

# Structures and Structural Phase Transitions in Confined Liquid Crystal Systems

Eugene C. Gartland, Jr.\*

Department of Mathematics and Computer Science

Kent State University

P.O. Box 5190

Kent, Ohio 44242-0001 USA

November 22, 1995

## Abstract

Discussed are two numerical packages for computing equilibrium structures of liquid crystals. The first uses Frank elasticity in a rectangular geometry in two spatial dimensions. The second uses a tensor order parameter and Landau-deGennes free energy in the geometry of a finite circular cylinder. The Frank code is being used to study the phenomenon of the "stripe phase" in thin nematic films in the bend-Fréedericksz geometry. The cylinder code is being used to investigate configurations in liquid crystals confined in microscopic cylindrical pores subject to homeotropic anchoring conditions. Preliminary results of these projects are presented.

\*\*\* This abstract electronically created by submit 1.39 (c) 05/23/95 Michael  
Stacey

---

\*This research was partially supported by the National Science Foundation Science and Technology Center on "Advanced Liquid Crystalline Optical Materials" (ALCOM) under grant DMR 89-20147 and by NSF grant DMS-9310733.