

Grain boundary passivation by an anionic perfluorocarbon surfactant for high stability perovskite solar cells

이정훈, 김홍기¹, 오준학[†]
서울대학교; ¹포항공과대학교
(joonhoh@snu.ac.kr[†])

The solution process is an effective method for fabricating low-cost and high-efficiency perovskite solar cells. However, the formation of perovskite films at low temperatures causes the growth of submicron grains with defects, lowering the efficiency and stability to water and air. Passivation of these grain boundary defects promises to improve solar cell performances. We used an anionic perfluorocarbon surfactant as an additive to obtain anionic defects passivation effect and increase the stability by hydrophobic functional group. The best device showed the performance of $J_{sc} \sim 21 \text{ mA/cm}^2$, $V_{oc} \sim 1.05$, $FF \sim 73.1\%$, and $PCE \sim 16\%$, showing an efficiency improvement of 12.6% compared to the conventional device.