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Energy level shift due to the co evaporated LiF in Alq_3 KIWAN PARK, HUANJUN DING, YONGLI GAO, FRANKY SO — Recently, one of us (FS) observed strong improvement in conductivity of LiF-doped tris (8-hydroxyquinoline) aluminum (Alq_3). We have investigated the p n-doping of the organic material. The doping induces energy level shift in frontier orbital for about 0.25 eV when the doping ratio by weight is 10 %. Small amount of metal deposition (0.5 $\mathring{A}$ of Al, Ag, Au) on LiF-doped Alq_3 causes further shift, with Al the most ($\sim$1 eV) and Au the least (0.3 eV). Further metal depositions reverse the shift for about 0.5 eV. These results suggest that the metal induced enhancement of n-doping in LiF:Alq_3 contributes to the improvement in conductivity. After 1$\sim$2 $\mathring{A}$, the properties of metals show up and the Energy levels converge.

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