

FIBER OPTICS STRAIN SENSORS CHARACTERIZATION

ZAIDAH ZAKARIA

**BACHELOR OF SCIENCE (Hons) PHYSICS
FACULTY OF APPLIED SCIENCES
UNIVERSITI TEKNOLOGI MARA**

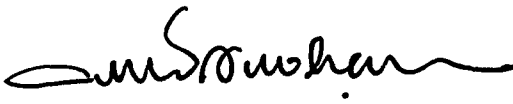
MAY 2006 .

This Final Year Project report entitled **“Fiber Optic Strain Sensors Characterization”** was submitted by Zaidah Zakaria, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons) Physics, in the Faculty of Applied Science, and was approved by

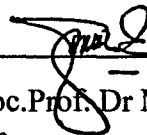


26/05/06

Assoc. Prof. Dr Mohd Kamil Abd Rahman
Supervisor
Faculty of Applied Sciences
Universiti Teknologi MARA



Dr. Mohd Zu Azhan Yahya
Head of Programme
B.sc. (Hons) Physics
Universiti Teknologi MARA



Assoc. Prof. Dr Mohd Kamal Hj Harun
Dean
Faculty of Applied Sciences
Universiti Teknologi MARA

Date: 26 MAY 2006

AKCNOWLEDGEMENTS

Firstly, my greatest thank to ALLAH for allowing me to complete this report all the way. Special deeply appreciated to my project supervisor, Assoc. Prof. Dr . Mohd Kamil B. Abd Rahman for his supervised during my completing project period. I am very grateful for his guidance, advice and lessons in technical or general knowledge. I want to thank for his care and willingness to help me no matter what the problem I have.

I would like to express my thanks to all people that helped me during completing this project. Thanks to all of my friends, especially Siti Rohani, Siti Jannah, Norsuzila and Rahimah .Special thanks also giving to Research Assistant, Shahrin Zen and Norasmah. Lastly, I also to take this opportunity to express my gratitude to my family especially my mother, Wan Halimah for her caring and willingness to support me no matter what happens.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vii
LIST OF FIGURES	viii
LIST OF ABBREVIATIONS	xi
ABSTRACT	xiii
ABSTRAK	xiv
CHAPTER	
1 INTRODUCTION	
1.1 Introduction	1
1.2 Significance of study	3
1.3 Problem Statements	3
1.4 Objectives	4
2 LITERATURE REVIEW	
2.1 History of optical fiber	5
2.2 Fundamental of optical fibers	8
2.3 Introduction to optical fiber sensor	11
2.4 Fiber Bragg Grating Sensors	13

CHAPTER 1

INTRODUCTION

1.1 Introduction

Photonics is the art and science of mastering light. It is the control, manipulation, transfer and storage of information using light. Nowadays, the photonic industries have been developed recently to become more competitive advantages and thus to fulfill those market needs. Photonics has a bright future because everyday people are dealing with photonics application.

The device of photonics deals with an optical fiber. The field of optical fiber has undergone tremendous growth and advancement over the last 25 years. Initially conceived as a medium to carry light and images for medical endoscopic application, optical fibers were later proposed in the mid 1960's as an adequate information carrying medium for telecommunication applications.

Ever since, optical fiber technology has been the subject of considerable research and development to the point that today light wave communications systems