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Photoelectron Spectroscopy Study of the Electronic Structures of Al/MgF2/*tris*-(8-hydroxyquinoline) aluminum Interfaces

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We have studied the electronic structures of Al/MgF2/*tris*-(8-hydroxyquinoline)aluminum (Alq3) interface using UV and X-ray photoelectron spectroscopy (UPS & XPS). The UPS revealed that the valence peak shift occurred with MgF2 deposition before Al was deposited and was independent of the gap state formation. The XPS core level peaks indicated that the MgF2 strongly interacted with Al and O atoms in Alq3 even before Al was deposited, and the deposition of Al caused slight change to the N 1s core level peak. These results indicate that the interaction mechanism in Al/MgF2/Alq3 is different from those found in Al/LiF/Alq3 and other metal/Alq3.