

## **DIELECTRIC BEHAVIOUR OF COBALT FERRITE NANOPARTICLES**

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### **ABSTRACT**

The cobalt ferrite (CoFe<sub>2</sub>O<sub>4</sub>) samples of different particle size were successfully prepared by nitrate route. The X-ray diffraction (XRD) patterns of all the samples show the single phase spinel structure of nanoparticles. The dielectric constant and loss tangent for the samples were determined as a function of frequency, and the frequency range was used from 75 kHz to 5 MHz. The dielectric constant and the loss tangent decreases rapidly with increasing frequency, and then reaches a constant value. Low dielectric constants materials are required for high –frequency application in electrical circuits, to reduce dielectric losses and skin effect. The high value of electrical resistivity in ferrite is suitable for the high frequency application where eddy current losses are appreciable. The resistivity is decreased with increase in temperature and the material behaves like a semiconductor.

**KEYWORDS:** XRD, Dielectric Constant, Dielectric Loss and Electrical Resistivity