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Light Scattering Study of Biaxiality in Nematic Liquid Crystal Tetrapodes KRISHNA NEUPANE, SHINWOONG KANG, SUNIL SHARMA, D. CARNEY, T. MEYER, GEORGE H. MEHL, DAVID W. ALLENDER, SATYENDRA KUMAR, SAMUEL SPRUNT, Department of Physics, Kent State University — We have performed dynamic light scattering studies on thermotropic liquid crystalline tetrapodes [1], which reportedly exhibit a uniaxial to biaxial nematic phase transition. Our results [2] support the existence of the biaxial nematic phase in tetrapodes. The uni - to biaxial transition is found to be weakly first-order in a 4-ring tetrapode and second-order in a 3-ring tetrapode, while the isotropic to uniaxial nematic transition is weakly first order in both materials. The temperature dependence of the relaxation rates of the biaxial order parameter modes, and of the intensity associated with biaxial director fluctuations, is explained by a LandaudeGennes model of the free energy.

[1] R. Elsasser, J. W. Goodby, G. H. Mehl, D. Rodriguez-Martin, R. M. Richardson, D. J. Photinos, and M. Veith, Mol. Cryst. Liq. Cryst. **402**, 237 (2003)
[2] K. Neupane, S. W. Kang, S. Sharma, D. Carney, T. Meyer, G. H. Mehl, D. W. Allender, S. Kumar, and S. Sprunt, *Phys. Rev. Lett.* **97**, 207802 (2006)

Krishna Neupane
Department of Physics, Kent State University

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