Navigasyonu DeÃ„ÂŸiÃ ÂŸtir

- HakkÃ„Â±nda
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  - DergiPark Ekibi
  - KatÃ„Â±lÃ„Â±m SÃƒÂ¶zleÃ ÂŸmesi
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  - DiÃ„ÂŸer
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Influence of Gd Substitution on Structural, Magnetic and Magnetocaloric Properties in (La0.8Gd0.2)0.85Ag0.15MnO3 Perovskite Manganite System

(La0.8Gd0.2)0.85Ag0.15MnO3 Perovskit Manganit Sisteminde Gd Yer DeÃ„ÂŸiÃ ÂŸtirmesinin YapÃ„Â±sal Manyetik ve Manyetokalorik ÃƒÂ–zellikleri ÃƒÂœzerine Etkisi

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In this paper, the effect of Gd substitution with La on structural, magnetic and magnetocaloric properties in $(La_{0.8}Gd_{0.2})_{0.85}Ag_{0.15}MnO_3$ manganite sample prepared by sol-gel method has been studied. The crystal properties have been investigated by x-ray diffraction technique that shows the sample is in rhombohedral structure with Rc space group. In addition to this structure, small amount of reflections belongs to $GdMn_2O_5$ phase is detected. Scanning electron microscope images show that the sample is constituted from square shaped grains. Energy dispersive x-ray spectroscopy analysis shows that the sample includes all expected elements. The sample exhibits magnetic phase transition from ferromagnetic to paramagnetic phase at around 149 K temperature. Applied field dependence of magnetization under isothermal process *M(H)* shows that the nature of the phase transition is second order and maximum magnetic entropy change (*-ÃŽÂ”S_M*) value calculated from *M(H)* curves is found as 1.73 J/kgK under 50 kOe external magnetic field change.

Bu makalede, sol-jel yÃƒÂ¶ntemi ile hazÃ„Â±rlanan $(La_{0.8}Gd_{0.2})_{0.85}Ag_{0.15}MnO_3$ sisteminde Gd ile La yer deÃ„ÂŸiÃ ÂŸtirmesinin yapÃ„Â±sal, manyetik ve manyetokalorik etkileri ÃƒÂ§alÃ„Â±Ã ÂŸÃ„Â±lmÃ„Â±Ã ÂŸtÃ„Â±r. Kristal yapÃ„Â± X-IÃ ÂŸÃ„Â±nlarÃ„Â± kÃ„Â±rÃ„Â±nÃ„Â±m tekniÃ„ÂŸi ile araÃ ÂŸtÃ„Â±rÃ„Â±lmÃ„Â±Ã ÂŸtÃ„Â±r ve bu teknik ÃƒÂ¶rneÃ„ÂŸin Rc uzay grubunda rombohedral yapÃ„Â±da oluÃ„ÂŸunu gÃƒÂ¶stermiÃ ÂŸtir. Bu yapÃ„Â±nÃ„Â±n yanÃ„Â±nda $GdMn_2O_5$ yapÃ„Â±sÃ„Â±na ait ÃƒÂ§ok kÃƒÂ¼ÃƒÂ§ÃƒÂ¼k miktarda safsÃ„Â±zlÃ„Â±k fazÃ„Â±na ait yansÃ„Â±malar da tespit edilmiÃ ÂŸtir. TaramalÃ„Â± Elektron Mikroskobu fotoÃ„ÂŸraflarÃ„Â± ÃƒÂ¶rneÃ„ÂŸin kare yapÃ„Â±lÃ„Â± taneciklerden oluÃ ÂŸtuÃ„ÂŸunu gÃƒÂ¶stermektedir. X-Ã„Â±Ã ÂŸÃ„Â±nlarÃ„Â± spektroskopisi analizleri ise ÃƒÂ¶rneÃ„ÂŸin tÃƒÂ¼m beklenen elementleri iÃƒÂ§erdiÃ„ÂŸini gÃƒÂ¶stermiÃ ÂŸtir. SÃ„Â±caklÃ„Â±Ã„ÂŸa baÃ„ÂŸlÃ„Â± mÃ„Â±knatÃ„Â±slanma, *M(T)*, ÃƒÂ¶lÃƒÂ§ÃƒÂ¼mleri sÃ„Â±caklÃ„Â±Ã„ÂŸÃ„Â±n artÃ„Â±Ã ÂŸÃ„Â±yla ÃƒÂ¶rneÃ„ÂŸin 149 K sÃ„Â±caklÃ„Â±kta ferromanyetik fazdan paramanyetik faza doÃ„ÂŸru bir manyetik faz geÃƒÂ§iÃ ÂŸi sergilediÃ„ÂŸini gÃƒÂ¶stermiÃ ÂŸtir. Ã„Â°zotermal Ã ÂŸartlarda yapÃ„Â±lan, uygulanan alana baÃ„ÂŸlÃ„Â± mÃ„Â±knatÃ„Â±slanma, *M(H)*, ÃƒÂ¶lÃƒÂ§ÃƒÂ¼mleri faz geÃƒÂ§iÃ ÂŸinin doÃ„ÂŸasÃ„Â±nÃ„Â±n ikinci dereceden oluÃ„ÂŸunu gÃƒÂ¶stermiÃ ÂŸtir ve *M(H)* verisinden maksimum manyetik entropi deÃ„ÂŸiÃ ÂŸim deÃ„ÂŸeri, (*-ÃŽÂ”S_M*), 50 kOe dÃ„Â±Ã ÂŸ manyetik alan deÃ„ÂŸiÃ ÂŸimi altÃ„Â±nda, 1.73 J/kgK olarak hesaplanmÃ„Â±Ã ÂŸtÃ„Â±r.Ã‚Â

Anahtar Kelimeler

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magnetocaloric effect, magnetic entropy change, Perovskites, magnetic cooling, magnetic entropy change

Perovskitler, manyetik soÃ„ÂŸutma, manyetokalorik etki, manyetik entropi deÃ„ÂŸiÃ ÂŸimi

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AyrÃ„Â±ntÃ„Â±lar

Birincil Dil	en
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