

Abstract Submitted
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Organic solar array with transparent contacts by spray¹ JASON LEWIS, JIAN ZHANG, XIAOMEI JIANG — Organic solar cells (OSC) based on pi-conjugated polymers (e.g., poly-3-hexylthiophene, P3HT) and fullerene derivatives (e.g., 6,6 -phenyl C61 butyric acid methyl ester, PCBM) have attracted attention over the past decades because they may provide a cost-effective route to wide use of solar energy for electrical power generation. These organic semiconductors have the advantage of being chemically flexible for material modifications, as well as mechanically flexible for the prospective of low-cost, large scale processing such as solution-cast on flexible substrates. However, one of the major challenges preventing the realization of complete solution-processable manufacturing of OSC is the metal cathode deposition involving high vacuum. Although there have been several reports about spraying a thick layer of PEDOT:PSS as a replacement, the sacrifice of transparency will be problematic in certain applications such as window technology. Furthermore, fabrication of organic solar array (OSA) using spray method is still in its early stage. We have developed a novel procedure to fabricate transparent-contacts OSA using layer-by-layer spray technique, with a balance between conductivity and transparency for the spray-on contacts. Spray-on OSA performance will be compared side by side with OSA fabricated by conventional spin-coating and metal desposition procedure.

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