composite also had been studied of their conductivity by using Electrochemical Impedance Spectroscopy (EIS). The highest conductivity of the composite had been known from this study which is $2.66x10^{-9}$ Scm^{-1}.

KAJIAN FIZIKAL DAN STRUKTUR BAHAN KOMPOSIT POLIMER PVA/TIO_2

ABSTRAK

Polyvinyl alcohol (PVA) adalah bahan gantian bagi bahan polimer dan terdapat banyak kertas cadangan untuk applikasinya sama ada dalam bidang elektronik, bahan pengbukusan produk makanan kerana ianya sangat kukuh dan tahan lama. Applikasi bagi Polyvinyl alcohol (PVA) telah menarik pelbagai minat di dalam bidang industri. Di dalam kajian ini, pengkelasan dan pencirian bagi komposit PVA/TiO_2 telah dilakukan dengan beberapa kaedah. Pertama sekali adalah penghasilan bahan tersebut dengan menggunakan kaedah pembentukan larutan. Selepas itu adalah kajian permukaan bahan tersebut dengan menggunakan alat Scanning Electron Microscope (SEM) bagi filem nipis bahan tersebut. Seterusnya adalah kajian ke atas ikatan kimia yang berlaku di dalam bahan tersebut dengan meggunakan kaedah Fourier Transform Infrared (FTIR) Spectroscopy. Seterusnya adalah kajian ke atas kadar aliran elektrik ataupun konduktiviti bagi bahan komposit polimer tersebut dengan menggunakan instrumen Electrochemical Impedance Spectroscopy (EIS). Daripada kajian ini, konduktiviti tertinggi bagi bahan tersebut yang dapat dicari adalah 2.66×10^{-9} Scm^{-1}.