2.3.6

Neutron Diffraction Study of the Kondo Antiferromagnet $CePt_2Sn_2$

H. Kadowaki, T. Sasaki, K. M. Kojima,[1] Y. J. Uemura,[1] G. M. Luke,[1] Y. Fudamoto,[1] T Osakabe,[2] Y Koike,[2] N. Metoki,[2] S. Katano,[2] K. Ohoyama,[3] M. Ohashi,[3] Y. Echizen,[4] T. Takabatake[4]

Department of Physics, Tokyo Metropolitan University, Hachioji-shi, Tokyo 192-0397
[1]Department of Physics, Columbia University, New York, NY 10027, U. S. A.
[2]Advanced Science Research Center, Japan Atomic Energy Research Institute, Tokai, Ibaraki 319-11
[3]Institute for Material Research, Tohoku University, Sendai 980
[4]Faculty of Science, Hiroshima University, Higashi-Hiroshima 739

The competition between Kondo spin fluctuation and exchange interactions produce a very heavy electron system of $CePt_2Sn_2$ which is characterized by a very large $\gamma > 3$ J/mole K^2 and a low Néel temperature $T_N = 0.9$ K.[1] Powder diffraction studies were performed to reveal the crystal structure and the magnetic structure using HERMES and TAS-2. The crystal structure is a $CaBe_2Ge_2$-type (P4/nmm) with a small monoclinic distortion. We performed the Rietveld analysis (RIETAN) assuming $P2_1/m$ and $P2_1$ space groups using diffraction data taken at $T=1.8$ K $> T_N$. A result for the $P2_1/m$ structure is shown in Fig. 1. One can see that there is certain discrepancy, though quality of fitting is not so bad. Below Néel temperature weak magnetic reflections were observed. Detail of the magnetic profile is being analyzed now. The magnetic structure is a single-k type with a modulation vector (1/3 0 1/2). In Fig. 2 an approximate magnetic structure, i.e., tentative result and to be revised, is illustrated.

Reference

1) W. P. Beyermann et al.: Phys. Rev Lett. **66** (1991) 3289

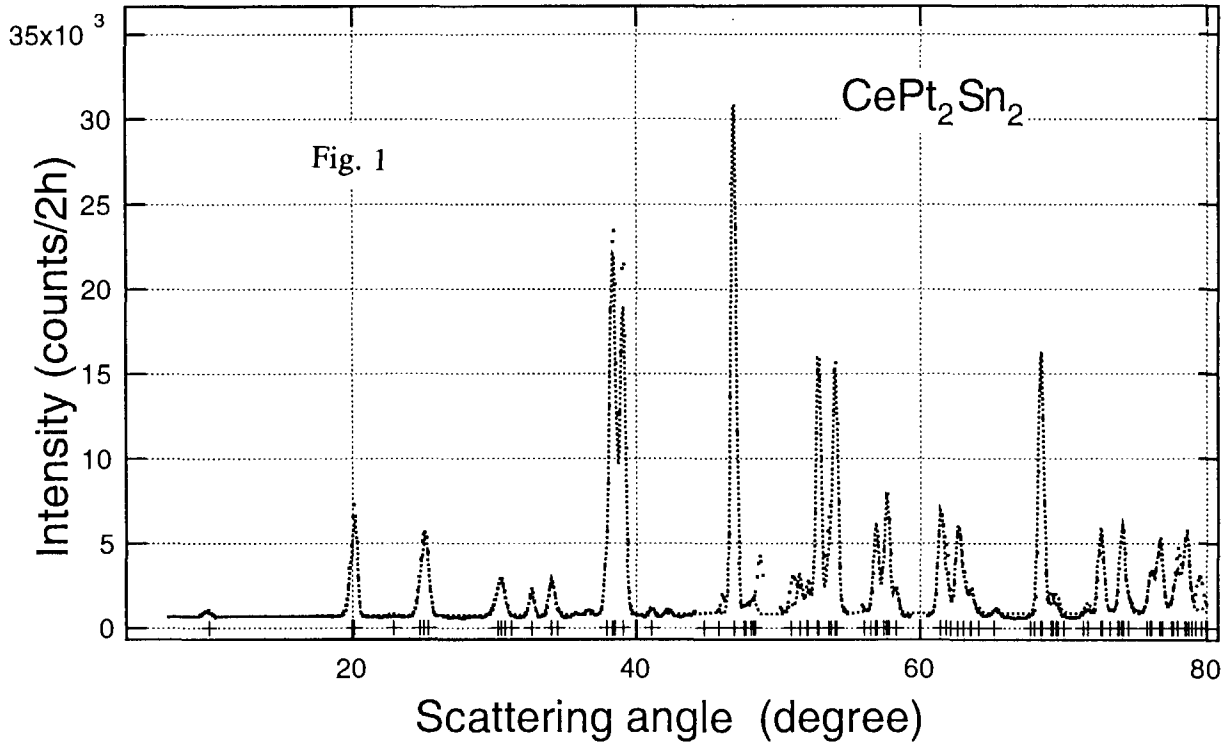

Fig. 1

Fig. 2