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Quételet-Type Interference from Liquid Crystal Polymer Dispersion Films

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Abstract

The Quételet-type ring pattern is observed in liquid crystal polymer dispersion (LCPD) films. The clusters of the polymer network and LC domains with different director axes in the LCPD films serve as scatterers. Changes in the first-order ring intensity are probed with a linearly polarized laser beam. Experimental results show that the first-order ring intensity of the Quételet-type interference peaks when the polarization of the probe beam is parallel to the director axis of the LC molecules. Also, it is shown that the number of the scatterers, the order parameter of the liquid crystals and the applied electric field affect the ring intensities. A simple model is proposed to explain these observations.

Key words : Interference; Liquid crystals; Quételet; Scattering