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# AC Conductivity and Dielectric Properties of TiCo Substituted Ytype Strontium Nano Hexa-ferrites Prepared by Sol Gel Autocombustion

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## Abstract

Six compounds of polycrystalline NiMn Y-type strontium nano-hexaferrites substituted with  $Ti^{4+}Co^{2+}$ , having chemical composition  $Sr_2NiMnFe_{12-X}(TiCo)_{X/2}O_{22}$  ( $0 \le x \le 2.5$  with a step of 0.5) were formed by sol-gel auto-combustion route through microwave and sintered at 950  $^{0}C$  for 5 hr. The grain size of the prepared sample (x=0.5) measured from Scherer formula is 62 nm. The frequency

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dependant ac conductivity, dielectric constant and tangent loss were measured at room temperature in the range 100Hz - 0.2 MHz by the LCR-Q meter. The carrier transfer mechanism between localized states in ferrites can be explained by Maxwell-Wagners suggested model of interfacial polarization and Koop's phenomenological theory of dielectric. The dielectric measurements at different temperature were also carried out. Dielectric relaxation peak on tan  $\delta(\omega)$  curve is observed and discussed on the basis of dielectric polarization.

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