

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Unusual Magnetic Behaviors with Large Anisotropy and 1/3 Magnetization Plateau in the CoV_2O_6 S.-Y. PARK, T.-H. JANG, Department of Physics, Pohang University of Science and Technology, Pohang 790-784, Korea, B.-G. PARK, Pohang Accelerator Laboratory, Pohang University of Science and Technology, Pohang 790-784, Korea, K.-P. HONG, Korea Atomic Energy Research Institute, Daejeon 350-600, Korea, Y.-H. JEONG, Department of Physics, Pohang University of Science and Technology, Pohang 790-784, Korea — The pseudo-one dimensional brannerite type CoV_2O_6 has been studied by magnetization measurement, heat capacity and neutron powder diffraction between 300 and 1.5K. CoV_2O_6 crystallizes in two modifications; a low-temperature γ - form of triclinic structure and high-temperature α -form of monoclinic structure. α - CoV_2O_6 of monoclinic structure shows a large magnetic anisotropy and an antiferromagnetic transition at $T_N=14\text{K}$. Furthermore, the magnetization measurement up to 9T shows 1/3 magnetization plateau below 10K and saturated magnetic moment $4.5\mu_B/\text{Co}^{2+}$, which is much larger than the spin-only value of $3.0\mu_B/\text{Co}^{2+}$ for the full moments of Co^{2+} ions. On the contrary, γ - CoV_2O_6 of triclinic structure shows saturated magnetic moment $3.0\mu_B/\text{Co}^{2+}$ with antiferromagnetic transition at $T_N=6.2\text{K}$. We discuss the different magnetic behaviors of the α - and γ - phase of CoV_2O_6 .

S.-Y. Park
Department of Physics, Pohang University of Science and
Technology, Pohang 790-784, Korea

Date submitted: 26 Nov 2010

Electronic form version 1.4