# Accepted Manuscript


Magnetic phase transitions and large magnetocaloric effects in equiatomic binary DyZn compound

Xiangjie Wang, Lijuan Wang, Qingmei Ma, Gang Sun, Jianzhong Cui

PII: S0925-8388(16)32915-2

DOI: 10.1016/j.jallcom.2016.09.161

Reference: JALCOM 38995

To appear in: *Journal of Alloys and Compounds*

Received Date: 23 June 2016

Revised Date: 15 September 2016

Accepted Date: 16 September 2016

Please cite this article as: X. Wang, L. Wang, Q. Ma, G. Sun, J. Cui, Magnetic phase transitions and large magnetocaloric effects in equiatomic binary DyZn compound, *Journal of Alloys and Compounds* (2016), doi: 10.1016/j.jallcom.2016.09.161.

# Magnetic phase transitions and large magnetocaloric effects in equiatomic binary DyZn compound

Wang Xiangjie,* Wang Lijuan, Ma Qingmei, Sun Gang, Cui Jianzhong

*Key Laboratory of Electromagnetic Processing of Materials (Ministry of Education), School of Materials Science and Engineering, Northeastern University, Shenyang 110819, China*

**Abstract:**

The magnetic properties and magnetocaloric effect (MCE) in dysprosium zinc binary DyZn compound were studied. The compound reveals a paramagnetic-to-ferromagnetic transition together with a spin reorientation phenomenon at Curie temperatures of $T_C$ ~ 135 and $T_{SR}$ ~ 50 K, respectively. A large reversible MCE was observed in DyZn around $T_C$. For the magnetic field change of 0-7 T, the values of maximum magnetic entropy change ($-\Delta S_M^{max}$), relative cooling power (*RCP*), and refrigerant capacity (*RC*) were 12.2 J/kg K, 895 J/kg, and 672 J/kg, respectively.

**Keywords**: DyZn compound; magnetocaloric effect; magnetic phase transition; magnetic properties

* Corresponding author: email: wangxj@epm.neu.edu.cn (X. Wang)