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A VARIATIONAL MODEL FOR BENT-CORE LIQUID CRYSTALS

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We present a nonlinear variational model for bent-core (banana-shaped) liquid crystals which contains energy terms arising from polarization, smectic and chiral effects, elasticity, and surface tension. Bent-core liquid crystals are made of molecules that are bent rather than straight (rod-like) as in standard liquid crystals. Their structure is described by energy minimizers.

We analyze stable solutions in a physically realistic regime. The mathematical analysis involves a free boundary problem for the energy and the existence of a Gamma-limit.