

is possible, on the basis of a study in the presence of strong magnetic field of $(\partial T_k / \partial P)$ and to compare the It would directly allow to judge the description of magnetic transition pressure. Such a comparison is

d Samples

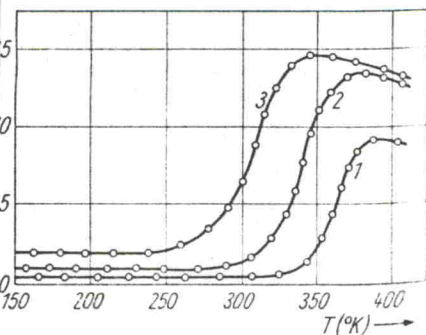
single crystalline samples of the $Mn_2Ge_ySb_{1-y}$, $y = 0.12, 0.16, \text{ and } 0.20$. Magnetic measurements up to 300 kOe in the temperature range 77 to 450 °K. The technique and sample preparation are described elsewhere. The transition temperature with pressure dependence is shown in Fig. 1. The measurements were made in a diamond anvil cell where measurements were made in the temperature range 77 to 450 °K. The measurements were made using methods described elsewhere.

Measurements

In the system studied we use only data for $y = 0.16, \text{ and } 0.20$ which we consider to be representative.

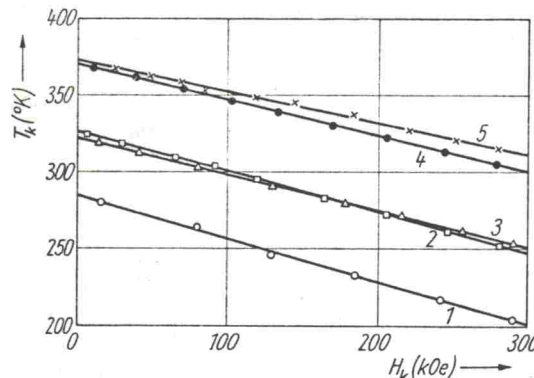
The dependence of magnetization for samples of $Mn_2Ge_{0.12}Sb_{0.88}$ at fields of 53, 106, and 212 kOe. At low temperatures and practically does not depend on magnetic field strength. The transition to the antiferromagnetic state.

is observed first into the spiral state and then into the ferromagnetic state in the magnetic field strength increase region. The magnetization values are 10 e.m.u./g, and 14.5 e.m.u./g at 365 °K



2. Temperature dependence of magnetizations of $Mn_2Ge_{0.20}Sb_{0.80}$ samples in magnetic fields of different strength. (1) $H = 27$ kOe, (2) $H = 100$ kOe, and (3) $H = 240$ kOe

Fig. 3. Transition temperature dependence on magnetic field strength for different samples of the system. (1) AF-SP, $y = 0.12$; (2) AF-SP, $y = 0.16$; (3) AF-FM, $y = 0.12$; (4) AF-FM, $y = 0.20$; (5) AF-FM, $y = 0.16$



are close to the magnetization saturation of Mn_2Sb at the same temperatures [4]. Similar dependences are also observed for $Mn_2Ge_{0.12}Sn_{0.88}$ samples, in which both AF-SP and SP-FM consecutive transitions were found with temperature change. For $Mn_2Ge_{0.2}Sb_{0.8}$ samples a different behaviour is observed. Fig. 2 shows the temperature dependence of magnetization measured in one of the samples with the above mentioned composition at different values of magnetic field strength. At low temperatures here too the AF structure is realized, but with temperature increase the transition to the FM structure is observed, but no SP structure is found. With field increase the transition temperature is decreased and the magnetization in the FM state is consistent with data obtained for Mn_2Sb . Fig. 3 is expected to be a kind of generalization of the strong magnetic field effect on the transition temperature, where the $T_k(H_k)$ dependence is shown for different transitions. The dependences 1 and 2 correspond to AF-SP transitions, the remaining ones to AF-FM transitions. Fig. 3 vividly depicts all dependences as linear ones which little differ in their slope. The transition temperature for a phase transition of first kind must depend not only on magnetic field strength but also on pressure. Our measurements showed that with pressure increase the transition temperature rose both for the AF-FM transition and the SP-FM one. The temperature dependences of the electrical resistivity of $Mn_2Ge_{0.08}Sb_{0.92}$ are shown in Fig. 4. These dependences were obtained at different pressure. As is seen from Fig. 4, with pressure increase the SP-FM transition temperature is shifted into the high-temperature region.

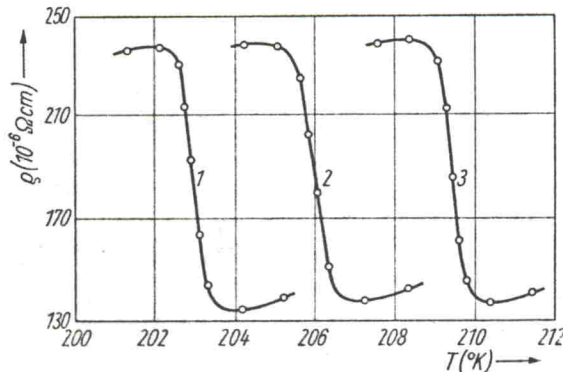


Fig. 4. Pressure influence on the temperature dependence of the electrical resistivity of $Mn_2Ge_{0.08}Sb_{0.92}$. (1) $P = 1.3$ katm, (2) 3 katm, and (3) 6.5 katm