

황화 열처리를 통한 CIGS 광흡수층의 표면 특성 변화 연구

*김 지혜, 고 영민, Liudmila Larina, **안 병태

Properties of the surface of the CIGS thin films after sulfurization

*Ji Hye Kim, Young Min Ko, Liudmila Larina, **Byung Tae Ahn

Many efforts on the surface sulfurization of Cu(InGa)Se₂ (CIGS) thin films have been reported as techniques to improve CIGS solar cell performance. We have investigated the sulfurization technique using the sulfur vapor. The co-evaporated Cu(In,Ga)Se₂ thin film was used for sulfurization. A thin Cu(In,Ga)(S,Se)₂ layer was grown on the surface of the CIGS thin film after high-temperature annealing in sulfur vapor. The structural and compositional properties of the thin films were studied by XRD, EDS and AES analysis. The obtained results revealed that the surface modification technique is promising method to S incorporated into CIGS absorber.

Key words : Sulfurization, CIGS, Thin film, solar cells

E-mail : * wisdom8407@kaist.ac.kr, ** btahn@kaist.ac.kr

실리콘 기판 습식 세정 및 표면 형상에 따른 a-Si:H/c-Si 이종접합 태양전지 패시베이션 특성

*송 준용, 정 대영, 김 찬석, 박 상현, 조 준식, 윤 경훈, 송 진수, **이 정철

Effect of cleaning process and surface morphology of silicon wafer for surface passivation enhancement of a-Si/c-Si heterojunction solar cells

JunYong Song, Daeyoung Jeong, Chan Seok Kim, Sang Hyun Park, Jun-Sik Cho, Kyounghun Yun, Jinsoo Song, JeongChul Lee

This paper investigates the dependence of a-Si:H/c-Si passivation and heterojunction solar cell performances on various cleaning processes of silicon wafer and surface morphology. It is observed that passivation quality of a-Si:H thin-films on c-Si wafer highly depends on wafer surface conditions. The MCLT(Minority carrier life time) of wafer incorporating intrinsic (i) a-Si:H as a passivation layer shows sensitive variation with cleaning process and surface morphology. By applying improved cleaning processes and surface morphology we can obtain the MCLT of 200μsec after H-termination and above 1.5msec after i a-Si:H thin film deposition, which has implied open circuit voltage of 0.720V.

Key words : solar cells(태양전지), heterojunction(이종접합), a-Si:H(비정질실리콘), minority carrier lifetime(소수반송자수명), cleaning(세정)

E-mail : * kkunyong@nate.com, ** jcleee@kier.re.re