EFFECT OF PRESSURE ON THE MAGNETIC PROPERTIES OF $RMn_6Ge_{6-x}Ga_x$ (R= Lu, Sc, Y) SOLID SOLUTIONS

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9.7 cm

We present results of the magnetic measurements of hexagonal $HfFe_6Ge_6$-type solid solutions $RMn_6Ge_{6-x}Ga_x$ (R= Lu, Sc, Y; $0.1 \leq x \leq 1.0$) in high pressure conditions. The changes in magnetic transition temperatures under external pressure up to 1.5GPa were determined by using the ac susceptibility method. The measurements of magnetization were carried out under isobaric conditions in a pulsed magnetic field at various temperatures. The pressure has almost no effect on the magnetic properties of scandium and itrium compounds and noticeable effect on the magnetic properties of the lutetium compound (x=0.7). Temperature of metamagnetic transition T_1 strongly decrease with increasing pressure (dT_1/dP = -46K/GPa). The considerable temperature hysteresis of this transition was observed. Moreover, it seems that pressure and temperature act in opposite ways on the magnetic behaviour (considering that the F-AF transition is driven by a criterion based on the interatomic distances). The B-T curves show that, for a given temperature, the thereshold field increases with pressure (dB_t/dT = 1.5mT/K).

13.4 cm

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