

Vorticity driven dynamics in nematic liquid crystals

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In 1990, Janossy made an astonishing observation; he showed that if a small amount of photoisomerizable dye is dissolved in the liquid crystal, the threshold intensity for the optical Freedericksz transition is reduced by two orders of magnitude. The anomalous reduction of the threshold intensity is the Janossy effect. The dye molecules under photoexcitation in a liquid crystal host act as rotors of molecular motors, and generate vorticity and subsequent flow. In this talk, we present a numerical study of the dynamics of nematic liquid crystal driven by local vortices using a hydrodynamic Q tensor theory, we shall investigate the effect the distribution of the local vortices on the alignment of Liquid crystals in different geometries.

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