

Supplementary Information

For

Catalyst-free Iodine-Mediated Living Radical Polymerization under Irradiation over a Wide Visible-Light Spectral Scope

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Table S1. Photo-induced catalyst-free LRP of MMA under white or green LED irradiation.^a

Entry	Light source	[M] ₀ /[I] ₀	Solvent	Solvent volume	Time (h)	Conv. ^b (%)	$M_{n,th}^c$ (g/mol)	$M_{n,GPC}^d$ (g/mol)	M_w/M_n^d
1	White LED	100/1	DMSO	1.0	9	51.3	5330	4800	1.20
2	Green LED	100/1	DMSO	1.0	15	74.7	7670	8360	1.13
3	Green LED	100/1	DMAC	0.2	12	47.9	4990	5100	1.12
4	Green LED	100/1	DMAC	0.5	12	58.6	6060	6560	1.12
5	Green LED	100/1	DMAC	1.0	12	64.6	6660	6690	1.10
6	Green LED	100/1	DMAC	1.5	12	57.5	5950	6450	1.14
7	Green LED	100/1	DMAC	2.0	12	57.0	5900	5970	1.17
8	Green LED	600/1	DMAC	1.0	52	47.6	28790	40220	1.07
9	Green LED	800/1	DMAC	1.0	68	44.8	36080	43690	1.09
10	White LED	600/1	DMSO	1.0	20	52.5	31730	55850	1.26
11	White LED	800/1	DMAC	1.0	20	46.5	37440	61250	1.34

^aReaction conditions: [MMA]₀:[CP-I]₀ = 100:1, 600:1 or 800:1, V_{MMA} = 1.0 mL, at room temperature irradiation by LED light.

^bDetermined by gravimetry. ^cCalculated based on monomer conversion, $M_{n,th} = M_{CP-I} + [MMA]_0/[CP-I]_0 \times M_{MMA} \times \text{conversion}\%$.

^dDetermined by GPC in THF, based on linear PMMA as calibration standards.

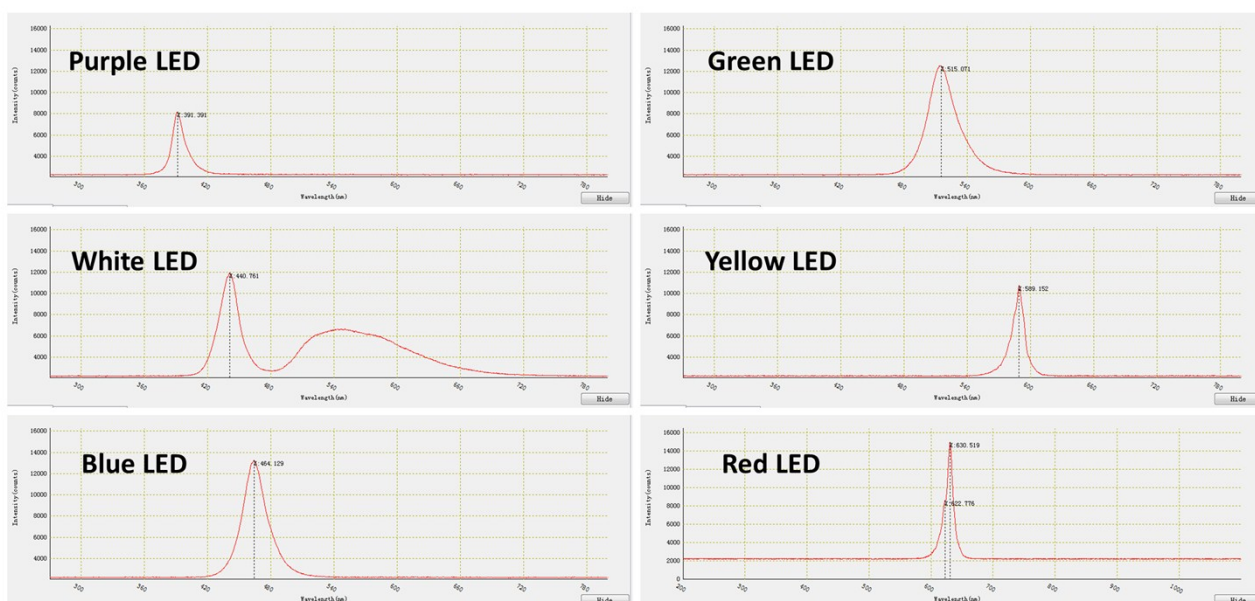


Fig. S1 Emission spectra of LEDs. The peaks are 390 ± 30 nm for the purple LED, 464 ± 40 nm for the blue LED, 515 ± 40 nm for the green LED, 590 ± 20 nm for the yellow LED and 630 ± 30 nm for the red LED with the breadths of the distribution are given by half of the full width at half maximum. The emission wavelength for the white LED was 400-720 nm, $\lambda_{\max} = 440, 540$ nm. The emission intensities changes with the variation of distance of the light source to the inductive sensor.

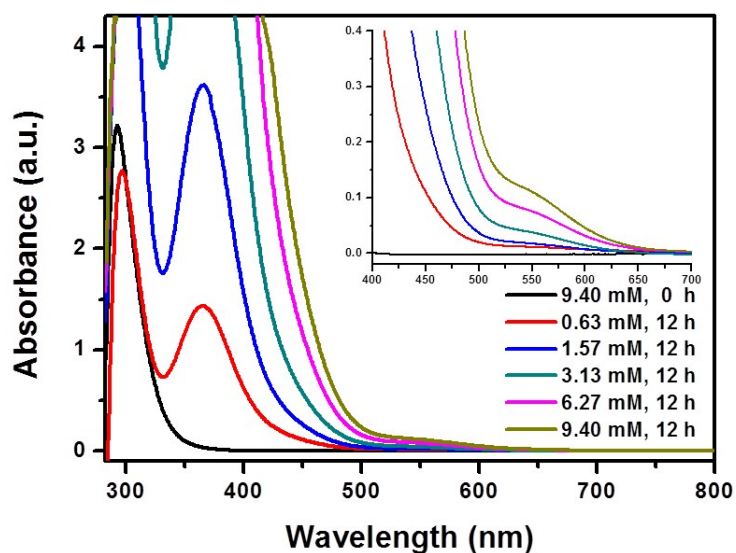


Fig. S2 UV-Vis absorption spectra of polymerization systems in DMAC before and after polymerization under red LED irradiation for 12h; the polymerization systems were diluted with DMAC and calculated by original initiator concentration before measurement.