Abstract Submitted
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Infrared evidence for multiple structural transitions in single crystal $Cu_3(SeO_3)_2Cl$[1] KEVIN H. MILLER, Department of Physics, University of Florida, HELMUTH BERGER, Institute of Physics of Complex Matter, Ecole Polytechnique Federal de Lausanne, DAVID B. TANNER, Department of Physics, University of Florida — Infrared reflection and transmission over a broad temperature range (10-300 K) have been measured on the anisotropic single-crystal $Cu_3(SeO_3)_2Cl$. Two distinct space groups have previously been reported for $Cu_3(SeO_3)_2Cl$ at 300 K (monoclinic C2/m and triclinic P1bar). Comparing the number of observed infrared active phonons with group theoretical predictions points towards the existence of the triclinic structure at 300 K; however, an impurity-rich monoclinic structure cannot be ruled out. New phonon modes are observed upon cooling below 90 K, and again upon cooling below 40 K. The latter temperature range corresponds to the onset of long range magnetic order in the material. The structural and magnetic properties of $Cu_3(SeO_3)_2Cl$ will be discussed in terms of our infrared spectra, group theoretical predictions, and comparisons to related compounds.

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