

## High-field magnetization of Pr-skutterudite compounds

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We have measured the high-field magnetization in single crystalline samples of  $\text{PrOs}_4\text{Sb}_{12}$ ,  $\text{PrFe}_4\text{P}_{12}$  and  $\text{UFe}_4\text{P}_{12}$ . The magnetization of  $\text{PrOs}_4\text{Sb}_{12}$  in the field along the  $\langle 100 \rangle$  at 0.1 K shows a small kink around 5 T. This phenomenon was explained by the crystalline electric field (CEF) model including the quadrupole interaction. [1].

The magnetization of  $\text{PrFe}_4\text{P}_{12}$  in the field along the  $\langle 100 \rangle$  at 1.3 K shows a metamagnetic transition at  $H_c = 4$  T. Above  $H_c$ , the magnetization is slightly anisotropic among three directions of  $\langle 100 \rangle$ ,  $\langle 110 \rangle$  and  $\langle 111 \rangle$ .

The magnetization of a ferromagnet  $\text{UFe}_4\text{P}_{12}$  is highly different from those of  $\text{PrOs}_4\text{Sb}_{12}$  and  $\text{PrFe}_4\text{P}_{12}$ . The magnetization above 5 T is flat, not increasing with increasing the field. We will discuss the CEF-scheme including the exchange and quadrupole interactions among three compounds.

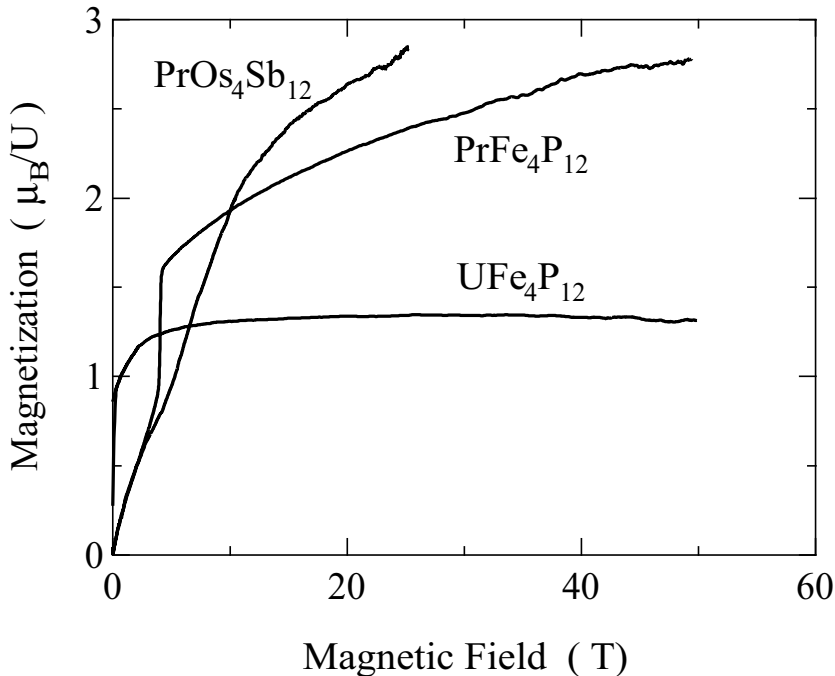


Figure 1: The magnetization curves of  $\text{PrOs}_4\text{Sb}_{12}$ ,  $\text{PrFe}_4\text{P}_{12}$  and  $\text{UFe}_4\text{P}_{12}$ .

[1] M. Kohgi, K. Iwasa, M. Nakajima, N. Metoki, S. Araki, N. Bernhoeft, J.-M. Mignot, A. Gukasov, H. Sato, Y. Aoki and H. Sugawara, J. Phys. Soc. Jpn. **72** (2003) 1002.