EPR STUDY OF Cd$_4$Fe$_8$V$_{10}$O$_{41}$ VANADATE

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A new multicomponent vanadate Cd$_4$Fe$_8$V$_{10}$O$_{41}$ has been synthesized [1] and investigated by electron paramagnetic resonance (EPR) technique. The compound Cd$_4$Fe$_8$V$_{10}$O$_{41}$ is isostructural with previously studied Mg$_3$Fe$_4$(VO$_4$)$_6$ [2]. According to the nominal stoichiometry of the Cd$_4$Fe$_8$V$_{10}$O$_{41}$ compound the ions (excepted iron ions) are nonmagnetic. The registered EPR spectra in the 4-300 K temperature range have dominated the presence of very wide almost symmetrical resonance line which is disappeared below 20 K. The resonance line is centered at $g_{\text{eff}}=2.017(1)$ with linewidth $\Delta B_{pp}=77.3$ mT at room temperature. Its amplitude decreases with decreased temperature where below 40 K the linewidth strongly depends from temperature. Below 60 K the resonance line shifts essential with decreasing temperature towards lower magnetic fields. It is suggested the strong magnetic interaction leads to magnetically ordering state. Replacing non-magnetic cations ions by divalent cadmium ions seems to intensify the magnetic ordering processes in the low temperatures region [2].

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