

**THE EFFECT OF PH ON THE PROPERTIES OF SILICA
NANOPARTICLES**

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	ix
ABSTRACT	x
ABSTRAK	xi
CHAPTER 1 INTRODUCTION	
1.1 Background of the study	1
1.2 Problem statement	3
1.3 Significant of study	4
1.4 Objectives of study	5
CHAPTER 2 LITERATURE REVIEW	
2.1 Effect of pH.	6
2.2 Mesoporous Silica.	7
CHAPTER 3 METHODOLOGY	
3.1 Introduction.	12
3.2 Materials	12
3.3 Apparatus	13
3.4 Methodology	13
3.5 Characterization Technique	16
3.5.1 Energy Dispersive X-Ray Spectroscopy (EDX)	16
3.5.2 Scanning Electron Microscope (SEM)	17
3.5.3 Fourier Transform Infrared Spectroscopy (FTIR)	18
3.5.4 Ultraviolet-Visible absorption (UV-Vis)	19
3.5.5 X-ray Powder Diffraction (XRD)	21
CHAPTER 4 RESULTS AND DISCUSSION	
4.1 Energy Dispersive X-Ray Spectroscopy (EDX)	22
4.2 Size and Morphology Analysis	26
4.3 Fourier Transform Infrared Spectrometer (FTIR) analysis	28

4.4	Energy Band Gap Analysis from UV-Visible Spectroscopy	31
4.5	Structure Analysis from X-Ray Diffraction (XRD)	34
CHAPTER 5 CONCLUSION AND RECOMMENDATIONS		
5.1	Summary	36
5.2	Future research	37
CITED REFERENCES		38
APPENDIX		41
<i>CURRICULUM VITAE</i>		42

LIST OF TABLES

Table	Caption	Page
3.1	Detailed parameter used for the reaction. NaOH changed from 0.10 mL to 0.30 mL.	15
4.1	Value of pH from different amount of NaOH	22
4.2	Percentage of element detected using EDX for uncalcined sample	25
4.3	Percentage of element using EDX for calcined sample	25
4.4	Chemical structure related to the functional group	30
4.5	Details of peak for calcined sample S0.10 and S0.20	35

ABSTRACT

THE EFFECT OF PH ON THE PROPERTIES OF SILICA PARTICLES

In this project, silica particles have been successfully produced by using adjusted Stöber method. Tetraethyl orthosilicate (TEOS) was used as source of silica, Sodium Hydroxide (NaOH) as catalyst, and Cetyl Trimethylammonium Bromide (CTAB) as pore-forming agent and surfactants. In order to study the effect of pH on the properties of silica particles, the amount of NaOH has been adjusted to find the different value of pH. The samples were analysed by using EDX, SEM, FTIR, UV-Vis, and XRD. According to SEM, the size of silica particles produced is about 0.423 micrometer. From UV-Vis spectroscopy, the direct energy band gap has been analysed by using Tauc plot. The energy band gap has been estimated for S0.10, S0.15, S0.20, S0.25 and S0.30 samples are 3.9184, 3.9554, 3.8679, 3.9939 and 4.0695 eV respectively. Increase of energy bandgap shows the decrease of particles size. XRD pattern shows several sharp peaks for sample S0.1 and S0.2 that defined as crystalline structure. While, for S0.30 sample show broad peak which determine amorphous pattern state of silica. The reaction parameters should be carefully adjusted in order to produce high quality silica particles which suitable for application in drug delivery.