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Supporting Information

Harnessing the N-Dopant Ratio to Carbon Quantum Dots for Enhancing the Power Conversion Efficiency of Solar Cell

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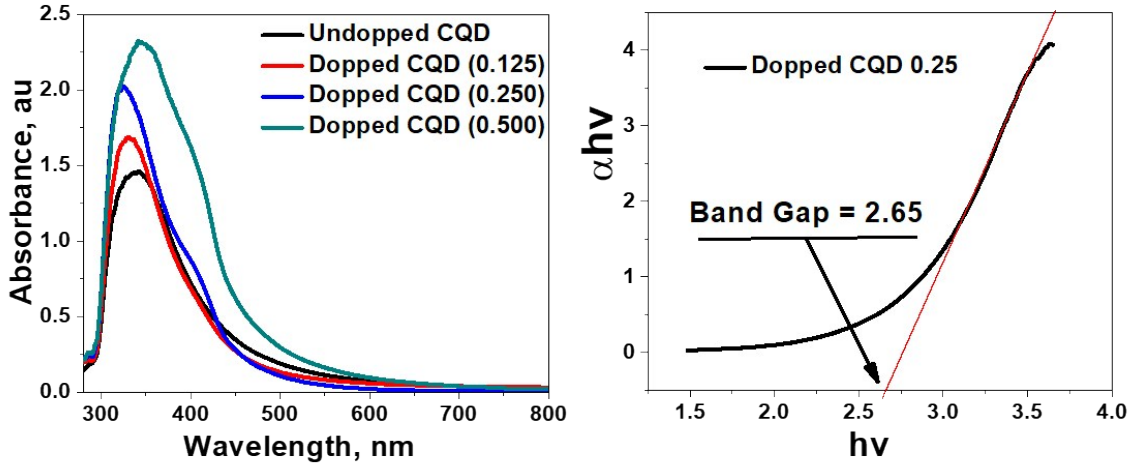

Figure S1: UV-Vis Spectra of CQD Samples in methanol solvent a) and Band gap calculation b)

Cyclic Voltammetry

Cyclic Voltammetry performed using three electrode system in which Ag/Ag^{+}, Pt wire and spin coated NCQD on FTO glass taken as reference, counter and working electrode respectively in Acetonitrile solvent with $TBPF_6$ as supporting electrolyte. Onset was found from CV data and Band Gap calculated from UV data and HOMO-LUMO were calculated as per standard equation.

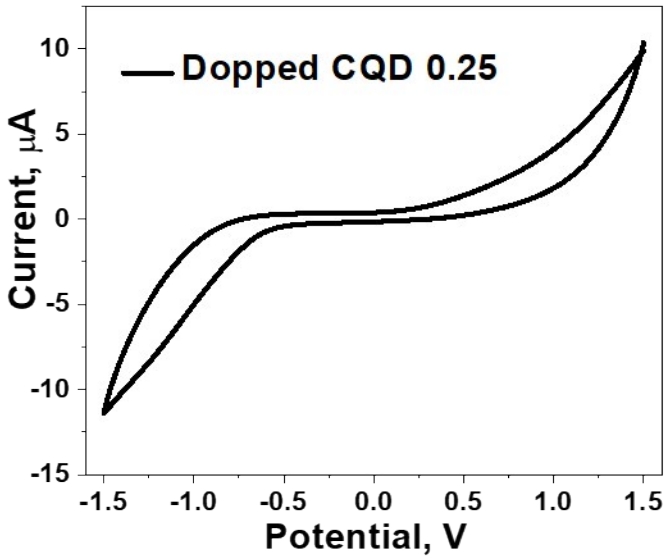

Figure S2. Cyclic Voltammetry of Doped CQD in Methanol solvent without supporting.

Energy Level diagram

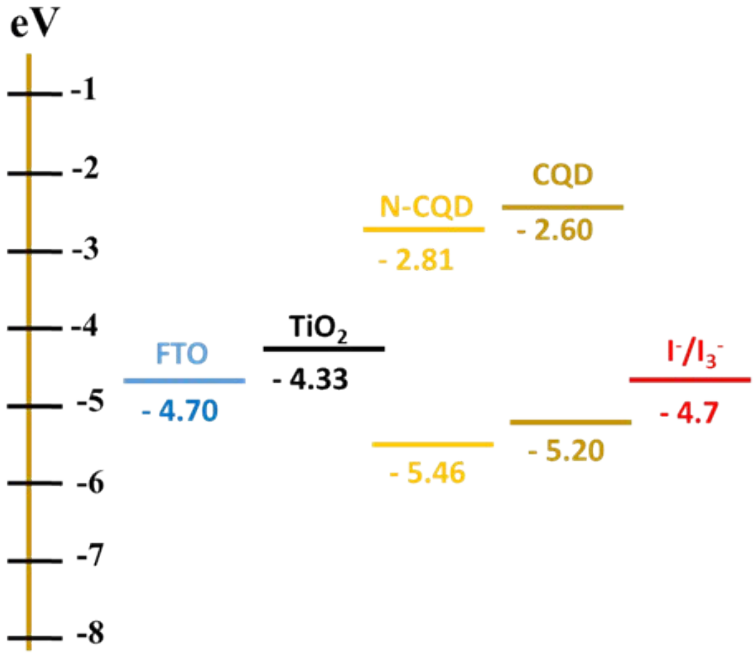

Figure S3. Energy level diagram

Mott-Schottky

Analysis carried out using three electrode system, in which CQD and NCQD coated FTO taken as working electrode, Pt wire as counter and saturated calomel as reference in aqueous solution of 0.5 M Na_2SO_4 as electrolyte.

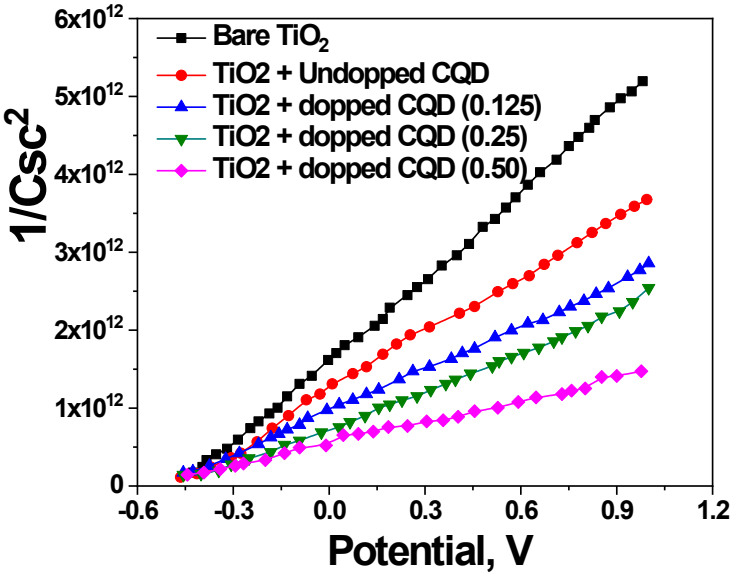

Figure S4. Mott-Schottky plots of CQD samples with various %N doping

Table S1. Donor density of N-doped CQDs sensitized TiO_2 photoanode

Sr. No.	Material	Slope ($X10^{12}$)	Donor Density ($X10^{18}$)
1	Bare TiO_2	3.60	4.78
2	TiO_2 + undoped CQD	2.49	6.90
3	TiO_2 + Nitrogen doped CQD (0.125)	1.82	9.45
4	TiO_2 + Nitrogen doped CQD (0.25)	1.62	10.61
5	TiO_2 + Nitrogen doped CQD (0.50)	0.92	18.69

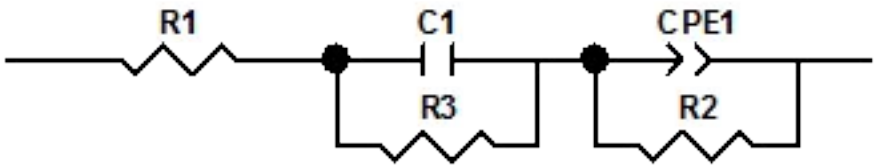

Figure S5. ESI equivalent circuit for fitting

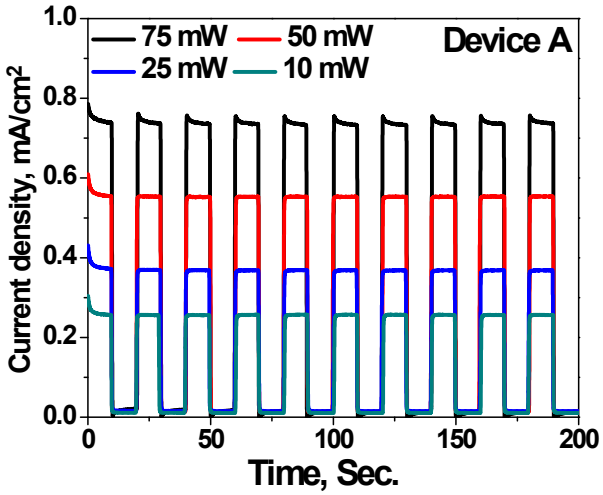

Figure S6. Transient measurements of Device A at different intensities