

Abstract Submitted  
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**A comparison between “cybotactic” groups in bent-core and rod-like nematic liquid crystals** SAONTI CHAKRABORTY, NICHOLAS DIORIO, WILL CARR, JAMES GLEESON, ANTAL JAKLI, SAMUEL SPRUNT, Kent State University — It is becoming increasingly clear that short-range smectic-CP order is the basis for some of the unusual macroscopic properties of bent-core nematic (BCN) liquid crystals. By analyzing small angle X-ray diffraction patterns taken on a bent-core and a chemically related calamitic (rod-like) nematic, we have attempted to clarify the nature of the “cybotactic groups” (or molecular clusters) contributing to this short-range order in BCNs, and to distinguish their signature from the scattering due to smectic fluctuations normally observed above a nematic to smectic transition. We find that persistent, finite-sized, tilted smectic clusters, with short, temperature-independent correlation lengths, account for the scattering observed from the BCN, while the calamitic material provides a remarkably clear example of temperature-dependent fluctuations in smectic order observed even far above a smectic-C phase. Supported by NSF DMR-0964765

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