

Electron spin resonance in the Heusler alloy YbRh2Pb

Ivanshin V., Litvinova T., Sukhanov A., Sokolov D., Aronson M.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

An electron spin resonance (ESR) signal was observed in a concentrated Kondo lattice, Heusler alloy YbRh₂Pb. It is attributed to the combined effect of the 4f local magnetic moments of Yb³⁺ and conduction electrons. It is shown that the significant broadening and disappearance of the ESR line at temperatures above 20 K is caused by the processes of the spin-lattice relaxation of the Yb³⁺ ions through the first excited Stark doublet with an activation energy $\Delta \approx 73.5$ K. A comparison of the ESR data for YbRh₂Pb and some other undoped intermetallic compounds based on ytterbium, cerium, and europium indicates that hybridized electronic states occurring as the result of hybridization between the localized 4f electrons and the collectivized conduction electrons constitute a fundamentally new source of ESR. © Pleiades Publishing, Ltd., 2009.

<http://dx.doi.org/10.1134/S0021364009140070>
