Size and alloying effects on magnetic interactions in CePt\(2+x\)

Y.Y. CHEN, Institute of Physics, Academia Sinica, Taipei, Taiwan 115 ROC, P.H. HUANG, C.T. CHEN, P.C. LEE, J.M. LAWRENCE, Department of Physics and Astronomy, University of California, Irvine, CA92717 USA, C.H. BOOTH, Chemical Science Division, Lawrence Berkeley National Laboratory, Berkeley, CA 94720-8175 — Alloying and size effects on magnetic correlations and Kondo interactions were investigated in CePt\(2+x\) \((x=0-1)\). Magnetic and specific confirmed that Ce in CePt\(_2\) bulk are entire magnetic Ce\(^{3+}\), but only 0.95 and 0.93 mole in CePt\(_{2.5}\) and CePt\(_3\) respectively. Alloying not only suppresses magnetic correlations but also enhances the quantity of Ce\(^{3+}\) in Kondo interactions from 0.6 to 0.9 mole as x rises from 0 to 1. A decrease of \(T_K\) with Pt alloying was revealed as well. Similar consequences with size reduction were also discovered, disorders created from alloying and size reduction are conjectured to be the origin of these consequences.

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