# EFFECT OF NANO $SnO_2$ ADDITION ON SUPERCONDUCTING PROPERTIES OF $YBa_2Cu_3O_{7-\delta}$ (YBCO) SUPERCONDUCTOR

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Final Year 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 2008

## ACKNOWLEDGEMENTS

Upon completion of this project, I would like to express my gratitude to many parties. My heartfelt thanks go to my supervisor Pn. Norazila Bt. Ibrahim which have gave me a lot of information about the superconductor and guide me to finished my project. Thank also to the individuals who help and support me especially to Pn. Laila Hanim who give me an opportunity to doing the XRD at Faculty of Chemical Engineering, UiTM Shah Alam. My sincere thank also go to Dr. Syed Yusainee b. Syed Yahya as my Co-Supervisor where guide me when prepare this project. And I would like to particularly wish to Madihah bt. Mujaini , Muzammir b. Abu Bakar , Masnita bt. Mat Jusoh, Nurul Huda bt. Ahmad and Norashikin bt. Abdul Rasih which helped me when do the experiment. Finally I would like to thanks everyone else who contributed to finish this project.

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## ABSTRACT

### Effect of Nano $SnO_2$ Addition on Superconducting Properties of $YBa_2Cu_3O_{7-\delta}$ (YBCO) Superconductor

The effect of nano $SnO_2$ particle addition on superconducting properties of $YBa_2Cu_3O_{7-\delta}$ (YBCO) ceramics was systematically studied. Samples were synthesized using a standard solid state reaction technique by adding nanoparticles $SnO_2$ up to 0.8 wt%. The phase formation for samples 0.0wt% and 0.2wt% was characterized by X-ray diffraction (XRD) using Rigaku X-Ray Diffractometer. The crystal lattice parameters were found are not change and the orthorhombicity still remained with addition of nano $SnO_2$.With the increase of nano $SnO_2$ addition, the superconducting transition temperature determined by standard four-probe method measurement decreased to 70K for x = 0.8 wt%, then dropped sharply with higher nano $SnO_2$ concentration. Results are discussed in relation with decreasing $J_c$ with as an amount of the nano $SnO_2$ added. The value of $J_c$ are not enhanced in the superconductor YBCO with higher-level concentration ($x$>0.2wb %) in the addition of nano of $SnO_2$ added to the samples.