

LIST OF CONTENT

FOREWORD	ii
LIST OF CONTENT	iv
LIST OF FIGURES	vii
LIST OF TABLES	viii
LIST OF APPENDIX	ix
ABSTRACT	x
<i>ABSTRAK</i>	xi
CHAPTER I INTRODUCTION	1
I.1 Background	1
I.2 Research Purpose	3
CHAPTER II LITERATURE REVIEW	4
II.1 Mesoporous Silica	4
II.2 Sulfonate Functional Group	5
II.3 Sulfonation	6
II.4 Cetyltrimethylammonium Bromide (CTAB)	7
II.5 Adsorption	8
II.6 Chromium	9
II.7 Fourier Transform Infrared (FTIR)	13
II.8 UV-Vis Spectroscopy	15
II.9 Gas Sorption Analyzer (GSA)	17
II.9.1 Brunauer-Emmett-Teller (BET) Surface Area Analysis	18
II.9.2 Barrett-Joyner-Halenda (BJH) Surface Area Analysis	19

II.10	Scanning Electron Microscopy – Electron Dispersive X-ray (SEM EDX)	20
CHAPTER III	METHOD	22
III.1	Research Variables	22
III.1.1	Fixed Variables	22
III.1.2	Independent Variables	22
III.1.3	Dependent Variables	23
III.2	Tools and Materials	23
III.2.1	Materials	23
III.2.2	Tools	24
III.3	Research Procedure	24
III.3.1	Synthesis of Mesoporous Silica with CTAB Template	24
III.3.2	Synthesis of Sulfonated Mesoporous Silica with CTAB Template ..	25
III.3.3	Cr Metal Adsorption Application	26
CHAPTER IV	RESULT AND DISCUSSION	28
IV.1	Analysis of synthetic materials	28
IV.1.1	Results of Mesoporous Silica Synthesis with CTAB Template (CTAB Furnace)	28
IV.1.2	Synthesis Results of Sulfonated Mesoporous Silica with CTAB Template (SSCTAB)	29
IV.2	Characterization Results of Non-Furnaced SCTAB, Furnaced SCTAB, and SSCTAB	30

IV.2.1 FTIR Spectra and Functional Groups.....	30
IV.2.2 SEM EDX Images	33
IV.2.3 Surface and Pore Morphology.....	35
IV.3 Cr(VI) Metal Ion Adsorption Test Results.....	36
IV.3.1 Effect of Concentration on Potassium Dichromate Solution	37
IV.3.2 Effect of pH on Potassium Dichromate Solution	39
IV.3.3 Effect of Contact Time on Potassium Dichromate Solution	40
CHAPTER V CLOSING	42
V.1 Conclusion	42
V.2 Suggestion.....	42
BIBLIOGRAPHY	44
APPENDIX.....	48