

**SYNTHESIS AND ULTRASONIC CHARACTERIZATION OF
Na, La AND Mg PHOSPHATE GLASSES**

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Synthesis and ultrasonic characterization of Na, La and Mg phosphate glasses / Farahiza Razali.

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Pengarang	FARAHIZA RAZALI	No. Panggilan	LP 9 FST
Judul	Synthesis and ultrasonic characterization of . . .		
Tarikh	23/6/03	Nombor Ahli	425525
Waktu Pemulangan	5.00 pm	Tanda tangan	[Signature]

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SYNTHESIS AND ULTRASONIC CHARACTERIZATION OF Na, La AND Mg PHOSPHATE GLASSES

By

FARAHIZA BINTI RAZALI

Thesis is submitted in partial fulfillment of the requirement
for the Bachelor of Science (Hons.) in Chemistry

PUSAT PEMBELAJARAN DIGITAL SUKMANUR ZAHIRAH

Faculty of Science and Technology
KOLEJ UNIVERSITI SAINS DAN TEKNOLOGI MALAYSIA
UNIVERSITI PUTRA MALAYSIA

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CERTIFICATION

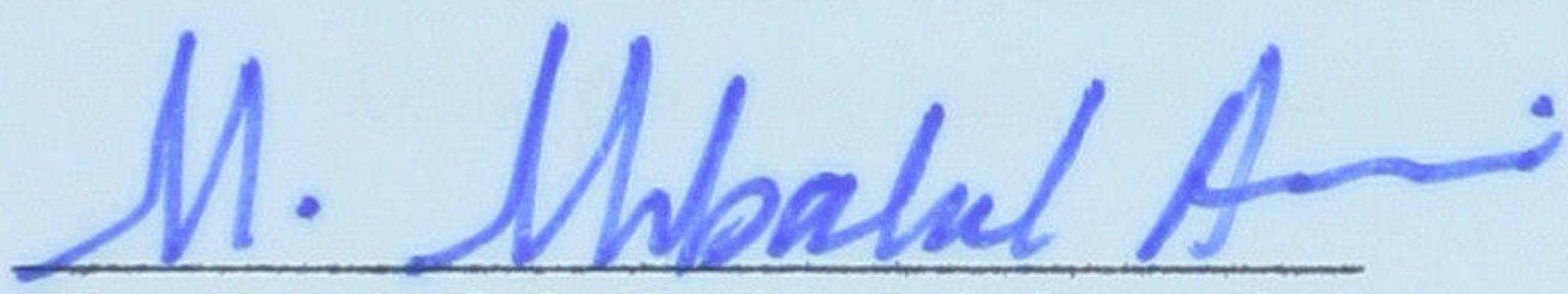
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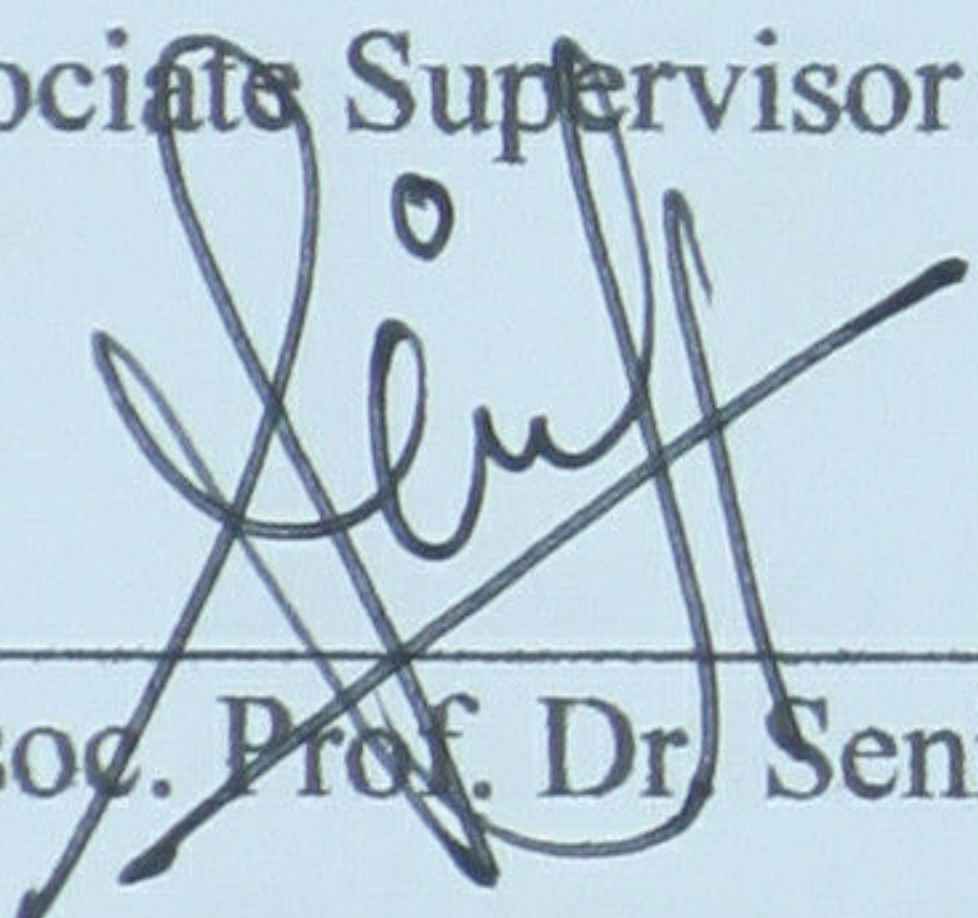
Approved By:

Supervisor


(Dr. M. Misbahul Mohd Amin)

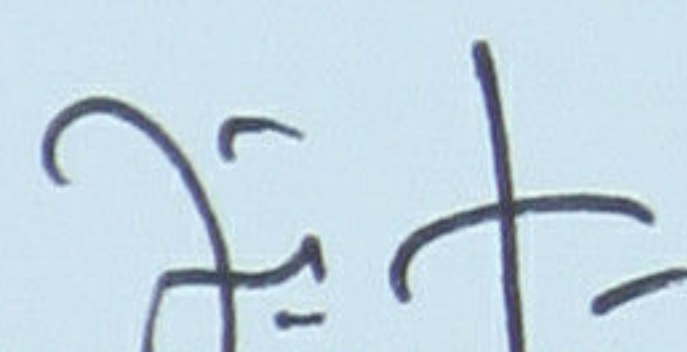
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Date: 28/4/02

PUSAT PEMBELAJARAN DIGITAL SULTANAH NUR ZAHIRAH

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ABSTRAK

SINTESIS DAN PENCIRIAN ULTRASONIK KACA FOSFAT Na, La, DAN Mg

Oleh

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Mac 2002

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Fakulti: Sains dan Teknologi

Satu siri kaca fosfat dengan peratusan P_2O_5 dari 70% hingga 80% telah berjaya disintesis. Halaju membujur dan halaju melintang ultrasonic ini telah diukur dengan menggunakan teknik MSP-8000 DSP. Daripada data-data ini, pemalar-pemalar elastic C_{11} , C_{44} , modulus Young dan modulus pukal boleh dikira. Perbandingan antara kaca fosfat yang dihasilkan dengan kaca fosfat yang lain telah dilakukan.

Keputusan menunjukkan pertambahan pecahan mol MgO dalam kaca fosfat menyebabkan struktur kaca menjadi lemah. Ini mungkin disebabkan oleh pertambahan dalam kuantiti atom-atom oksigen yang tidak terikat.

Sampel kaca mampu menampung tegasan membujur dengan lebih baik berbanding tegasan melintang. Jadi, kaca yang dihasilkan lebih mudah dibengkokkan dari diregangkan.

ABSTRACT

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March 2002

Supervisor: Dr. M. Misbahul Mohd. Amin

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Faculty: Science and Technology

A series of phosphate glasses with composition of P_2O_5 varying from 70% to 80% have been successfully synthesized. Their ultrasonic longitudinal and shear wave velocities were measured using the MSP-8000 DSP. From these data, the elastic stiffness C_{11} , C_{44} , Young's modulus and bulk modulus are calculated. Comparison of all these data is done with the other phosphate glasses.

The results show that as the mole fraction of MgO in phosphate glasses is increased, the structure of the glasses is weakened. This could be due to the increase in the concentration of non-bridging oxygen.

The glass sample capable of resisting the much better compare to shear stress. Therefore, the produced glasses are much more easier to bend than stretch.