

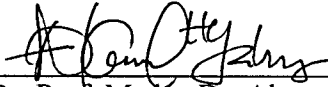
**SYNTHESIS AND EFFECT OF Bi AND Ag SUBSTITUTIONS ON
RESISTIVITY AND MAGNETORESISTANCE OF $(La_{1-x}Bi_x)_{1-y}Ag_yMnO_3$**

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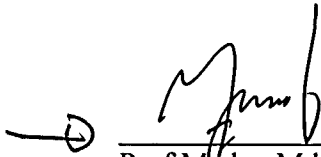
**Final Year Project Report Submitted in
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This Final Year Project Report entitled “Synthesis and Effect of Bi and Ag Substitutions on Resistivity and Magnetoresistance of $(La_{1-x}Bi_x)_{1-y}Ag_yMnO_3$ ” was submitted by Enera Entik Anak David, in partial fulfillment of the requirements for the Degree of Bachelor of Science (Hons.) Physics, in the Faculty of Applied Sciences, and was approved by



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ABSTRACT

SYNTHESIS AND EFFECT OF Bi AND Ag SUBSTITUTIONS ON RESISTIVITY AND MAGNETORESISTANCE OF $(\text{La}_{1-x}\text{Bi}_x)_{1-y}\text{Ag}_y\text{MnO}_3$

The compound $(\text{La}_{1-x}\text{Bi}_x)_{1-y}\text{Ag}_y\text{MnO}_3$ ($y=0.30$, $x = 0.05, 0.10, 0.20$) was synthesized using solid state reaction technique. The transition from metallic behavior ($T < T_M$) to insulating behavior ($T > T_M$) of resistivity as a function of temperature has been observed. When $H=0\text{T}$, the substitutions of Bi and Ag caused the peak resistivity $\rho(0, T_M)$ to be decreased for $x=0.05-0.10$. However, at $x=0.20$, the peak resistivity $\rho(0, T_M)$ increased. This is probably due to increase in electrons localization as a result of Jahn-Teller effect. Under $H=0.7\text{T}$, the resistivity $\rho(0.7, T)$ of all samples decreased if compared to at $H=0\text{T}$. This may be due to spin of electrons are more aligned due to the external magnetic field. The highest MR of 28.5% was observed at $x=0.05$. The metallic part of resistivity region ($T < T_M$) was best fitted to the model of electron-magnon scattering while the insulating region ($T > T_M$) was fitted to the small polaron hopping model. The activation energy of 22 meV was obtained for all samples.