Abstract Submitted for the MAR10 Meeting of The American Physical Society

Thickness dependent phase behavior of AFLC liquid crystal films CHENG-CHER HUANG, LIDONG PAN, SHUN WANG, University of Minnesota, CHAIN-SHU HSU, National Chiao Tung University — Free standing films of a liquid crystal compound with simple surface enhanced order were studied. The resultant phase diagram demonstrates that (1) the short helical pitch smectic- C^*_{alpha} phase disappears below a film thickness of 10 layers, and (2) the temperature window of a distorted 4 layer smectic- C^*_{d4} phase increases dramatically upon decreasing film thickness. The experimental findings were attributed to the reduced dimensionality and enhanced surface effects in thin films. The results of the smectic- C^*_{alpha} phase are consistent with what have been reported for helically ordered magnetic thin films, with a noticeable difference due to the opposite effect of the surface on ordering in the two systems.

LiDong Pan University of Minnesota

Date submitted: 22 Nov 2009 Electronic form version 1.4