

Abstract Submitted
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Remarkably large field dependences of the thermodynamic and transport properties of PtSn₄¹ P.C. CANFIELD, S.L. BUD'KO, E.D. MUN, H. KO, G.D. SAMOLYUK², Ames Lab / Iowa State University — PtSn₄ is a known, binary, intermetallic compound that forms as a result of a deeply peritectic reaction. It's reported to have an orthorhombic crystal structure with lattice parameters $a = 6.42$, $b = 11.4$, $c = 6.39$ Å. Exceptionally low residual resistivity single crystals of PtSn₄ have been grown out of excess Sn (with RRR values larger than 1000) and a detailed study of their field dependent properties have been made. The highlights of our results can be summarized as follows: (a) PtSn₄ manifests a huge, low temperature magnetoresistance of 10^5 %, for an applied field of 5 T, that rises to 10^6 % for 14 T; (b) PtSn₄ manifests dramatic and clearly resolved oscillations in the magnetization that, for fields below 7T, can be clearly resolved for temperatures as high as 20 K; (c) PtSn₄ manifests dramatic and clear oscillations in electrical resistivity, that for fields below 14 T, can be clearly resolved for temperatures as high as 10 K.

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