

Characteristic of Perovskite solar cell with CuO hole transfer layer prepared by hydrothermal synthesis

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CuO hole transfer layer (HTL) was introduced by the hydrothermal synthesis method to improve the thermal stability of the perovskite solar cell. CuO can generate a large amount of current due to its high optical and electrical properties and is excellent in thermal stability. The structure of this device is FTO / CuO / CH₃NH₃PbI₃ / ZnO / Ag. The CuO, CH₃NH₃PbI₃ and ZnO were used as a hole transfer layer, an active layer, and an electron transfer layer, respectively. The morphology, the chemical bonding and ingredient, thickness of CuO was measured by using SEM, XRD and EDX, Alpha step photometer. The electrical characteristics of the device were measured using a solar simulator. Through the hydrothermal synthesis conditions such as hydrothermal synthesis temperature and solution, the thinner the CuO thickness, the higher the photoelectric conversion efficiency.