

Abstract Submitted  
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**Studies on manganese substituted cobalt ferrite prepared by autocombustion route** Y. KOLEKAR, Pune University, R. KAMBALE, Shivaji University, Kolhapur, R. GUPTA, P. KAHOL, K. GHOSH, Missouri State University — Compositions of  $\text{Co}_{1.2-x}\text{Mn}_x\text{Fe}_{1.8}\text{O}_4$  ( $0 = x = 0.4$ ) were synthesized by autocombustion route keeping oxidizer to fuel ratio at 1. Structural and compositional characterizations of all the samples were performed by XRD, SEM and EDS. Magnetization measurements showed that the  $M_s$  increases from 106.5 emu/g for  $x = 0.0$  to 138.5 emu/g for  $x = 0.2$  and then decreases from  $x = 0.3$  (124.71 emu/g for  $x = 0.3$  and 97.78 emu/g for  $x = 0.4$ ), whereas the coercivity ( $H_c$ ) decreases with manganese (Mn) substitution, except for  $x = 0.3$ . Room temperature dielectric properties such as relative dielectric permittivity ( $\epsilon_r$ ), dielectric loss and ac conductivity, were studied as a function of frequency in the range from 20 Hz to 1 MHz. These studies indicate that the relative dielectric permittivity increases (from  $\epsilon_r = 600$  for  $x = 0.0$  to  $\epsilon_r = 2400$  for  $x = 0.4$ ) with the increase of Mn content in cobalt ferrite and also all samples show the usual dielectric dispersion which may be due to the Maxwell-Wagner-type of interfacial polarization. Dr. Y. D. Kolekar gratefully acknowledges the award of BOYSCAST fellowship by Department of Science and Technology, India. \*On leave from Department of Physics, University of Pune, Pune- 411 007, India.

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