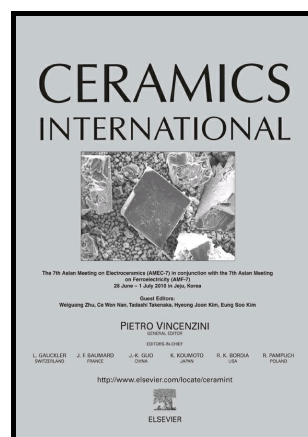


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**Chromium incorporated nanocrystalline cobalt ferrite synthesized by  
combustion method: Effect of fuel and temperature**

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**Abstract**

Nanocrystalline  $\text{CoCrFeO}_4$  samples were prepared by Cost effective and low temperature combustion method using different fuels as glycine, urea and polyvinyl alcohol and the effect of temperature on their physical properties has been studied. The thermal study of the precursor gels was done by using Thermogravimetric and Differential thermal analysis (TG-DTA). Occurrence of the cubic spinel phase for the samples was confirmed by the Rietveld analysis of X-ray diffraction (XRD) data. The refinement results also confirm that the cationic distribution over the tetrahedral and octahedral sites in the spinel lattice of samples is partially inverse. The magnetic studies indicate a superparamagnetic behavior, showing an increase in the blocking temperatures with the particle size in case of all fuels. All the samples showed

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