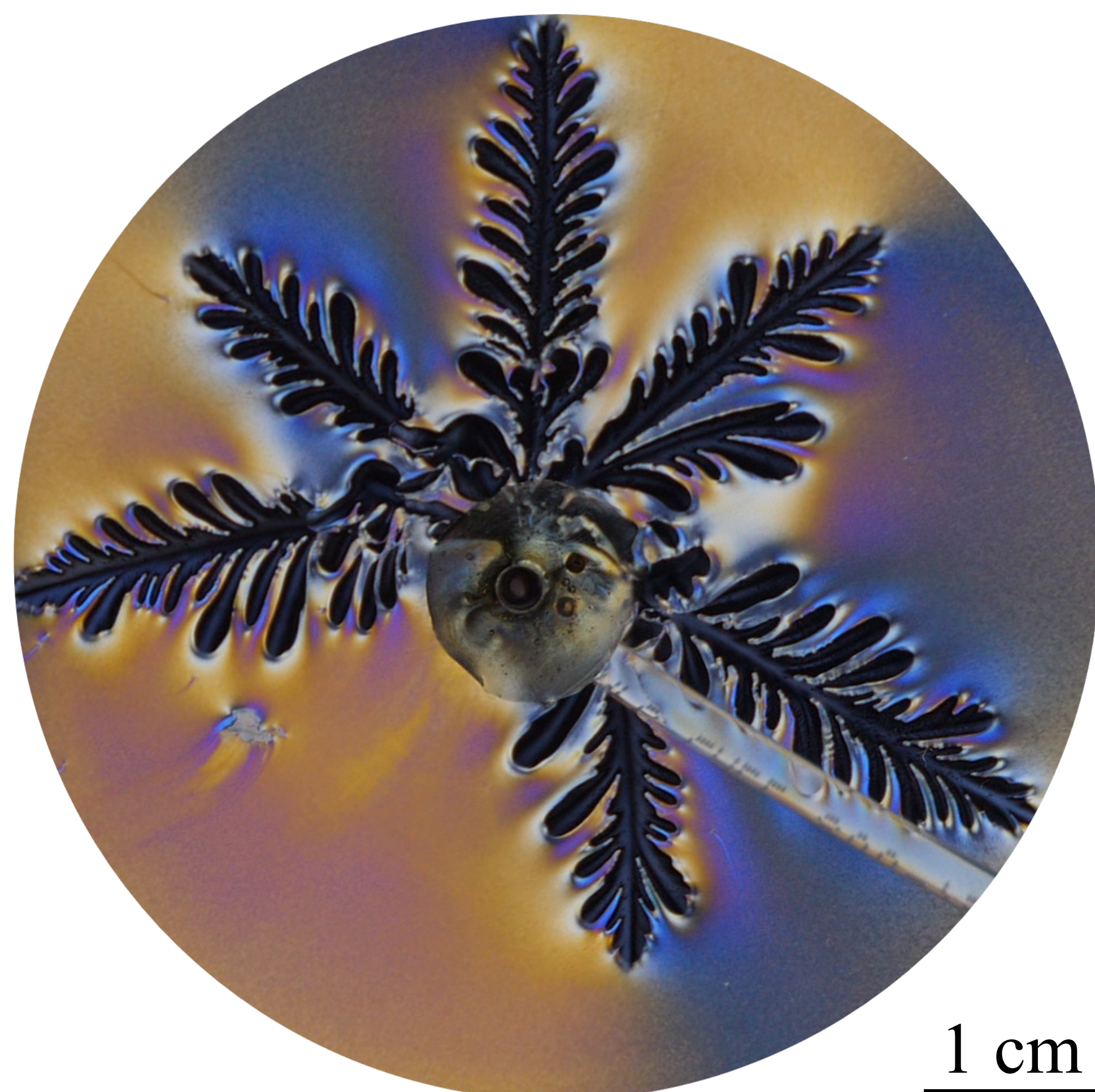
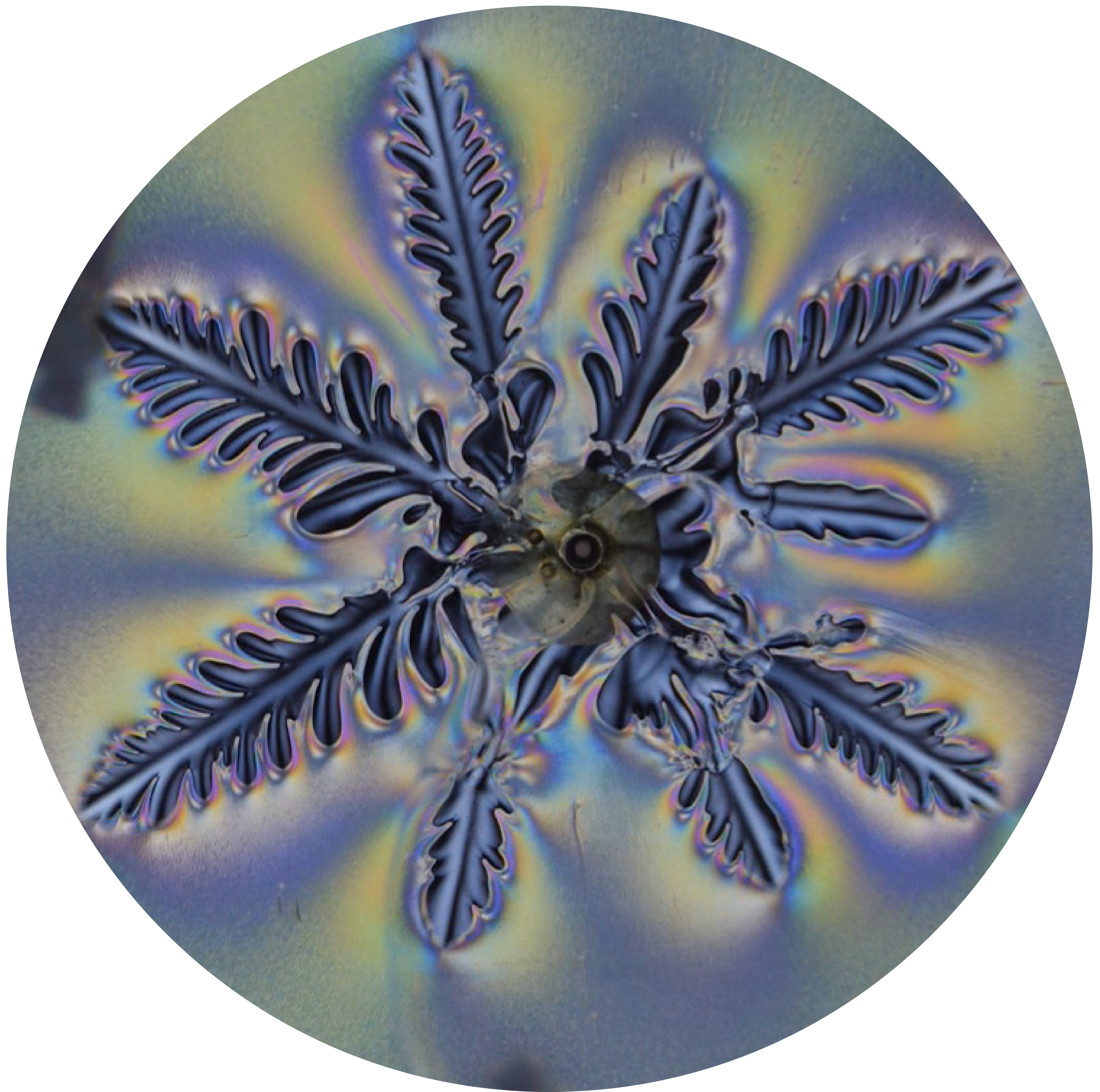


Pattern formation in chromonic liquid crystals

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1 cm

The displacement of a liquid crystal by a less viscous silicone oil in a Hele-Shaw cell leads to an instability.

Due to the anisotropic nature of liquid crystals, the unstable growth results in a dendritic growth morphology, characterized by stable needle-like protrusions decorated with side branches.

The characteristics of the dendritic patterns depend on the viscosity ratio between the inner and outer fluids, η_{in}/η_{out} . The number of dendrites increases and the length of the side branches decreases with increasing η_{in}/η_{out} (left images, from bottom to top: $\eta_{in}/\eta_{out} = 0.002$, $\eta_{in}/\eta_{out} = 0.024$, $\eta_{in}/\eta_{out} = 0.126$).