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Interfacial Engineering of Hybridized Solar Cells for Simultaneously Harvesting Solar and Rain Energies

Yingli Wang, Jialong Duan, Yanyan Duan, Yuanyuan Zhao, Zhibin Pang, Benlin He and Qunwei Tang*

Institute of Materials Science and engineering, Ocean University China, Qingdao 266100, P. R. China.

*E-mail address: tangqunwei@ouc.edu.cn

Supplementary tables

Table S1 The EIS parameters for the photovoltaics.

CEs	R_s (Ω cm^2)	R_{ct1} (Ω cm^2)	R_{ct2} (Ω cm^2)
PANi	0.63	1.38	22.01
PANi-graphene	0.61	0.72	15.45
PANi-graphene/PtCo	0.42	0.71	9.58
PANi-graphene/PtCo|LPPs	0.16	0.37	6.77

Table S2 The composition of the real rain collected in Qingdao of China.

	KCl	NaCl	$NaNO_3$	Na_2SO_4	$(NH_4)_2SO_4$	$MgCl_2$	$CaCl_2$	$CaSO_4$	Na_2CO_3
Concentration ($mg\ L^{-1}$)	4.10	2.05	8.33	1.42	13.73	32.78	47.90	34.43	10.60

Supplementary figures

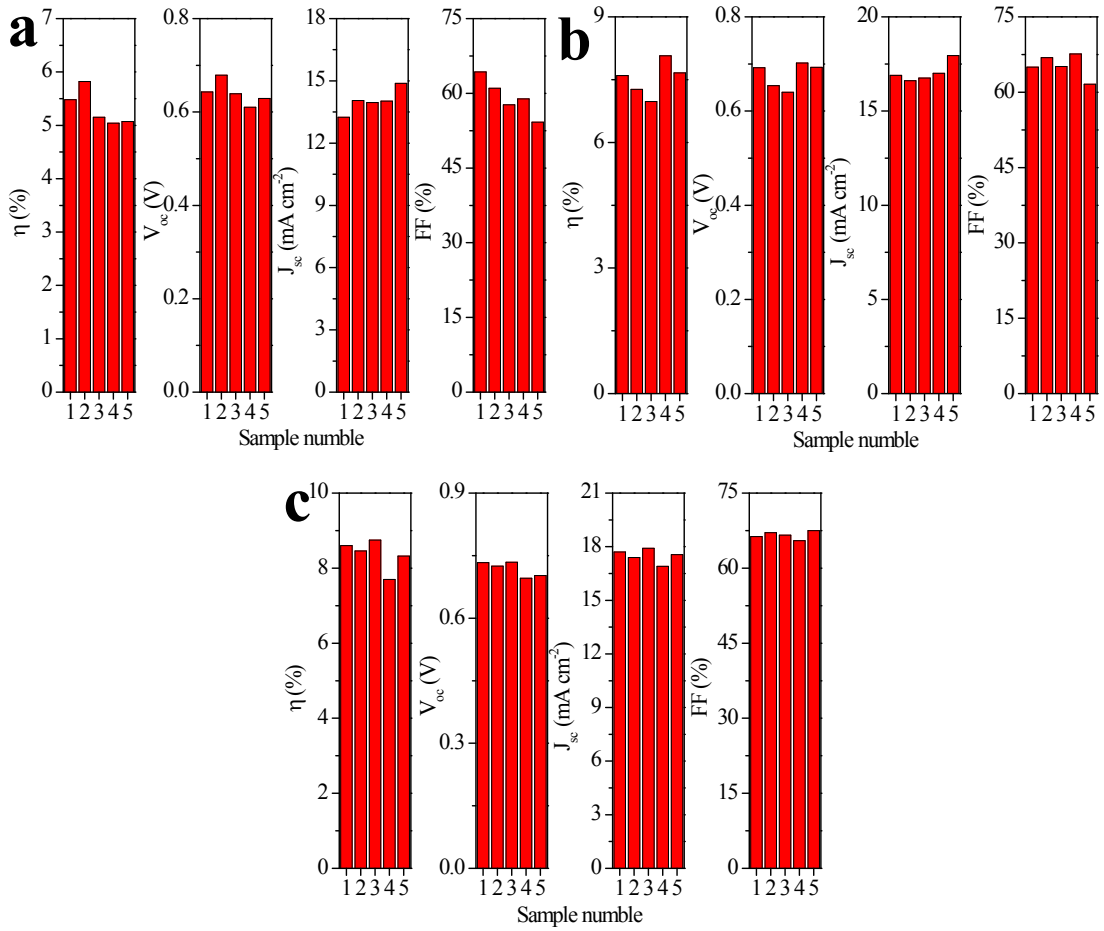

Fig. S1 The random photovoltaic parameters for (a) PANi, (b) PANi-graphene and (c) PANi-graphene/PtCo CEs tailored traditional DSSC under the simulated sunlight (AM 1.5).

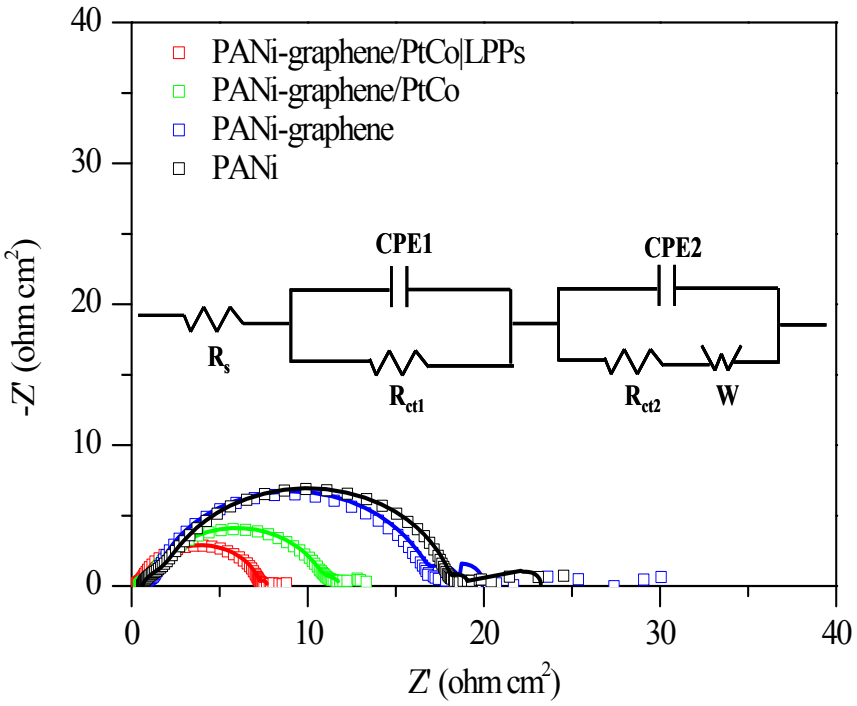

Fig. S2 The Nyquist EIS plots for photovoltaics. R_s: sheet resistance, R_{ct1}: charge-transfer resistance at counter electrode/electrolyte, R_{ct2}: charge-transfer resistance at the TiO_2/dye/electrolyte interface, W: Nernst diffusion impedance corresponding to the diffusion resistance of I^-/I_3^- redox species, CPE1 and CPE2 are constant phase elements. (Table S1).

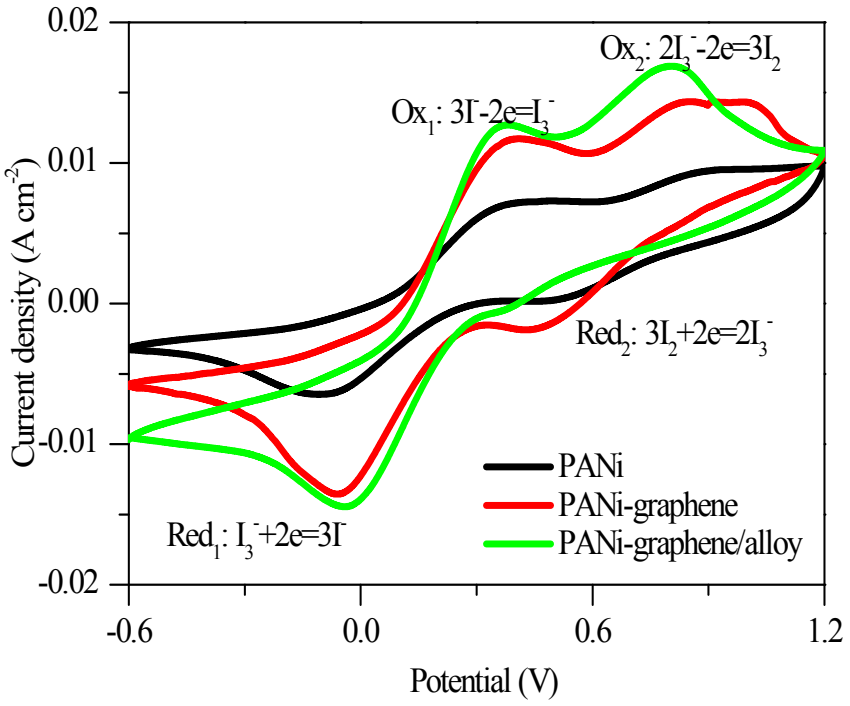

Fig. S3 CV curves of PANi, PANi-graphene and PANi-graphene/PtCo CEs recorded in liquid electrolyte at a scan rate of 50 mV s^{-1}.

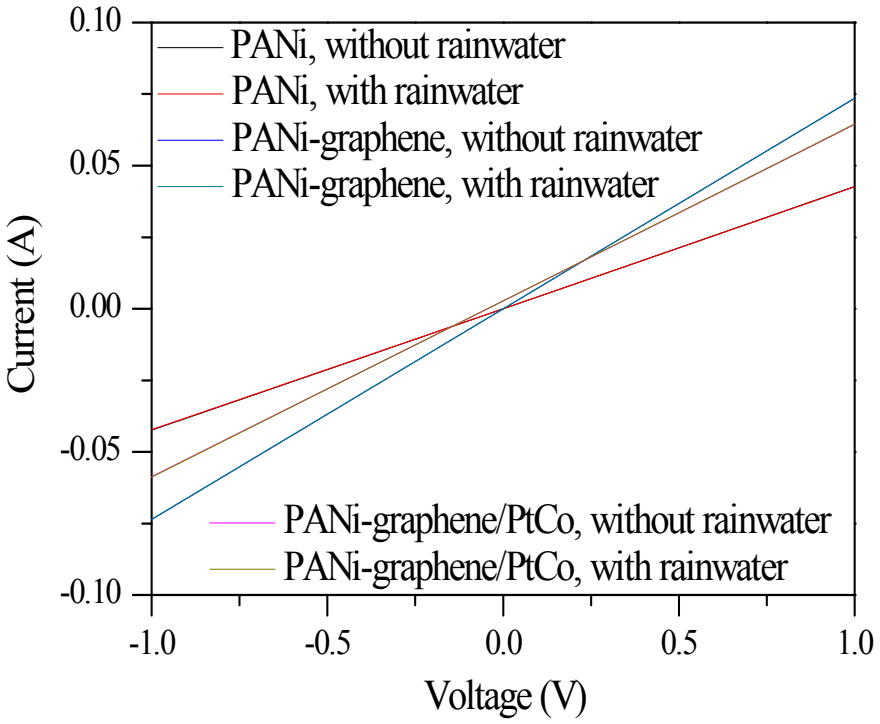

Fig. S4 The ohmic resistances recorded on PANi, PANi-graphene or PANi-graphene/PtCo alloy tailored solar cells with and without simulated rainwater.

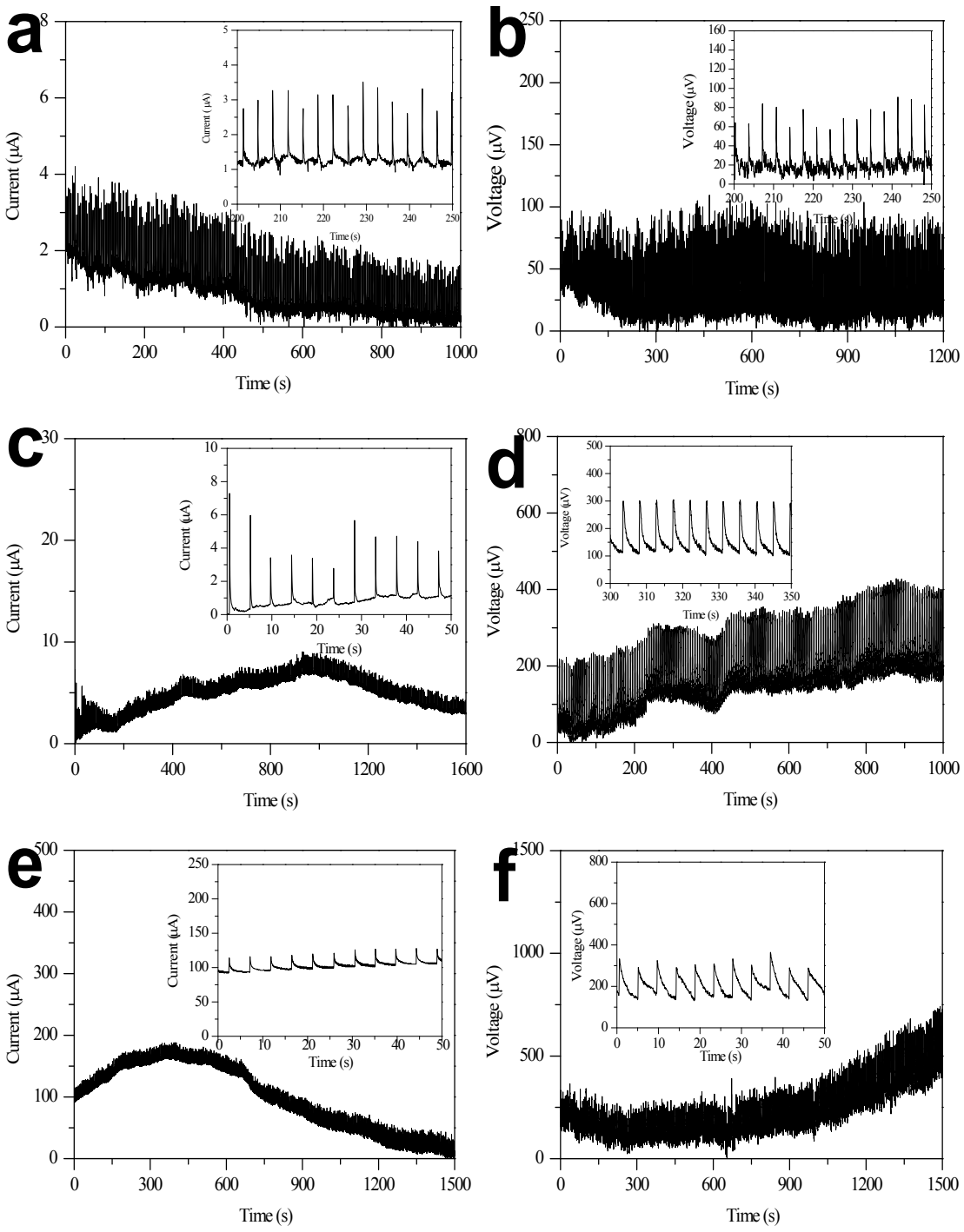

Fig. S5 The long-term stability of current and voltage outputs by dropping simulated rainwater onto (a)&(b) PANi, (c)&(d) PANi-graphene, or (e)&(f) PANi-graphene/PtCo tailored all-weather solar cells.

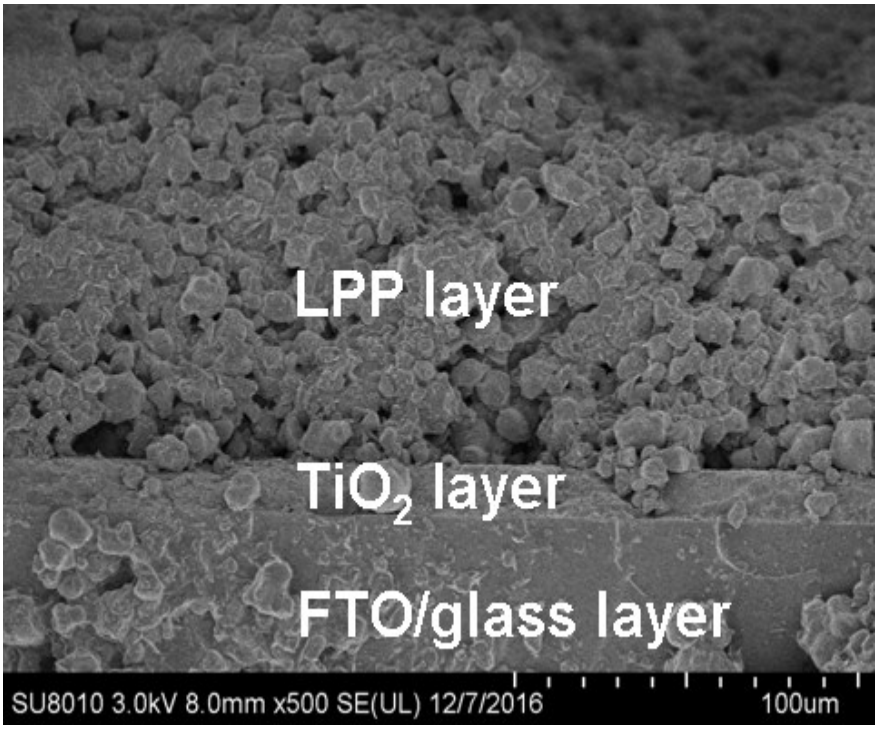

Fig. S6 Cross-sectional SEM image of green-emitting TiO_2/LPP photoanode.

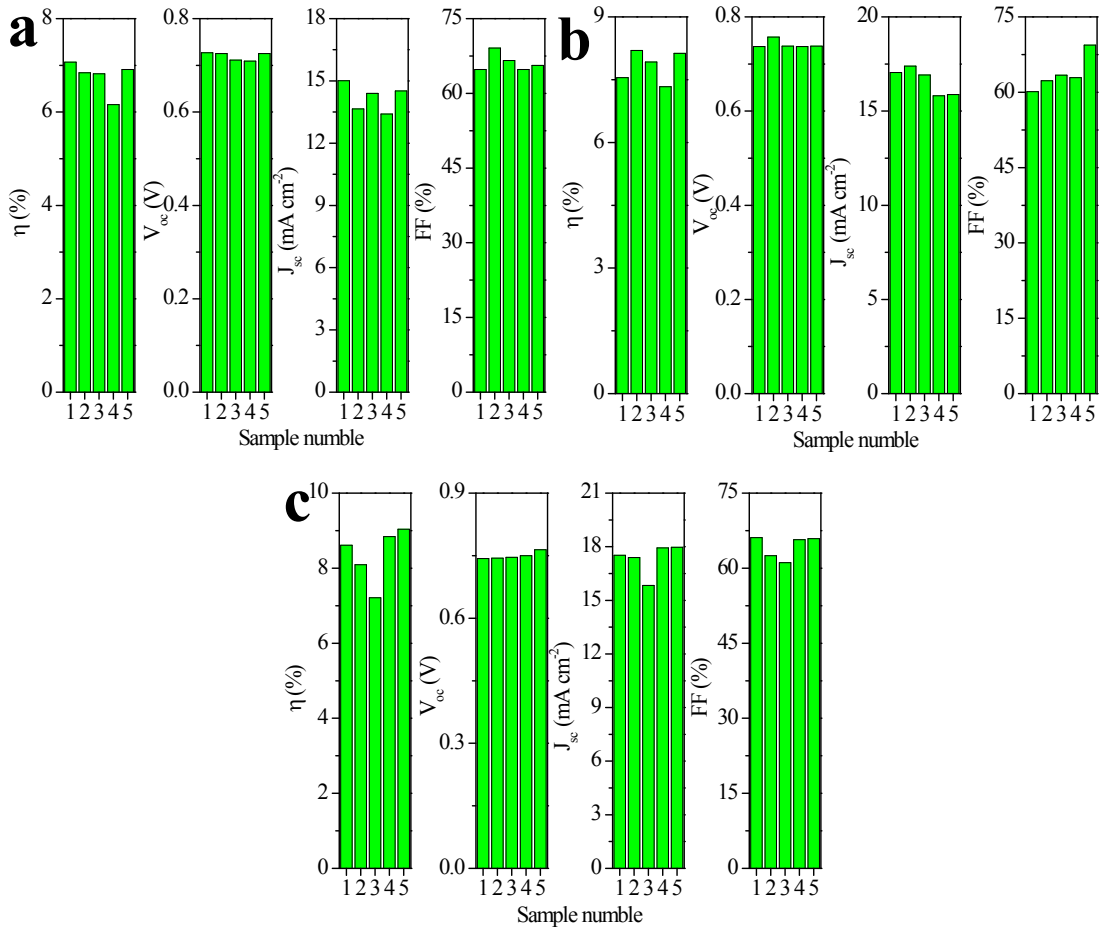

Fig. S7 The random photovoltaic parameters for (a) PANi, (b) PANi-graphene and (c) PANi-graphene/PtCo CEs tailored hybridized solar cells with green-emitting *m*-TiO_2/LPP photoanodes under the simulated sunlight (AM 1.5).

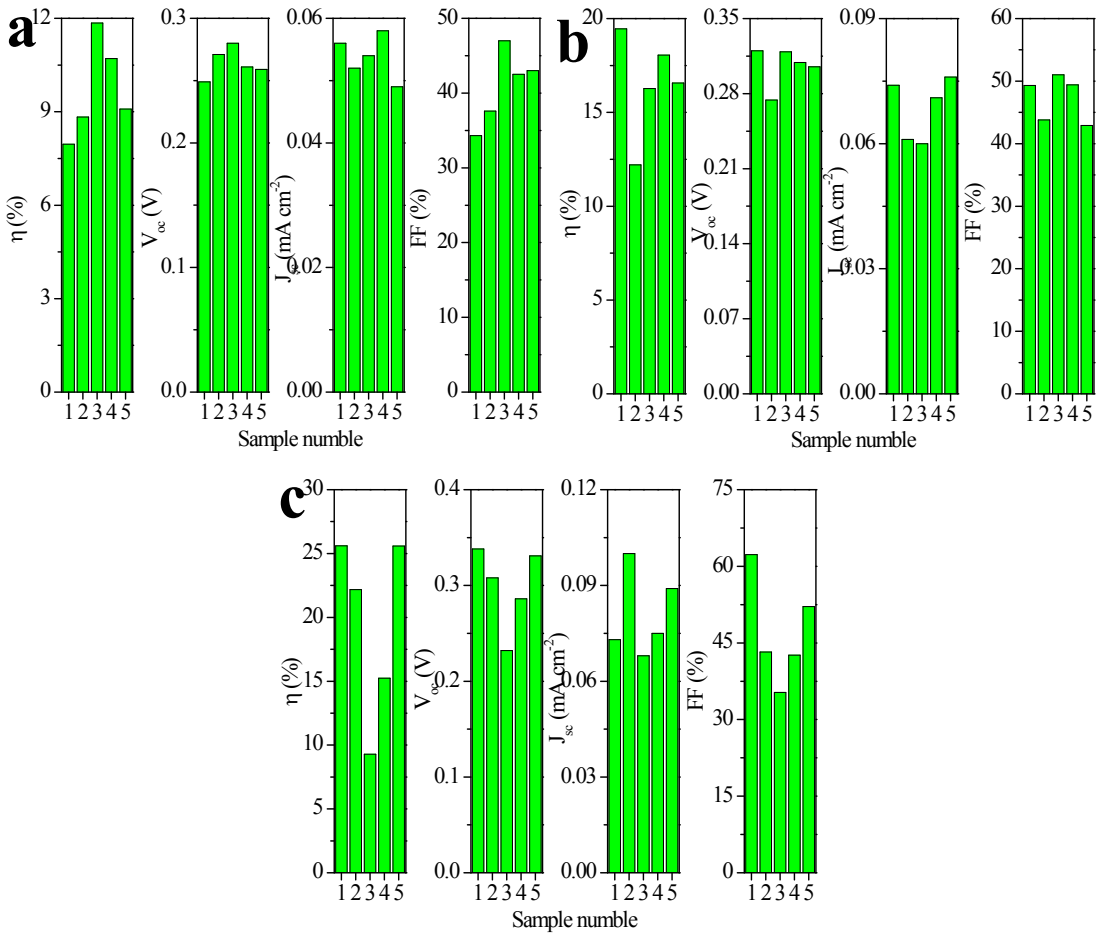

Fig. S8 The random photovoltaic parameters for (a) PANi, (b) PANi-graphene and (c) PANi-graphene/PtCo CEs tailored hybridized solar cells with green-emitting *m*-TiO_2/LPP photoanodes in the dark condition.

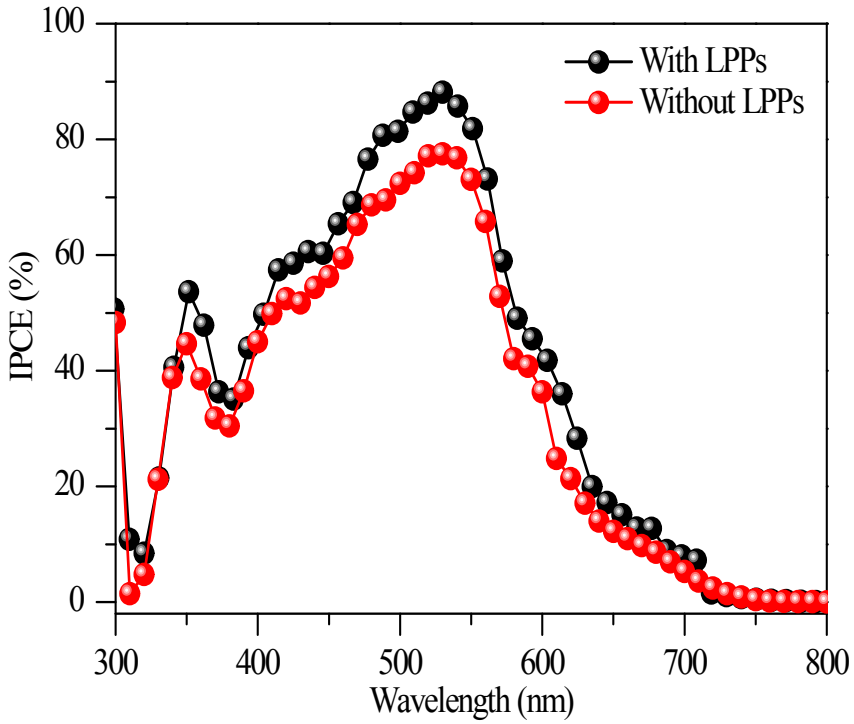

Fig. S9 IPCE plots of the solar cells with and without LPP phosphors.

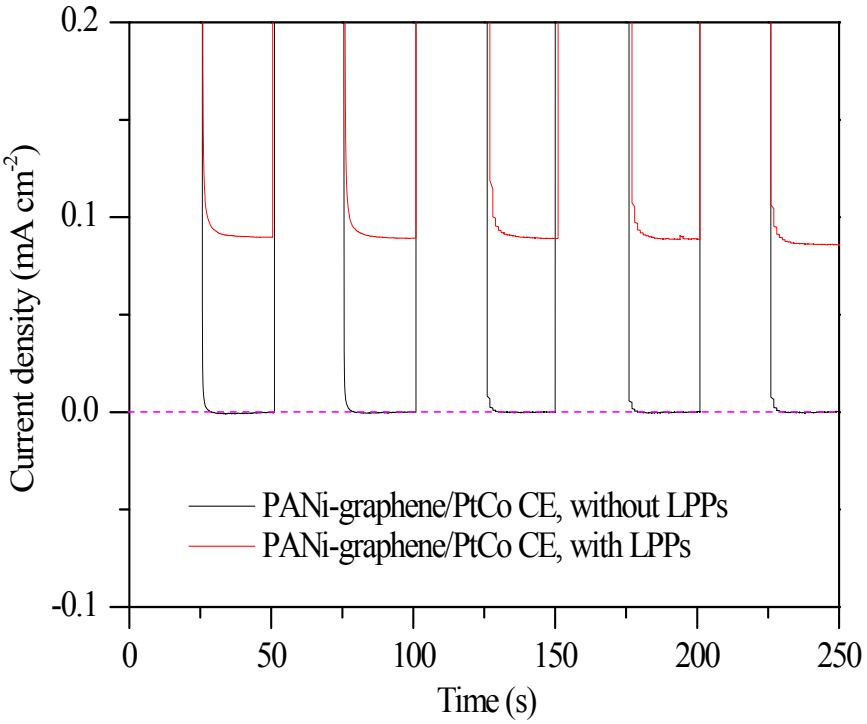

Fig. S10 The magnified on-off switches of PANi-graphene/PtCo alloy CE tailored hybridized solar cell and traditional solar cell.