

Hollow-flowered ZnO structures as scattering layer for improving energy conversion efficiency in organic-inorganic solar cells

노원엽, Mohammad Vaseem¹, 양화영¹, Tahmineh Mahmoudi¹, 한윤봉^{1,*}

전북대학교; ¹전북대학교 반도체 화학공학부

(ybhahn@jbnu.ac.kr*)

Organic-inorganic solar cells (OISCs) which consist with organic and inorganic semiconductors have been researched as an alternative to conventional photovoltaic devices. Compared with organic-organic solar cells, organic-inorganic solar cells have higher electron mobility and higher physical and chemical stability. CdSe, TiO₂ and ZnO are used in inorganic semiconductors. Especially, ZnO has a wide band gap, less toxic than many other II-VI semiconductors, and easy synthesis with low cost techniques. For these reasons of ZnO properties, ZnO is an excellent candidate as OISCs. However, the energy conversion efficiency of OISCs needs to be improved. To improve the energy conversion efficiency of OISCs, scattering layers are one of best research areas in the light harvesting. Hollow structure has attracted a great deal of attention due to low density, high surface area, good surface permeability. Here, we reported characterization of hollow-flowered ZnO as scattering layer and its application to OISCs for improving energy conversion efficiency.