ESI to accompany:

The way to panchromatic copper(I)-based dye-sensitized solar cells: co-sensitization with the organic dye SQ2

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Table S1 Performance parameters of duplicate DSCs assembled by the dipping procedure of *Experiment 4* (Table 4 in the main paper)

SQ2 concentration in the 1st dipping step [mM]	DSC number	J_{SC} [mA cm^{-2}]	V_{OC} [mV]	FF [%]	η [%]
DAY 0					
0.1	1	8.80	505	67.2	2.99
	2	7.81	471	69.6	2.56
0.01	1	10.18	529	68.0	3.67
	2	9.56	493	71.2	3.36
0.001	1	9.51	530	69.2	3.49
	2	9.43	490	70.1	3.24
0.0001	1	10.56	533	69.5	3.91
	2	10.19	484	66.6	3.28
DAY 3					
0.1	1	9.20	521	69.6	3.34
	2	10.51	520	69.0	3.77
0.01	1	10.26	554	69.6	3.96
	2	11.86	515	71.9	4.39
0.001	1	9.11	560	65.2	3.33
	2	11.44	533	66.3	4.04
0.0001	1	10.19	556	68.9	3.90
	2	10.69	514	68.7	3.78
DAY 7					
0.1	1	9.60	525	70.1	3.53
	2	11.08	549	60.9	3.71
0.01	1	10.63	559	67.4	4.01
	2	12.26	515	71.3	4.51
0.001	1	9.52	556	62.0	3.28
	2	6.23	558	68.8	2.39
0.0001	1	10.86	557	67.6	4.09
	2	11.33	524	69.1	4.11

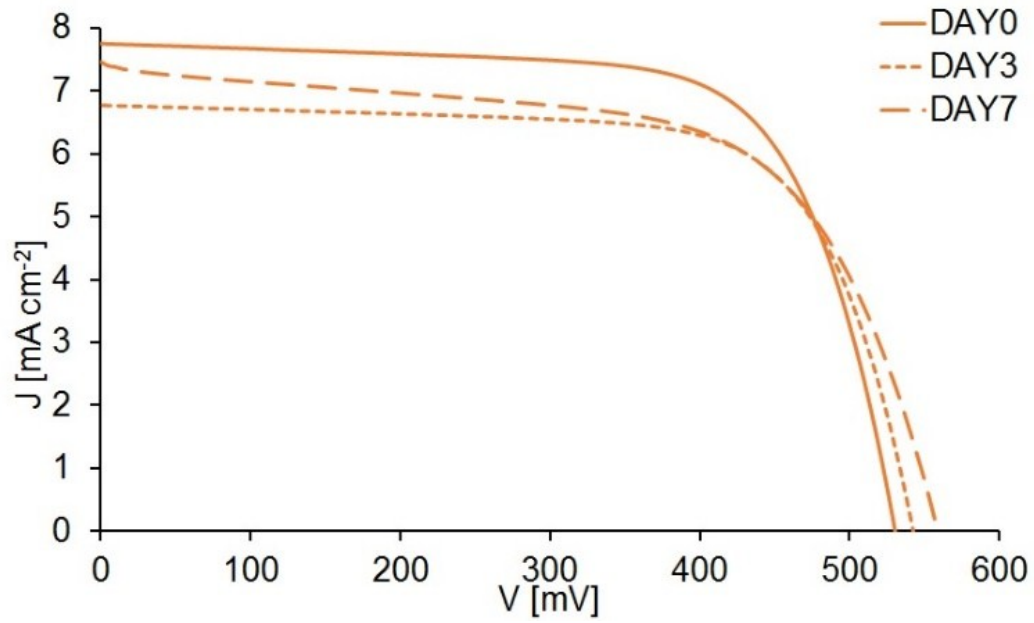


Fig. S1 *J-V* curves of the best-performing DSC of a set containing the dye [Cu(**3**)(**1**)]$^+$. Data are taken from ref. 1.

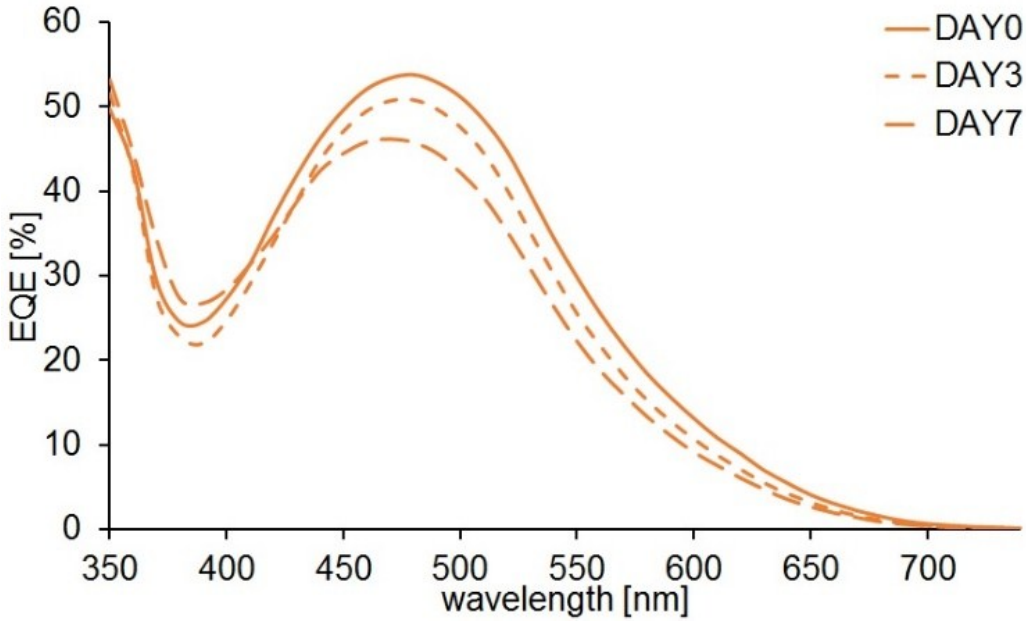


Fig. S2 EQE curves of the best-performing DSC of a set containing the dye [Cu(**3**)(**1**)]$^+$. Data are taken from ref. 1.

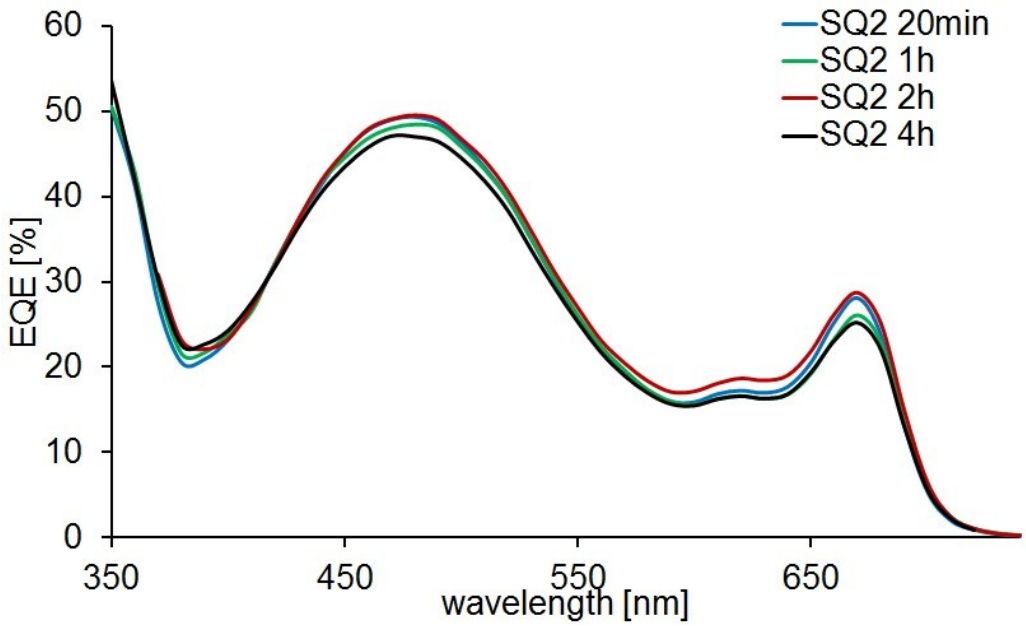


Fig. S3 EQE curves of co-sensitized DSCs assembled by the dipping procedure of *Experiment 1* (Table 4 in the main paper).

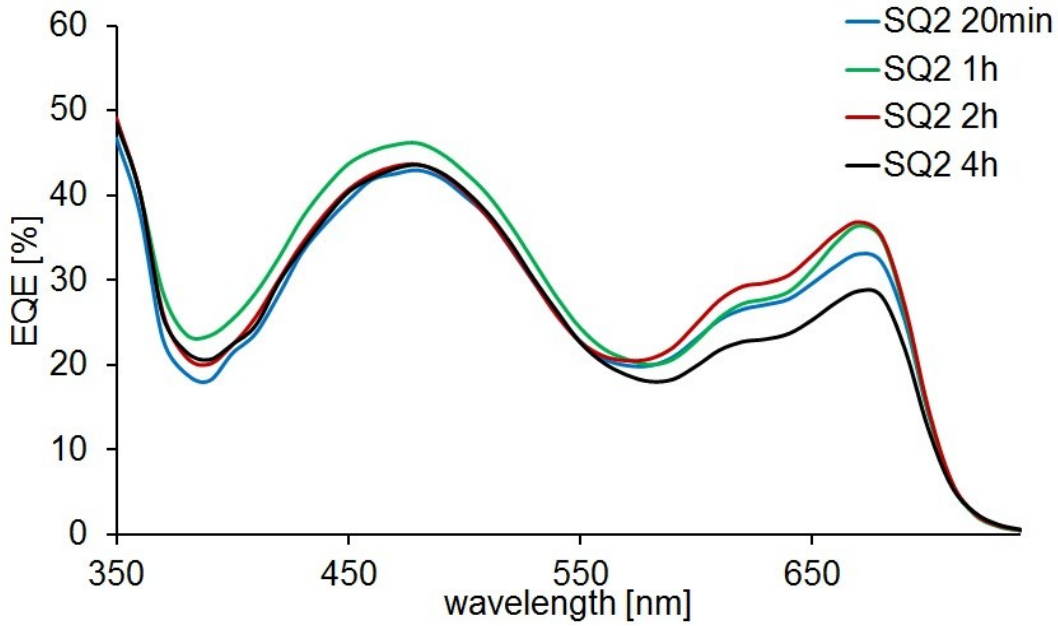


Fig. S4 EQE curves of co-sensitized DSCs assembled by the dipping procedure of *Experiment 2* (Table 4 in the main paper).

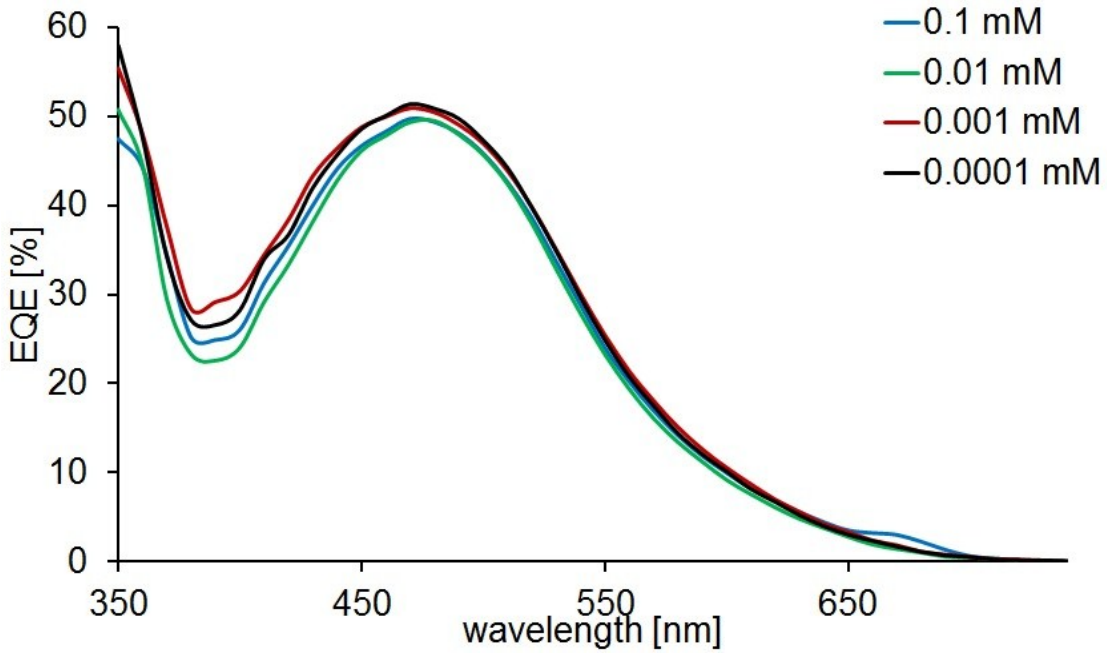


Fig. S5 EQE curves of co-sensitized DSCs assembled by the dipping procedure of *Experiment 3* (Table 4 in the main paper).

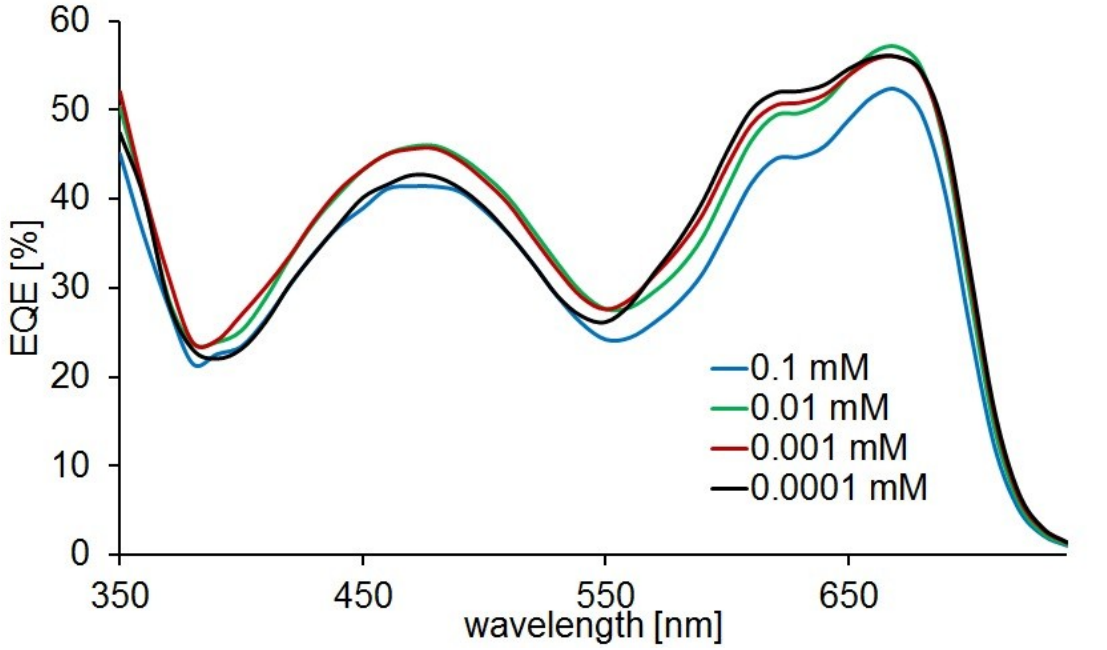


Fig. S6 EQE curves of co-sensitized DSCs assembled by the dipping procedure of *Experiment 4* (Table 4 in the main paper).

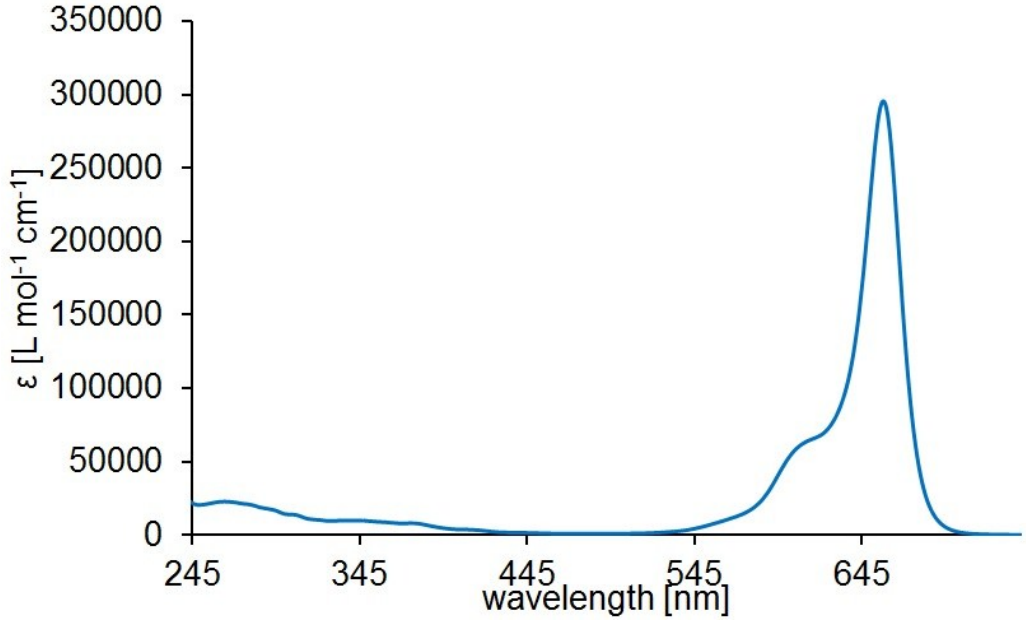


Fig. S7 UV-Vis spectrum of the organic dye **SQ2**.

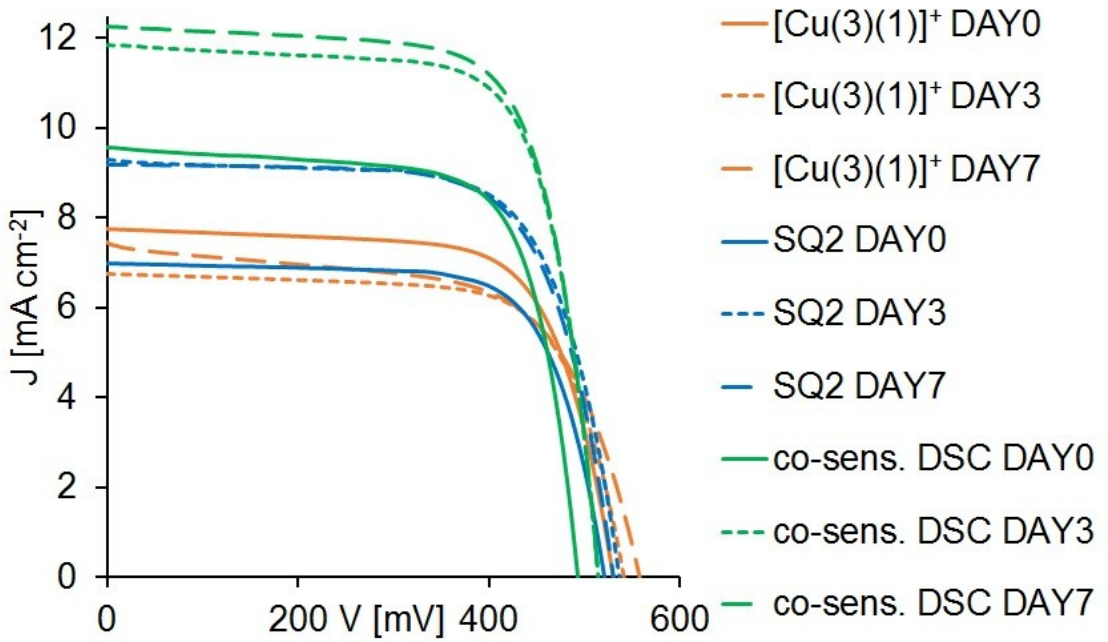


Fig. S8 *J-V* curves of the single dye DSCs containing the dye [Cu(**3**)(**1**)]$^+$ (Data are taken from ref. 1) or **SQ2** and the best performing co-sensitized DSC on the day of assembling the cell (DAY0), 3 days and 7 days later.

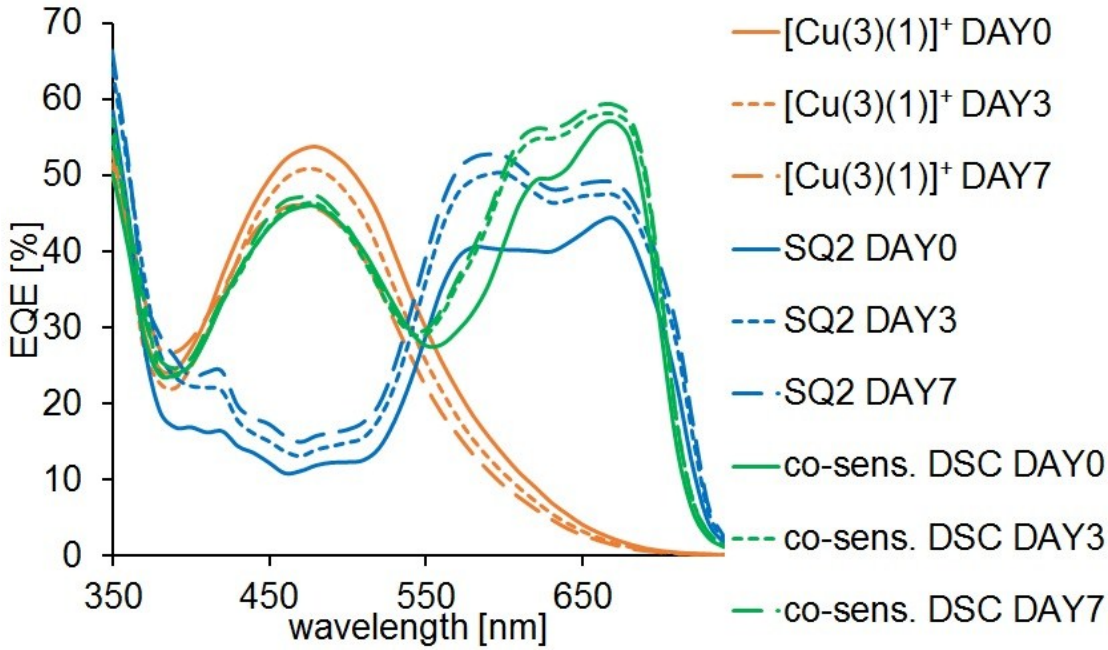
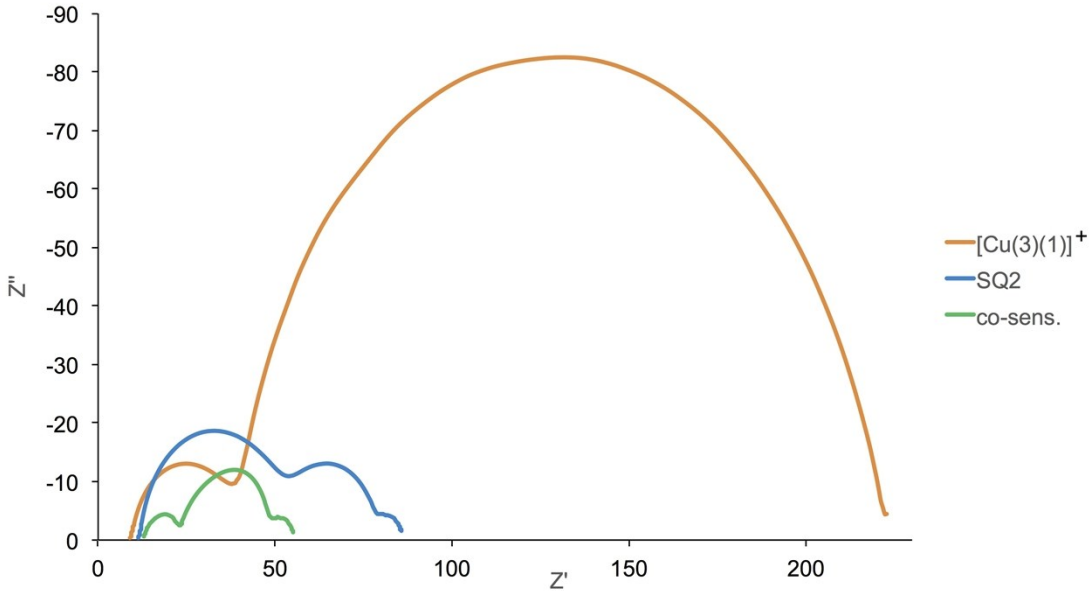
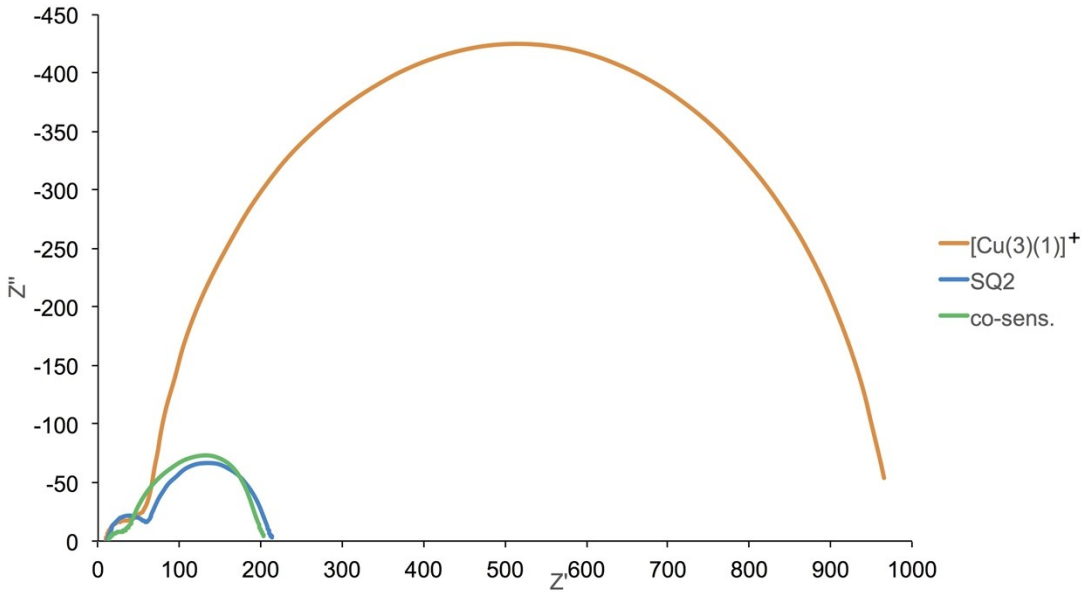


Fig. S9 *EQE* curves of the single dye DSCs containing the dye [Cu(**3**)(**1**)]$^+$ (Data are taken from ref. 1)or **SQ2** and the best performing co-sensitized DSC on the day of assembling the cell (DAY0), 3 days and 7 days later.



(a)



(b)

Fig. S10 Nyquist plots at light intensities (a) 22 and (b) 2.2 mW cm^{-2}.

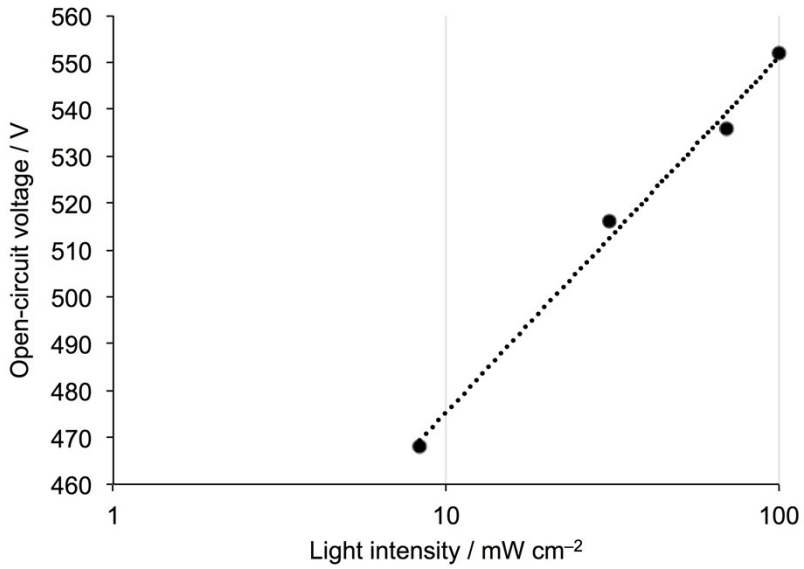


Fig. S11 The dependence of V_{OC} on the light-intensity (plotted on a logarithmic scale). Data are from Table 9.

References

1. F. J. Malzner, C. E. Housecroft, E. C. Constable and M. Willgert, *J. Mater. Chem. A*., 2017, **5**, 4671.