Magnetic orders in RPtIn and RRhSn (R = Tb-Er) intermetallics

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The RPtIn and RRhSn rare earth ternary intermetallic compounds crystallize in a hexagonal structure of the ZrNiAl-type. The layers composed of rare earth atoms and transition metal atoms are separated by layers composed of transition metal atoms and *p*-electron element atoms. The rare earth atoms within a single layer form a triangular lattice. The triangular arrangement of rare earth atoms leads, in case of antiferromagnetic interactions, to frustrated magnetic structures. The title compounds were investigated by magnetization measurement as well as by neutron diffraction. The substitution of different rare earth elements is accompanied with the change from an antiferromagnetic order (compounds with R = Tb and DyRhSn) to a ferromagnetic one (ErPtIn) through the coexistence of antiferro- and ferromagnetic contributions in DyPtIn, HoPtIn and ErPtIn. What was also found was a change of direction of magnetic moments from those perpendicular to the c-axis in compounds with R = Tb and DyRhSn to those parallel to this axis in ErPtIn and HoRhSn. More information on magnetic orders in the discussed compounds is available in Ref. [1].

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[1] S. Baran, "Comparison of magnetic orders in RPtIn and RRhSn (R = Tb-Er) ternary intermetallics" in "Neutron scattering and complementary methods in investigations of condensed phase", vol. 2, Monograph No. 60. Editors: J. Chruściel, A. Szytuła, W. Zając, University of Podlasie Publishing House, Siedlce (2005) 81.

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