A calamitic nematic material confined in a π-cell and subjected to a strong modulated electric field exhibits structural transitions locally mediated by transient biaxial states described by the Landau de Gennes Q tensor model. We investigated the evolution of the induced nematic texture as function of the amplitude, the frequency of the applied electric field by solving a system of five coupled partial differential equations implemented by finite element method [1-3]. We demonstrated that the electrical response of the π-cell is very sensitive to the nematic distortion dynamics and the analysis of the current shape provides relevant informations about the modulation of the biaxial order induced and its dynamics. For a better and complete understanding of the order reconstruction dynamics, we
performed experimental measurements of the electric current flowing across a nematic
π-cell when subjected to an external sinusoidal electric field. The experimental
observations were then compared to the numerical results with a good agreement.

Virga, "Electric field induced order reconstruction in a nematic cell," Eur. Phys. J. E 13,
61-71 (2004)


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