

Abstract Submitted
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Statistical mechanics of bend flexoelectricity and the twist-bend phase in bent-core liquid crystals¹ SHAIKH SHAMID, SUBAS DHAKAL², JONATHAN SELINGER, Kent State University — We develop a Landau theory for bend flexoelectricity in a liquid crystals of bent-core molecules. In the nematic phase of the model, the bend flexoelectric coefficient increases as we reduce the temperature, and it diverges at the nematic to polar phase transition. At this critical point, there is a second order transition from high-temperature uniform nematic phase to low-temperature nonuniform polar phase composed of twist-bend or splay-bend deformations. To test the predictions of Landau theory, we perform Monte Carlo simulations to find the behavior as a function of temperature, applied electric field and interaction parameters, and to determine the orientational distribution of the mesogenic molecules.

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