

Abstract Submitted  
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**Magneto-optical technique for detecting biaxial nematic phase<sup>1</sup>**

TANYA OSTAPENKO, J.T. GLEESON, S.N. SPRUNT, A. JAKLI, Kent State University — There have been numerous attempts to find a thermotropic liquid crystal that exhibits a biaxial phase. There have been findings of biaxial order in bent-core nematic liquid crystals; however, there are recent reports that call this into question. One reason for this discrepancy is the difficulty in unambiguously identifying the biaxiality. Based on a previously described electro-optical technique, we have developed a technique that uses magnetic field, thus widening its application to any bent-core nematic material. The field orients the uniaxial director along the optical path length, and we search for birefringence perpendicular to this direction. We expect one of two situations to occur: if the material is uniaxial, the induced phase difference will decrease asymptotically to zero as the field increases. However, if the material is biaxial, the induced phase will extrapolate to a non-zero value. Results on one calamitic liquid crystal show that this method yields the expected result, namely the lack of biaxial nematic phase. We also tested several bent-core nematic liquid crystals and found that none of these materials exhibits a biaxial nematic phase.

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James Gleeson  
Kent State University

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