

**EFFECT OF NANO SnO₂ ADDITION ON SUPERCONDUCTING
PROPERTIES
OF YBa₂Cu₃O_{7-δ} (YBCO) SUPERCONDUCTOR**

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**Final Year Report Submitted in
Partial Fulfillment of the Requirements for the
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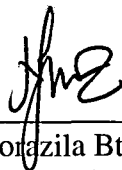
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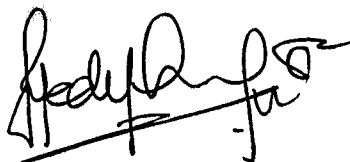
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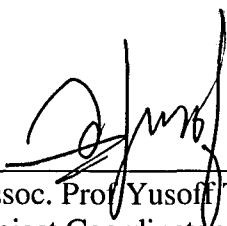
This Final Year Project Report entitled “Effect of Nano SnO₂ Addition on Superconducting Properties of YBa₂Cu₃O_{7-δ} (YBCO) Superconductor” was submitted by Mohd Riduan Bin Rasul, in partial fulfillment of the requirements of the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by



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ABSTRACT

Effect of Nano SnO₂ Addition on Superconducting Properties of YBa₂Cu₃O_{7-δ} (YBCO) Superconductor

The effect of nano SnO₂ particle addition on superconducting properties of YBa₂Cu₃O_{7-δ} (YBCO) ceramics was systematically studied. Samples were synthesized using a standard solid state reaction technique by adding nanoparticles SnO₂ 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 SnO₂. With the increase of nano SnO₂ 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 SnO₂ concentration. Results are discussed in relation with decreasing J_c with as an amount of the nano SnO₂ added. The value of J_c are not enhanced in the superconductor YBCO with higher-level concentration ($x > 0.2$ wt %) in the addition of nano of SnO₂ added to the samples.