Novel approach to PDLC using polymer capsules

김민균, 박견주, 김도현*
KAIST

Polymer dispersed liquid crystal (PDLC) can be used for smart displays with the control of transparency. PDLC has been generally made using phase separation between polymer matrix and liquid crystal. In this case, however, liquid crystal is dispersed irregularly and the irregular shape of liquid crystal causes a sharp decline of quality of transparent state. For this reason, making monodisperse liquid crystal droplets is important in PDLC. In this work, liquid crystal in polyurethane capsules were made by membrane emulsification to make droplets of uniform size. Capsules were characterized by SEM and polarized optical microscopy. Chemical structures of polymer shell also were investigated by FT-IR. Optimization of the process to enhance the yield and performance of microcapsules will be discussed.