

## Structural, electrical and magnetic properties of nano spinel ferrite

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The structural, electrical and magnetic properties of Co-spinel nano ferrites synthesized by combustion route have been studied. The thermo-gravimetric study reveals that the stable phase formation above  $\sim 620^\circ\text{C}$ . Structural characterization was carried out by using the X-ray diffraction technique. The X-ray diffraction study reveals that the lattice constant of cobalt nano ferrites increases with the increase of Mn content. Dielectric properties of Co-ferrite have been studied with frequency and temperature dependence. Room temperature magnetization measurement showed that for the substitution of Co by Mn, there is an initial increase in saturation magnetization ( $M_s$ ) and remanence ( $M_r$ ) for  $x=0.0$  to  $x=0.4$  and decrease for  $x=0.5$ . The coercivity values of the samples increases with increase of Mn content. The sample  $\text{Co}_{0.7}\text{Mn}_{0.3}\text{Fe}_2\text{O}_4$  exhibit the superior magnetic properties which can be further employed to form magnetoelectric (ME) composites useful for sensor applications.

### Biography:

He obtained his Doctorate (Ph.D.) from Guru Nanak Dev University, Amritsar, India in 1987. He was Visiting Faculty at Department of Physics, Grambling State University, Grambling, Louisiana, LA 71245, USA and worked as Visiting Scientist at International Centre for Theoretical Physics, Italy and Jozef Stefan Institute, Ljubljana, Yugoslavia.

He had completed sponsored research projects successfully on "Development of Lead based Ceramics for applications in Pyro-electric IR Sensors", "On the transport properties of III -V Compound semi - conducting Thin Films", "Development of  $\text{Ga}_x\text{In}_{1-x}\text{Sb}$  thin films for Device applications" and "Development of LPE for semiconducting thin films".

He published book entitled, "Experiments in Materials Sciences" and was the Guest Editor for the special issue on **Material Science: Trends and Future**, published by Indian Journal of Engineering & Material Science.