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Supporting Information

Oleylamine-Functionalized Graphene Oxide as Electron Block Layer Toward High-Performance and Photo-Stability Fullerene-Free Polymer Solar Cells

Zhiyong Liu[b], Shengli Niu[a*] and Ning Wang[c*]

[a]Key Laboratory of Zoonosis of Liaoning Province, School of Animal Science and Veterinary Medicine, Shenyang Agricultural University, Shenyang 110866, People's Republic of China

[b]College of Science, Shenyang Agricultural University, Shenyang 110866, People's Republic of China

[c]Key Laboratory of Physics and Technology for Advanced Batteries (Ministry of Education), College of Physics, Jilin University, Changchun 130012, China

[*]Corresponding authors: (niushengli1@163.com (S.L Niu); eningwang@outlook.com (N. Wang))

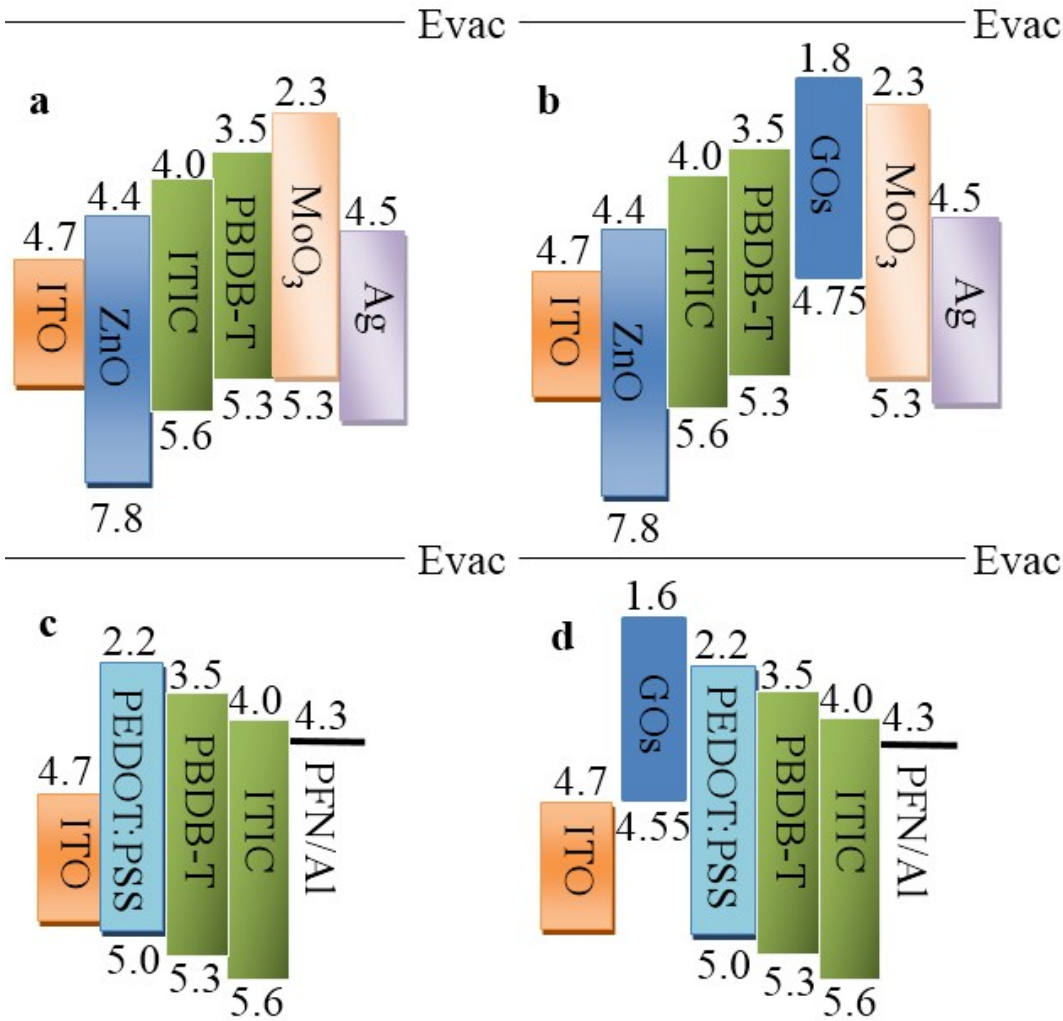

Figure S1. The Energy level diagram of the inverted PSCs without and with GOs of figure (a) and (b), and the forward PSCs without and with GOs of figure (c) and (d) respectively.

Table S1. The electron mobilities (μ_e) and hole mobility (μ_h) value were calculated from the figure 2a and 2b.

EBL	μ_e ($\times 10^{-4}$ cm^2 V^{-1} s^{-1})	μ_h ($\times 10^{-4}$ cm^2 V^{-1} s^{-1})
Free GOs	1.94±0.15	5.86±0.34
2 nm	1.26±0.11	5.75±0.38
4 nm	0.87±0.08	5.71±0.34
6 nm	0.82±0.07	5.42±0.39

Table S2. Conductivity and transmittance of ITO with different treatment methods.

	ITO	ITO/PEDOT	ITO/GOs/PEDOT:PSS
Conductivity (S cm^{-1})	4500	850	3500
Transmittance (%)	95	75	83

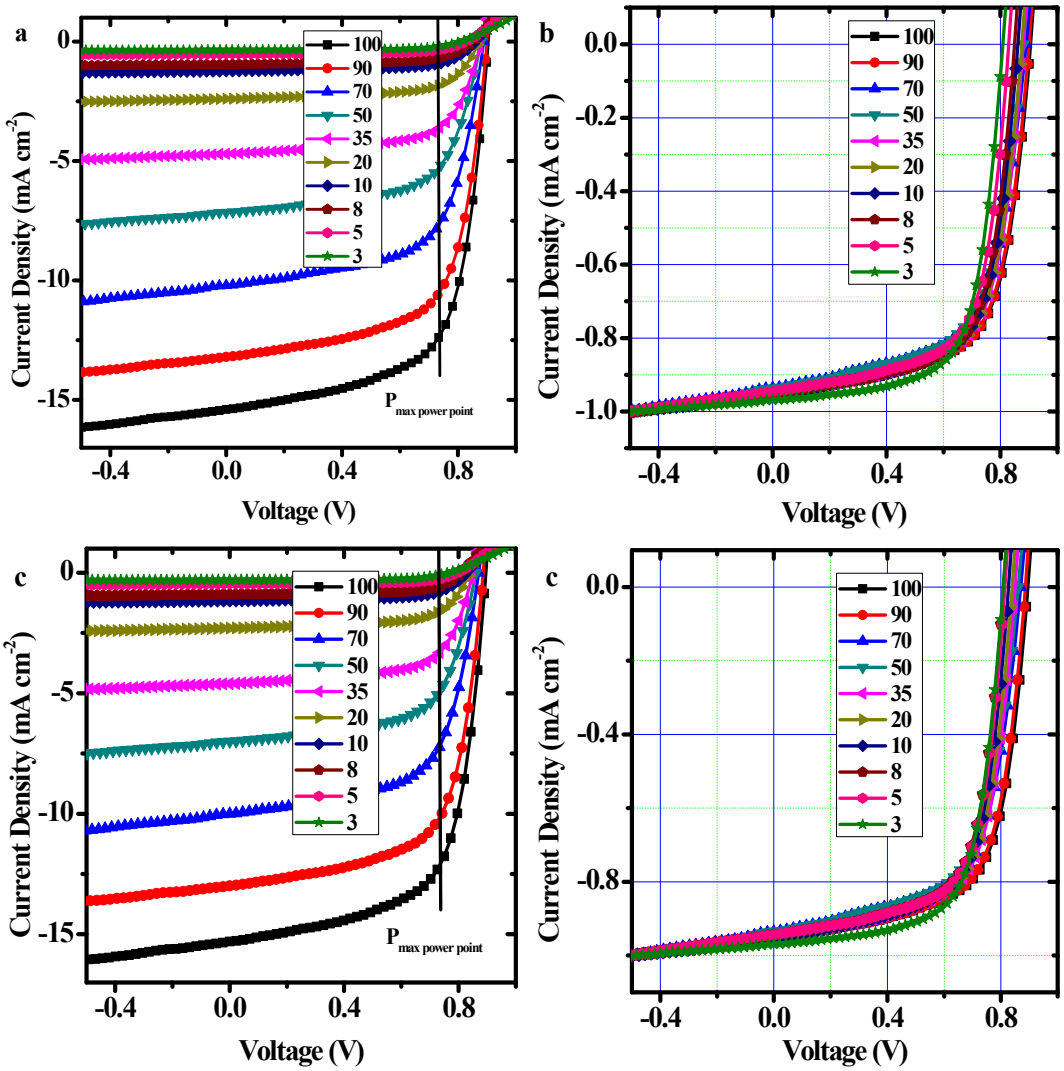

Figure S2. (a and c) *J-V* characteristics of PSCs with and without GOs as EBL under various light intensities ranging from 100 to 3 mW cm^{-2} respectively. (b and d) Charge collection probability (or) normalized photocurrent of the Figure (a and c) respectively.

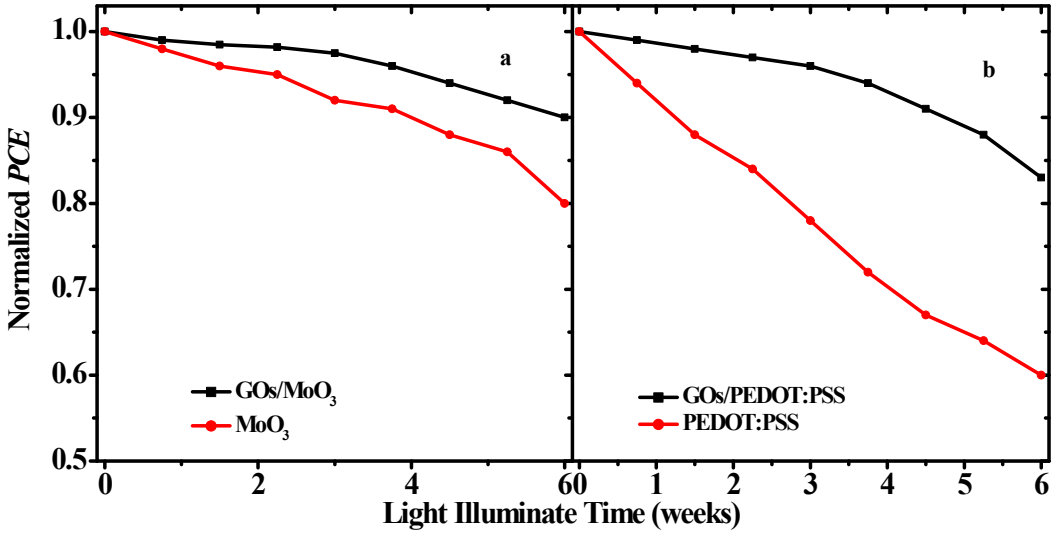

Figure S3. Normalized *PCE* of the un-encapsulated inverted PSCs for (a) and forward PSCs for (b) as a function of light illuminate time in the glove box with and without PBDB-T:ITIC as the photoactive layer.