

# Non-Ideal Optical Isotropy of Blue Phase Liquid Crystal and their Self-Assembly on Electrode Surface

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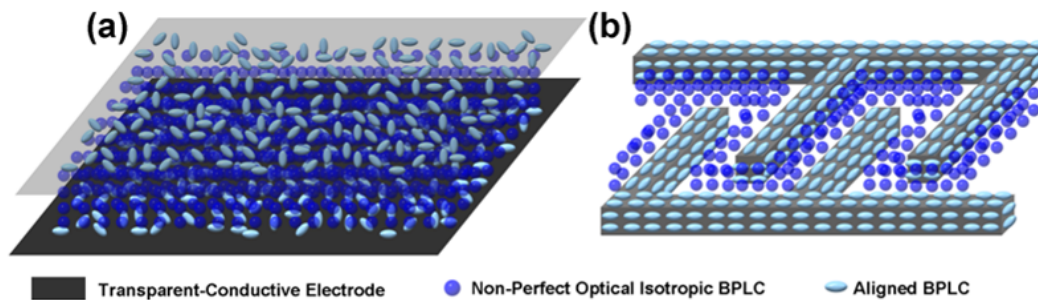
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Polymer-stabilized blue phase liquid crystal (BPLC) is well defined as three-dimension nanostructures and has three thermodynamic lattices, blue phase I, blue phase II and blue phase III.<sup>[1,2]</sup> Nanostructures of BPLC have excellent optoelectric properties. For example, optical isotropic leads alignment free and voltage-off state. Short coherent length contributes to microsecond response time. Based on these advantages, BPLC was regarding as next-generation display. BPLC was optical isotropic state and high contrast ratio (CR) should be easily achieved. However, low CR of BPLC (< 1000) was report in all literatures. Mechanism of low CR was found and explained by optical rotatory power.<sup>[5]</sup>

In this report, we reported BPLC is not only non-ideal optical isotropic, but also self-assembly along with electrode. Polarizer and analyzer maintain cross while  $\theta$  was change from  $0^\circ$  to  $90^\circ$ , where  $\theta$  is the angle between electrode of in-plane-switching (IPS) test cell and analyzer. Result showed that BPLC randomly aligned in vertical-switching cell, while self-assembly along with electrode of IPS cell. Detail was confirmed by polarized-optical microscopy and measurement of nit index.



## References:

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