

The performance of large-area organic solar cells by spray deposition process

박선영^{1,2}, 박동석¹, 김도근¹, 김종국¹, 김주현², 강재욱^{1,*}

¹한국기계연구원부설재료연구소, ²부경대학교

Organic solar cells have attracted much interest due to the potential advantage of the lightness, simple solution processing and flexibility. Until recently, the focus of organic solar cells research has been on optimization of material processing to improve the power conversion efficiency. However, area scaling is an important position for alternative to the market dominating solar cells. Spray deposition technologies have advantage of less material wastage and possibility of large scale photoactive area coating when compared with spin coating process. We investigated the performance of organic solar cells as a function of active area using two types of deposition process. The commonly used process is spin coating which can be fabricated organic materials deposition for devices. Spray deposition process compare with spin coating for large-area organic solar cells. The spray deposition organic layer shows excellent performance up to the active area of 4 cm² with the PCE of ~3.0 % under AM.1.5 simulated illumination with an intensity of 100mW/cm². This indicates that the spray deposition process can be used as a mass production process for evaluating large-area organic solar cells.