Abstract Submitted for the MAR12 Meeting of The American Physical Society

Sorting Category: 10.1.1 (E)

Preparation and Characterization of Mg Substituted NiCuZn Nano Ferrites for Multilayer Chip Inductors R.C. REDDY A, SUJATHA CH, VENUGOPAL REDDY K, SOWRI BABU K, National Inst. of Technology Warangal - 506004 (A.P) India, H.RAO K, Andhra University Visakhapatnam - 530003 (A.P) India — The present paper examines the effect of magnesium substitution on structural and magnetic properties of NiCuZn nano ferrites synthesized by sol - gel method. Formation of single phase spinel structure was confirmed both from XRD and FTIR. The initial permeability shows decreasing trend with increasing Mg concentration due to reduced magnetization, grain size and increased magneto - crystalline anisotropy constant. At the same time, the cut off frequency increases with increasing Mg content. This is attributed to domain wall pinning arising due to the presence of non magnetic magnesium ions. Also the permeability is observed to be constant up to 10MHz frequency range showing compositional stability and quality of the material. The magnetic loss factor shows very low values at higher frequencies. It is concluded that even though both zinc and magnesium are non magnetic ions, substitution of one cation by another prone to influence the magnetic properties due to their change in dimension and cation distribution among the two available sites of a spinel system. These samples have advantages of low sintering temperature find applications in multilayer chip inductors due to their high and constant permeability even at higher frequencies.



Prefer Oral Session Prefer Poster Session Sujatha Ch chsuji2@gmail.com National Inst. of Technology Warangal - 506004 (A.P) India

Date submitted: 03 Feb 2012

Electronic form version 1.4