Magnetic structures and phase transitions in TbRhSi, DyRhSi and HoRhSi.

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9.7 cm

Neutron diffraction and magnetometric measurements show that RRhSi (R = Tb, Dy, Ho) are antiferromagnets below the Néel temperature equal 26 K for TbRhSi, 14.6 K for DyRhSi and 8.5 K for HoRhSi. At 1.5 K the magnetic structure of TbRhSi is described as a sine-wave modulated one with the propagation vector $\vec{k}$=(0;0.393(2);0.204(2)). Near by 16 K it transforms into a magnetic structure represented by the propagation vector $\vec{k}$=(0;0.3878(3);0). Simultanously a change of the direction of the magnetic moment is observed. For DyRhSi at T_t equal 5.4 K the magnetic structure changes from a collinear commensurate one, described by the propagation vector $\vec{k}=(\frac{1}{2};0;\frac{1}{2})$, to the incommensurate sine-wave structure described by the propagation vector $\vec{k}$=(0.418(2);0;0.515(2)). In both phases Dy magnetic moments are parallel to the b-axis. For HoRhSi magnetic structure similar to this observed for DyRhSi is stable in thr temperature range from 1.5 K up to T_N.

13.4 cm

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