

13TH INTERNATIONAL CONFERENCE ON

ADVANCED MATERIALS AND NANOTECHNOLOGY

OCTOBER 26-28, 2017 OSAKA, JAPAN

Effect of Nd doping on the structural, magnetic and magnetocaloric properties of double perovskite $\text{Sr}_{2-x}\text{Nd}_x\text{FeMoO}_6$ **So Eun Jeon, Imad Hussain, Tae Hwan Noh, Min Soo Kim and Bon Heun Koo**
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The Fe-Mo based double perovskites have attracted much attention in the field of materials science due to their multiverse fascinating physical properties which make them suitable candidates for several technological applications. In the present work, the $\text{Sr}_{2-x}\text{Nd}_x\text{FeMoO}_6$ ($0.0 \leq x \leq 0.3$) samples have been investigated for their structural, magnetic and magnetocaloric properties. Polycrystalline $\text{Sr}_{2-x}\text{Nd}_x\text{FeMoO}_6$ ($0.0 \leq x \leq 0.3$) samples were prepared by using the conventional solid-state reaction method. To achieve the target double perovskite phase and to minimize the undesirable secondary phases, the samples were sintered in a reducing atmosphere, created by a gas mixture of 5% H_2 /95% Ar. The structure, microstructure and phase purity of the samples were investigated by X-ray Diffraction (XRD) and Scanning Electron Microscopy (SEM). XRD study confirmed the formation of tetragonal structure with Fm3m space group in all the synthesized samples. The Arrott plots and magnetization measurements showed a second order of ferromagnetic phase transition in all the fabricated samples. All the samples went through a paramagnetic to ferromagnetic phase transition at the Curie temperature (TC). A magnetocaloric effect was calculated in terms of isothermal magnetic entropy change. The value of the Relative Cooling Power (RCP) was observed to decrease with the increasing Nd content. A significant variation in the magnetocaloric properties of the samples was observed with the increasing Nd concentration. This investigation suggests that $\text{Sr}_{2-x}\text{Nd}_x\text{FeMoO}_6$ samples can be used as potential magnetic refrigerants for magnetocaloric applications.

Biography

So Eun Jeon is currently a student at Changwon National University, Republic of Korea. She has published numerous research papers and articles in reputed journals and has various other achievements in the related studies. She has extended her valuable service towards the scientific community with her extensive research work.

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