

## Supplementary materials for

### Effect of BCP Buffer Layer on Eliminating Charge Accumulation for High

### Performance of Inverted Perovskite Solar Cells

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**Table S1.** Performance parameters of photovoltaic devices with varying BCP-thickness, every 10 samples of the same BCP thickness included.

Thickness (nm)	$V_{oc}$ (V)	$J_{sc}$ (mA cm <sup>-2</sup> )	$FF$	$PCE$ (%)
0 nm	1.07449	21.28738	0.67508	15.44116
	1.07988	20.95023	0.67205	15.20428
	1.07126	19.6713	0.66085	14.06733
	1.06655	19.65911	0.67006	14.04943
	1.06767	18.87873	0.65726	13.2479
	1.06822	18.84814	0.66338	13.35647
	1.05537	18.07712	0.56151	10.71252
	1.07371	17.15227	0.57057	10.50794
	1.05938	19.83604	0.66216	13.91457
	1.05957	20.05997	0.63761	13.55236
1 nm	1.02889	20.47191	0.75686	15.942
	1.05508	20.38846	0.75048	16.18313
	1.04123	19.35042	0.75906	15.29372
	1.04451	20.29163	0.76682	16.2526
	1.05529	16.3436	0.75149	12.96113
	1.06143	16.23565	0.74324	12.80826

	1.06104	19.71962	0.75838	15.86782
	1.0642	19.77634	0.75516	15.89308
	1.07277	21.07964	0.64566	14.6007
	1.07085	21.13035	0.67112	15.18572
3 nm	1.03613	20.93748	0.77643	16.83246
	1.04399	20.65368	0.76615	16.51991
	1.04242	19.65223	0.74502	15.26239
	1.04014	18.08462	0.73349	13.79734
	1.06141	21.33648	0.7575	17.15492
	1.06683	21.34858	0.7382	16.81273
	1.05505	19.82933	0.77562	16.2267
	1.06241	20.19064	0.76323	16.37185
	1.05869	16.12496	0.61252	10.45653
	1.06163	16.12689	0.68542	11.73493
5 nm	1.04814	20.12868	0.76495	16.13867
	1.05896	20.34992	0.75389	16.24614
	1.05742	19.94343	0.79097	16.68044
	1.05019	20.17166	0.7607	16.11473
	1.06558	21.47898	0.72574	16.61043
	1.06896	21.10521	0.79139	17.86571
	1.05976	21.10662	0.79156	17.70558
	1.06812	21.22773	0.76789	17.41096
	1.064	19.29921	0.79234	16.27019
	1.07093	19.41337	0.76852	15.97781
7 nm	1.06193	18.64349	0.63742	12.61969
	1.05459	17.87763	0.64099	12.08495
	1.03457	19.71455	0.74238	15.14164
	1.03889	19.70208	0.72893	14.92088
	1.01483	15.75405	0.76009	12.15208
	0.99459	16.5964	0.74865	12.35768
	1.01062	20.37793	0.55918	11.51595
	1.03911	19.7026	0.57543	11.78088
	1.04745	20.65858	0.62103	13.43836
	1.05239	20.6659	0.62826	13.66377
10 nm	1.0025	13.59725	0.23487	3.20157
	0.98787	14.76088	0.22726	3.31387
	1.03803	12.91265	0.25465	3.41326
	1.03773	13.33778	0.25872	3.58095
	0.99534	15.33306	0.29332	4.47653
	1.0188	16.42819	0.3002	5.02446
	1.03169	17.52722	0.38691	6.99636
	1.03229	18.64366	0.39351	7.44241
	1.02708	18.82178	0.49205	9.51205
	1.02836	18.97227	0.48536	9.46953

13 nm	0.95961	5.92607	0.26204	1.49015
	0.96139	5.9415	0.26652	1.52239
	0.97274	7.29717	0.31005	2.20081
	0.9755	8.65684	0.31235	2.64161
	1.01571	8.14072	0.28199	2.33167
	1.01884	8.19877	0.29367	2.45309
	1.03658	8.79087	0.1913	1.74321
	1.03874	9.09315	0.18954	1.79028
	0.99806	11.4517	0.30386	3.47296
	1.0008	11.5147	0.3046	3.51018

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