한국신·재생에너지학회 2007년도 춘계학술대회논문집 pp.244

플렉시블 염료감응 태양전지의 임피던스 분석 연구

강 만구[1], 전 용석[2]

Impedance Study of Flexible Dye-sensitized Solar Cells

Mangu Kang, Yongseok Jun

Key words : Dye-sensitized(염료감응), Impedence(임피던스), Flexible(구부림), Metal substrate (금속 기판)

Abstract : Dye sensitized solar cells (DSSCs) and organic solar cells are different from any inorganic only solar cells in terms of various crossing interfaces between organic and inorganic materials. Especcially, DSSCs have various components such as dyes and electrolytes. Elecrochemical impedance spectroscopy (EIS) is one of the strongest tools for solar cells which has this crossing interface and various components. Due to the merits, researches of EIS analysis for the DSSSs have obtained a lot of attentions.

Metal substrates are excellent alternatives to conducting plastic substrates in flexible solar cells because of the possible sintering process at high temperature. However, the investigation of cells with flexible metal substrates has only recently started with Ti, W, stainless steel(stst). It was found that they formed semiconductor oxides after the sintereing process. For the detail analysis, the EIS has been taken and analyzed to characterize the impedance elelment in each circuit. The corresponding effect has been also discussed. We have probed the properties of DSSCs with the metal substrates prepared in three different ways; a bear metal sheet, indium tin oxide (ITO) sputter coating on a bare metal sheet, and ITO sputter coating after the addition of a SiOx layer on the metal sheet. A new impedance element resulting from the SiOx insulating layer was classified from EIS data.

1) 한국전자통신연구원 IT-NT그룹 이오닉스소자팀
E-mail : 10009kang@etri.re.kr
Tel : (042)860-6817 Fax : (042)860-6836
2) 한국전자통신연구원 IT-NT그룹 이오닉스소자팀
E-mail : yjun@etri.re.kr
Tel : (042)860-6817 Fax : (042)860-6836