Department of Applied Physics

Final Year Project Report

Project Title

For example: Zinc Oxide Nanostructures Prepared by Thermal Evaporation

Student Name: XXXXX
Student Number: XXXXXXX
Programme code: XXXXX

2006
Abstract

Abstract is usually one to two pages. The abstract is a summary of your work. It can include a very brief introduction of importance to carry out your project and objectives of your project followed by research methodology. The main content of abstract is to summarize the research results and significance of your project. You may also point out limitations of your achievement and propose future work extended from your project.
Acknowledgements

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Chapter 1  Introduction

1.1 Nanotechnology and one dimensional semiconductor nanostructures

Nanotechnology is a technology to fabricate and use of nanostructured materials as well as to understand of the relationships between the physical properties and material dimensions. Due to the rapid development of the sciences and technologies into the nanoscale regime, considerable research efforts are being focused on synthesizing nanostructured materials, investigating their physical and chemical properties related to the lower dimensionality; and what is more important is to explore their possible applications in nanoelectronic devices.

Nanotechnology deals with materials or structures in the nanometer scale, typically ranging from subnanometer to several hundred nanometers. Small features permit more functionality in a given space, but nanotechnology is not only a simple continuation of miniaturization from micro meter scale down to nanometer scale. Materials in nanoscale exhibit unique physical properties owing to quantum confinement effect. For example, the bandgaps of semiconductors can be tuned by varying material dimensions. A bulk semiconductor becomes insulators when the characteristic dimension is sufficiently small. Au nanocrystals demonstrate an excellent low temperature catalytic property where the bulk does not. In order to explore the novel physical properties and realize
2.1 Introduction to synthesis methods

Over the past several years, considerable efforts have been devoted to the synthesis of nanowires, and three main experimental approaches to fabricate nanowires have been developed. One of the methods is by laser ablation or thermal evaporation of source materials through a Vapour-Liquid-Solid (VLS) growth mechanism. A critical feature of this method is that the catalyst used to define one-dimensional growth and thus the metal droplets were always observed at the ends of the nanowires. The second method is oxide-assisted semiconductor nanowires growth by laser ablation or thermal evaporation. By means of this approach, each nanowire consists of an amorphous oxide shell and a high density of defects have been observed in the crystalline semiconductor core. The third method is template assisted synthesis method. In this method, some fibrous or porous materials such as carbon nanotubes, nanoporous anodic alumina membranes are employed as templates to guide the formation of wire-like or tube-like oxide nanostructures.
Chapter 3  Results and Discussion

Depends on the nature and contents, you can present your results in more than one chapter, and each chapter may also contain a brief introduction and summary.
Chapter 4 Conclusions
References:


