

Perovskite solar cells with 2PACz modified NiOx hole transport layer

이석민, 김석순[†]

군산대학교

(sskim@kunsan.ac.kr[†])

Organic/inorganic perovskite solar cells (PeSCs) has been developing rapidly with dazzling success in the improvement of device performance and cost-efficient processes. In particular, interests in inverted p-i-n structured PeSCs has emerged due to their low hysteresis and simple processes. To demonstrate efficient and air-stable p-i-n type PeSCs, NiOx has been spotlighted as an optimal hole transport layer (HTL). However, there are still some challenges to obtain high performance NiOx-based PeSCs such as optimization of the contact between NiOx and perovskite layers and suppressing energy loss at the interface. In addition, the ligands on the surface of solution-processed NiOx lead to poor device stability due to the reaction with perovskite

In this study, interface engineering was carried out by modifying the NiOx layer with [2-(9H-carbazol-9-yl)ethyl] phosphonic acid (2PACz) to improve the surface contact between NiOx and perovskite. Very recently, 2PACz has been reported as a promising self assembled monolayer type HTL in p-i-n structured PeSCs. Effect of 2PACz modified NiOx on the formation of perovskite and overall device performance will be discussed.