PROPERTIES OF Ca DOPED IN NON POROUS AND POROUS OF $Y_3CaBa_4Cu_8O_y$ COMPARED TO NON POROUS AND POROUS OF $YBa_2Cu_3O_y$ 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 400^0C in a furnace, open pores were created. Then all samples were final sintered at 950^0C 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, Tc and critical current density, Jc, Experimental results showed that the critical temperature, Tc 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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