

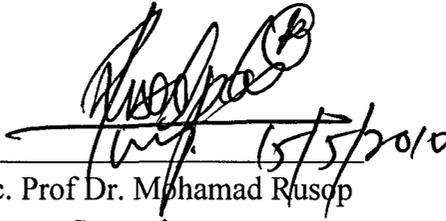
**RAMAN STUDY OF ZINC OXIDE NANOSTRUCTURES PREPARED  
BY SOL-GEL IMMERSSED METHOD**

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**Final Year Project Report Submitted in  
Partial Fulfillment of the Requirements for the  
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in the Faculty of Applied Sciences  
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This Final Year Project Report entitled “**Raman Study of Zinc Oxide Nanostructures Prepared by Sol-Gel Immersed Method**” was submitted by Azlinda binti Ab. Aziz in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by:



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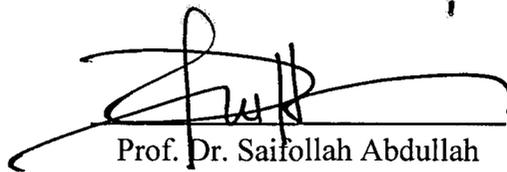
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## CHAPTER 1

### INTRODUCTION

#### 1.1 Background

Nanotechnology has gained substantial popularity recently due to the rapidly developing techniques both to synthesize and characterize materials and devices which the purpose is to control matter at the nanoscale (1-100 nm) [1]. Nanotechnology comes from many knowledge branches such as applied physics, materials science, interface and colloid science, device physics, supramolecular chemistry (which refers to the area of chemistry that focuses on the non-covalent bonding interactions of molecules), self-replicating machines and robotics, chemical engineering, mechanical engineering, and electrical engineering.

Nanotechnology utilizes the units provided by nature which can be assembled and manipulated based on atomic interactions. Atoms, molecules and solids are therefore the basic building blocks of nanotechnology. With this technology, it is possible to make artificial nanometer systems in where the effect of the quantum confinement in two-dimensional (2-D) like quantum wells, one-dimensional (1-D) like quantum wires and zero-dimensional (0-D) like quantum dots. Nanoscale 1-D semiconductor materials have attracted a