

Fabrication and Characterization of Cadmium Sulfide Nanowires on Aluminum Oxide Template



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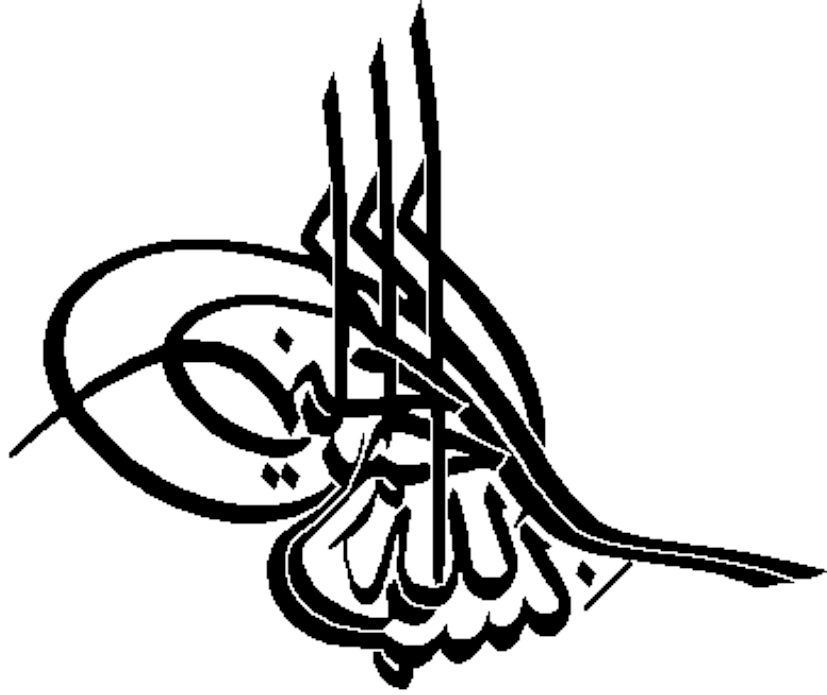
BY
MALIK IMRAN AFZAL

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SESSION: 2013-2015

DEPARTMENT OF CHEMISTRY
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PAKISTAN



In the name of

Allah,

The most Compassionate,

The most merciful

Thesis Similarity Report

DECLARATION

I Malik Imran Afzal S/O Malik Mohammad Afzal, ID: 13001140042

Session **2013-2015** hereby declare that the matter printed in the thesis titled **“Fabrication and Characterization of Cadmium Sulfide Nanowires on Aluminum Oxide Template ”** is my own work and has not been printed, published and submitted as research work, thesis or publication in any form in any University, Research institution etc. in Pakistan or Abroad.

Dated: _____

(Malik Imran Afzal)

RESEARCH COMPLETION CERTIFICATE

Certified that the research work contained in this thesis titled,
“Fabrication and Characterization of Cadmium Sulfide Nanowires on
Aluminum Oxide Template” has been carried out and completed by, **ID:
13001140042**. The quantum and the quality of the work contained in
this thesis is adequate for the award of Degree of M.Phil.

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Dedication

Affectionately Dedicated to

WIFE AND DAUGHTERS

Due to whom Prayers and Cooperation

I am able to reach this status.

ACKNOWLEDGEMENT

Two years back, when I decided to resume my studies after a break of more than 15 years, it seemed to be a difficult task to carry out studies along with my school teaching job and family responsibilities. Now towards the end of my MS degree program, I am really grateful to almighty Allah and all those kind personalities who enabled me to reach this goal with their consistent support.

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ABSTRACT

Cadmium supplied nanowires have unique electrical and optical properties and applications. To obtain cadmium supplied nanowires with regular and good aspect ratio, they can be synthesized by template synthesis method. Porous anodized aluminium oxide is most promising template with regular hexagonal shapes. Their aspect ratio can be controlled by controlling the pores' depth and diameter which greatly depend on anodization voltage and temperature of the electrolyte. In this research, high purity aluminium was used to prepare nanotemplates at 5-6°C in 1M phosphoric acid and cadmium supplied was deposited electrochemically using a co-solution of thiourea, cadmium acetate and ammonium acetate. pH was maintained at 11 in heat bath at 75°C with the help of aqueous ammonia solution. Both porous anodized alumina and cadmium supplied Nanowires were characterized using SEM. A good quality Nanowires were obtained in bunches with reasonably high aspect ratio.

CONTENTS

Thesis Similarity Report.....	i
Declaration.....	ii
Research Completion Certificate	iii
Acknowledgements.....	v
abstract	vi
Chapter-1	
INTRODUCTION	
1.1. Anodization	1
1.2. Nanomaterials	3
1.2.1. History	3
1.2.2. Synthesis of nanomaterial on porous anodized template	3
1.2.2.1. Synthesis of nanoparticles.....	4
1.2.2.2. Synthesis of nanotubes.....	4
1.2.2.3. Synthesis of nanorods and nanowires.....	5
1.2.3. Properties.....	6
1.3. Scope and structure of this thesis	7
1.4. Template-based method for the preparation of nanomaterials	7
1.4.1. Porous anodic aluminium oxide (Al ₂ O ₃) membranes & Template..	8
1.4.2. Deposition of Cadmium Sulphide (CdS) Nanowires	12
1.5. Properties of Cadmium Sulphide (CdS)	13
1.6. Applications of CdS Nanowires	13

Chapter-2

Literature Review.....

2.1	Anodization of Aluminium.....	16
2.2	Synthesis of CdS Nanowires	23

Chapter-3

Experimental

3.1	General Experimental Conditions	
3.1.1	Materials.....	28
3.1.2	Instruments and Apparatus.....	28
3.1.3	Solutions and their preparation.....	29
3.2	Preparation of Porous Aluminium Oxide Template	32
3.3	Electrodeposition of Cadmium Sulphide Nanowires.....	35
3.4	Characterization.....	37

Chapter-4 Results and Discussion

4.1	Present work.....	40
4.2	Structural features of the Porous Anodized Aluminum oxide and CdS Nanowires obtained.....	45
4.3	Conclusions.....	49
5.	REFERENCES.....	50

