

## 비정질 실리콘 태양전지 후면 반사막 적용을 위한 저온 증착된 AZO 박막 특성에 관한 연구

Junyoung Kang, Hyeongsik Park and Junsin Yi\*

School of Electronic Electrical Engineering, College of Information and Communication Engineering,  
Sungkyunkwan University, Suwon, 440-746, Korea

The hydrogenated amorphous silicon (a-Si:H) thin film solar cells using n/Al or n/Ag/Al back reflector have low short circuit current ( $J_{sc}$ ) due to high absorption coefficients of Al or work function difference between n-layer and the metal. In this article, we utilized aluminum doped zinc oxide (AZO) to raise the internal reflectance for the improvement of short current density ( $J_{sc}$ ) in a-Si:H thin film solar cells. It was found that there was a slight increase in the reflectance in the long wavelength range at the process temperature of 125oC due to improved crystalline quality of the AZO back reflector. The optical band gap ( $E_g$ ) and work function were affected by the temperature and so did the internal reflectance. The increased internal reflectance within the solar cell resulted in  $J_{sc}$  of 14.94 mA/cm<sup>2</sup> and the efficiency of 8.84%.  $J_{sc}$  for the cell without back reflector was 12.29 mA/cm<sup>2</sup>.

**Keywords:** AZO, thin film solar cell, back reflector, low temperature, sputtering

