Magnetization measurements were performed at magnetic fields up to 50 kOe by using a superconducting quantum interface device (SQUID) magnetometer.

The initial permeability was measured as a function of temperature under hydrostatic pressures with an ac transformer method. The primary and secondary coils were wound around a cylindrical aggregate of sample. When an ac current of a constant amplitude flows in the primary coil, the voltage induced in the secondary coil is directly proportional to initial permeability. The hydrostatic pressure was applied to a sample in a Teflon pressure cell filled with a liquid pressure medium by using a piston–cylinder type device.

3. Results and discussion

Magnetization of Rh_2MnSn was measured at magnetic fields up to 50 kOe in the temperature range from 5 to 350 K. The obtained magnetization curves are characteristic of ferromagnets. We performed the $\sigma(H, T)^2$ versus $H/\sigma(H, T)$ plot (so-called Arrot plot) based on the results of magnetization curves. The spontaneous magnetization σ_s at each temperature was determined by the linear extrapolation to $H/\sigma = 0$ of the plot at high fields. The value of σ_s and the magnetic moment p_s per formula at 5 K were estimated to be 57.9 emu/g and $3.93\mu_B$/formula, respectively. The plot of σ_s against temperature is well fitted to a Brillouin function for $s = 2$ with $T_C = 431$ K, where T_C is the value estimated by the method mentioned below.

Fig. 1 shows the initial permeability μ versus temperature curves for Rh_2MnSn at various pressures up to about 1 GPa. The value of μ decreases rapidly just below T_C with increasing temperature and then takes almost a constant value above T_C. The Curie temperature T_C was defined as the point intersection of linear extrapolations of the μ–T curves from both higher and lower temperature ranges as shown in the figure.

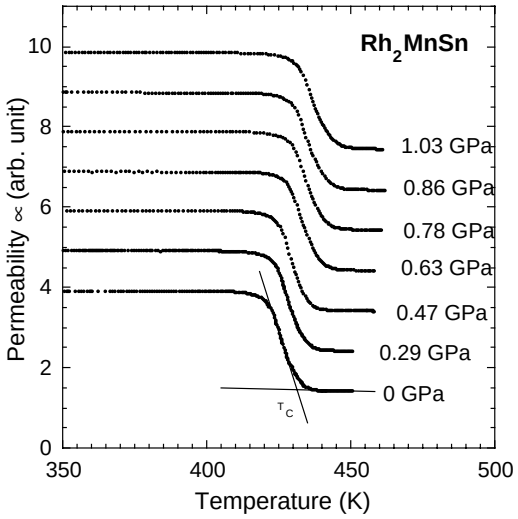

Fig. 1. The initial permeability μ vs. temperature curves at various pressure for Rh_2MnSn.

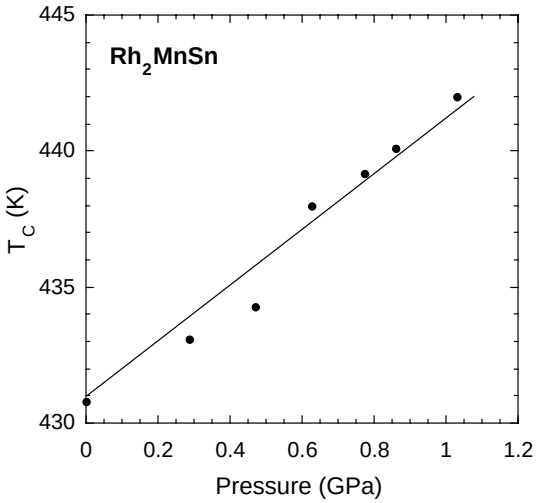

Fig. 2. Pressure dependence of the Curie temperature T_C for Rh_2MnSn.

The Curie temperature was obtained to be $T_C = 431$ K at normal pressure, which is larger than 412 K [1]. The Curie temperature appears to increase with pressure as seen in the figure. The pressure dependence of T_C is shown in Fig. 2. The Curie temperature increases linearly with pressure. The pressure coefficient of the Curie temperature $(1/T_C)dT_C/dp$ is estimated to be $+2.6 \times 10^{-2}$ GPa^{-1} as large as that of Ni_2MnX (X = Al, Ga, In, Sn) [4].

The magnetization of Rh_2MnGe was also measured at magnetic fields up to 50 kOe in the temperature range from 5 to 300 K. The obtained magnetization curves are characteristic of ferromagnets. We determined the spontaneous magnetization σ_s at each temperature using the Arrot plot. The value of σ_s and magnetic moment p_s at 5 K were estimated to be 69.9 emu/g and $4.17\mu_B$/formula, respectively.

Fig. 3 shows the initial permeability μ versus temperature curves for Rh_2MnGe at hydrostatic pressures up to about

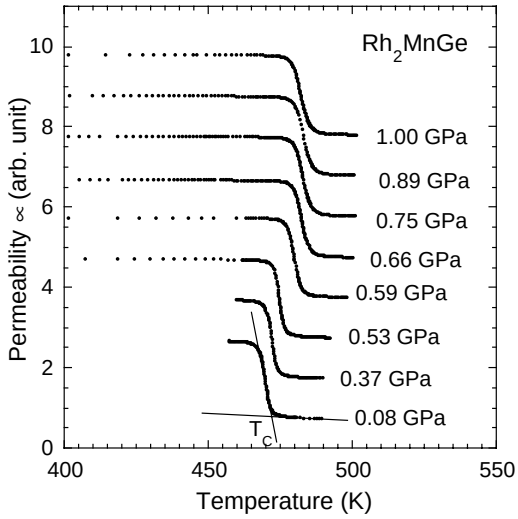

Fig. 3. The initial permeability μ vs. temperature curves at various pressures for Rh_2MnGe.