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High-field Magnetism of Filled Skutterudite Compounds and $NpRhGa_5$

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$NpRhGa_5$ is an antiferromagnet with the tetragonal crystal structure. There are two magnetic transitions at T_{N1}=37 K and T_{N2}=32 K. The magnetic structure between T_{N1} and T_{N2} is the same as that in $NpCoGa_5$[1], but a reorientation of the magnetic moment from the [001] direction to [110] occurs at T_{N2}. The ordered moment of Np is determined as 0.96 μ_B/Np and the antiferromagnetic propagation vector is thus q = (0 0 1/2) below T_{N1}, which is unchanged even below T_{N2}[2]. We have measured the magnetization of $NpRhGa_5$ and found the metamagnetic transition at 26 T, as shown in Fig. 1. The magnetization saturates at 38 T with 0.43 μ_B/Np which is about half of the observed ordered moment of 0.96 μ_B/Np.

[1] D. Aoki *et al.*: J. Phys. Soc. Jpn 73 (2004) 2608.
[2] N. Metoki *et al.*: to be published.

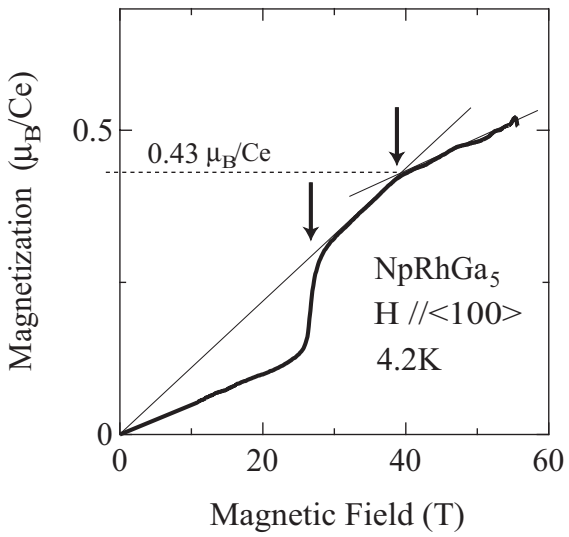

Figure 1: Magnetization of $NpRhGa_5$ in the field along ⟨100⟩ at 4.2 K. Thick arrows show the transition fields.