Magnetic resonance in Sr-doped $Yb_{0.82}Sr_{0.18}Mn_{1-x}Fe_xO_3$

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Electron spin resonance (ESR) measurements were performed in $YbMnO_3$, $Yb_{0.82}Sr_{0.18}Mn_{1-x}Fe_xO_3$ (x=0; 0,1-0,2) in a wide temperature range from 100 to 300 K. The ESR spectrum in ceramics $YbMnO_3$ consists of one exchange-narrowed line with the g-factor about 2.11 and the linewidth about 800 Oe in the entire temperature range. This value of the linewidth in ceramics $YbMnO_3$ is about 2.3 times less than in $LaMnO_3$. Probably, this experimental fact is related with a change in the symmetry of the crystal structure from hexagonal $P6_3cm$ ($YbMnO_3$) to orthorhombic Pbnm ($LaMnO_3$) and thus with the change of the crystal field parameters.

ESR spectrum of Sr-doped $Yb_{0.82}Sr_{0.18}Mn_{1-x}Fe_xO_3$ consists of two lines in the temperature range from 100 to 260 K due to the phase separation in the sample. At the temperature above 260 K phase transition was observed into single-phase state in ceramics $Yb_{0.82}Sr_{0.18}Mn_{1-x}Fe_xO_3$. In spectrum we observed only one line. The antiferromagnetic ordering is observed in the Fe-doped samples $Yb_{0.82}Sr_{0.18}Mn_{1-x}Fe_xO_3$ (x=0,1-0,2) at the temperature below 130 K, thus the spectrum of magnetic resonance are not observed. The reported study was partially supported by RFBR, research project No. 13-02-97120.