Orientational dynamics of the compressible nematic liquid crystals induced by temperature gradient

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The theoretical description of the reorientational dynamics and the relaxation processes in the hybrid-oriented compressible liquid crystal (HOCLC) cell under influence of the vertical temperature gradient has been presented. We have carried out a numerical study of the system of hydrodynamic equations including director reorientation, fluid flow, and both the temperature and density redistribution across a HOCLC cell under the influence of a temperature gradient ∇ T directed normal to the restricting surfaces, when the sample heated both from below and above. Calculations show that, under the influence of ∇ T, the HOCLC sample settles down to a stationary flow regime, both with the horizontal *u* and vertical *w* components of velocity **v** (1,2).
The role of hydrodynamic flow in the relaxation processes of the stress tensor components, for a number of dynamic regimes in a HOCLC cell containing *4-n - pentyl –4`-cyanobiphenyl*, has been investigated (3).

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