

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Low Temperature ^{31}P -NMR Study of the Frustrated Square-Lattice Compound $\text{BaCdVO}(\text{PO}_4)_2$ ¹ B. ROY, R. NATH, D.C. JOHNSTON, Y. FURUKAWA, Ames Laboratory, Dept. of Phys. and Astro., Iowa State Univ., C. GEIBEL, MPI CPfS, Dresden — $\text{BaCdVO}(\text{PO}_4)_2$ is known to be a $S = 1/2$ frustrated square-lattice (FSL) system with a ferromagnetic nearest neighbor exchange coupling $J_1 \sim -3.36$ K and an antiferromagnetic next nearest neighbor exchange coupling $J_2 \sim 3.53$ K. We have carried out ^{31}P -NMR measurements at low temperatures down to 0.1 K to investigate magnetic properties of this compound from a microscopic point of view. ^{31}P spin-lattice relaxation rates ($1/T_1$) measured at $H = 0.8$ T are almost independent of temperature above 2 K, show a peak at 1.05 K and become constant below 0.4 K. The temperature dependence of $1/T_1$ indicates the existence of antiferromagnetic ordering at $T_N \sim 1.05$ K which is also evidenced by the broadening of the NMR spectrum below that temperature. We will compare our NMR results with those of a similar FSL system, $\text{Pb}_2\text{VO}(\text{PO}_4)_2$ and discuss the similarities and differences in the magnetic properties of these two systems.

¹Supported by USDOE under the Contract No. DE-AC02-07CH11358.

Beas Roy
Ames Laboratory, Dept. of Phys. and Astro., Iowa State Univ.

Date submitted: 22 Nov 2010

Electronic form version 1.4