

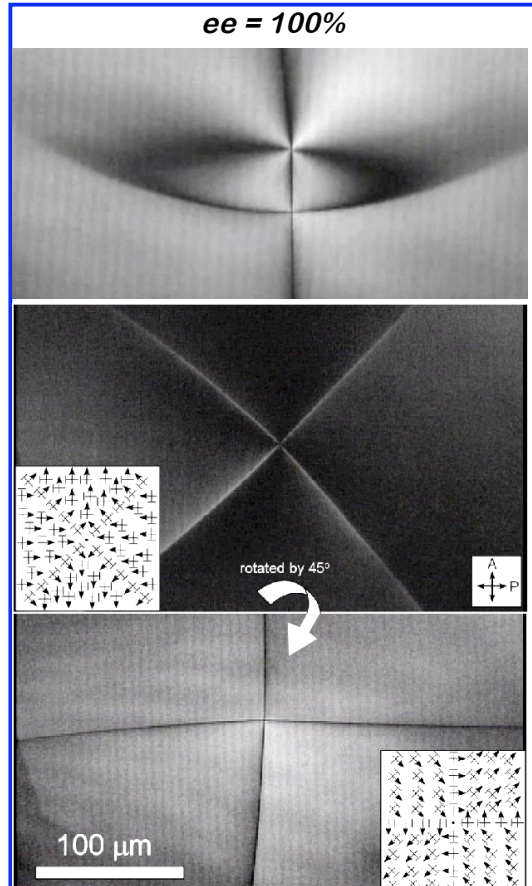
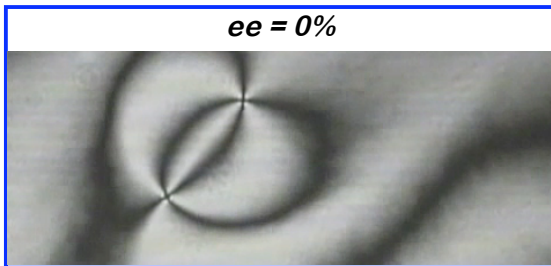
Confinement effects in two dimensions on freely suspended liquid crystal films

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We are studying the interactions and dynamics of islands, textures, and topological defects on freely suspended smectic C liquid crystal films. Freely suspended smectic films are quantized in thickness in units of single smectic layers and Islands studied here are thicker stacks of layers on a thinner background film. We will report on the following:

- Diffusion of islands on smectic A films, revealing the distinct effects of hydrodynamic drag from liquid crystal flow and from airflow.
- Interactions of islands on smectic C films, exploring the effects of chirality on the collective behavior of islands and their companion topological defects.
- Dynamic behavior of buckminsterfullerene nanospheres in freely suspended films.
- Effects of polarization on textures and defects in two dimensions, where a dramatic transformation in textures is found to accompany the increase of polarization, a change which can be produced by increase of the enantiomeric excess (ee) of the LC. The images below show an example, where the $ee = 0\%$ textures are smooth with large orientation fluctuations, the $ee = 100\%$ textures exhibit sharp discontinuities.

Textures of SmC free films



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