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**Structural, magnetic, transport and dielectric properties of Lu, Y substituted nickel ferrite** UGENDAR KODAM, Research Scholar, MARKANDEYULU GARIMALLA, Department of Physics, IIT Madras, Chennai-600036, Tamil Nadu, India — Structural, magnetic and transport properties of Lutetium (Lu) and Yttrium (Y) substituted Nickel ferrite (NFO)  $\text{NiFe}_{1.925}\text{R}_{0.075}\text{O}_4$  (R=Lu, Y) were investigated. The samples were prepared by the solid-state reaction method. The materials formed in the cubic inverse spinel phase with small amounts of  $\text{RFeO}_3$  as secondary phases. The back scattered electron imaging confirms both phase. A small rhombohedral distortion of the cubic lattice was observed upon the substitution of Fe by R in the B site. Substitution of Lu and Y for Fe decreased saturation magnetization compared with pure NFO but no change in Curie temperature in contrast to reported. The saturation magnetostriction is seen not to change significantly by the substitution of Lu and Y. Electrical conductivity curves shows the semiconducting magnetic oxide nature. Analysis of the temperature-dependent conductivity indicates that the small polaron and variable-range-hopping mechanisms are operative in the 250-300 and 200-100 K temperature regions, respectively. The dielectric constant of the materials were decreased from that of the pure NFO. Frequency variation of the dielectric constant at room temperature shows a dispersion that could be modeled using modified Debye function which considers the more than one ion contributing to the relaxation.

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