UA03

Study on Structural and Magnetic Properties of $Sr_{1-x}La_xFe_{12}O_{19}$ and $SrLa_xFe_{12-x}O_{19}$ (x = 0÷0.2) Prepared by Sol-gel Method

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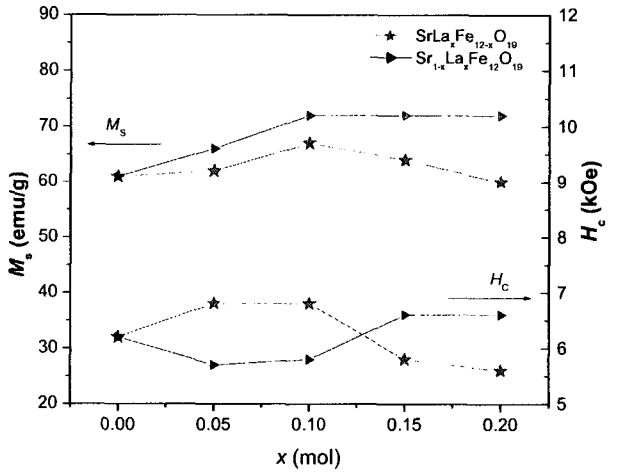
M-type hexagonal ferrites of composition $Sr_{1-x}La_xFe_{12}O_{19}$ and $SrLa_xFe_{12-x}O_{19}$ (x = 0÷0.2) were produced by sol-gel method. The as-synthesized particles were heated at temperatures ranging from 800°C to 1050°C for 2 h in air. The effects of the substitution of La^{3+} for Sr^{2+} and for Fe^{3+} ion in ferrites on their magnetic properties were investigated. The analyses reveal for all the samples the single Sr-M phase after calcinating at temperature of 1050°C. At room temperature, the coercivity (H_c) and saturation magnetization (M_S) values of the samples $Sr_{1-x}La_xFe_{12}O_{19}$ increase with increasing x, while these values of the samples $SrLa_xFe_{12-x}O_{19}$ increases considerably in samples x = 0 and 0.1 and largely decrease when x increases (see fig).



The saturation magnetization (M_S) and coercivity (H_c) at room temperature of the samples after calcination for 2h at 950°C depend on the concentration La substitution.

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UA04

Magnetic and Electronic Properties of $CeCo_2$ Studied by Synchrotron Radiation

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The electronic state and magnetic properties of $CeCo_2$ bulk and nanoparticles have been investigated using element-specific techniques, X-ray absorption spectroscopy (XAS) and X-ray magnetic circular dichroism (XMCD). The analysis of the Ce L_3-edge XAS spectra revealed increased $4f^1$ electronic states in nanopartices with respect to the bulk, which reflects the valence of Ce is decreased. In addition, spectroscopic results from the XMCD signals at Co $L_{2,3}$-edges and Ce $M_{4,5}$-edges indicate that $CeCo_2$ undergoes a nonmagnetic and a magnetic transition with size reduction. The XAS and XMCD measurements evidence that electronic and magnetic property changes were attributed to the charge transfer induced by the surface effect.