

ON THE CRYSTAL AND MAGNETIC BEHAVIOUR OF ScFe_4Al_8 SINGLE CRYSTAL

K. Rećko^a, L. Dobrzyński^{a,b}, M.-H. Lemée-Cailleau^c, J. Waliszewski^a and
E. Talik^d

^aFaculty of Physics, University of Białystok, Lipowa 41, 15-424 Białystok, Poland

^bThe Soltan Institute for Nuclear Studies, 05-400 Otwock-Świerk, Poland

^cInstitut Laue-Langevin, PB 156, 38042 Grenoble Cedex 9, France

^dInstitute of Physics, Silesian University, Uniwersytecka 4, 40-007 Katowice, Poland

Nuclear and magnetic properties of the ScFe_4Al_8 single crystal attracts our attention owing to the unparalleled complexity of nuclear and magnetic structures. Our previous neutron measurements [1] revealed presence of two modulation vectors, both along $[\xi\xi 0]$, however with different critical temperatures. Recent experiment forced us to revise our knowledge of the structural ordering in the sample. So far, the crystal structure of this alloy, being of ThMn_{12} -type, has never been questioned. Let us remind, that the ternary compounds with the general formula MFe_4Al_8 $\text{M}=(\text{Ac}, \text{Re}, \text{Sc})$ which have been ever reported as crystallizing in the body centered tetragonal $I 4/mmm$ symmetry (no. 139) form a large family of the intermetallics with a variety of magnetic structures and in consequence physical properties. Our earlier studies carried out on crystal and magnetic structures of $(\text{U}, \text{Th})(\text{FeAl})_{12}$ samples showed identity of crystal structures and even certain magnetic similarity in both series of actinide's systems. In case of scandium compound these rules turned out to fail.

[1] K. Rećko et al., Phase Transitions, Vol. 80, No. 6-7 (2007) 575-586.

9.7 cm

13.4 cm

Subject category :

3. Magnetic Structure and Dynamics

Presentation mode :

poster

Corresponding author :

K. Rećko

Address for correspondence :

Faculty of Physics, University of Białystok
Lipowa 41, 15-424 Białystok
Poland

Email address :

karo@alpha.uwb.edu.pl