

Broad Spectral Photodetectivity of CoPc/a-IGZO Hybrid Thin Film Phototransistor

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In this research, the incorporating of cobalt phthalocyanine (CoPc) absorption layer on amorphous indium-gallium-zinc oxide transistor was proposed to enhance a broad spectral and responsivity of photodetector from ultraviolet to visible regime. A wide-band-gap IGZO film was used as a semiconducting channel and UV absorption layer, while small-band-gap CoPc film was decorated for converting visible light absorption to an electrical signal. The result showed that the CoPc-incorporated phototransistor has higher responsivity than IGZO transistor under illumination of a 635 nm laser. In addition, a good stability and reduced PPC effect of IGZO-based hybrid transistor have also approached. These result indicate that the proposed hybrid CoPc/a-IGZO phototransistor is suitable for applying as UV-visible light detector.

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