

Abstract Submitted  
for the MAR07 Meeting of  
The American Physical Society

**High-Energy Magneto-Dielectric Effect in  $\text{Co}_3\text{V}_2\text{O}_8$ .**<sup>1</sup> L. I. VERGARA, R. C. RAI, J. CAO, S. BROWN, J. L. MUSFELDT, University of Tennessee, D. J. SINGH, Oak Ridge National Laboratory, G. LAWES, Wayne State University, N. ROGADO, DuPont Central Research and Development, R. J. CAVA, Princeton University, X. WEI, Florida State University — We investigate the optical and magneto-optical properties of the Kagomé staircase compound  $\text{Co}_3\text{V}_2\text{O}_8$  in order to explore mechanistic aspects of the high-energy magneto-dielectric effect.  $\text{Co}_3\text{V}_2\text{O}_8$  displays a much smaller dielectric contrast compared to quasi-isostructural  $\text{Ni}_3\text{V}_2\text{O}_8$ , a result that we attribute to a high-temperature local structural distortion in  $\text{Co}_3\text{V}_2\text{O}_8$  along the cross-tie direction. Such a distortion prevents the low temperature magnetic transitions from having a strongly coupled lattice component. This proposition is supported by vibrational studies.

<sup>1</sup>This work is supported by the U.S. Department of Energy.

L. I. Vergara  
University of Tennessee

Date submitted: 25 Nov 2006

Electronic form version 1.4