

Energy level alignments at tris-(8-hydroquinoline) aluminum/8-hydroquinolatolithium/aluminum interfaces

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The electronic structures of tris-(8-hydroquinoline) aluminum (Alq_3)/8-hydroquinolatolithium (Liq)/Al interfaces were studied using in situ ultraviolet and x-ray photoelectron spectroscopy. We constructed complete energy level diagrams and analyzed chemical interactions at the interface. When Liq was inserted between Al and Alq_3 , the electron injection barrier was reduced by 0.56 eV compared to the structure without Liq. Additionally, a gap state was observed in the gap of Liq, which is related to an interfacial reaction. The N 1s spectra revealed that there were destructive chemical reactions between Alq_3 and Al, which could be prevented by inserting Liq between them.