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## Zn-Cr Co-Substitution Effect on Structural and Electromagnetic Properties of CuFe<sub>2</sub>O<sub>4</sub> via Oxalate Decomposition Route

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### Abstract

Zn-Cr-co-substituted Cu<sub>1-x</sub>Zn<sub>x</sub>Fe<sub>2-2x</sub>Cr<sub>2x</sub>O<sub>4</sub> ferrites (where x = 0.0-0.5) were prepared via thermal decomposition of oxalate precursors. The thermal decomposition up to ferrites formation was followed by differential thermal analysis-thermogravimetry measurements. Mossbauer technique was used to predict the possible cation distribution of the entire system, and X-ray diffraction, Fourier transform infrared, and electromagnetic measurements were used for confirmation. The superparamagnetic characteristics estimated via Mossbauer studies, for samples with higher substitution, agreed well with vibrating sample magnetometer, magnetic susceptibility, and conductivity results. All the samples showed semiconducting properties in which conductivity decreases by increasing substitution. The effect of cationic substitution on the entire system was investigated and discussed.

### Keywords

**Author Keywords:** [conductivity](#); [electromagnetic properties](#); [thermal decomposition](#); [ferrites](#)

**KeyWords Plus:** [MAGNETIC-PROPERTIES](#); [CATION DISTRIBUTION](#); [ZINC FERRITE](#); [NONISOTHERMAL DECOMPOSITION](#); [DIELECTRIC-PROPERTIES](#); [NICKEL FERRITES](#); [EGG-WHITE](#); [COPPER](#); [MOSSBAUER](#); [NANOPARTICLES](#)

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