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Neutron diffraction and magnetic properties of $\text{Sr}_2\text{Fe}_{0.9}\text{Cr}_{0.1}\text{MoO}_6$

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Abstract

The crystalline structure of the ordered perovskite $\text{Sr}_2\text{Fe}_{0.9}\text{Cr}_{0.1}\text{MoO}_6$ has been determined to be tetragonal at room temperature, with lattice parameters $a_0 = 5.578 \text{ \AA}$ and $c_0 = 7.866 \text{ \AA}$. The lattice volume of Cr doped sample was smaller than that of $\text{Sr}_2\text{FeMoO}_6$. Neutron diffraction patterns for the $\text{Sr}_2\text{Fe}_{0.9}\text{Cr}_{0.1}\text{MoO}_6$ compound have been taken at different temperatures, from 10 to 473 K. The crystal symmetry is cubic ($Fm\bar{3}m$) in the paramagnetic phase and tetragonal ($I4/mmm$) in the ferrimagnetic phase. The Curie temperature of Cr doped sample is 415 K.

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