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## **FERROELECTRIC LIQUID CRYSTAL DISPLAYS: PHYSICS AND APPLICATIONS**

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### **Abstract**

The development of molecular switches has the capability to modulate the bulk properties of e.g thermotropic liquid crystals, has found great scope in the advances of display devices for information technology and other high Tech area. A display acts as an interface between human body and the machine. Till date nematic liquid crystals (NLC) have found a good market for such displays but their slow switching speed has been an impediment for their success.

Ferroelectric liquid crystals are novel class of organic non- emissive display materials. They are being actively investigated for liquid crystal displays (LCD) because of their bistability and relatively fast switching time in comparison to nematic based display materials. The surface stabilized ferroelectric liquid crystal (SSFLC) geometry provides fast passively addressed bistable device. We have studies series of ferroelectric liquid crystal materials for their dielectric, optical and electro-optic characterization. We evaluated their polarization, switching responses and studies physical properties of such systems. Their dispersion in siloxane polymer matrix has resulted in a flexible display with better responses in comparison to polymer-dispersed liquid crystals (PDLC) in which nematic materials were dispersed.

We shall present the physics of such systems and discuss our experimental results.

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