

E2-01: Novel method of preparing liquid crystal displays

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The conventional method of preparing liquid crystal displays involves the deposition of an inert polymer film on a conducting glass surface followed by the sandwiching of liquid-crystalline material between 2 such inert polymer-coated conducting glass plates. The inert polymer matrix serves as a template to align the liquid crystal molecules in the desired orientation.

A new approach to forming orientated liquid crystalline films. is reported, where, instead of using a conducting glass surface coated with an inert polymer, a conducting glass surface coated with a conducting polymer was prepared by polymerizing aniline on the conducting glass surface electrochemically. Nematic liquid crystal (4-heptyl-4'-cyano biphenyl) applied on this conducting polymer surface exhibited the desired orientation.

This method may have certain advantages over the conventional method. The conventional conducting glass surface prepared with indium doped tin oxide, has the draw back that the applied potential immediately develops a negative potential gradient. As a result, the liquid crystals aligned on such surfaces do not experience a uniform potential throughout. On the other hand, a potential applied to a conducting polymer surface does not develop a significant potential gradient and as a result, all the liquid crystals aligned on such surfaces would experience a significantly more uniform potential.