Preliminary study of hall effect of chitosan thin film with adipic acid / Norlaily Abdul Rashid.

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Lihat sebelah

PRELIMINARY STUDY OF HALL EFFECT OF CHITOSAN THIN FILM WITH ADIPIC ACID

By
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A thesis submitted in partial fulfillment of
the requirements for the award of the degree of
Bachelor of Applied Science (Physics Electronics and Instrumentation)

DEPARTMENT OF PHYSICAL SCIENCES
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DECLARATION

I hereby declare that this thesis entitled 'Preliminary Study of Hall Effect of Chitosan Thin Film With Adipic Acid' is the result of my own research except as cited in the references.

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ABSTRACT

This work is the preliminary study of Hall Effect of Chitosan thin film with adipic acid. The samples were prepared by dissolving chitosan powder in acetic acid to prepare chitosan films. The acetic acid was added with some manganese chloride ($MnCl_2$) and adipic acid. The sample was called chitosan adipic (CA-AA) film. Two kinds of samples; with constant amount $MnCl_2$ and without $MnCl_2$ were prepared by varying the content of salt. The salt used in this work was adipic acid which was varied between 0 wt% and 50 wt%. The method of characterization of the samples was conducted using Electrochemical Impedance spectroscopy (EIS), Scanning Electron Microscopy (SEM), and Four Point Probe (FPP) method. From the EIS study when the resistivity values increased the conductivity values decreases and vise-versa for both samples studied. The highest value of the conductivity obtained for sample S9 for sample without $MnCl_2$ and S18 for sample with $MnCl_2$. The same sample also obtained to have the highest conductivity when tested using FPP. The thickness of the samples was found to be in the range of 38.60 to 41.44 micro meters. From the probability value of the hall voltage obtained, it is sufficient to say that the sample is possible for the study of determination of the Hall Effect with minor adjustment.

ABSTRAK

Kajian ini adalah kajian saringan awal atau kaedah awal terhadap kesan Hall chitosan filem nipis dengan asid adipik. Sampel-sampel disediakan dengan dilarutkan serbuk chitosan di dalam asid asetik untuk menyediakan filem chitosan. Asid asetik telah ditambahkan dengan sedikit mangan klorid ($MnCl_2$) dan asid adipik. Sampel ini dipanggil filem adipik chitosan (CA-AA). Dua jenis sampel; dengan jumlah yang tetap $MnCl_2$ dan tanpa $MnCl_2$ disediakan dengan kandungan garam yang pelbagai. Garam yang digunakan di dalam kajian ini adalah asid adipik yang mana dipelbagaikan kandungannya iaitu di antara 0 wt% sehinggan 50 wt%. Kaedah pencirian sampel-sampel ini menggunakan kaedah 'Electrochemical Impedance spectroscopy' (EIS), 'Scanning Electron Microscopy' (SEM), dan 'Four Point Probe' (FPP). Daripada EIS, apabila nilai kerintangan meningkat nilai kekonduksian menurun dan sebaliknya untuk kedua-dua sampel yang dikaji. Nilai kekonduksian yang paling tinggi didapati untuk sampel S9 bagi sampel tanpa $MnCl_2$ dan sampel S18 untuk sampel dengan $MnCl_2$. Apabila diuji dengan FPP, nilai kekonduksian tertinggi juga dimiliki oleh sampel yang sama. Ketebalan sampel-sampel berada di dalam julat 38.60 hingga 41.44 mikro meter. Nilai anggaran voltan hall diperolehi, dan didapati sampel-sampel yang telah disediakan boleh diuji untuk menentukan Kesan Hall dengan sedikit penyesuaian.