

**EFFECT OF Ca SUBSTITUTION ON HIGH TEMPERATURE  
RESISTIVITY OF  $\text{Eu}_{1-x}\text{Ca}_x\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$  CERAMICS (x=0.0,0.1,0.5)**

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This Final Year Project Report entitled "EFFECT OF Ca SUBSTITUTION ON HIGH TEMPERATURE RESISTIVITY OF  $\text{Eu}_{1-x}\text{Ca}_x\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$  CERAMICS ( $x=0.0,0.1,0.5$ )" was submitted by Mohamad Shahrizal Bin Mohamad Salleh, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Industrial Physics, in the faculty of Applied Science and was approved by,

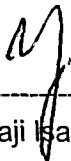


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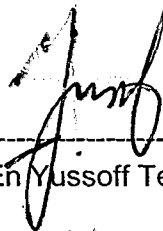
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## ABSTRACT

In this paper,  $\text{Eu}_{1-x}\text{Ca}_x\text{Ba}_2\text{Cu}_3\text{O}_{7-\delta}$  Ceramic rod with cross sections of 0.65mm x 0.65mm and length 12mm with  $x=0.0, x=0.1$  and  $x=0.5$  were prepared by standard solid state reaction. The rod shows various functional characteristics that give rise to applications in devices such as oxygen sensor. The temperature dependent test were measured by using four point probe method. The data is taken due to increasing of temperature. This sensor operates without any separate heater by taking advantage of the high temperature where oxide ions can diffuse easily. The values of voltage and current were obtained from the temperature dependent experiment. The resistivity value was calculated by using the equation. The result was expressed in a graph, it shows varies data for each sample. With the substitution of Ca in Eu site, the sensor is said to be more sensitive due to increasing of conductivity because of increasing in hole concentration.

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