

UA03

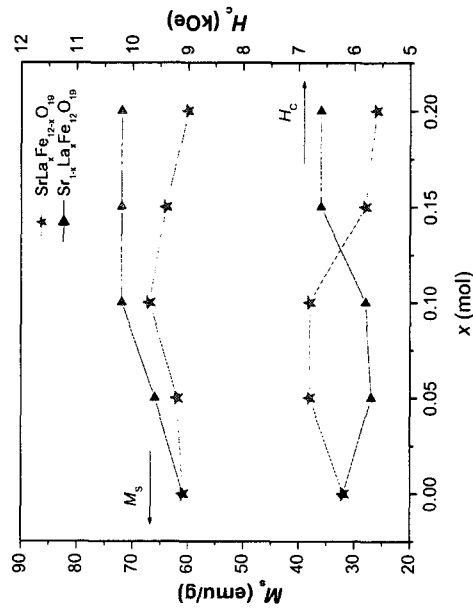
Study on Structural and Magnetic Properties of $\text{Sr}_{1-x}\text{La}_x\text{Fe}_{12}\text{O}_{19}$ and $\text{SrLa}_x\text{Fe}_{12-x}\text{O}_{19}$ ($x = 0-0.2$) Prepared by Sol-gel Method

T. T. V. Nga, T. D. Hien, N. P. Duong and T. D. Hoang

International Training Institute for Materials Science (ITIMS)
Hanoi University of Technology, 01 Dai Co Viet Str., Hanoi, Vietnam

*Corresponding author: vietnga@itims.edu.vn Phone: + 04 8 692 136, Fax: 04 869 2006

M-type hexagonal ferrites of composition $\text{Sr}_{1-x}\text{La}_x\text{Fe}_{12}\text{O}_{19}$ and $\text{SrLa}_x\text{Fe}_{12-x}\text{O}_{19}$ ($x = 0-0.2$) 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 $\text{Sr}_{1-x}\text{La}_x\text{Fe}_{12}\text{O}_{19}$ increase with increasing x , while these values of the samples $\text{SrLa}_x\text{Fe}_{12-x}\text{O}_{19}$ 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

C. L. Dong^{*1}, Y. Y. Chen¹, P. C. Chen¹, C. L. Chen², Y. S. Liu², J. L. Chen²,
C. L. Chang², and J.-H. Guo³

¹ Institute of Physics, Academia Sinica, Taipei 11529, Taiwan, R.O.C.

² Department of Physics, Tamkang University, Tamsui 251, Taiwan, R.O.C.

³ Advanced Light Source, Lawrence Berkeley National Laboratory, Berkeley, CA 94720

*Corresponding author: eldong@physics.sinica.edu.tw, Phone: +886 2 2788 0058-6035, Fax: +886 2 2783 4187

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_{2,3}-edge XAS spectra revealed increased 4f¹ electronic states in nanoparticles 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.