

Abstract Submitted
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Polarization modulated orthogonal smectic phases¹ CHENHUI ZHU, RENFAN SHAO, JOSEPH MACLENNAN, DONG CHEN, YONGQIANG SHEN, MATTHEW GLASER, NOEL CLARK*, Department of Physics, University of Colorado, R. AMARANATHA REDDY, DAVID WALBA, Department of Chemistry and Biochemistry, University of Colorado, PER RUDQUIST, Microtechnology and Nanoscience, Chalmers University of Technology, Sweden — Polar orthogonal phases of bent-core materials have long been predicted, and a field-induced SmAP_F has been reported¹. We have recently observed a stable SmAP_F phase, obtained by design for an asymmetric bent-core mesogen with only one tail². Here we report studies on a similar single-tail bent-core mesogen, W596, which suggest the new material possesses an I-SmAP_F'-SmAP_F-Crystal phase sequence on cooling, where the SmAP_F' phase is similar to the SmAP_F phase except that the SmAP_F' phase is polarization modulated, leading to the formation of layer undulations, evidenced from the 1D periodic line patterns in freeze fracture transmission electron microscopy images, and x-ray reflections in addition to the main smectic layering reflection. Results of polarizing optical microscopy, electro-optic studies, and differential scanning calorimetry will also be presented. [1] Y. Shimbo, et al. PRL 97, 113901 (2006). [2] D. M. Walba, et al. 11th FLC Conference, 2007, p31.

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