

## Magnetic Field Dependence of Specific Heat in Clinoatacamite $\text{Cu}_2(\text{OH})_3\text{Cl}$

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We have performed the specific heat study in a new geometrically frustrated system, clinoatacamite  $\text{Cu}_2(\text{OH})_3\text{Cl}$ , with cornersharing tetrahedrons of the  $\text{Cu}^{2+}$  ions with  $S=1/2$  Heisenberg spins. At  $H=0$  T, two anomalies are observed at  $T_1=18$  K and  $T_2=6.2$  K. The specific heat decreases rapidly below  $T_2$  and shows no anomaly down to  $T=150$  mK despite the existence of the spin fluctuation found in the  $\mu\text{SR}$  experiments.<sup>1</sup> As the magnetic field increased, the sharp peak at  $T_2$  is broadened and shows a small reentrant behavior in the  $T-H$  phase diagram. On the other hand, the peak at  $T_1$  shows no obvious change up to  $H=5$  T. The entropy at  $T_1$  is estimated as  $\sim 0.35R\ln 2$ . These features may be caused by the two dimensional nature of the kagome antiferromagnets which are weakly coupled via  $\text{Cu}^{2+}$  ions at the triangular sites located between the  $\text{Cu}^{2+}$  kagome layers.

<sup>1</sup>X.G.Zheng, H.Kubozono, K.Nishiyama, W.Higemoto, T.Kawae, A.Koda and C.N.Xu, Phys. Rev. Lett. **95**, 057201 (2005)