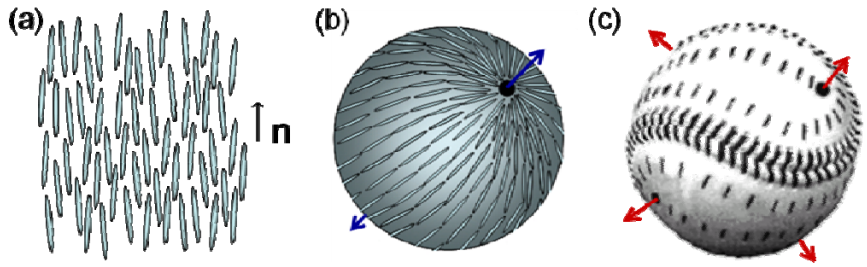
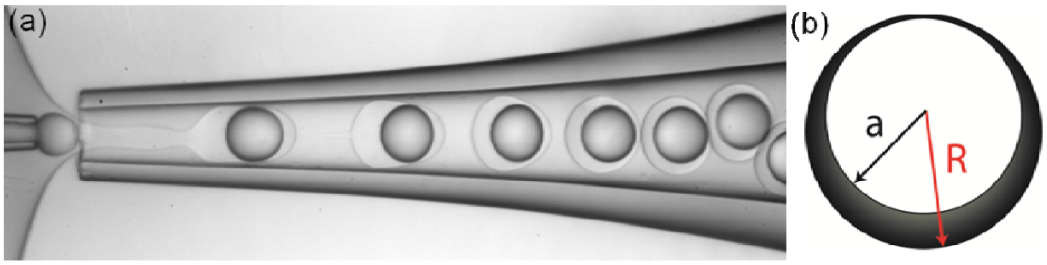
# FIGURES

## Figure 1



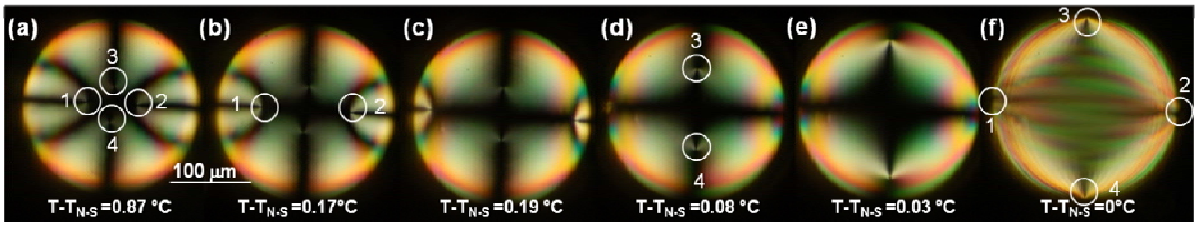

(a) Nematic order on a flat surface: the molecules display long-range orientational order along **n**, the director. (b)-(c) Nematic order on the surface of a sphere: curvature imposes topological constrains which result in the formation of singularities or topological defects in the director field. These defects are indicated by arrows in (b) and (c), which are two possible nematic organizations on a sphere.

## Figure 2



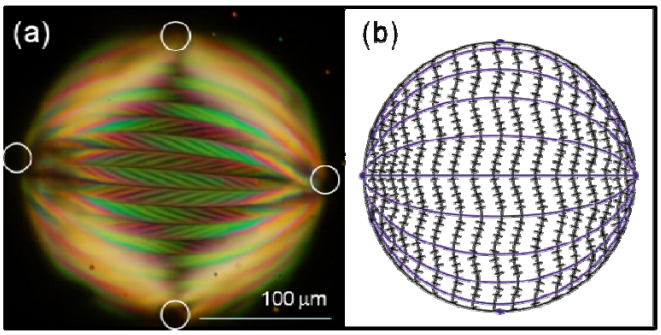

(a) Axisymmetric capillary device employed to produce nematic shells. (b) Geometry of the experimental nematic shells: due to a density mismatch between the inner and middle fluids, the experimental shells are heterogeneous in thickness.

## Figure 3



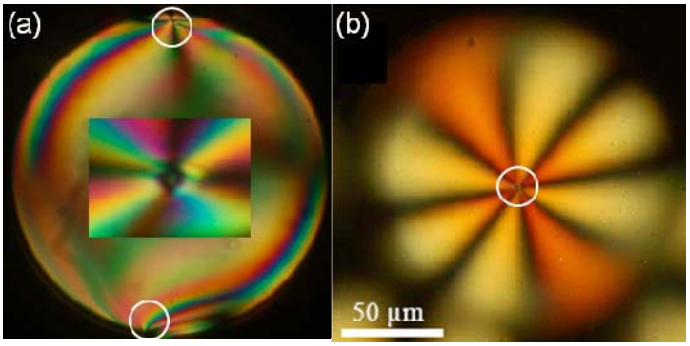

Cross-polarized micrographies of a nematic shell at different temperatures. (a) Far from the nematic-smectic phase transition temperature $T_{NS}$, four defects (highlighted with circles) appear confined at the thinnest part of the shell. (b)-(e) As temperature is decreased toward $T_{NS}$, the defects increase their separation distance in a two step process: defects 3 and 4 move away from each other at lower temperatures than defects 1 and 2. (f) At $T=T_{NS}$ the four defects lie on the equator of the sphere, confirming recent simulation predictions.

**Figure 4**




(a) First experimental observation of a smectic shell. The ground state of the system not only possesses four point defects (highlighted by circles) as predicted by theory, but also disclination lines which divide the shell into crescent domains. These disclination lines (blue lines) provoke a wavy modulation of the smectic layers (black lines), as schematically represented in (b).

**Figure 5**




Silica beads trapped at the defects of a nematic shell. (a) Two defect-bead pairs located at one diameter distance due to elastic repulsions between defects. (b) Two defect-bead pairs located side by side due to the aggregation of silica beads; this configuration gives rise to a defect of topological charge s=+2, which is energetically forbidden in the absence of beads.