

Electronic Supporting Information (ESI)

A low molecular mass organogelator electrolyte with TiO₂ nanoparticles for stable and efficient quasi-solid-state dye sensitized solar cell

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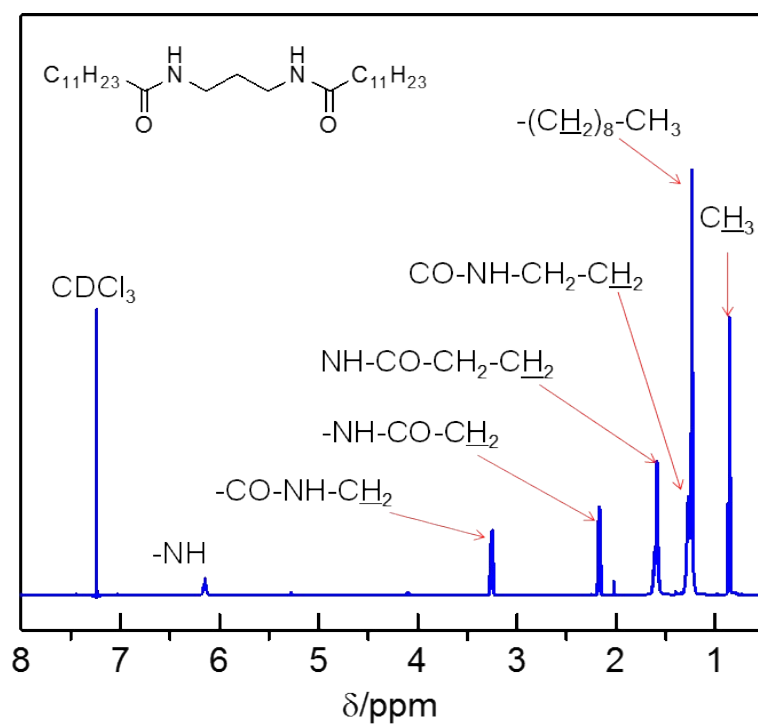


Figure S1. ^1H NMR spectra of N, N'-1,3-propanediylbis-dodecanamide (LMOGs) in chloroform.

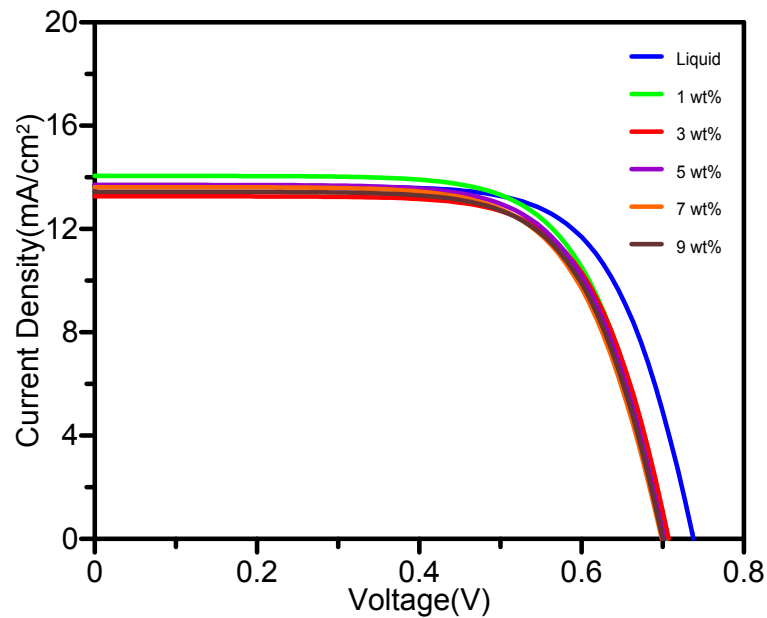


Figure S2. The J - V curves of DSSCs using liquid, 1 wt%, 3 wt%, 5 wt%, 7 wt% and 9 wt% LMOGs based electrolytes under AM 1.5G (100 mW cm^{-2}).

Table S1. Performance characteristics of the DSSCs using liquid, 1 wt%, 3 wt%, 5 wt%, 7 wt% and 9 wt% LMOGs based electrolytes under AM 1.5G (100 mW cm⁻²).

Electrolyte	J_{SC} (mA cm ⁻²)	V_{OC} (mV)	FF (%)	PCE ^a (%)	PCE ^b (%)
liquid	13.8	738	71.1	7.22	7.19 ± 0.03
1 wt%	13.5	699	71.1	6.75	6.49 ± 0.26
3 wt%	13.9	722	71.6	7.21	7.11 ± 0.10
5 wt%	13.3	706	71.7	6.76	6.68 ± 0.08
7 wt%	13.6	702	71.3	6.84	6.74 ± 0.12
9 wt%	13.5	698	71.1	6.72	6.51 ± 0.21

^a. The performance of the champion cell

^b. Average efficiency and standard deviations from five independent cells.

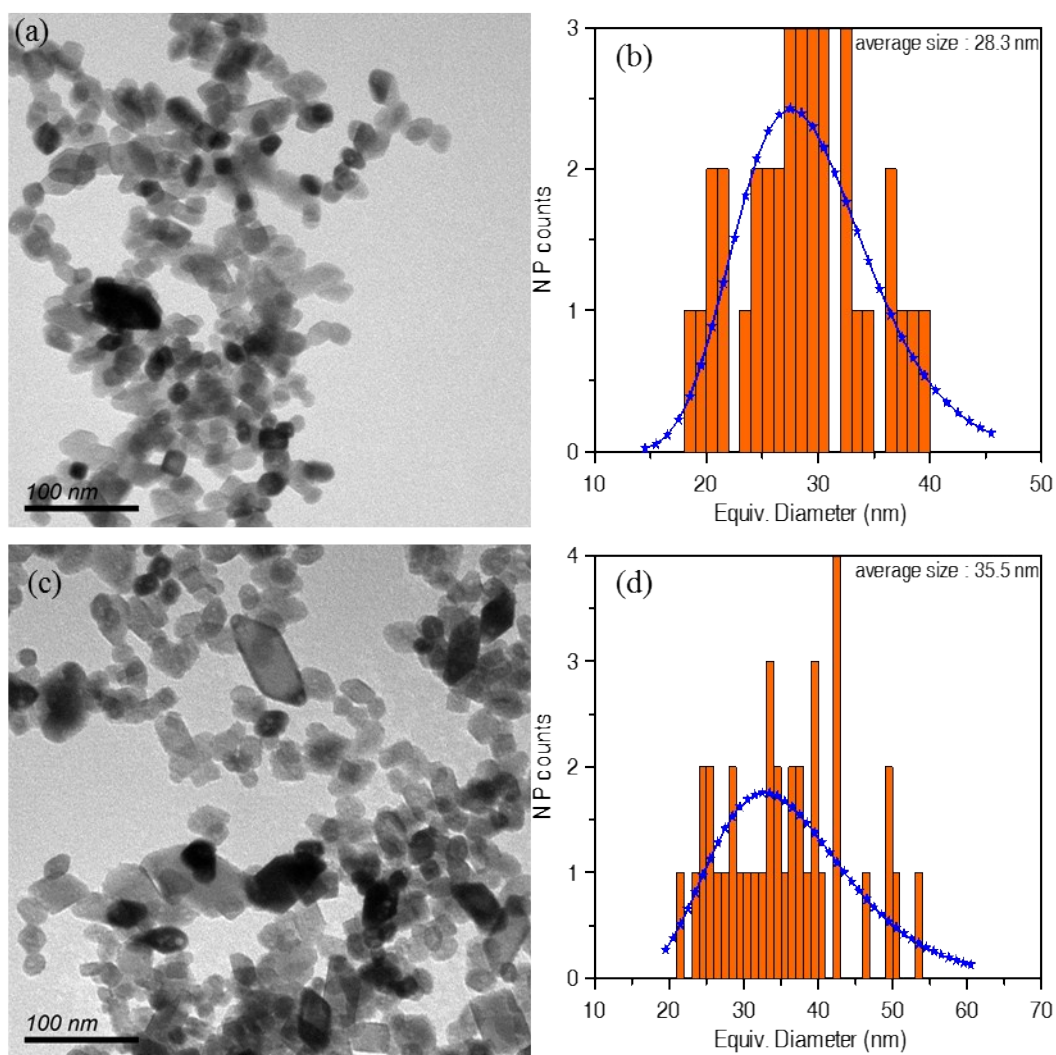


Figure S3. (a) TEM images of TiO₂ nanoparticle with synthesis reaction time 16 hours (b) the size distribution of TiO₂ nanoparticle with synthesis reaction time 16 hours (c) TEM images of TiO₂ nanoparticle with synthesis reaction time 24 hours and (d) size distribution of TiO₂ nanoparticle with synthesis reaction time 24 hours.

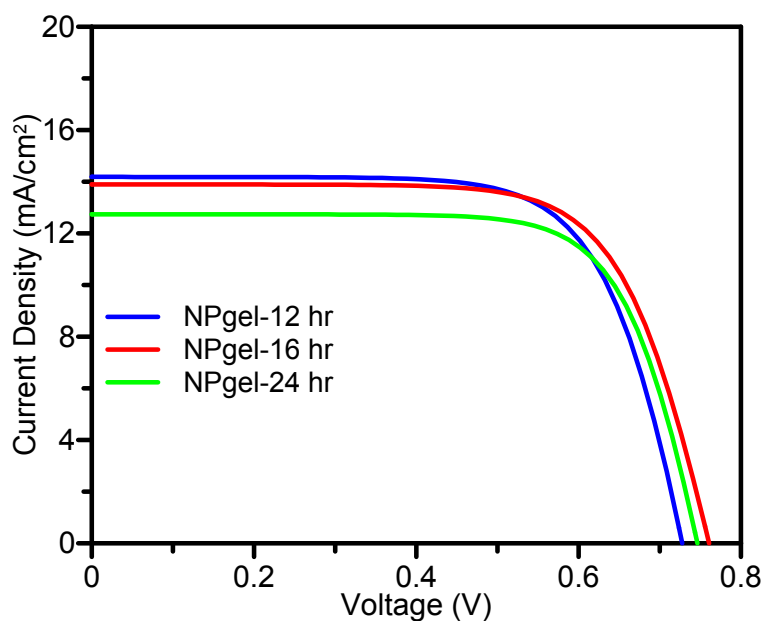


Figure S4. The J - V curves of DSSCs using 1 wt% of, 12, 16, and 24-hours reaction time for the synthesis of, TiO_2 nanoparticle with 3 wt% LMOGs electrolytes under AM 1.5G (100 mW cm^{-2}).

Table S2. Performance characteristics of the DSSCs using 1 wt% of, 12, 16, and 24-hour reaction time for the synthesis of, TiO_2 nanoparticle with 3 wt% LMOGs electrolytes under AM 1.5G (100 mW cm^{-2})

Electrolyte	J_{sc} (mA cm^{-2})	V_{oc} (mV)	FF (%)	PCE ^a (%)	PCE ^b (%)
NPgel-12 hr	14.3	736	74.2	7.79	7.66 ± 0.13
NPgel-16 hr	13.8	762	71.7	7.54	7.52 ± 0.02
NPgel-24 hr	12.9	745	73.1	7.04	6.92 ± 0.12

^a. The performance of the champion cell

^b. Average efficiency and standard deviations from five independent cells.