

**STRUCTURAL STUDIES OF TELLURITE GLASS SYSTEM  
OF  $(90-x)\text{TeO}_2-10\text{Nb}_2\text{O}_5-(x)\text{ZnO}$  BY FOURIER TRANSFORM  
INFRARED (FTIR) SPECTROSCOPY**

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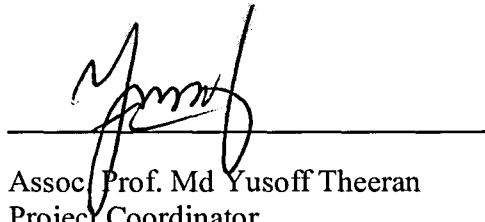
**Final Year Project Report Submitted in  
Partial Fulfillment of the Requirements for the  
Degree of Bachelor of Science (Hons.) Industrial Physics  
in the Faculty of Applied Sciences  
Universiti Teknologi MARA**

**MAY 2010**

This Final Year Project entitled “**Structural Studies of Tellurite glass system of (90-x)TeO<sub>2</sub>-10Nb<sub>2</sub>O<sub>5</sub>-(x)ZnO by Fourier Transform Infrared (FTIR) Spectroscopy**” was submitted by Nurulain Binti Mohamed Tajuddin, in partial fulfillment of the requirements for the Degree of Bachelor of Sciences (Hons.) Industrial Physics, in the Faculty of Applied Science, and was approved by



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## ACKNOWLEDGEMENT

Bismillahirrahmannirrahim...

I would like to express my sincere thanks to Assoc. Prof. Dr. Mohd Salleh Mohd Deni, my supervisor, for all his guidance and encouragement that he provided in the course of this research work. I am grateful for his time, patience and consideration. I would also like to thank Cik Nur Baizura Binti Mohamed as my co-supervisor for her help during my research. Her suggestion and creative ideas are greatly appreciated. To my mother, Zainab Bte Che Mat who are always supported me for all the endless encouragement and support during my study. I would like to express my grateful to my Head of Programme, Tn. Haji Mohd Isa Mohd Yusof for his advice throughout the course of this study. Finally, thanks to my entire course mate Industrial Physics programmed for all their support and encouragements.

Nurulain Binti Mohamed Tajuddin

## ABSTRACT

### STRUCTURAL STUDIES OF TELLURITE GLASS SYSTEM OF (90-x)TeO<sub>2</sub>-10Nb<sub>2</sub>O<sub>5</sub>-(x)ZnO BY FOURIER TRANSFORM INFRARED (FTIR) SPECTROSCOPY

This project is to study the effect and role of ZnO on structural properties of ternary (90-x)TeO<sub>2</sub>-10Nb<sub>2</sub>O<sub>5</sub>-(x)ZnO glass system by using Fourier Transform Infrared (FTIR) spectroscopy. Ternary (90-x)TeO<sub>2</sub>-10Nb<sub>2</sub>O<sub>5</sub>-(x)ZnO; x = 0-15 mol% were prepared by melt-quenching method. X-ray powder diffraction (XRD) result confirmed that all the samples are amorphous. Infrared absorption spectrum shows formation of ZnO<sub>4</sub> tetrahedral and TeO<sub>3</sub> trigonal pyramid (tp) which indicate formation of both bridging oxygen (BO) and non-bridging oxygen (NBO) ions. The glass transition temperature, T<sub>g</sub> increased from 364.04 °C to 381.21 °C with the increased in the concentration of ZnO to the glass system.

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