

Stability Enhanced Flexible Liquid Crystal Display using Micro-Structure

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We demonstrate the novel flexible liquid crystal display(LCD) mode for stabilizing to the external distortions by using micro-structure of pillar spacer array and micro-contact printing assembling method. Specially designed columnar spacer structure generates self-collected adhesive polymer structure results in both a good adhesion properties and enhanced mechanical stability to the external bending deformations.

Two types of micro-structure are designed and demonstrated to fabricate flexible LCD as illustrated in Fig. 1. The micro-structure was formed by using a conventional photoresist SU-8 with photolithography method on the flexible PES plastic substrate. The pre-fabricated spacer array maintains a uniform and stable cell gap of device well without showing any detachment under external bending through the sample compared to the conventional ball-spacer type structure.

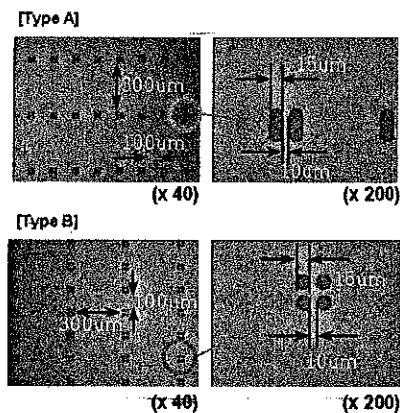


Figure 1. The micro-structure of designed columnar spacer array.

This novel LC mode can be highly applicable for practical flexible display with enhanced mechanical stability and high performance.

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KUSUNOKI KAIKAN in North Campus