Supporting Information for

Role of HA Additive in Quantum Dot Solar Cell with $Co[(bpy)_3]^{2+/3+}$ Based Electrolyte

Sang Youn Chae,[a,b] Yun Jeong Hwang,[a,c] Oh-Shim Joo[a*]**

[a] *Department of Chemistry, Korea University, Seoul 136-713, Republic of Korea*
[b] *Clean Energy Research Center, Korea Institute of Science and Technology (KIST), 39-1 Hawolgock Dong, Seoul 136-791, Republic of Korea,*
[c] Department of Clean Energy and Chemical Engineering, Korea University of Science and Technology, Daejeon 305-350, Republic of Korea

* Corresponding author. Tel: +82-2-958-5217; Fax:82-2-958-5219
** Corresponding author. Tel: +82-2-958-5227; Fax:82-2-958-5809

E-mail address: yjhwang@kist.re.kr (Y.J. Hwang), joocat61@gmail.com,joocat@kist.re.kr (O.-S. Joo).

Supplementary Figures

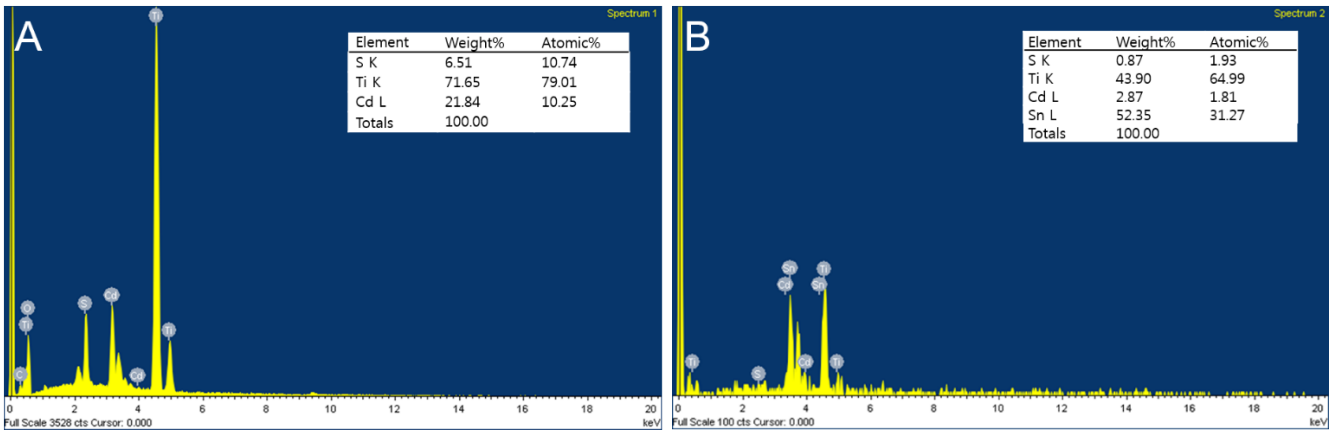

Figure S1. SEM EDS apectra of CdS/TiO_2. A : CdS/anatase TiO_2 nanoparticle, B : CdS/rutile TiO_2 nanorod ar rays

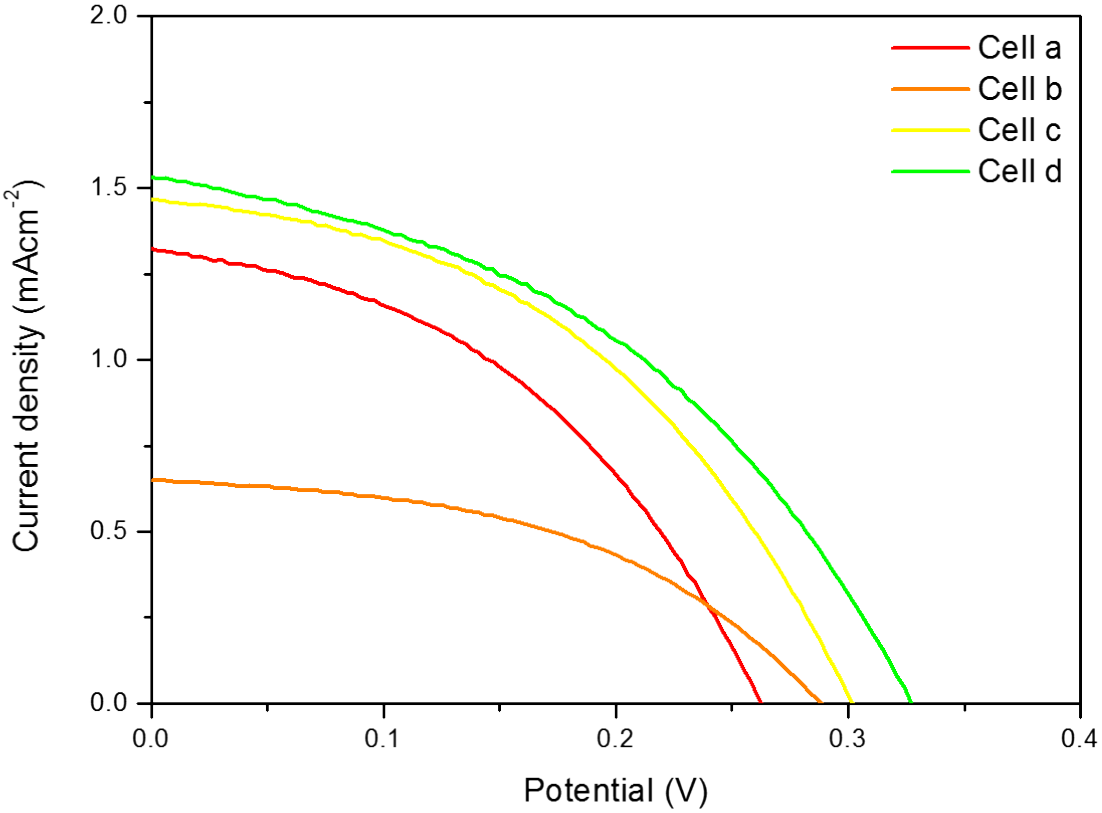

Figure S2. I-V curves of various QDSCs depending on the use of the HA; No HA was contained (Cell a), HA w as added in the electrolyte (Cell b), the TiO_2/CdS electrode was soaked in HA before cell assembly (Cell c), and HA was applied for both on the TiO_2/CdS electrode and the electrolyte (Cell d). All TiO2 form was anatase nan oparticle.

Cell	Photoanode	Electrolyte	J_{sc} ($mAcm^{-2}$)	V_{oc} (V)	ff (%)	η (%)
a	TiO_2 NP/CdS	$Co(bpy)_3^{2+/3+}$	1.334	0.2634	41.98	0.1474
b	TiO_2 NP/CdS	$Co(bpy)_3^{2+/3+}$ with HA	0.654	0.2899	45.36	0.0860
c	TiO_2 NP/CdS/HA	$Co(bpy)_3^{2+/3+}$	1.486	0.3027	43.14	0.1940
d	TiO_2 NP/CdS/HA	$Co(bpy)_3^{2+/3+}$ with HA	1.530	0.3279	42.02	0.2109

Table S1. Parameter of QDSC from Fig. S2 with different photoanode and electrolyte