

**PROPERTIES OF NON POROUS AND POROUS IN THE
SUPERCONDUCTING $\text{YBa}_2\text{Cu}_3\text{O}_y$ AND $\text{Y}_2\text{CaBa}_4\text{Cu}_7\text{O}_y$
COMPOUND**

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**Final Year Project Report Submitted In
Partial Fulfillment of the Requirements For The
Degree of Bachelor in Science (Hons.)Physics
Faculty of Applied Sciences
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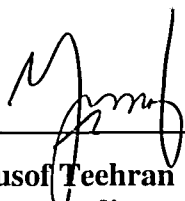
This Final Year Project Report entitled “Properties of Non Porous and Porous In The Superconducting $\text{YBa}_2\text{Cu}_3\text{O}_y$ and $\text{Y}_2\text{CaBa}_4\text{Cu}_7\text{O}_y$ ” was submitted by Murni Safiah Binti Muhd Yusof in partial fulfilment for the degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Science, and was approved by:



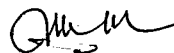
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ABSTRACT

Samples were prepared using solid state reaction method involved series of heating and grinding. Sucrose was adding during pelletization and after firing at 400°C in a box furnace, open pores were created. CaCo₃ was substituted in Ba site of YBCO superconductor having a general formula Y₂CaBa₄Cu₇O_y. All samples were characterized using He closed cycle four point probe to determine the critical temperature, T_c and critical current density, J_c, x-ray diffraction (XRD) for the structural properties and scanning electron microscopy (SEM) for morphology and orientation of samples. Generally, all samples displayed a normal metallic behaviour above T_c with a single transition. The values of T_c have been found to decrease towards Ca doping. From XRD, the crystal structure remains in orthorhombic where $a \neq b \neq c$ for all samples. The crystal orientation becomes smaller when the pure sample was doped with Ca.

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