Magnetocaloric Effect of Double Perovskite Manganite La0.8Ø0.6Ca1.6Mn2O7 having the Magnetostructural Transition

C.G. Ünlü,[1] A. Tekgül,[2] M. Acet,[3] and M. Farle[3]

[1] *Department of Biomedical Engineering, Pamukkale University, Denizli Turkey*

[2] *Department of Physics, Uludag University, Bursa, Turkey*

[3] *Faculty of Physics, Universität Duisburg-Essen, Duisburg, Germany*

The sintering of some perovskites was dominated by the diffusion of A-site cations during the densification, and A-site cation vacancies could assist the diffusion of A-site cations. Therefore, the porosities are created by this process. Furthermore, the magnetic properties and magnetocaloric effect of materials is controlling by porosity. We present a new approach introducing porosity in the bilayered Ruddlesden-Popper Perovskites $La_{1.4}Ca_{1.6}Mn_2O_7$ perovskite manganite. Here, A-site deficient is created by the evaporation of K^{1+} during the high temperature sintering and this evaporation supports the porosities of crystal structure of the material. It is shown that there is a structural transition associated with the ferromagnetic-paramagnetic transition. The results reveal that two phase transitions exist within the range from room temperature to 112 K: orthorhombic (O)-tetragonal (T)-rhombohedral (R).