

I3 **Dynamic Microlens Array Techniques based on a Liquid Crystal and a Polymer**

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Emerging liquid crystal (LC) based microlens developments will be introduced in this presentation. Among diverse electro-optical device applications of LC, the lens and the microlens array are most viably studied in recent days due to its valuable utilizations such as optical communication component, optical information processing unit and three-dimensional display element. Until now, several approaches have been demonstrated to realize a multi-functional and a dynamic LC based microlens array structure [1-12].

In this letter, the various realization techniques of dynamic microlens array based on the combined system of a LC and a polymer will be described with focusing on diverse driving characteristics like tunable focal length of the device, fast switching, incident polarization independent focusing properties and dynamic driving behavior. Especially, in the presented microlens configurations, various polymers are utilized to provide the simple fabrication and surface modulation while LC layer supports the dynamic focusing properties of the device. This separate driving mechanism of LC/polymer microlens array can be highly applicable for adopting the resultant device to various practical optical systems like optical transmission, photonic system and 3-D display module within a simple fabrication process.

Acknowledgement

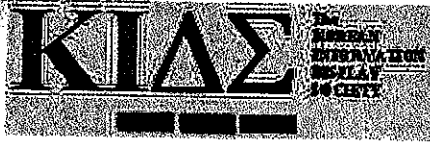
This work was supported in part by Samsung Electronics co. Ltd. and the Korea Research Foundation Grant funded by the Korean Government (MOEHRD)(KRF-2005- 005-D00165).

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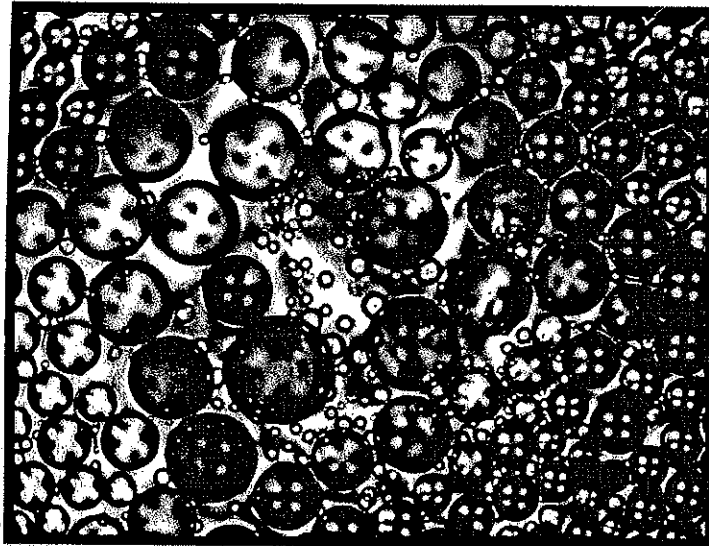
Proceedings of the 9th



KOREA LIQUID CRYSTAL CONFERENCE

Chungnam National University, Daejeon, Korea

July 21 - 22, 2004



Organized by
Korea Liquid Crystal Society
Institute of Quantum Systems

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