Investigation of optimization of organic solar cells

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Organic solar cells offer the possibility of inexpensive and efficient energy conversion, and one design currently being investigated is the organic bi-layer solar cell. The bi-layer cell design is composed of p- and n-type thin films sandwiched together with charge transport enhancement layers between two electrodes.
A HTL (Hole Transport Layer) was deposited between ITO and the active layer. This layer provides a smooth surface for active layer deposition and reduces the energy barrier for hole collection at the ITO electrode. CuPc serves as the active layer where electron-hole pares are generated through photon absorption. C60 is the n-type material in this organic solar cell which transports electrons to the back electrode and provides a p-n junction to separate electron-hole pares. The BCP layer is an EBL (Exciton Blocking Layer) which helps to prevent exciton recombination at the Al electrode.
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