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SAXS studies of short-range order in the nematic phase of reduced symmetry mesogens S. CHAKRABORTY, Department of Physics, Kent State University, N. DIORIO, C. ZHANG, Chemical Physics Interdisciplinary Program and Liquid Crystal Institute, Kent State University, R. BRECKON, R. TWIEG, Department of Chemistry, Kent State University, J. GLEESON, Department of Physics, Kent State University, A. JAKLI, Chemical Physics Interdisciplinary Program and Liquid Crystal Institute, Kent State University, S. SPRUNT, Department of Physics, Kent State University — Recently, we proposed a model based on persistent, nano-scale smectic-C-like domains ("smectic clusters") to explain the features present in the small angle x-ray diffraction patterns from certain bent-core nematic liquid crystals (which do not possess an underlying smectic phase). We report on new results from a wider range of nematics formed by reduced-symmetry molecules – including laterally-branched ("Y"-shaped) mesogens and "H" shaped dimers – that also lack a low temperature smectic phase. We find that our model, extended to incorporate the notion of staggered molecular arrangements, is successful in reproducing the SAXS patterns and reveals variation in the temperature-dependence of cluster size among different systems. Supported by NSF DMR-0964765.

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