

## Properties of Thin Barrier Adhesive Film for Laminated Encapsulation of Organic Devices

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Organic devices are suitable for next generation electronics due to their flexibility and light weight. However, their inherent vulnerability to water vapor and oxygen is still a problem. To enhance the stability of organic devices, the additional encapsulation is necessary. Here, laminated encapsulation with Al foil and thin barrier adhesive film is studied to prevent the penetration of water vapor and oxygen. To fabricate thin barrier adhesive film, initiated chemical vapor deposition (iCVD) is applied. The adhesive is consisted of epoxide and hydroxyl group and it shows barrier property while maintaining adhesion. By optimization of the monomer ratio, the adhesion strength up to 55 N / 25 mm is achieved with post annealing process. Also, the barrier property of the adhesive layer with different adhesive thickness is studied. The water vapor transmission rate (WVTR) of the barrier adhesive layer is on the order of  $10^{-3}$  g/m<sup>2</sup>/day. Thus, the barrier adhesive film with iCVD can be a good candidate for laminated encapsulation to enhance the stability of flexible organic electronics devices.