

Magnetic properties of the $RENi_2Ga_3In$ ($RE = Y, Dy, Ho$) compounds

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The quaternary indides $RENi_2Ga_3In$ ($RE = Y, Dy, Ho$) were synthesized from the elements by arc-melting and subsequent annealing at 873 K. X-ray powder data for these compounds revealed isotypism with orthorombic $GdNi_2Ga_3In$ type structure, space group $Pnma$, Pearson symbol $oP56$ [1]. Magnetic properties of the $RENi_2Ga_3In$ compounds with $RE = Y, Dy$ and Ho were studied down to 1.72 K. YNi_2Ga_3In appeared a Pauli paramagnet, while $DyNi_2Ga_3In$ and $HoNi_2Ga_3In$ were found to order antiferromagnetically below $T_N = 10.5$ K and 4.4 K, respectively. In the ordered state, distinct metamagnetic-like transitions were observed for both materials. At higher temperatures, strong crystalline electric field interactions were found, which significantly influence the magnetic behaviors essentially governed by Dy^{3+} and Ho^{3+} ions.

References:

[1] Ya.V. Galadzhun, M.M. Horiacha, G.P. Nychporuk, U.Ch. Rodewald, R. Pöttgen, V.I. Zaremba, *Z. Anorg. Allg. Chem.* **2016**, 642 (16), 896-901.