

Accepted Manuscript

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PII: S0925-8388(16)32915-2

DOI: [10.1016/j.jallcom.2016.09.161](https://doi.org/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.

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

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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 $T_C \sim 135$ and $T_{SR} \sim 50$ 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

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