

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

N. Guskos<sup>1,2</sup>, G. Zolnierkiewicz<sup>1,\*</sup>, J. Typek<sup>1</sup>, and A. Blonska-Tabero<sup>3</sup>

<sup>1</sup>Institute of Physics, Szczecin University of Technology, Al. Piastów 17, 70-310 Szczecin, Poland;

<sup>2</sup>Solid State Physics, Department of Physics, University of Athens, 15 784 Zografos, Athens, Greece;

<sup>3</sup>Dept. of Inorg. & Anal. Chem., Szczecin Univ. of Technol., Al. Piastów 42, 71-065 Szczecin, Poland;

A new multicomponent vanadate  $\text{Cd}_4\text{Fe}_8\text{V}_{10}\text{O}_{41}$  has been synthesized [1] and investigated by electron paramagnetic resonance (EPR) technique. The compound  $\text{Cd}_4\text{Fe}_8\text{V}_{10}\text{O}_{41}$  is isostructural with previously studied  $\text{Mg}_3\text{Fe}_4(\text{VO}_4)_6$  [2]. According to the nominal stoichiometry of the  $\text{Cd}_4\text{Fe}_8\text{V}_{10}\text{O}_{41}$  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  $\Delta B_{\text{pp}}=77.3$  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].

*This scientific work is financed from Polish budget resources allocated to science in the years 2005-2008 as a research project (1311/TO9/2005/29).*

1. A Blonska-Tabero, *J. Therm. Anal. Cal.* – in press

2. N. Guskos et al., *J. Appl. Phys.* **101**, 103922 (2007).