

The characterization of different n-type semiconductors and their device application

서승희, Tahmineh Mahmoudi, 왕유생, 양화영, 노원엽,

한윤봉[†]

전북대학교

(ybhahn@jbnu.ac.kr[†])

ZnO and TiO₂ are the most commonly used n-type semiconductors in various state-of-the-art photovoltaics. Both of materials have similar wide band gap energy approximately 3.2eV. While the TiO₂ has a higher chemical stability and fewer defect states, less recombination, the ZnO have higher electrical conductivity and electron mobility than TiO₂ and can be easily controlled shapes and sizes. The structure, optical and electrical characteristics of ZnO and TiO₂ nanoparticles have been investigated by HR-TEM, FE-SEM, X-ray diffraction, and UV-Vis absorption spectroscopy. In this work, we utilized ZnO and TiO₂ as electron transport materials in solar cells and compared their device performance.