Accepted Manuscript

A giant magnetocaloric effect in $EuTi_{0.875}Mn_{0.125}O_3$ compound

ZhaoJun Mo, QiLei Sun, Jun Shen, ChangHong Wang, FanBin Meng, MoHan Zhang, Ying Huo, Lan Li, GuoDong Liu

PII: S0925-8388(18)31117-4

DOI: 10.1016/j.jallcom.2018.03.247

Reference: JALCOM 45477

To appear in: *Journal of Alloys and Compounds*

Received Date: 21 December 2017

Revised Date: 18 March 2018

Accepted Date: 20 March 2018

Please cite this article as: Z. Mo, Q. Sun, J. Shen, C. Wang, F. Meng, M. Zhang, Y. Huo, L. Li, G. Liu, A giant magnetocaloric effect in $EuTi_{0.875}Mn_{0.125}O_3$ compound, *Journal of Alloys and Compounds* (2018), doi: 10.1016/j.jallcom.2018.03.247.

A giant magnetocaloric effect in $EuTi_{0.875}Mn_{0.125}O_3$ compound

ZhaoJun Mo [*] [1]; QiLei Sun[2]; Jun Shen[4]; ChangHong Wang[3]; FanBin Meng[2]; MoHan Zhang[1]; Ying Huo[1]; Lan Li[1]; GuoDong Liu[2]

[1]. School of Material Science and Engineering, Institute of Material Physics, Key Laboratory of Display Materials and Photoelectric Devices of Ministry of Education of Ministry of Education, Key Laboratory for Optoelectronic Materials and Devices of Tianjin, Tianjin University of Technology, Tianjin 300191, China.

[2]. School of Material Science and Engineering, Hebei University of Technology, Tianjin, China.

[3]. School of Science, Tianjin University of Technology, Tianjin 300191, China.

[4]. Key laboratory of cryogenics, Technical Institute of Physics and Chemistry, Chinese Academy of Sciences, Beijing, China.

Abstract: The magnetic properties and magnetocaloric effect of $EuTi_{0.875}Mn_{0.125}O_3$ compounds are investigated. $EuTi_{0.875}Mn_{0.125}O_3$ compounds show the ferromagnetic to paramagnetic magnetic transition at T_c = 5.5 K. There are 15.48% Eu^{2+} ions that change into Eu^{3+}, because the concentrations of Mn^{2+} and Mn^{4+} are 7.74% and 4.76% in the $EuTi_{0.875}Mn_{0.125}O_3$ compounds. Although, the magnetic moments were decreased, the utilization of spin entropy of Eu^{2+}: $4f^7$ localized moments was improved. A giant reversible magnetocaloric effect was observed in $EuTi_{0.875}Mn_{0.125}O_3$ compounds. The maximum value

[*] Corresponding author at: 391 Binshui Xidao, Xiqing District Tianjin 300384, P.R.China Tel: +86-22-60215338 electronic mail: mzjmzj163@163.com (Z. J. Mo)