THE DURABILITY OF $HoBa_2Cu_3O_{7-\delta}$ AND $HoBa_2Cu_3O_{7-\delta}$ (WITH ELEMENTAL SUBSTITUTION- Sr AT Ba SITE OF THE CERAMICS WITH THE HOT SPOT PHENOMENA)

MOHD FAROUK AFIZAL BIN ISMAIL

Final Year Project Report Submitted in Partial Fulfillment of the Requirements for the Degree of Bachelor of Science (Hons.) Physics in the Faculty of Applied Sciences, Universiti Teknologi MARA

MAY 2007

This Final Year Project Report entitled **"The Durability of $HoBa_2Cu_3O_{7-\delta}$ and $HoBa_2Cu_3O_{7-\delta}$ (with elemental substitution- Sr at Ba site of the ceramics with the hot spot phenomena)"** was submitted by Mohd Farouk Afizal Ismail, in partial fulfillment of requirement for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Science, and was approved by

Assoc. Prof. Laila Hanim Md Idrus
Supervisor
Faculty of Applied Sciences
Universiti Teknologi MARA

Dr. Muhd Zu Azhan Yahya
Head of Physics
B.Sc.(Hons.) Physics
Universiti Teknologi MARA

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

Date: 23 MAY 2007

ACKNOWLEDGEMENTS

Firstly, I feel so grateful to Allah s.w.t, The Most Giving and Most Merciful for the completion of my final year project paper. I would like to use this opportunity to acknowledge anybody who had supported me during my final project. I would to thank my families and friends for their care and concern. To my supervisor, Assoc. Prof. Pn Laila Hanim Bt Mohd Idrus, thank you very much for all your support during my studies period. Without your advices and lessons, I'm nobody in this university. And again, I would like to express my gratitude for all this time of believing and inspiring me in working through this project. To En.Misbah Hassan, special thank you for your help and knowledge during completion my final project. Lastly, I would like to thank everybody whose contribute their time and energy to help me directly or directly. May God bless you all and thank you.

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ABSTRACT

THE DURABILITY OF $HoBa_2Cu_3O_{7-\delta}$ AND $HoBa_2Cu_3O_{7-\delta}$ (WITH ELEMENTAL SUBSTITUTION- Sr AT Ba SITE OF THE CERAMICS WITH THE HOT SPOT PHENOMENA)

A hot spot, which is local area glowing orange appear in $HoBa_2Cu_3O_{7-\partial}$ ceramics the certain voltage is applied to the rod at room temperature. The durability of the rod during a sustained presence of the hot is improved upon substitution of Sr at Ba site. In this experiment, the $HoBa_2Cu_3O_{7-\partial}$ ceramics were prepared using conventional solid-state reaction. The experiment was done using three different samples; $HoBa_2Cu_3O_{7-\partial}$ without any substitution, $HoBa_2Cu_3O_{7-\partial}$ with 0.3 mol% substitution and 0.5 mol% substitution of Sr at Ba site. The samples were cut into rod shape of dimension (0.65 x 0.65 x 12) mm. All the samples were tested for its current-voltage characteristics using the four-point-probe method. The voltages of hot spot appearance were determined. The durability of rod was determined by the time of appearance of hot spot. The results showed different durability for different samples. There are also some differences in power consumptions of the rod due to the Sr substitution content.