Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Room-Temperature Liquid Crystal Blue Phases STEFANIE TAUSHANOFF, Kent State University, KHOA VAN LE, Tokyo Institute of Technology, ROBERT TWIEG, ANTAL JAKLI, Kent State University — The "blue phases" of a highly chiral liquid crystal are defect-studded structures of double-twist cylinders that are laced together. The three phases, BPI*, BPII* and BPIII* differ only in the packing of the double-twist cylinders. Until recently, blue phases were of limited practical use because they appeared for only a very narrow temperature range. Mixtures that show BPI* and BPII* phases for wide temperature ranges at or around room temperature are now available [1]. Relatively wide temperature BPIII (the blue fog) phase so far was available only at very high temperatures [2]. Here we present mixtures with room-temperature wide range BPIII* phase and compare the ability of chiral dopants to form the different blue phases in a base nematic mixture. PDLC films cast with blue-phase material are also examined.

[1] H. Coles and M. Pivnenko, Nature 2005 436-18 997-1000
[2] C. V. Yelamaggad, I. S. Shashikala, G. Liao, D.S. Shankar Rao, S. K. Prasad , Q. Li A. Jakli, Chem. Mater Comm, 2006, 18, 6100-6102

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Date submitted: 21 Nov 2008 Electronic form version 1.4