

Unusual negative magnetisation effect in antiferromagnetic YbFe₄Al₈ compound

B. Andrzejewski^a, A. Kowalczyk^a, J. Frąckowiak^b, T. Toliński^a,
A. Szlaferek^a, S. Pal^c, Ch. Simon^c

^aInstitute of Molecular Physics, PAS, Smoluchowskiego 17, 60-179 Poznań, Poland

^bInstitute of Materials Science, Silesian University, 40-007 Katowice, Bankowa 12,
Poland

^c3 Laboratoire CRISMAT, ENSICAEN-CNRS-Universite de Caen, 6 boulevard du
Marechal Juin, 14050 CAEN Cedex 4, France

The nowadays-published experimental reports on the magnetic and transport properties of rare earth RFe₄Al₈ systems are not numerous and still controversial. One of the most intriguing is the possibility of superconductivity in the Lu- or Yb systems [1]. To clarify this point we performed investigations of the magnetic and transport properties of YbFe₄Al₈ intermetallic compound by the methods of DC magnetisation, microwave absorption, Mössbauer effect and four-point resistivity measurements. The Mössbauer effect measurements reveal a broad antiferromagnetic phase transition which begins at $T_N = 160$ K and is completed at the temperature of 100 K. This compound exhibits also a negative magnetisation below 34 K. We explain this effect in terms of antiferromagnetic interactions between the moment of Yb and the effective moment of canted Fe spins.

[1] H. Drulis et al., Solid State Commun. 123 (2002) 391.

13.4 cm

Subject category :

4. Rare Earths and Actinides, Alloys and Compounds

Presentation mode :

poster

Corresponding author :

B. Andrzejewski

Address for correspondence :

Institute of Molecular Physics
Polish Academy of Sciences
Smoluchowskiego 17
60-179 Poznań
Poland

Email address :

and@ifmpan.poznan.pl

9.7 cm