

Organic-Inorganic Solar Cells with Nanopatterned ZnO Layer Using Nanoimprint Lithography Process

양화영, 노원엽, Tahmineh Mahmoudi, 한윤봉*

전북대학교

(ybhahn@chonbuk.ac.kr*)

Organic inorganic solar cells(OISC), the importance of an interpenetrating network of donor and acceptor materials has been recognized. Organic p-type donor polymers and inorganic n-type acceptor metal oxides are the most widely used in OISC solar cells. The most important advantage of ZnO is higher electron mobility, high transparency, and excellent electrical properties than other metal oxide. However, the charge separation between the organic polymers and the inorganic metal oxides does not show more efficiency because the excited electrons far from interface may recombine with holes during the transporting to ZnO layer. Nanostructured metal oxide has spatially distributed interfaces for charge separation and direct pathways for collecting electrons and holes. Here, we have demonstrated the nanoimprinted ZnO layer and its application for hybrid solar cells. The energy conversion efficiency of the hybrid solar cells with well-ordered nanostructures of ZnO is improved due to decreasing recombination and increasing light trapping.