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Tin, Manganese doped chromium iron oxides of composition $\alpha\text{-Sn}_{0.2}\text{Cr}_{1.8-x}\text{Fe}_x\text{O}_3$ and $\alpha\text{-Mn}_{0.2}\text{Cr}_{1.8-x}\text{Fe}_x\text{O}_3$

We have investigated single phase formation in a series of $(\text{Sn}, \text{Mn})_{0.2}\text{Cr}_{1.8-x}\text{Fe}_x\text{O}_3$ produced by low temperature synthesis based on hydrothermal process in a reflux system and in a stirred pressure reactor. The evolution of the properties is investigated by X-ray diffraction (XRD) and by magnetic measurements. Evidence of successful Sn or Mn incorporation into the corundum structure is obtained. ^{57}Fe Mössbauer spectra show the materials to be paramagnetic for Fe concentration $x \leq 0.5$ and in ordered magnetic state at higher concentration. Rietveld structure refinement of the XRD spectra is employed in the analysis.

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