

Confirmation of a First Order Magnetic Phase Transition in $\text{Ca}_2\text{FeCoO}_5$.

F. Ramezanipour¹ and J.E. Greedan¹

¹ Department of Chemistry, McMaster University, Hamilton, ON, Canada L8S 4M1

$\text{Ca}_2\text{FeCoO}_5$, a brownmillerite oxide, crystallizes in the rare $P6_3cm$ symmetry with two distinct octahedral and tetrahedral sites.[1] Magnetic susceptibility data suggested a possible discontinuous or first order magnetic transition near 600K but previous work could not confirm this. In this project we measured the magnetic reflections over the range 400K to 600K. In Figure 1, the temperature dependence of the strongest reflection, (022), is shown compared with the susceptibility (inset). These results support the onset of a discontinuous magnetic phase transition between 590K and 600K. Below ~ 560 K the transition appears to be continuous.

Reference

- [1] Farshid Ramezanipour, John E. Greedan, Andrew Grosvenor, James Britten, Lachlan M.D. Cranswick, V. Ovidiu Garlea, Chem. Mater. 22 (2010) 6008-6020.

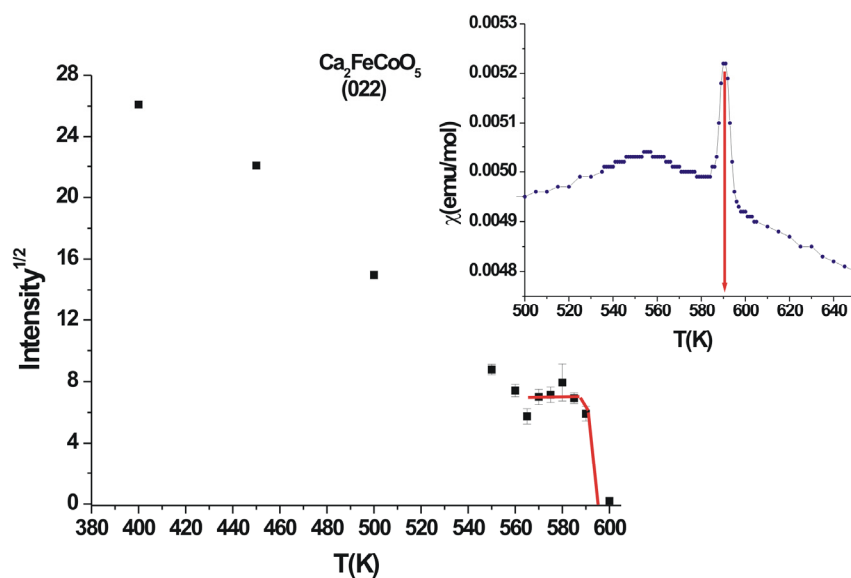


Fig. 1 The temperature dependence of the (022) magnetic reflection for $\text{Ca}_2\text{FeCoO}_5$ compared with the magnetic susceptibility data (inset). The onset of a discontinuous magnetic phase transition below ~ 590 K is confirmed.