Accepted Manuscript

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PII: S0925-8388(17)33443-6

DOI: 10.1016/j.jallcom.2017.10.031

Reference: JALCOM 43428

To appear in: *Journal of Alloys and Compounds*

Received Date: 24 July 2017

Revised Date: 23 September 2017

Accepted Date: 5 October 2017

Please cite this article as: A. Tursina, E. Khamitcaeva, D. Gnida, D. Kaczorowski, $CePd_2Al_8$ – A ferromagnetic Kondo lattice with new type of crystal structure, *Journal of Alloys and Compounds* (2017), doi: 10.1016/j.jallcom.2017.10.031.

$CePd_2Al_8$ – a ferromagnetic Kondo lattice with new type of crystal structure

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Abstract

The novel cerium aluminide $CePd_2Al_8$ was investigated by means of single crystal X-ray diffraction and low-temperature magnetic, electrical transport and heat capacity measurements. The compound is found to crystallize with a monoclinic structure of its own type with a single crystallographic position for Ce atoms in the unit cell. Due to magnetic moments carried on Ce^{3+} ions, it exhibits Curie-Weiss paramagnetic behavior and long-range ferromagnetic ordering below T_C = 9.5 K. In the entire temperature range studied, the physical properties of $CePd_2Al_8$ are influenced by Kondo interactions with an energy scale close to T_C.

Keywords: cerium intermetallics; crystal structure; magnetic properties; Kondo effect

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