

## The interfaces between Alq3 and ZnO substrates with various orientations

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ZnO has been introduced as one of the good candidates for next generation opto-electronics. Recently, ZnO is known to be suitable for the transparent electrode in organic solar cells and light emitting devices. The contact with n-type organic material has been studied due to the n-type properties of ZnO. However, the surface of ZnO has shown different electronic property with respect to its surface orientation. Therefore, it is presumed that there are differences in the interfacial electronic structures between organic materials and ZnO with different orientation. Therefore, it is required to classify the interfacial electronic structures according to the surface orientation of ZnO.

In this study, we measured the interfacial electronic structures between the ZnO substrate having various orientations and a typical n-type organic material, tris-(8-hydroxyquinoline) aluminum (Alq3). In-situ x-ray and ultraviolet photoelectron spectroscopy measurements revealed the interfacial electronic structures. We found the changes in the electronic structures with respect to the orientation of ZnO substrate and it could be used to improve the contact between ZnO and Alq3.

**Keywords:** ZnO, Alq3, XPS, UPS, Interface