

알루미늄 알콕사이드를 이용한 유/무기 수분 차단 막

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We demonstrate an organic/inorganic hybrid thin film encapsulation for OLED using sol-gel method. Sol-gel method may be a good choice for obtaining low cost, high productivity and large area devices. We consider the inorganic moiety provides moisture barrier property, while the organic moiety improves flexibility of the hybrid layer. Gibbsite ( $\gamma$ -Al(OH)<sub>3</sub>), Tetraethyl orthosilicate (TEOS) and Poly(methyl methacrylate) (PMMA) were used as the organic and the inorganic moiety. Nanosized hexagonal gibbsite seed are grown from a mixture of dissolved alumina alkoxides at 85°C. TEOS solution as the precursor of SiO<sub>x</sub> in ethanol with HCl and Gibbsite solution in water were separately prepared. The solutions were then mixed and dip coated on the Pen film.

We focus our attention on the effect of increasing number of interfaces on the final barrier properties. The encapsulation barrier properties of these layers are assessed using the electrical calcium test. Moisture barrier property was determined by water vapor transmission rate (WVTR) measured by Ca test at 85°C and 85% RH. Water vapor transmission rate (WVTR) of  $\sim 2 \times 10^{-2}$  g/m<sup>2</sup>·day is reported, which has also high potential for flexible barrier applications.