Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Flexible plastic cells fabricated using phase separation of liquid crystal from its mixture in a prepolymer[1] QINGBING WANG, RUI GUO, SATYENDRA KUMAR, Department of Physics, Kent State University, OH 44240 — During phase separation of liquid crystal (LC) from its mixture in a prepolymer, in a cell, the prepolymer accumulates near the spacers. After the phase separation is complete, UV irradiation is used to crosslink the polymer thereby fixing the position of the spacers and bonding them to the substrates. We employ this method to create polymer-embedded spacers to improve cell gap uniformity for LC displays using plastic substrates. Spacers remain adhered to their initial positions thus preventing them from movement or aggregation during temporary cell deformation. Scanning electron microscopy was employed to evaluate the internal polymer morphologies formed under different polymerization conditions. Electro-optical performances and the flexibility of plastic LC cells were determined and the details will be presented.

[1]Supported by a grant from Samsung Electronics Corporation

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Date submitted: 07 Dec 2005 Electronic form version 1.4