

**THE STUDY ON CRITICAL TEMPERATURE OF YBCO
(YTTRIUM BARIUM COPPER OXIDE) SUPERCONDUCTOR
UPON DOPING OF CeO₂ (CERIUM OXIDE) NANOPARTICLE**

FARITH AQMAL BIN ALI

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ABSTRACT

THE STUDY ON CRITICAL TEMPERATURE OF YBCO (YTTRIUM BARIUM COPPER OXIDE) SUPERCONDUCTOR UPON DOPING OF CeO_2 (CERIUM OXIDE) NANOPARTICLE.

This experiment was conducted to determine the critical temperature of $\text{YBa}_2\text{Cu}_3\text{O}_9$ superconductor doped with CeO_2 (cerium oxide). The samples with varying value of Y ($x = 0.00$ wt%, 0.02 wt% and 0.05 wt %) were prepared by using solid state method. The samples characterization were done by using four point probe analysis obtaining the critical temperature for each sample. By this, current will be passed through the prepared samples and the resistance and temperature value was recorded. The resistance as well as the derivative of the resistance as a function of temperature was analyzed in order to determine the specific value of critical temperature for each sample. This particular experiment yielded T_c values of YBCO superconductor which were 82.5 K, 79.2 K and 77.3 K for $x = 0.00$ wt%, $x = 0.02$ wt% and $x = 0.05$ wt% respectively. The critical temperature of pure sample, $x = 0.00$ was found to be 82.5 K, an 11.3% difference from the accepted value of 93 K.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS	viii
ABSTRACT	ix
ABSTRAK	x
CHAPTER 1: INTRODUCTION	
1.1 Background study	1
1.2 Problem Statement	2
1.3 Significance of study	3
1.4 Objectives of the study	3
CHAPTER 2: LITERATURE REVIEW	
2.1 Superconductor	
2.1.1 Definition of superconductor	4
2.1.2 History of superconductor	4
2.1.3 Classes of superconductor	7
2.2 High Temperature Superconductor	
2.2.1 Factor of Superconducting State for HTS	13
2.3 YBCO superconductor	17
2.4 Doping Method	17
2.5 Preparation of YBCO	18
2.6 Rare Earth Metal Oxides	19
2.7 CeO ₂ (cerium oxide) nanoparticles	19
CHAPTER 3: METHODOLOGY	
3.1 Preparation of YBaCu ₃ O _{7-x} sample	20
3.2 Sample preparation flowchart	21
3.3 Materials	22
3.4 Apparatus	22
3.5 Sample Preparation	23
3.6 Sample Characterization	
3.6.1 Four-point probe measurement	25

CHAPTER 4: RESULTS AND DISCUSSION	
4.1 Four Point Probe Measurement Analysis	
4.1.1 Critical Temperature, T_c	27
CHAPTER 5: CONCLUSION AND RECOMMENDATION	
5.1 Conclusion	31
5.2 Recommendation	32
REFERENCES	33
APPENDICES	37
<i>CURRICULUM VITAE</i>	38

LIST OF TABLES

Table	Caption	Page
2.1	Critical temperature of several elements	8
2.2	Family of High Temperature Superconductor	13
3.1	Molecular mass ratio for $Y_{1-x}Ce_xBa_2Cu_3O_\delta$	23
3.2	Stoichiometric ratio and calculated mass for $Y_1Ce_0Ba_2Cu_3O_\delta$	23
3.3	Stoichiometric ratio and calculated mass for $Y_{0.98}Ce_{0.02}Ba_2Cu_3O_\delta$	24
3.4	Stoichiometric ratio and calculated mass for $Y_{0.95}Ce_{0.05}Ba_2Cu_3O_\delta$	24
4.1	The presence of electric conduction in the samples	26
4.2	Critical temperature for all samples	28
4.3	Value of critical temperature mid for varying x concentration	30