THE INFLUENCE OF SUBSTITUTIONS ON THE MAGNETIZATION PROCESSES IN COMPOUNDS BASED ON $DyMn_6Ge_6$

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9.7 cm

In order to study the influence of substitutions in the rare-earth, manganese and germanium sublattices on the magnetic properties of $DyMn_6Ge_6$ compound new solid solutions $Dy_{0.8}Sm_{0.2}Mn_6Ge_6$, $DyMn_5CoGe_6$, $DyMn_5FeGe_6$ and $DyMn_6Ge_5Si$ have been prepared. The magnetization isotherms of their polycrystalline samples were obtained in the temperature range 4.2-300 K and in external magnetic fields up to 140 kOe. The common feature of all isotherms is that no saturation has been reached up to the maximum value of the magnetic field. The magnetization curves for samples containing Co and Fe exhibit hysteresis loops below 20 K that are not observed for the initial $DyMn_6Ge_6$ sample. It should be noted that some of the obtained isotherms of samples containing Co, Fe and Si are of almost the same linear character. This fact is probably connected with the predominance of ferrimagnetic or antiferromagnetic ordering with a weak ferromagnetic component. The higher values of magnetization of $Dy_{0.8}Sm_{0.2}Mn_6Ge_6$ in comparison with non-substituted compound are due to antiparallel orientation of Sm and Dy magnetic moments. This research has been supported by RFBR grant N 00-02-17862.

13.4 cm

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