ELECTRONIC STRUCTURE AND MAGNETIC PROPERTIES $Gd_{1-x}Tb_xNi_3$ COMPOUNDS

[a]**M. Kwiecień and G. Chełkowska and J. Bakaimi**

[a]A. Chełkowski Institute of Physics, Silesian University, Uniwersytecka 4, 40-007 Katowice

The magnetic susceptibility, the crystal and electronic structure of the polycrystalline intermetallic $Gd_{1-x}Tb_xNi_3$ compounds has been investigated. All investigated compounds crystallize in the rombohedral $PuNi_3$type of crystal structure (space group R-3m). The effect of partial substitution Gd by Tb is reflected in the linear decrease of the lattice parameters in the whole range of x, whereas the Curie temperature determined from AC susceptibility measurements decreases from 114 K for $GdNi_3$ to 100 K when x=0.5 and is unchanged until full concentration of Tb (x=1). Additionally the presence of the helimagnetic phase when Gd is substituted by Tb was observed. The electronic structure was studied by using X-ray Photoelectron Spectroscopy (XPS). Both valence band and core level spectra are analyzed. The valence band spectra close to the Fermi level are dominated by the *Ni 3d* and *Gd/Tb* states.

9.7 cm

13.4 cm

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Corresponding author :

G. Chełkowska

Address for correspondence :

Instytut Fizyki , ul. Uniwersytecka 4, 40-007 Katowice

Email address :

gchelkow@us.edu.pl