

Fig S1 SEC traces of polymers obtained from different initiation routes: photo iniferter (black), photo Fenton reaction (red) and conventional initiator V50 (blue).

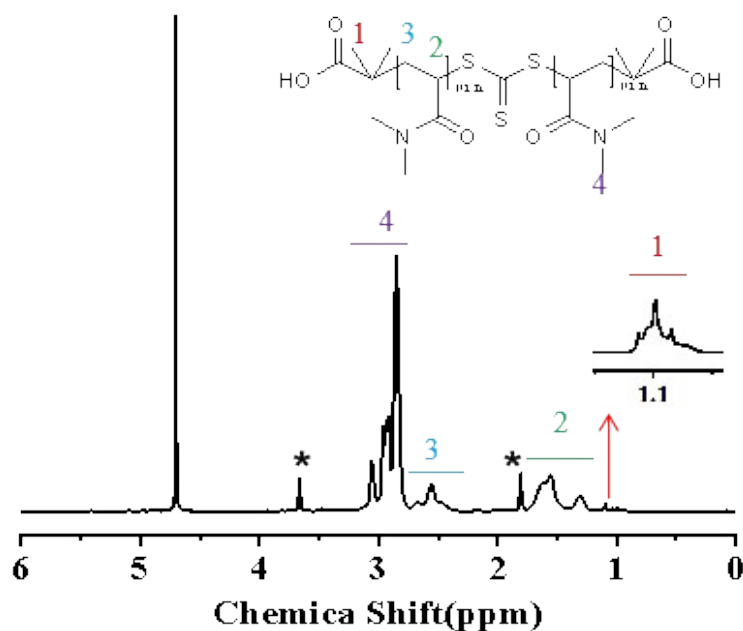


Fig. S2 <sup>1</sup>H-NMR spectrum of purified PDMA over photo fenton mediated aqueous RAFT polymerization

Table S1 effect of H<sub>2</sub>O<sub>2</sub> concentration on polymerization

Entry	Monomer	DP	bis-TTC/MB/H <sub>2</sub> O <sub>2</sub>	Time(min)	Conv.(%)	M <sub>n,GPC</sub> (KDa)	PDI
13	DMA	200	1:0.02:0.05	20	0	0	0
14	DMA	200	1:0.02:0.075	20	56.5	7.6	1.42
15	DMA	200	1:0.02:0.3	20	77.9	11.1	1.24
16	DMA	200	1:0.02:0.5	20	97.8	16.5	1.19
17	DMA	200	1:0.02:1	20	99.4	16.9	1.19

Table S2 effect of MB concentration on polymerization

Entry	Monomer	DP	bis-TTC/MB/H <sub>2</sub> O <sub>2</sub>	Time(min)	Conv.(%)	M <sub>n,GPC</sub> (KDa)	PDI
18	DMA	200	1:0.001:0.5	20	0	0	0
19	DMA	200	1:0.0025:0.5	20	55	7.6	1.28
20	DMA	200	1:0.005:0.5	20	80.5	10.7	1.20
21	DMA	200	1:0.01:0.5	20	94.5	14.0	1.22
22	DMA	200	1:0.02:0.5	20	97.8	16.5	1.19
23	DMA	200	1:0.03:0.5	20	91.5	15.3	1.19
24	DMA	200	1:0.04:0.5	20	81.2	12.7	1.31
25	DMA	200	1:0.05:0.5	20	49.1	8.8	1.29
26	DMA	200	1:0.06:0.5	20	22.1	3.5	1.62
27	DMA	200	1:0.07:0.5	20	0	0	0

Table S3 Details of Multiblock PDMA homopolymer

Entry	Monomer	DP	bis-TTC:MB:H <sub>2</sub> O <sub>2</sub>	Time(min)	Conv.(%)	M <sub>n,GPC</sub> (Da)	PDI
1	DMA	50	1:0.03:1	40	99.6	2808	1.48
2	DMA	50	1:0.03:1	40	99.8	7687	1.21
3	DMA	50	1:0.03:1	40	96.1	11636	1.26
4	DMA	50	1:0.03:1	40	89.4	16793	1.18
5	DMA	50	1:0.03:1	40	89.6	20651	1.3

Table S4 Details of PDMA-PNAM Multiblock polymer

Entry	Monomer	DP	Bis-TTC:MB:H <sub>2</sub> O <sub>2</sub>	Time(min)	Conv.(%)	M <sub>n, GPC</sub> (Da)	PDI
1	DMA	50	1:0.03:1	40	97.1	3665	1.22
2	NAM	50	1:0.03:1	40	99.9	8865	1.18
3	DMA	50	1:0.03:1	40	95	14167	1.17
4	NAM	50	1:0.03:1	40	99.9	18765	1.37
5	DMA	50	1:0.03:1	40	80	23889	1.47