Available online at **www.joac.info**

ISSN: 2278-1862

Journal of Applicable Chemistry

2014, 3 (4): 1569-1574

(International Peer Reviewed Journal)

Synthesis And Characterization of Spinel Ferrite $Cu_{1-x}Fe_xMn_{1-x}Co_xCr_{1-x}Al_xO_4$

Sachin J. Deshmukh* and A.Venkatachalam

*Department of Chemistry, PAHER University, Udaipur, Rajasthan-313024, **INDIA**

Email: sachinjd@outlook.com

Accepted on 14th June 2014

ABSTRACT

The spinel ferrite $Cu_{1-x}Fe_xMn_{1-x}Co_xCr_{1-x}Al_xO_4$where $0\leq x\leq 1$ has been prepared by the co-precipitation technique and is characterized by XRD, IR, Catalytic and saturation magnetization studies. All the compounds in the system form the single cubic spinel phase. IR spectra of the compounds show absorption bands in the region of 500-1500 cm^{-1}. Catalytic studies using decomposition of H_2O_2 as a model reaction between 303-343K using first order rate law suggested lower catalytic power for the composition x = 0.00 and then it increases gradually. The activation energy values calculated from catalytic studies between 303-313K and 333-343K are in the range of 82.56 KJ $Mole^{-1}$ to 72.00 KJ $Mole^{-1}$. Saturation magnetization values calculated using 2200 gauss magnetic field, magnetization value (15 emu gm^{-1}).

Keywords: Spinel ferrites, XRD, FTIR, Magnetic Hysteresis, Catalytic studies.