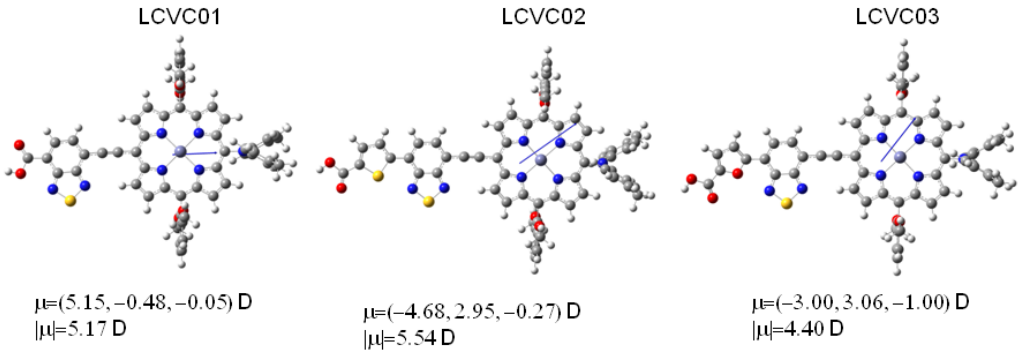
Electronic Supplementary Material (ESI) for Energy & Environmental Science.
This journal is © The Royal Society of Chemistry 2015

Supplementary Information

A single atom change "switches-on" solar-to-energy conversion efficiency on Zn-porphyrin based Dye Sensitized Solar Cell to 10.5%.

Figure 1S. Molecular dipole for the dyes described at the manuscript.



We also have include the Excel files that show the integration of our IPCE against the 1.5.AM G solar spectrum using the Excel procedure developed by NREL (National Renewable Energy Labs, USA) which can be found free on charge in the internet.

Files For IPCE Integration are Excel files:

IPCE (LCVC01). xlsx

IPCE (LCVC02).xlsx

IPCE (LCVC03).xlsx

Below you can find pictures extracted from the Excel files:

This spreadsheet computes the photocurrent resulting from the overlap integral between an arbitrary IPCE spectrum and the AM1.5G Global spectrum (ASTM G173-03).

Beta 0.99 + Mod by Werther
(Linear interpolation of QE values between points)

LCV01

Paste quantum efficiency data below:
(Wavelength between 300 nm and 1240 nm, with any arbitrary spacing)

Wavelength (nm)	QE (%)
300	12,66422758
310	3,548653858
320	2,834135601
330	2,469770637
340	3,166170348
350	9,516599292
360	12,72964291
370	9,824270218
380	7,627211294
390	8,724174215
400	13,7866617
410	23,1216311
420	35,40407381
430	46,44582613
440	54,65537294
450	59,55835027
460	58,49672162
470	52,05313805
480	44,36593419
490	39,3037028
500	35,3527906
510	32,82746582
520	30,1875154
530	28,22701729
540	26,27721639
550	24,64359455
560	22,31827599
570	20,47222188
580	18,69597199
590	16,3504839
600	14,2349475
620	15,34228383
630	18,16897473
640	21,75979956
650	26,51379741
660	33,26999596
670	40,47819686
680	46,86614225
690	48,52408804

J_{SC} = 7,56 mA/cm^2

This spreadsheet computes the photocurrent resulting from the overlap integral between an arbitrary IPCE spectrum and the AM1.5G Global spectrum (ASTM G173-03).

Beta 0.99 + Mod by Werther
(Linear interpolation of QE values between points)

LCVC02

Paste quantum efficiency data below:
(Wavelength between 300 nm and 1240 nm, with any arbitrary spacing)

Wavelength (nm)	QE (%)
300	199,459
310	88,7552
320	57,4205
330	43,0059
340	34,6742
350	31,0784
360	31,3467
370	32,8018
380	37,2435
390	43,1206
400	51,649
410	59,2844
420	65,2849
430	68,5602
440	70,0421
450	72,7856
460	74,2348
470	75,3968
480	76,5915
490	76,2071
500	76,7964
510	76,1012
520	75,7302
530	75,3748
540	74,7295
550	74,7081
560	75,0966
570	74,7925
580	73,2895
590	72,3829
600	69,9985
610	71,207
620	74,0012
630	77,6205
640	81,9596
650	84,3411
660	87,5018
670	89,2137
680	89,1686

J_{SC} = 19,18 mA/cm^2

This spreadsheet computes the photocurrent resulting from the overlap integral between an arbitrary IPCE spectrum and the AM1.5G Global spectrum (ASTM G173-03).

Beta 0.99 + Mod by Werther
(Linear interpolation of QE values between points)

LCVC03

Paste quantum efficiency data below:
(Wavelength between 300 nm and 1240 nm, with any arbitrary spacing)

Wavelength (nm)	QE (%)
300	5,955730536
310	3,199135027
320	2,943798984
330	2,702546259
340	2,903031963
350	6,960533469
360	11,04557216
370	12,52721363
380	13,91648445
390	16,1570108
400	20,1406925
410	25,88361898
420	31,97587041
430	35,63859391
440	36,86328547
450	37,71869312
460	37,12852022
470	36,80366366
480	35,41446401
490	32,89947828
500	30,51844388
510	27,27825214
520	24,91905704
530	22,47108088
540	20,4303
550	18,63394821
560	16,97922127
570	15,1801138
580	13,55138487
590	12,12845409
600	11,02952371
610	11,13460997
620	12,87079904
630	15,55507805
640	19,10017675
650	23,4628037
660	28,82380969
670	33,95685766
680	35,22041574

J_{SC} = 5,61 mA/cm^2