

Abstract Submitted
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Real time monitoring of the atmospheric-pressure low-temperature argon plasma treatment to the PEDOT:PSS HAJIME SHIRAI, TOMOHISA INO, TASUYA HAYASHI, RYO ISHIKAWA, KEJI UENO, Saitama University, SHIRAI/UENO TEAM — We demonstrate the effect of atmospheric-pressure low-frequency plasma treatment of argon to the 3, 4-polyethylenedioxythiophene:polystyrenesulfonate (PEDOT:PSS) layer on the performance of copper phthalocyanine/C60 hetero-junction solar cells. The efficiency was improved up to 0.93% by adjusting the plasma exposure period, which originate from the decrease in the series resistance and the increase in the shunt resistance in the diode. The Fourier-transform infrared spectroscopy (FTIR) and x-ray photoelectron spectroscopy (XPS) characterization revealed the PSS component contributing to high resistivity was reduced preferentially rather than the PEDOT by the plasma exposure, which reduced the sheet resistance. The effect of the Ar plasma treatment to PEDOT:PSS on the performance of the CuPc/C60 hetero-junction solar cells is discussed with the real time monitoring of the surface chemistry of PEDOT:PSS using a spectroscopic ellipsometry.

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