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A study of hardness and fourier transform infrared spectra of aluminium oxide / Gabriel Anak Chaong.



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**A STUDY OF HARDNESS AND FOURIER TRANSFORM INFRARED
SPECTRA OF
ALUMINIUM OXIDE**

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Project Report submitted in partial fulfillment of the requirement for the degree of
Bachelor of Applied Science (Physics Electronics and Instrumentation)

**DEPARTMENT OF PHYSICAL SCIENCES
FACULTY OF SCIENCE AND TECHNOLOGY
UNIVERSITY MALAYSIA TERENGGANU**

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PENGAKUAN DAN PENGESAHAN LAPORAN PITA I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk: A STUDY OF HARDNESS AND FOURIER TRANSFORM INFRARED SPECTRA OF ALUMINIUM OXIDE

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telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Fizik sebagai memenuhi sebahagian daripada keperluan memperoleh Ijazah San. In. Geomet. (Fiz., Elek. & Test.)
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DECLARATION

I hereby declare that this thesis entitled a study of hardness and Fourier Transform Infrared spectra of aluminium oxide is the result of my own research except as cited in the references.

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ABSTRAK

Sampel aluminium oksida yang diterima dalam bentuk pil telah diukur kekerasan dengan menggunakan mesin penguji kekerasan model Affri 206EX. Walau bagaimanapun, semasa bacaan diambil sampel telah pecah disebabkan oleh ciri-ciri kerapuhan. Oleh itu, bacaan yang diambil adalah kira-kira 1.9, iaitu hanya 21.11% daripada nilai teori (9.0). Kemudian, sampel yang telah pecah tadi diambil dan dikisar menjadikan dalam bentuk serbuk untuk diimbias menggunakan spektroskopi infrared Fourier Transform dan analisis spektra menunjukkan bahawa puncak terbaik terjadi pada 719.265 cm^{-1} yang kemungkinan besar dipengaruhi oleh ikatan dalaman Al_2O_3 .

ABSTRACT

Aluminium oxide sample which have been received in pellet form were measured of its hardness by using Affri 206EX hardness testing machine. However, during measurement being read, the sample been broken due to its fragile characteristic. Thus, the reading was taken at about 1.9, which is only 21.11% from the theory value (9.0). Then, the broken sample from the hardness testing were taken and grinded into powder form to be scanned with Fourier Transform Infrared Spectroscopy (FTIR) and the FTIR spectra analysis have revealed that the strongest peak occurred at 719.265 cm^{-1} much probably due to the internal bending of Al_2O_3 .