

Deposition of Al/Ti electrode layer on PET substrate using ebeam and optimization of electrical properties

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초 록: The current energy crisis in many countries has led to the search of an efficient renewable energy source. Among those the solar energy is the most abundant and easily available. However harvesting the solar energy requires a much efficient device. Lot of research has been done in this regard and so far the efficiency of traditional solar cell stands around ~50% and for PET films it is much lesser. The potential application of PET films in the solar cells can be very promising provided the fact that the PET film is lighter and logistically more viable. There is a lot of work that is being done to increase the efficiency of PET based solar cells. The base electrode plays a vital role in increasing the efficiency of the cell.

1. 서론

In this report we demonstrate the deposition of Al/Ti electrode on a PET film via ebeam. We optimize the growth parameters to obtain the best sheet resistance by changing the parameters like power and deposition time. The obtained films were characterized using X-ray diffraction for the structural properties and FESEM for the deposition thickness. Four point probes were used to analyze the sheet resistance and UV-Visible spectrometry was performed to analyze the transmittance. The goal of this study was to get equilibrium between the sheet resistance and the transmittance. It was found that the transmittance and the sheet resistance can be manipulated by changing the deposition parameters.

2. 본론

Different thickness electrode layers were deposited on PET substrate using the Ebeam Physical vapor deposition (PVD), Materials used wre Aluminun and Titanium, the study of thickness dependent sheet resistance was done. An ideal sheet resistance was obtained for the application in the field of flexible solar cells.



EbeAM Deposition setup

3. 결론

Decreasing sheet resistance with the increase in the thicness was observed, however the transparency being the prime consideration a equilibrium sheet resistance and transparency was obtained that can be used for the application in transparent solar cell technology.

감사의 글

This research was financially supported by the Ministry of Education, Science Technology (MEST) and National Research Foundation of Korea(NRF) through the Human Resource Training Project for Regional Innovation (2012H1B8A2026212), This work was supported by the National Research Foundation of Korea(NRF) grant funded by the Korea government(MSIP) (No.2011-0030058).