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Anisotropic thermal expansion and magnetostructural coupling in $CuSb_2O_6$[1] ALWYN REBELLO, MICHAEL G. SMITH, JOHN J. NEUMEIER, Montana State University — Low-dimensional (Quasi-1D or 2D) spin $S= \frac{1}{2}$ solid-state systems exhibit intriguing electronic and magnetic properties that deserve fundamental attention.[2] Besides, they have long been the subject of intense investigation since the discovery of high-T_c superconductivity in cuprates. Here we present results on anisotropic thermal expansion (TE) and magnetic properties in single crystalline $CuSb_2O_6$ in the temperature range $5 < T < 350$ K. We observe spin-flop transitions for magnetic field applied in $a(b)$ axis, but not in c. Our TE data reveals a magnetoelastic coupling in the vicinity of paramagnetic to antiferromagnetic phase transition around T_N. Also, the temperature dependence of 1D short range magnetic correlations in $CuSb_2O_6$ above T_N is reflected in the changes in sample length measured using high resolution dilatometer. Using the scaling of thermal expansion data with the heat capacity data around T_N,the pressure derivative of T_N is obtained as dT_N/dP= -0.11(1) K/GPa.

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[2]M. Hase et al., Phys. Rev. Lett. **70**, 3651 (1993).

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