

Magnetic properties and ordering in $\text{Tm}_5\text{Ni}_2\text{In}_4$

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Physical properties of $\text{Tm}_5\text{Ni}_2\text{In}_4$ have been investigated by means of magnetometric, calorimetric as well as neutron diffraction measurements. The compound crystallizes in the orthorhombic $\text{Lu}_5\text{Ni}_2\text{In}_4$ -type structure (space group Pbam , No. 55) with Tm^{3+} ions occupying three crystal positions within crystallographic unit cell: one 2a site and two 4g sites. Experimental data indicate that the sample orders antiferromagnetically below $T_N = 4.2$ K. Magnetic structure, derived from neutron diffraction data, is a commensurate one (propagation vector $\mathbf{k} = [0, \frac{1}{2}, \frac{1}{2}]$) with thulium magnetic moments lying in the a-b plane. The determined magnetic structure has been verified by group theory symmetry analysis.