

## Behavior of Nanocrystalline Nickel-Cobalt Ferrite ( $\text{Ni}_{1/2}\text{Co}_{1/2}\text{Fe}_2\text{O}_4$ ) in Electromagnetic interference (EMI) Shielding Applications

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### Abstract

In the present paper, our aim is to show how the prepared nickel-cobalt ferrite ( $\text{Ni}_{1/2}\text{Co}_{1/2}\text{Fe}_2\text{O}_4$ ) material is playing a leading role in the data transmission and data storage applications. The nickel-cobalt ferrite ( $\text{Ni}_{1/2}\text{Co}_{1/2}\text{Fe}_2\text{O}_4$ ) material is prepared by the well-known citrate route method at room temperature. In this research work, we verified the crystal structure of the prepared material by the X-Ray diffraction (XRD) pattern. The electrical properties of prepared  $\text{Ni}_{1/2}\text{Co}_{1/2}\text{Fe}_2\text{O}_4$  material are calculated by Impedance Analyzer. The dielectric Behavior of the prepared material with a frequencies range 100 kHz-100 MHz and various temperatures ( $30^\circ\text{C}$ - $200^\circ\text{C}$ ) providing information that, the prepared material have the characteristics that high frequency, high temperature values close to low temperature, low frequency values, which makes this material to be used at high frequency (100 MHz) and high temperature ( $200^\circ\text{C}$ ) as room temperature applications.

**Key words:** EMI Shielding, Shielding Effectiveness (SE), Nickel-Cobalt Ferrite ( $\text{Ni}_{1/2}\text{Co}_{1/2}\text{Fe}_2\text{O}_4$ ), Magnetic Material, Absorption loss and Reflection loss.