

Organic Photovoltaic Devices on HNO₃-Treated Multilayer Graphene Electrodes

Yong Un Jung¹, Seok-In Na², Han-Ki Kim¹, Seong Jun Kang¹

¹Kyung Hee University, ²Chonbuk National University

We reported on the characteristics of organic solar cells (OSCs) fabricated on HNO₃-treated multilayer graphene (MLG) transparent electrodes. MLG electrodes were prepared using a chemical vapor deposition and a multi-transfer process. Compared to organic solar cells (OSCs) on the ITO electrodes had a fill factor of 65.97%, and a power conversion efficiency (PCE) of 3.364%, OSCs on the MLG (three-layer graphene) electrodes with sheet resistance of 274±1 Ω/square and transparency of 92.1% had a fill factor of 43.46%, and a power conversion efficiency (PCE) of 2.019%. However, OSCs on the HNO₃-treated MLG electrodes with lower sheet resistance of 119±1 Ω/square had a fill factor of 57.54%, and a PCE of 2.861%. The results would provide a promising method to improve the performance of large-area OSCs based on MLG electrodes.

Keywords: Graphene, Organic solar cells