

## Folding Stability of Organic-Inorganic Multilayer Moisture Barrier Depending on Its Location to Neutralplane

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We developed a barrier structure with the stability of WVTR characteristics after folding using a neutral plane. Until now, the 3R barrier has been studied by applying an organic-inorganic multilayer, but the multilayer formed on the substrate has been limited by the crack of the barrier and deformation of the substrate under 1R condition. Therefore, it is needed to study of the structural approach of the barrier to withstand these conditions. 10 dyad of  $\text{Al}_2\text{O}_3$  and n-hexane multilayer barrier was placed on the neutral plane. folding measurement is performed at a flexural bending radius of 1mm before and after the WVTR characteristic. An  $\text{Al}_2\text{O}_3$  thin film grown by atomic layer deposition (ALD) was used as the encapsulation layer for this study. To compare the folding characteristics of the  $\text{Al}_2\text{O}_3$  inorganic single layer and organic-inorganic multilayer, we prepared a 50-nm-thick  $\text{Al}_2\text{O}_3$  single layer and a 10 dyad multilayer in which 5-nm-thick  $\text{Al}_2\text{O}_3$  layers and 20-nm-thick organic layers were alternately stacked. The organic layer used in this study was a thin film polymerized in plasma using n-hexane as a precursor.