Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

The frequency-dependent electrooptic response of the electroclinic effect in deVries SmA materials CHRISTOPHER D. JONES, Liquid Crystal Materials Research Center and Dept of Physics, Univ of Colorado, UTE DAWIN, FRANK GIESSELMANN, Liquid Crystal Group, Institute of Physical Chemistry, Univ Stuttgart, NOEL CLARK, LCMRC, University of Colorado, PER RUDQUIST, Microtechnology and Nanoscience (MC2), Chalmers Univ of Technology — It is well established that electroclinic switching in standard SmA* materials relates to a reorientation of the molecules in a plane normal to the layers, and thus there is no corresponding change in birefringence due to reorientation about a cone, as is the case in the SmC* phase. When the electrooptic response is then analyzed via lock-in amplifier, the signal at the driving frequency is strong, while the second harmonic response, is non-existent [1]. Using this method we have investigated deVries materials W530 and TSiKN65, and show that there is a frequency-dependent second order response – implying an electroclinic switching that corresponds to a change in birefringence, suggesting a reorientation of the molecule about a cone. We will present our findings and a model for the type of electroclinic switching that occurs in these two materials. Work supported by NSF MRSEC Grant DMR-0213918 and The Swedish Foundation for Strategic Research 2002/0388. [1] W. Kuczynski, et. al., *Ferroelectics*, 244, [491]/191, (2000)

Christopher Jones
Liquid Crystal Materials Research Center, University of Colorado

Date submitted: 27 Nov 2006 Electronic form version 1.4