

**PROPERTIES OF Ca DOPED IN NON POROUS AND POROUS OF
Y₃CaBa₄Cu₈O_y COMPARED TO NON POROUS AND POROUS OF
YBa₂Cu₃O_y CERAMICS**

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This Final Year Project Report entitled “Properties of Ca Doped in non porous and porous of $Y_3Ba_4Cu_8O_y$ compared to non porous and porous of $YBa_2Cu_3O_y$ Ceramics” was submitted by Zuliana Salmee binti Zainal Abidin 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

All samples powder were prepared using solid state method involved a series of heating and grinding. Ca was doped in Ba site of $Y_3Ba_4Cu_8O_y$ superconductor. Sucrose was adding during pelletization and after that firing at $400^{\circ}C$ in a furnace, open pores were created. Then all samples were final sintered at $950^{\circ}C$ in open atmosphere. These samples characterized through using the X-ray diffraction (XRD) for phase evaluation, scanning electron microscopy (SEM) for grain morphology, and He closed cycle four point probe to determine the critical temperature, T_c and critical current density, J_c , Experimental results showed that the critical temperature, T_c depends on Ca substitution. When Ca doped in $Y_3Ba_4Cu_8O_y$, the value of critical temperature decreased, it is lower than critical temperature of $YBa_2Cu_3O_y$. From the graph represent resistivity versus temperature, the major phase is orthorhombic and most of the sample shows metallic behaviour.

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