

Supporting Information for

High-performance wide-bandgap perovskite solar cells with enhanced photon-to-electron response of near-infrared wavelengths

Zhihai Liu,^a Lei Wang,^b Xiaoyin Xie,^{c,*} Chongyang Xu,^{d,**} Chao Zhang^a and Ping Chen^{a,***}

^a*School of Physics and Electronic Information, Yantai University, Yantai, 264005, China, Email:*

chenping@ytu.edu.cn

^b*School of Artificial Intelligence, Beijing Technology and Business University, Beijing, 100048, China*

^c*School of Chemistry and Chemical Technology, Hubei Polytechnic University, Huangshi 435003,*

China, Email: xyxie@hbpu.edu.cn

^d*Yantai Research Institute and Graduate School of HEU, Harbin Engineering University, Harbin*

150001, China, Email: xcy110@126.com

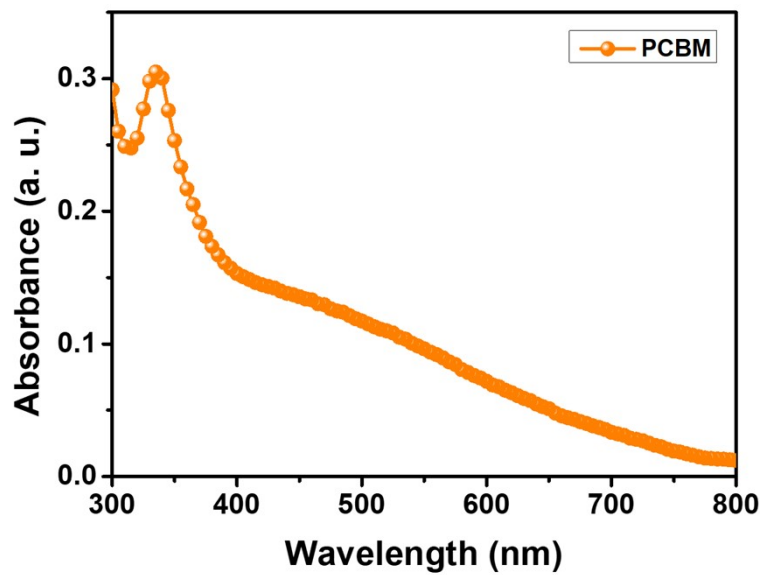


Fig. S1. Absorption spectrum of the PCBM film.

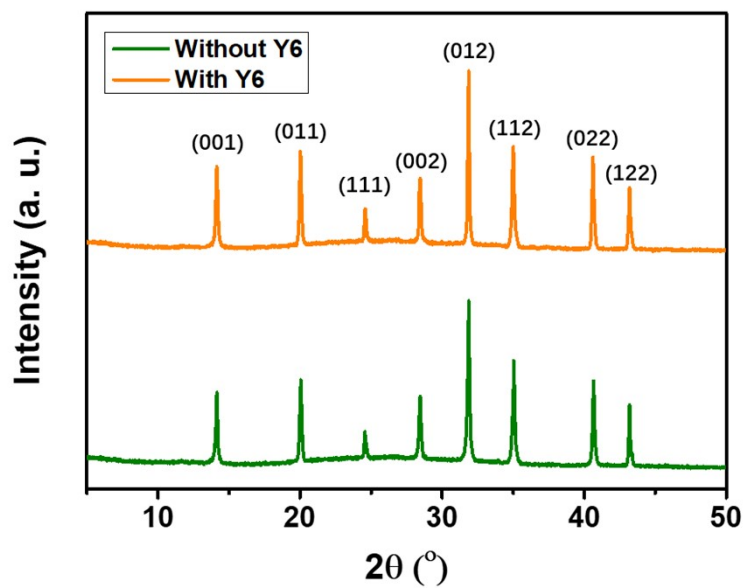


Fig. S2. XRD patterns of the perovskite films without and with Y6.

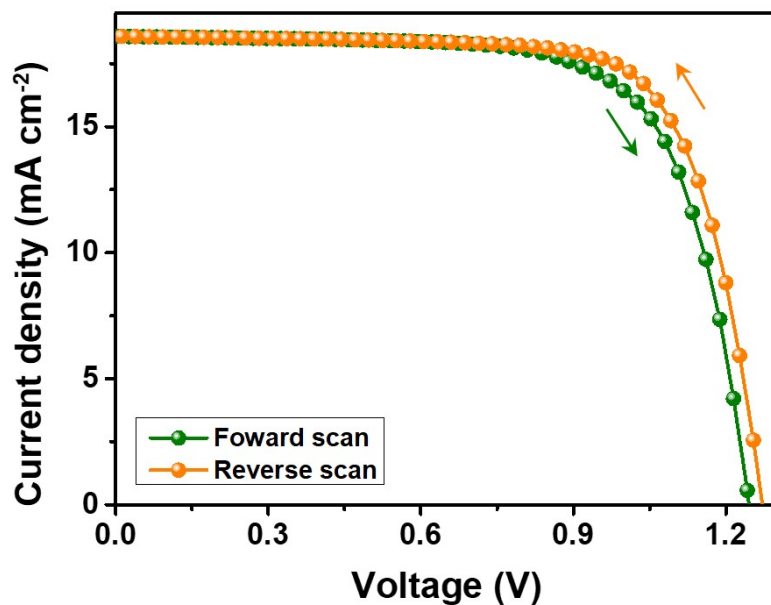


Fig. S3. Forward and reverse J - V characteristics of the best-performing control PSC without Y6.

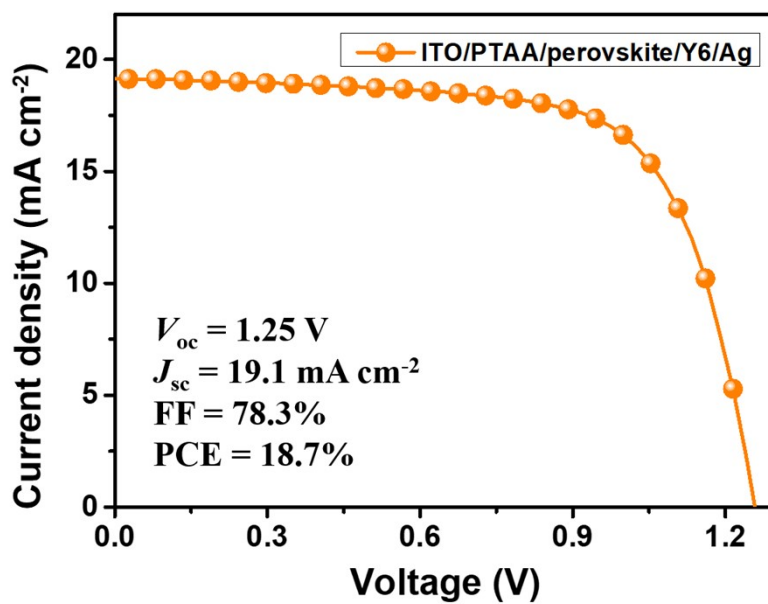


Fig. S4. J - V characteristics of the PSCs using Y6 as the electron transport layer.

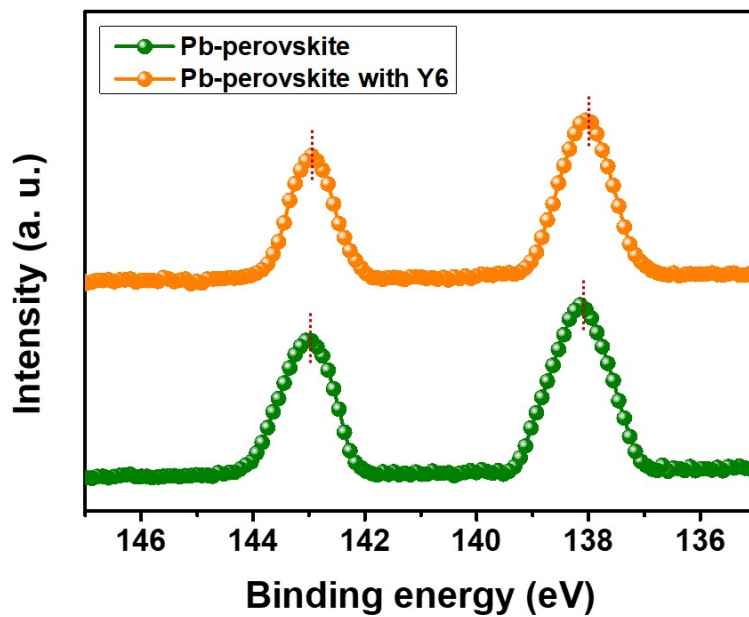


Fig. S5. XPS spectra of the perovskite films without and with Y6 at the range of Pb 4f.

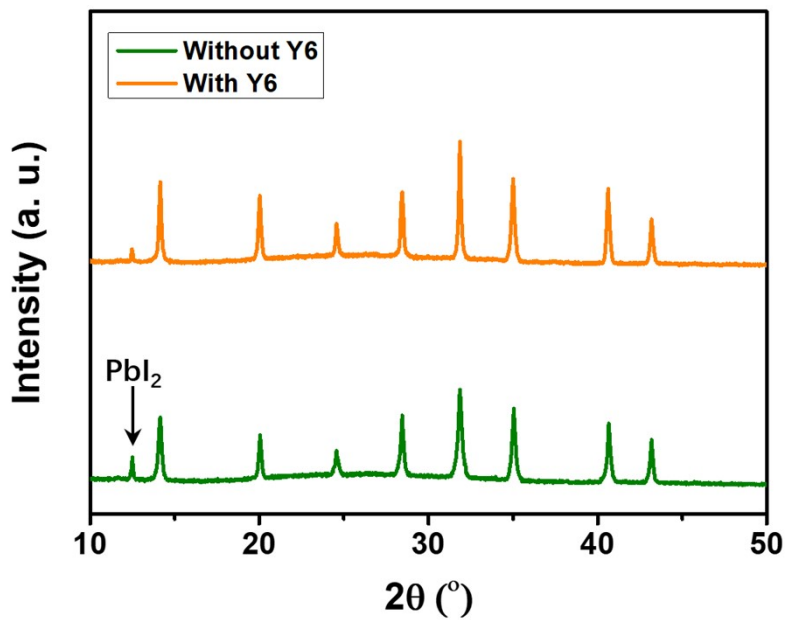


Fig. S6. XRD patterns of the aged perovskite films without and with Y6.

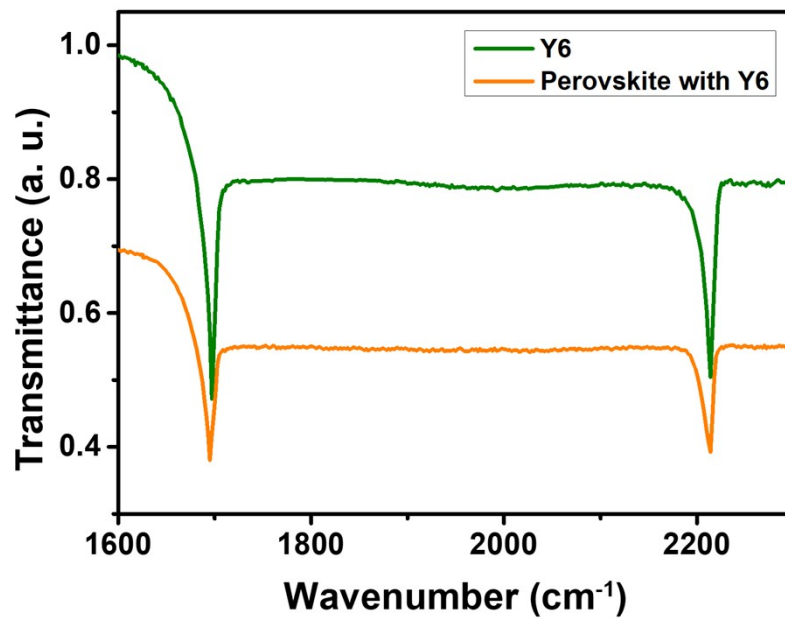


Fig. S7. FTIR spectra for bare Y6 and perovskite/Y6 mixture.

Table S1. Recently reported PCEs for wide-bandgap (1.70–1.80 eV) PSCs.

No.	Bandgap (eV)	PCE (%)	Reference
1	1.70	16.9	[1]
2	1.70	19.2	[2]
3	1.70	18.6	[3]
4	1.71	18.3	[4]
5	1.71	16.74	[5]
6	1.72	18.6	[6]
7	1.72	18.3	[7]
8	1.72	18.1	[8]
9	1.72	17.2	[9]
10	1.72	19.1	[10]
11	1.73	17.3	[11]
12	1.73	19.07	[12]
13	1.73	20.59	[13]
14	1.74	17.1	[14]
15	1.74	20.2	<i>This work</i>
16	1.74	18.3	[15]
17	1.74	20.37	[16]
18	1.74	19.3	[1]
19	1.74	17.32	[17]
20	1.75	19.8	[18]
21	1.75	17.7	[19]
22	1.75	20.2	[20]
23	1.75	18.19	[21]
24	1.75	18.3	[22]
25	1.76	14.7	[23]
26	1.77	16.4	[24]
27	1.78	15.7	[1]
28	1.78	17.5	[25]
29	1.79	17.0	[26]
30	1.80	13.7	[27]
31	1.80	17.7	[28]
32	1.81	17.1	[29]

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