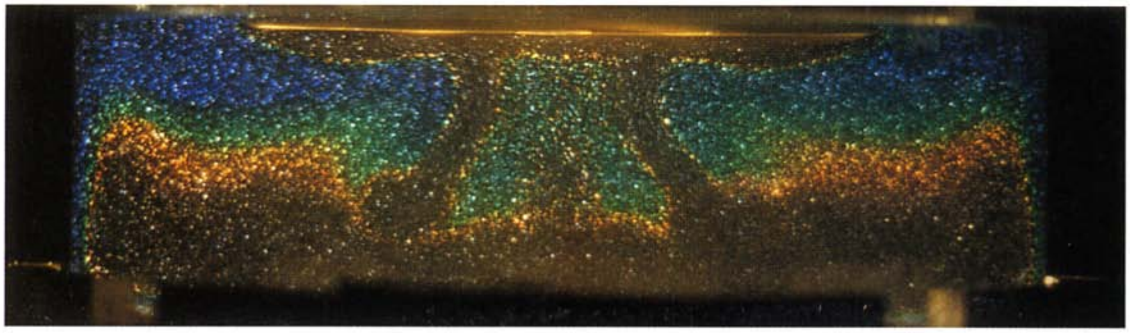
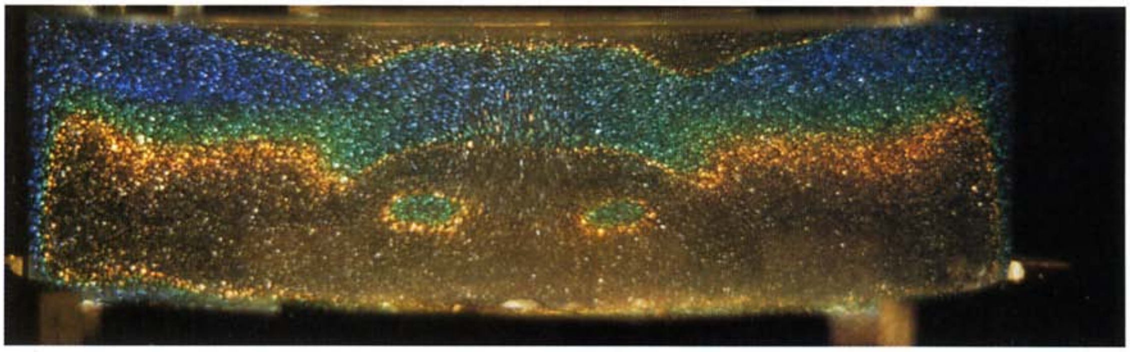
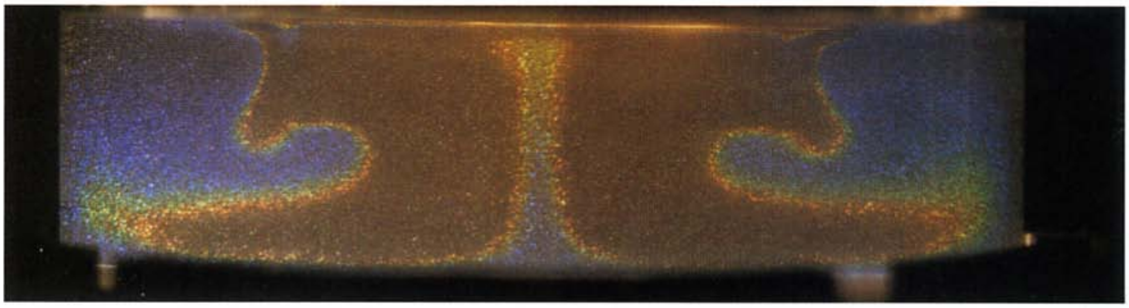


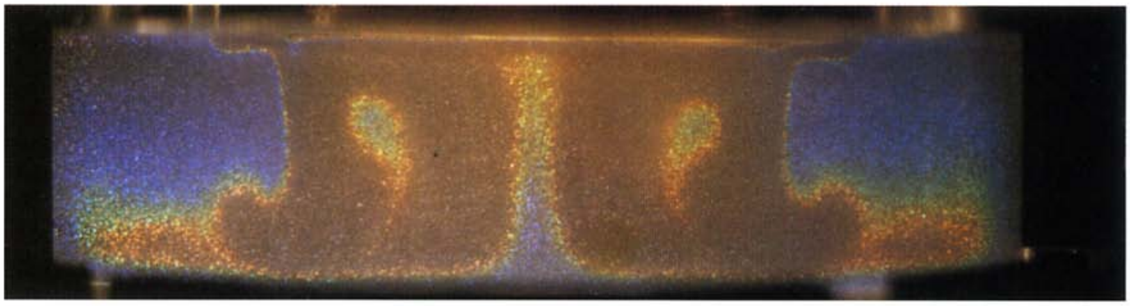
1(a)



1(b)



2(a)



2(b)

Visualization of Transient Temperature Field in a Rotating System using Liquid Crystals

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The versatility of imaging transient thermal phenomena using liquid crystals is displayed above (Mukherjee et al., 1996). The first two photos (Figs. 1a-b) capture the oscillatory regime in a buoyancy driven flow ($Ra \approx 1.2x10^5$, $Pr \approx 890$). The inner cylinder resting on the surface of the fluid is at 24 °C and the outer cylinder is at 36 °C. The progression from red (24 °C isotherm) to blue (36 °C isotherm) shows contributions from the buoyant and thermocapillary forces. The next two photos (Figs. 2a-b) portray a temporal behavior of (i) the competition between the buoyancy cum surface tension gradient driven flow toward the inner cylinder and the centrifugally pumped flow away from the inner cylinder ($Re \approx 4.41$, $Fr \approx 5.8x10^{-3}$, $Gr/Re^2 \approx 6.4$), and (ii) the Ekman suction owing to the shear imposed at the fluid surface. The distinct change in contrast between the two sets of photos is attributed to the photographic parameters; ASA 25 (Kodak Ektar) with aperture at *f*/4 for 1a and 1b, and ASA 100 (Kodak Royal) with aperture at f/1.8 for the faster flow. An 85 mm Nikkor lens is used to minimize error due to angular imaging.