

A STUDY OF SURFACE TENSION AND ADHESION

DR. ODELL W. COOPER

DOCTORAL DISSERTATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES

d/n G12.5

1100061759

Perpustakaan Sultanah Nur Zahirah (UMT)
Universiti Malaysia Terengganu

LP 19 FST 3 2008



1100061759

A study of surface morphology and physical properties of
polymethylmethacrylate thin film / Noor Jamsuzailawati
Jamaluddin.



PERPUSTAKAAN SULTANAH NUR ZAHIRAH
UNIVERSITI MALAYSIA TERENGGANU (UMT)
21030 KUALA TERENGGANU

1100061759		

Lihat sebelah

PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

**A STUDY OF SURFACE MORPHOLOGY AND PHYSICAL PROPERTIES
OF POLYMETHYLMETHACRYLATE (PMMA) THIN-FILM.**

By
Noor Jamsuzazilawati Binti Jamaluddin

A project paper submitted in partial fulfillment of the requirements for the award of
the degree of Bachelor of Applied Science (Electronics and Instrumentations Physics)

**DEPARTMENT OF PHYSICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
UNIVERSITI MALAYSIA TERENGGANU
2008**



JABATAN SAINS FIZIK
FAKULTI SAINS DAN TEKNOLOGI
UNIVERSITI MALAYSIA TERENGGANU

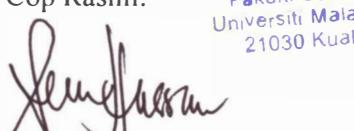
PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: *A study of Surface Morphology and Physical Properties of Polymethylmethacrylate (PMMA) Thin Film*

oleh Noor Jamsuzasrilowati Jonaluddin, no. matrik: UK 12362 telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah *Sarjan Muda Sains Generasi Elektronik dan Instrumenasi*, Fakulti Sains dan Teknologi, UMT.

Disahkan oleh:


Penyelia Utama DR. CHAN KOK SHENG
Nama: Pensyarah
Cop Rasmi: Jabatan Sains Fizik
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu

Tarikh:


5 Mei 2008

Penyelia Bersama (jika ada)
Nama: PROF. DR. SENIN BIN HASSAN
Cop Rasmi Ketua
Jabatan Sains Fizik
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu

Tarikh:


4 Mei 2008

Ketua Jabatan Sains Fizik
Nama: PROF. DR. SENIN BIN HASSAN
Cop Rasmi Ketua
Jabatan Sains Fizik
Fakulti Sains dan Teknologi
Universiti Malaysia Terengganu
21030 Kuala Terengganu

Tarikh:


4 Mei 2008

DECLARATION

I hereby declare that this thesis entitled A Study of Morphology and Physical Properties of Polymethylmethacrylate (PMMA) Thin-film is the result of my own research except as cited in the references.

Signature :

Name : NOOR JAMSUDZAILAWATI JAMNULUBIN
Matrix No : UK- 13362
Date : 5/5/08

ACKNOWLEDGEMENTS

First of all, I would like to express my gratitude to Dr. Chan Kok Sheng, who not served as my supervisor but also, encouraged and challenged me throughout this study. A millionth thanks for always corrected me when I'm doing wrong.

A thousand thanks to all lab assistant who is patiently guided me through this study and help me using the instruments. They cooperation really helps me a lot.

I also wish to thank all my friends for their valuable participation and insights during doing this study.

Last but not least; I wish to thanks my parents and my siblings for their moral support and always encouraged me when I'm down.

ABSTRACT

The application of polymer especially polymethylmethacrylate (PMMA) has generated much interest in various industry. In this research, characterization and properties of (PMMA) has been studied by several techniques. For the first method measurements reveal the surface morphology of PMMA in a form of powder and thin film. The image of the both PMMA surface has been carried out by Scanning Electron Microscope (SEM). Infrared detector was used to demonstrate the structure of PMMA. The result showed the bond group of PMMA in range between 500 cm^{-1} and 4000 cm^{-1} . The hardness of PMMA was analyzed by Affri Hardness Tester. The tensile strength has been studied by Testometric M350-5 CT Tensile Tester. The strength of PMMA thin-film has been compared with the strength of plastic.

ABSTRAK

Aplikasi penggunaan polimer terutamanya polymethylmethacrylate (PMMA) telah mencetuskan minat dalam pelbagai industri. Kajian ini telah dilakukan bagi mengetahui sifat serta ciri-ciri bagi PMMA dengan menggunakan beberapa kaedah. Kaedah pertama yang digunakan telah mendedahkan morfologi permukaan bagi PMMA dalam bentuk serbuk dan juga filem nipis. Mikroskop Pengimbasan Elektron telah menghasilkan imej permukaan kedua-dua jenis PMMA. Pengesan inframerah telah digunakan bagi menunjukkan struktur PMMA. Keputusan bagi kumpulan ikatan PMMA adalah di dalam skala di antara 500 cm^{-1} dan 4000 cm^{-1} . Kekerasan PMMA telah dianalisiskan menggunakan mesin penguji kekerasan Affri. Mesin penguji ketegangan Testometric M350-5 CT digunakan untuk mengkaji ketegangan PMMA.