Supporting Information

Light soaking effects on Charge Recombination and Device Performance in Dye Sensitized Solar Cells Based on Indoline-Cyclopentadithiophene Chromophores

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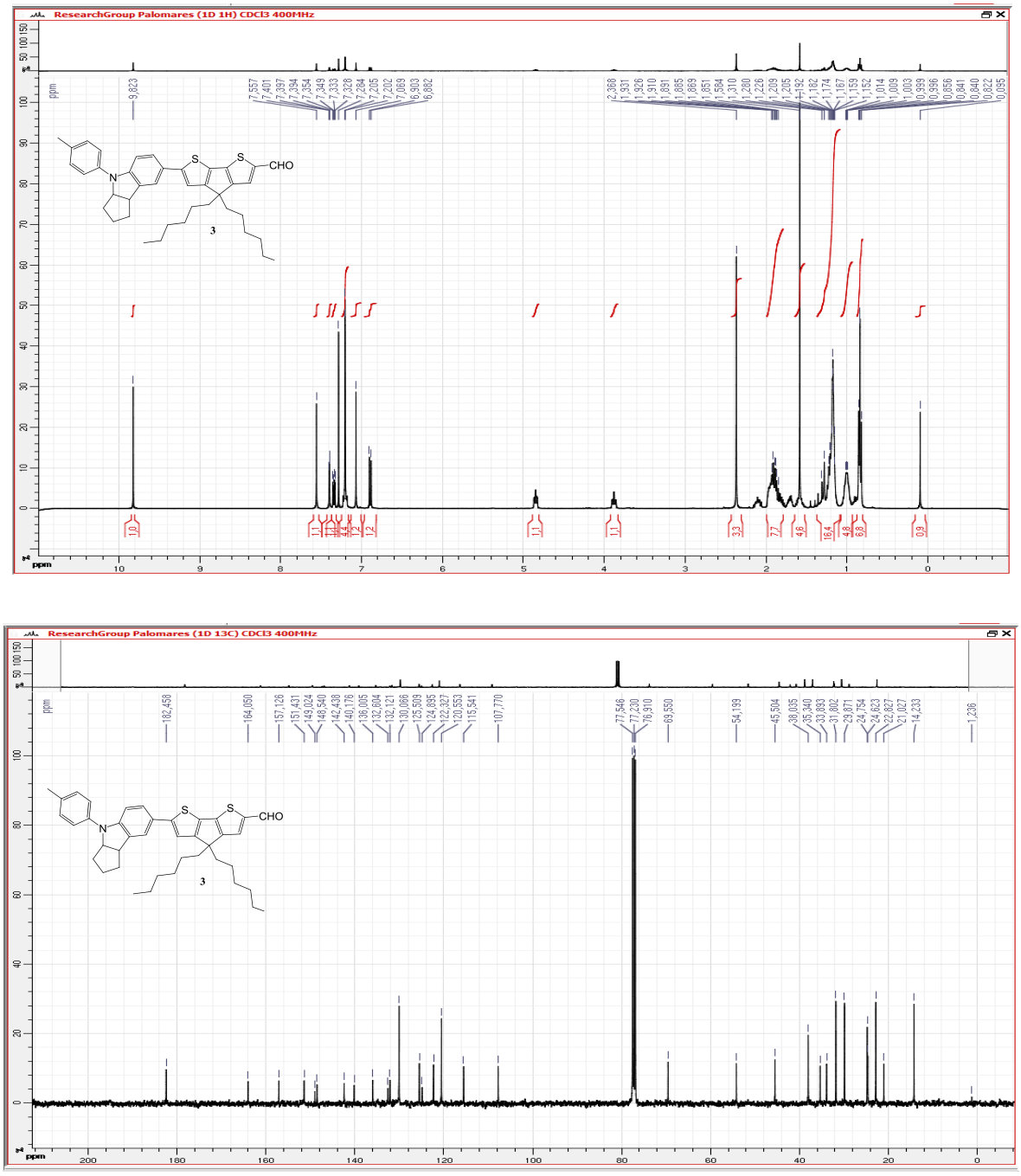

Fig. S1 ^{1}H NMR (upper) and ^{13}C NMR (lower) spectra of compound **3** recorded in $CDCl_3$.

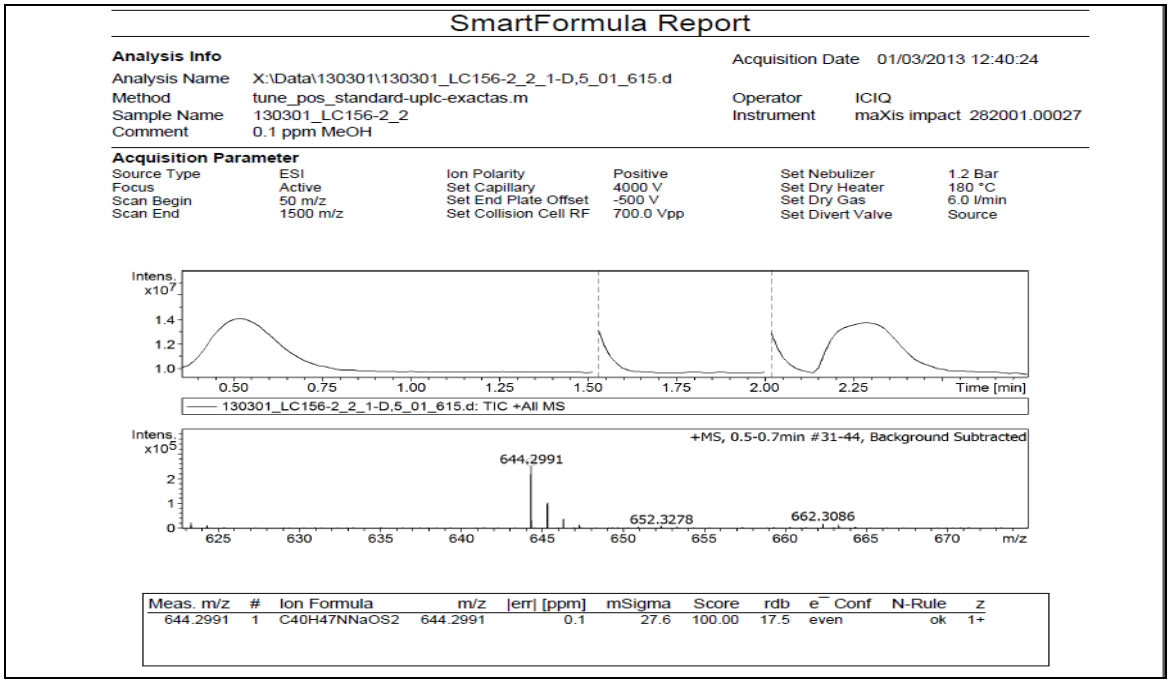

Fig. S2 HRMS (ESI) spectrum of compound **3**.

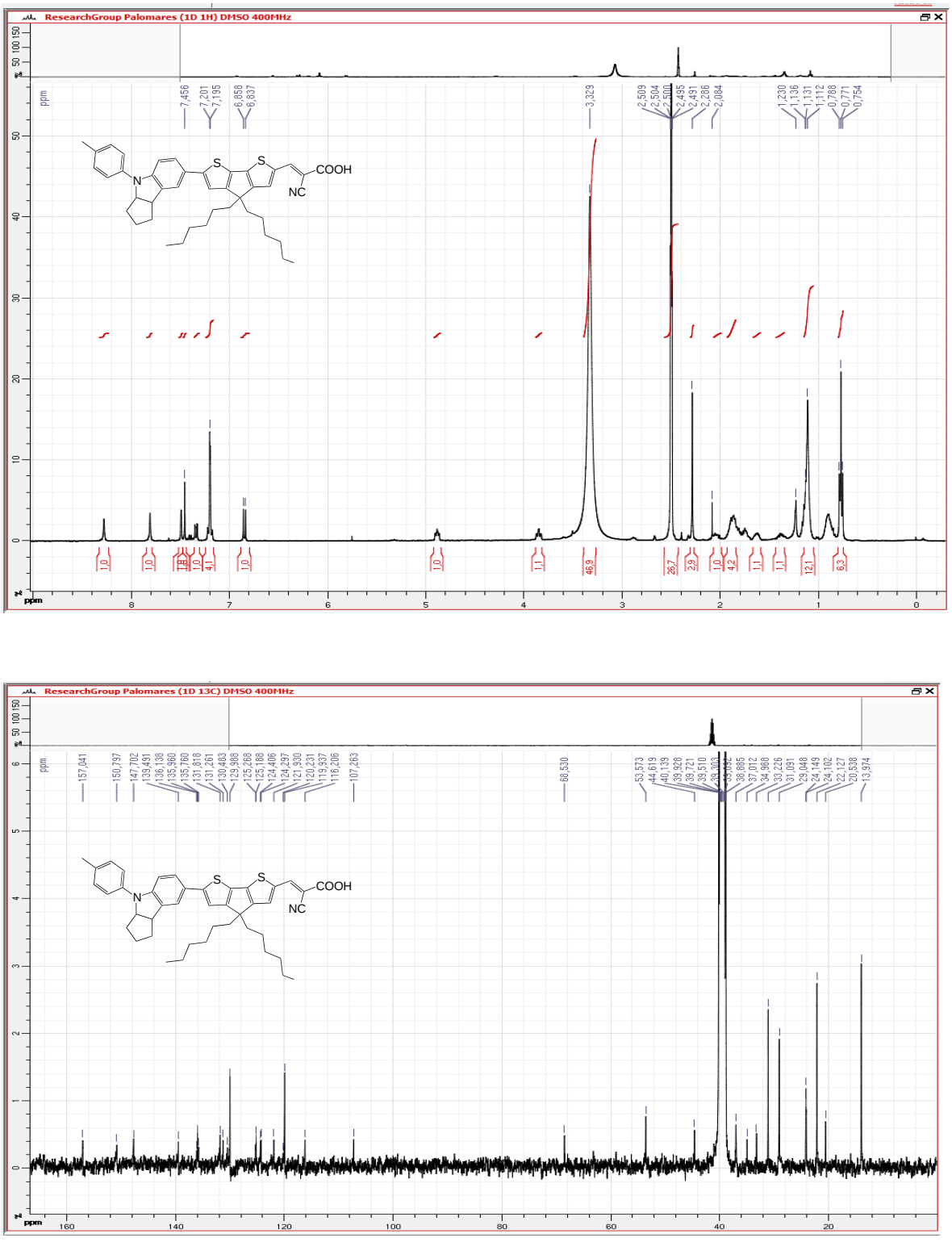

Fig. S3 ^{1}H NMR (upper) and ^{13}C NMR (lower) spectra of compound **VCL01** recorded in DMSO-d_6.

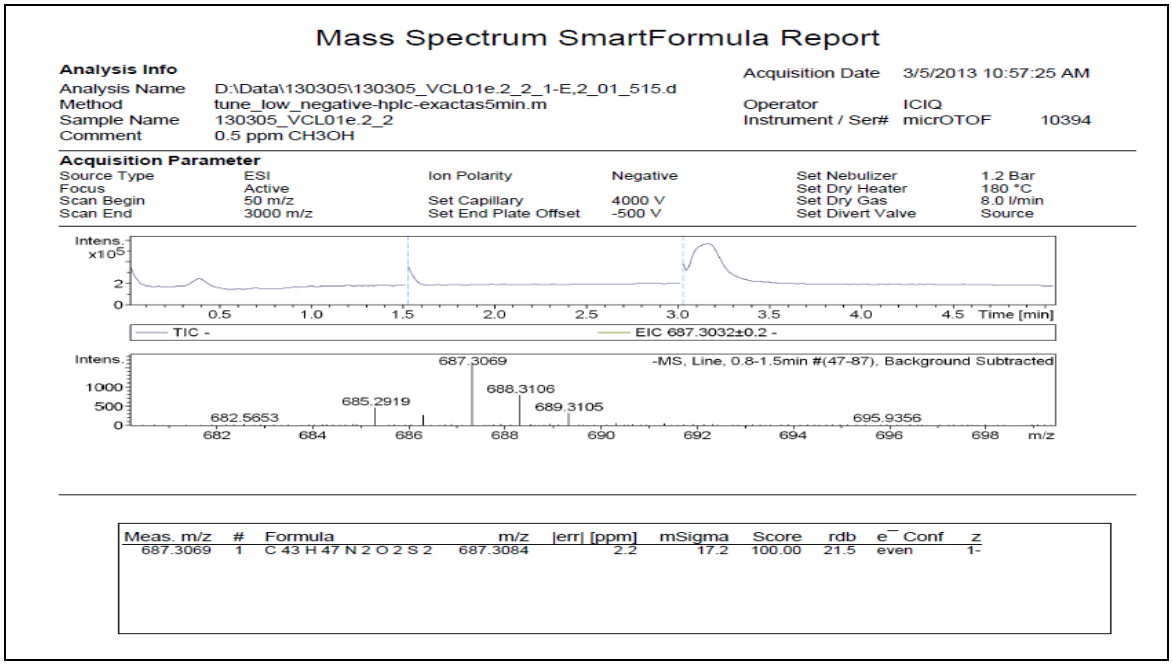

Fig. S4 HRMS (ESI) spectrum of compound **VCL01**.

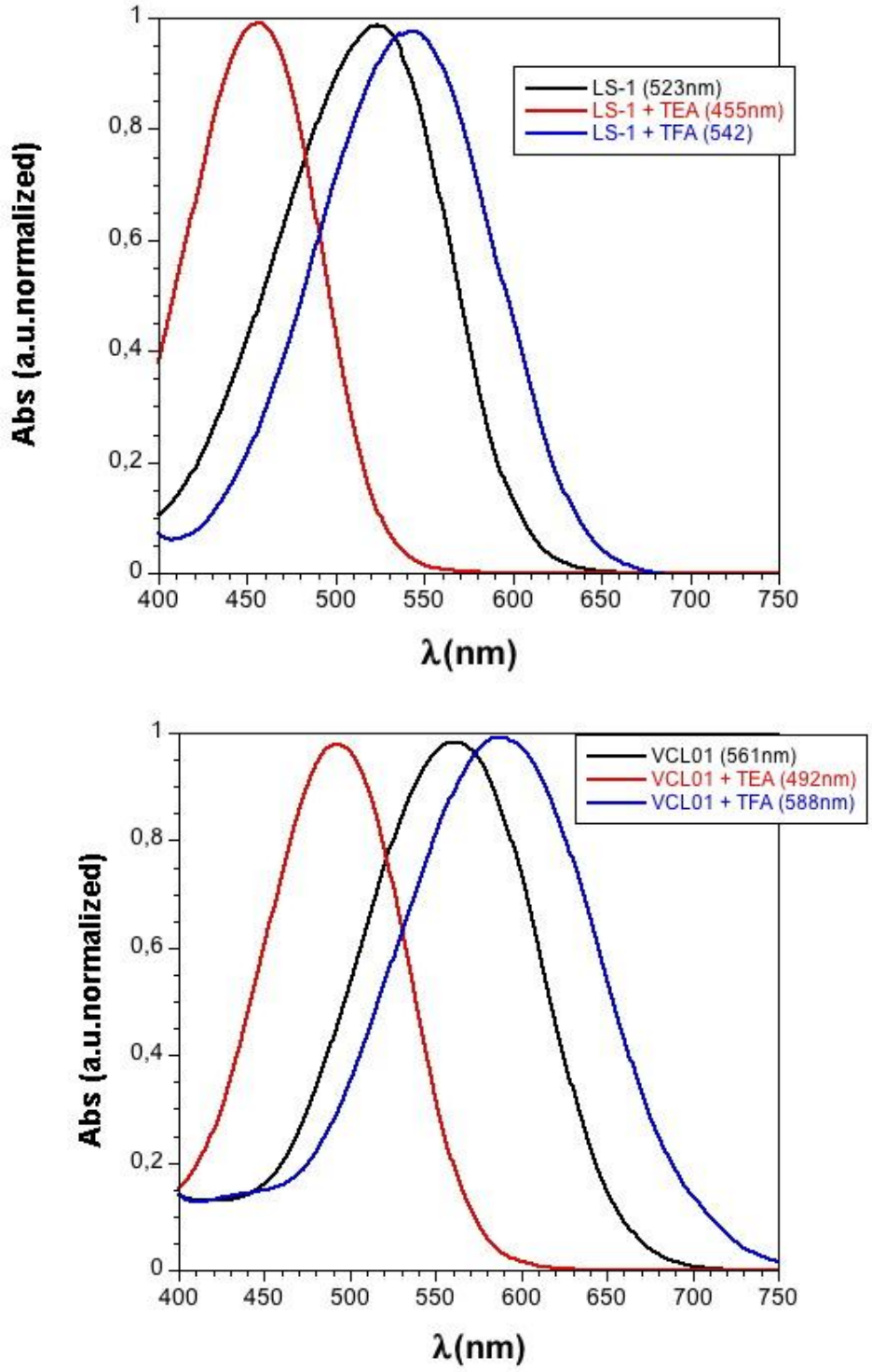

Fig. S5 Absorption spectra of dichloromethane solutions of **LS-1** and **VCL01** in the presence of organic base (TEA, triethylamine) and organic acid (TFA, trifluoroacetic acid).

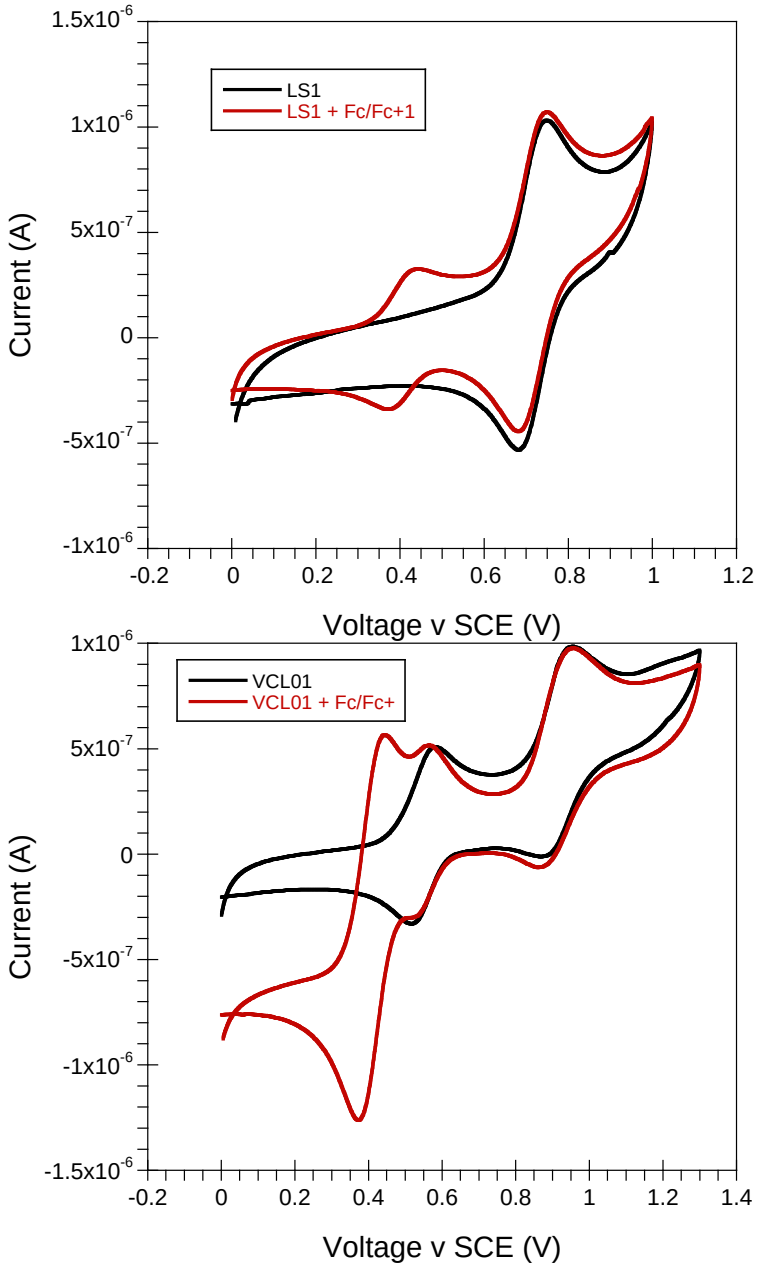

Fig. S6 Cyclic voltammetry of **LS-1** (top) and **VCL01** (bottom) recorded in 0.1M tetrabutylammonium hexafluorphosphate in 1:1 acetonitrile:*tert*-butanol at a scan rate of 10 mV s^{-1}. The working electrode consisted of a platinum wire and the counter electrode a platinum mesh. The reference electrode was the silver calomel electrode (saturated KCl). All solutions were degassed with argon for 5 mins prior to measurement. The red and black scans were recorded in the presence and absence of Ferrocene/Ferrocene+.

Table S1. Device properties of **LS-1** and **VCL01** DSCs.

Dye	V_{oc} (V)	J_{sc} (mA/cm^2)	*FF* (%)	η (%)*
LS-1 (No chenoxydecholic acid)	0.66	8.44	67.41	3.79
LS-1 (10 mM chenoxydecholic acid)	0.73	14.06	66.20	6.83
VCL01 (No chenoxydecholic acid)	0.67	12.75	67.44	5.81
VCL01 (10 mM chenoxydecholic acid)	0.60	5.25	71.22	2.27

*Efficiencies recorded without mask.

Table S2. Device properties of **LS-1** and **VCL01** DSCs before and after heating at 40ºC for 120 mins.

Dye	J_{SC} (mA/cm^2)	V_{OC} (V)	FF (%)	η(%)
LS-1 0 mins	13.52	0.69	72	6.70
LS-1 120 mins	13.75	0.68	72	6.81
VCL01 0 mins	7.85	0.61	70	3.32
VCL01 120 mins	8.46	0.60	70	3.57

*Efficiencies recorded with 0.16cm^2 mask.

Table S3. Emission lifetimes extracted from TC-SPC data of **LS-1** and **VCL01** DSC devices.

Dye	*Lifetime (ns)**
LS-1 (0 mins)	1.20 (42%); 2.96 (58%)
LS-1 (100 mins)	1.39 (41%); 2.99 (59%)
VCL01 (0 mins)	1.83 (75%); 3.37 (25%)
VCL01 (100 mins)	2.02 (92%); 4.79 (8%)

*Emission decays were fitted with 2 exponential parameters. The percentage in parenthesis is the contribution of each parameter.