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Comments Concerning the Observation of Bi-Dimensional Textures

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Comments Concerning the Observation of Bi-Dimensional Textures

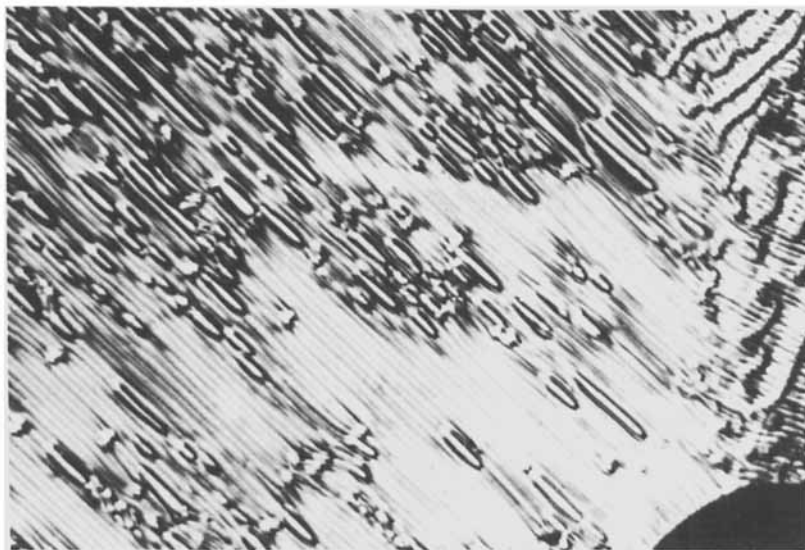
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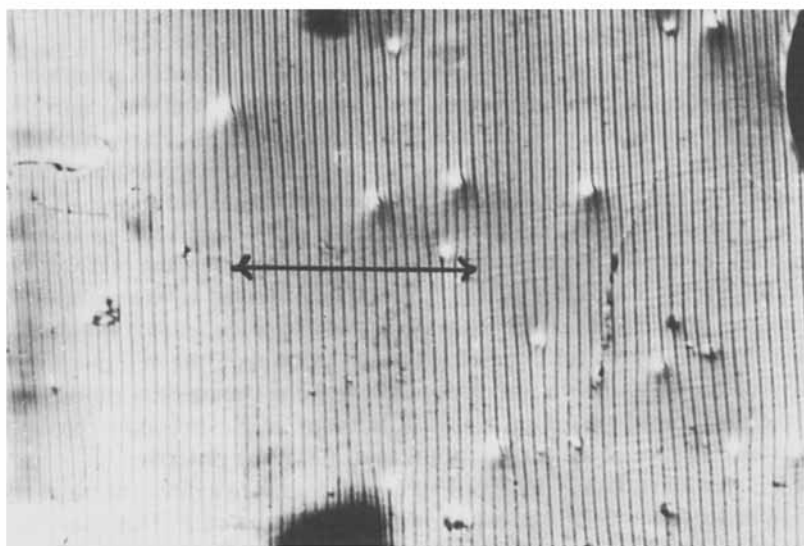
Berman, Gelerinter, and deVries have reported observing a broken Williams domain (square texture) structure in planar samples of Eastman dynamic scattering mixture II(KII). Their x-ray studies also indicate the presence of skewed cybotactic ordering in KII. No square textures were observed in MBBA nor was any skewed cybotactic ordering observed. In a subsequent paper² Weir and Gelerinter report observing the square texture in the nematic OOCF(di-1',4"-octyloxybenzylidene-1,4-diaminobenzene). Cybotactic ordering in this material is well documented,³ and the occurrence of the square texture was correlated with the amount of cybotactic order. More recently, Nasta, *et al.*,⁴ have reported observing bi-dimensional textures using twist cells of MBBA. It is their claim that the observation of these structures is "—contrary to the statements of—" Berman, *et al.* It is our contention that their statement is incorrect. It is clear that the textures observed by Nasta, *et al.*, are different from those observed by Berman, *et al.*, both in form (the square texture is always square never elongated) and source. Aside from the different cell geometry (twisted vs. planar), the bi-dimensional textures of Nasta, *et al.*, do not disappear when the polarizer is rotated 90° from the position of maximum contrast. Berman, *et al.*, do report the complete disappearance of the texture upon rotation of the polarizer.

We feel that the textures observed by Nasta, *et al.*, are a direct result of the twist. In order to verify this assertion, we also constructed MBBA twist cells of 50 μ and 100 μ thickness and reproduced the reported bi-dimensional textures. A magnetic field was then applied to unwind the samples, and the bi-dimensional textures were replaced by conventional Williams domain



I

a



I

b

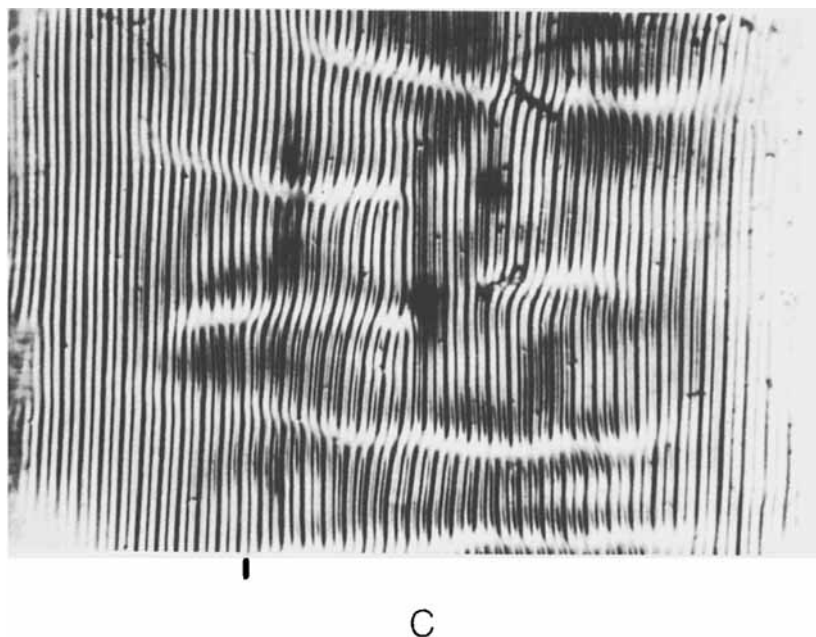


FIGURE 1 (a) Texture observed in a 50μ twist cell with V applied = 17 v. (b) Texture observed in cell of "a" with a magnetic field applied in the direction of the arrow to unwind the cell; V applied = 25 v. (c) Williams Domain stripes in a planar 50μ cell; V applied = 13 v.

stripes. The effect is illustrated in Figure 1. Hence we conclude that the bi-dimensional textures of Nasta, *et al.*, are due to the presence of twist. The existence of these textures is not a contraindication of the original contention that the square texture observed in Refs. 1 and 2 are correlated with skewed cybotactic ordering.

References

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