Abstract

Mixed Co-Li-Ni-Zn ferrites having the general formula Li0.5Ni0.25-x/2Cox/2Zn0.5Fe2O4 (where x=0, 0.1, 0.2, 0.3, 0.4 and 0.5) were prepared using auto combustion method. X-ray analysis reveals the polycrystalline nature of the samples. The lattice parameter and particle size increase with increase in Co content. The dielectric parameters were measured at room temperature in the frequency range 20Hz – 1MHz using a HP 4284 impedance analyzer. Plots of dielectric constant (\(\varepsilon\)) vs frequency show normal dielectric behavior of spinel ferrites. The frequency dependence of dielectric loss tangent (\(\tan \delta\)) is found to display a peak at certain frequency. The composition and frequency dependence of the dielectric constant and dielectric loss tangent is explained in terms of ferrous ion concentration. The low dielectric constant makes these ferrite materials useful in high frequency applications.

References

- J. Smit and H. P. Wijn : &quot;Ferrites&quot; Physical properties of ferromagnetic oxides in relation to their technical applications(Philips,Eindhoven) ,1959
Index Terms

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Keywords

Co-li-ni-zn Ferrites; Chemical Method; Nanoparticles; Dielectric Constant; Dielectric Loss Tangent