

### Polymer substrates for flexible display

윤석호, 김상기, 박용호\*, 황희남  
(주)아이컴포넌트  
(singalon@i-component.co.kr\*)

Recently, flexible displays have attracted an interest due to their light weight and portability. But, polymers as materials for flexible display are not compatible for electronic devices due to their low thermal resistance and high gas permeability. In this study, we introduce polymer substrate for flexible flat panel display such as liquid crystal display (LCD), organic light emission diode (OLED). Design of multi-layer structures using hybrid of organic-inorganic is essential because flexible substrates for OLED demand low gas permeation and high light transmittance materials. But, multi-layers have problems such as cracking when bent and a decrease of light transmittance. In this study, we investigated correlation between process conditions of barrier layers and optical and barrier properties of substrates. Our flexible substrates were manufactured on a full roll-to-roll process. Polyethersulfon (PES) as base film was prepared by extrusion. And then inorganic layers as gas permeation barrier were coated by reactive sputtering and wet-coating method using thermal curing for interlayer. PES substrates showed low retardation, high optical and water barrier properties.