The Influences of different cathode materials on Tris-(8-Hydroxyquinoline)- Aluminum Doped with CsNO₃ in Organic Light emitting Devices

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Graduate Institute of Photonics and Optoelectronics — This paper presents the investigations of interfacial interactions and electron-injection mechanisms between cesium nitrate (CsNO₃) and different cathode materials. By using ultraviolet and x-ray photoemission spectroscopy, the properties of electronic structures and the interfacial chemistry are studied. According to our results, there exists a phenomenon of electron exchange at the interface results in changes of Aluminum 2s core level binding energy by 1 eV when aluminum was deposited on CsNO₃. This means electrons transfer from cathode materials to the surface of CsNO₃, forming a strong dipolar field at the interface and reduction of the electron injection barrier. But, in contrast, there exists nearly no reaction between CsNO₃ and silver cathode. The evidences show that CsNO₃ is more effective only with aluminum cathode due to a reaction between Aluminum, Cesium and Nitrogen atoms.

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