

## Supporting Information

# Fundamental Understanding of Dye Coverage and Performance in Dye-Sensitized Solar Cells using Copper Electrolyte under Outdoor/Indoor Illumination

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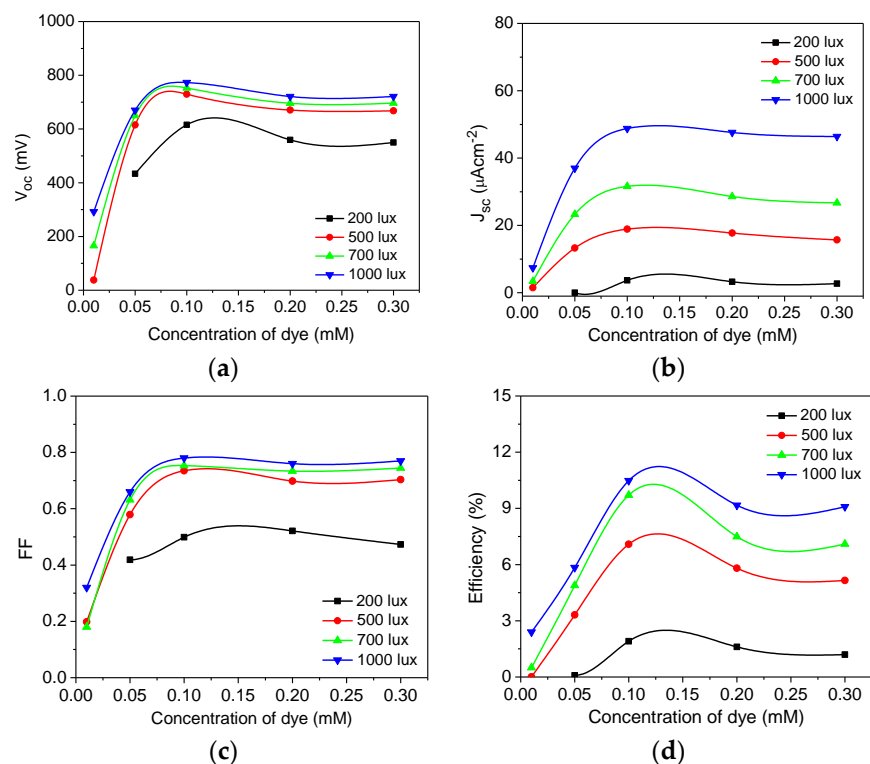
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**Table S1.** Photovoltaic parameters of DSCs with D35 sensitizer and [Cu(tmby)<sub>2</sub>]<sup>2+/1+</sup> electrolyte under various outdoor illuminations.

Intensity (mWcm <sup>-2</sup> )	Dye Concentration (mM)	V <sub>oc</sub> (V)	J <sub>sc</sub> (mA cm <sup>-2</sup> )	FF	Efficiency (%)
100	0.01	0.6	2.40	0.49	0.7
	0.05	0.8	4.62	0.6	2.2
	0.1	1.0	10.22	0.63	6.5
	0.2	0.9	9.91	0.64	5.7
	0.3	0.9	9.01	0.64	5.1
70	0.01	0.6	1.72	0.48	0.7
	0.05	0.8	3.34	0.59	2.2
	0.1	1.0	7.58	0.65	7.0
	0.2	0.9	7.00	0.66	5.7
	0.3	0.9	6.20	0.63	4.8
40	0.01	0.5	0.81	0.45	0.4
	0.05	0.7	1.62	0.56	1.7
	0.1	1.0	4.14	0.69	6.8
	0.2	0.8	3.94	0.64	5.3
	0.3	0.8	3.54	0.63	3.6
10	0.01	0.3	0.16	0.36	0.2
	0.05	0.5	0.30	0.5	0.8
	0.1	0.9	0.95	0.64	5.2
	0.2	0.7	0.86	0.55	3.4
	0.3	0.7	0.78	0.55	3.1



**Figure S1.** Photovoltaic characteristics of DSCs with D35 sensitizer and  $[\text{Cu}(\text{tmby})_2]^{2+/1+}$  electrolyte (a)  $V_{oc}$ , (b)  $J_{sc}$ , (c) FF and (d) efficiency from 0.1 sun to 1 sun as a function of dye concentration (0.01 mM, 0.05 mM, 0.1 mM, 0.2 mM, and 0.3 mM) under indoor illumination.

**Table S2.** Photovoltaic parameters of DSCs with D35 sensitizer and  $[\text{Cu}(\text{tmby})_2]^{2+/1+}$  electrolyte under various indoor illuminations.

Irradiance (Lux)	Dye Concentration (mM)	$V_{oc}$ (mV)	$J_{sc}$ ( $\mu\text{Acm}^{-2}$ )	FF	Efficiency (%)
1000	0.01	292	7.4	0.32	2.4
	0.05	670	37	0.66	5.8
	0.1	773	48.8	0.78	10.5
	0.2	721	47.6	0.76	9.2
	0.3	721	46.4	0.77	9.1
700	0.01	165	3.4	0.18	0.5
	0.05	649	23.3	0.63	4.9
	0.1	753	31.6	0.75	9.7
	0.2	696	28.6	0.73	7.5
	0.3	697	26.7	0.74	7.1
500	0.01	38	1.5	0.20	0.0
	0.05	615	13.3	0.58	3.3
	0.1	730	18.9	0.73	7.1
	0.2	670	17.7	0.70	5.8
	0.3	668	15.7	0.70	5.2
200	0.01	0	0.0	0.00	0.0
	0.05	433	0.0	0.42	0.1
	0.1	616	3.7	0.50	1.9
	0.2	559	3.3	0.52	1.6
	0.3	550	2.7	0.47	1.2