Electronic Supplementary Material (ESI) for Polymer Chemistry.

Supporting Information

Dimanganese decacarbonyl/2-cyanoprop-2-yl 1-dithionaphthalate: toward sunlight induced RAFT polymerization of MMA

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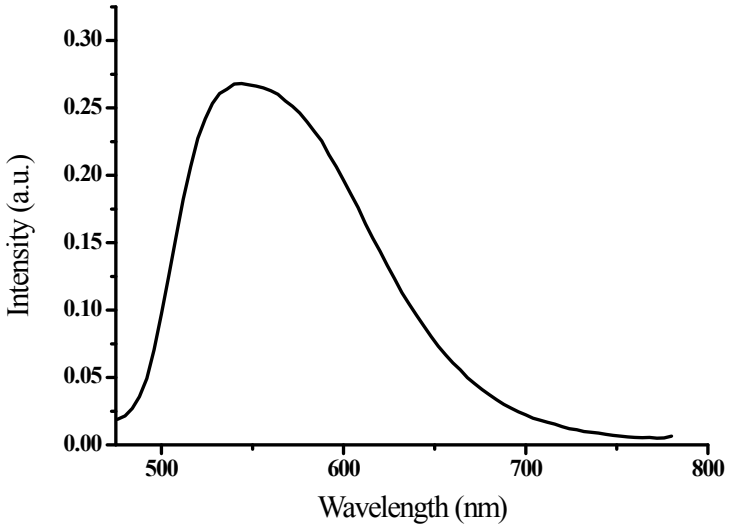
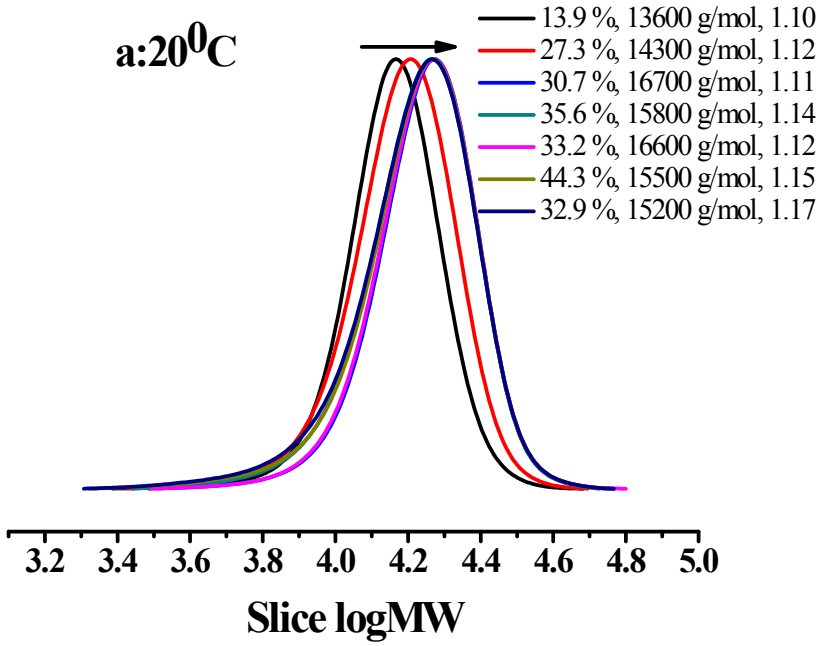
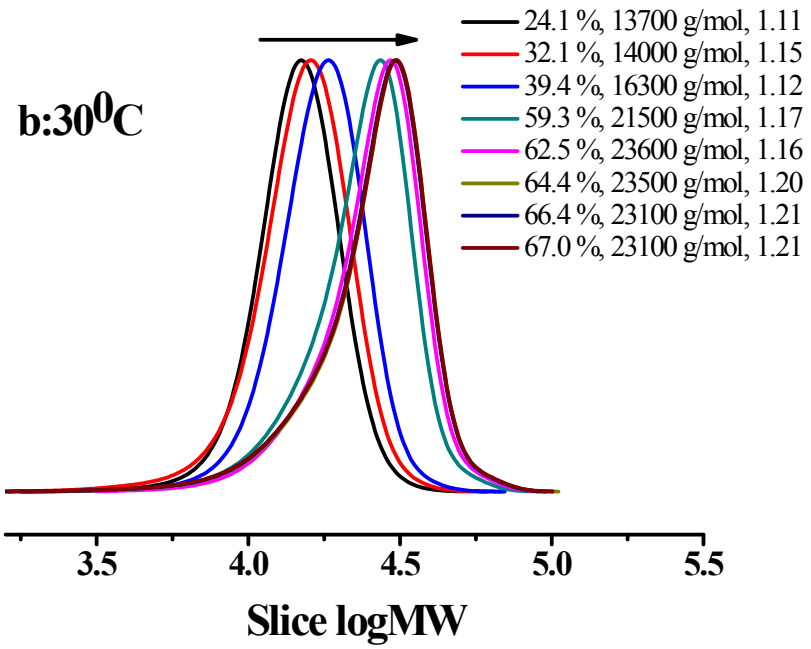


Figure 1S. Light emitting spectrum of LED at 12V DC.

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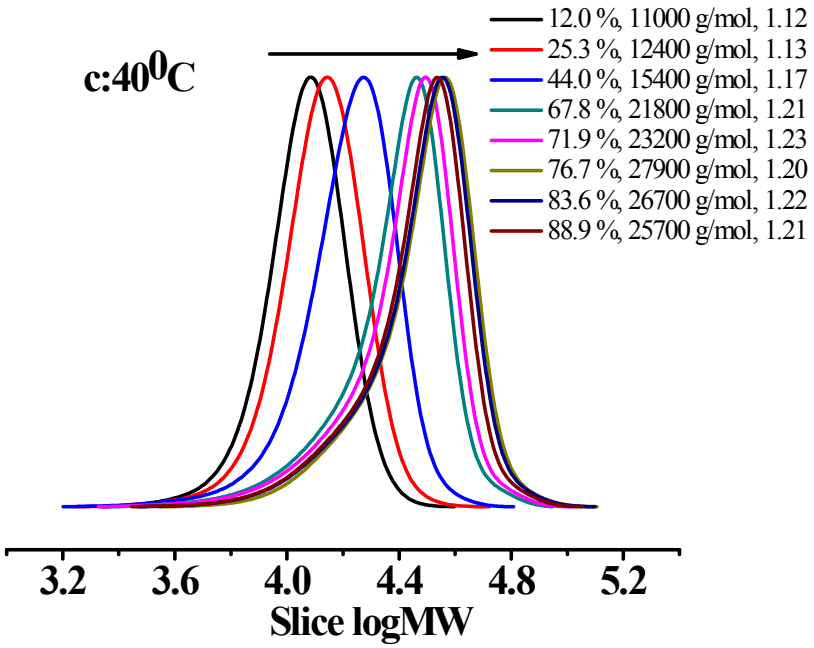
24.1 %, 13700 g/mol, 1.11
32.1 %, 14000 g/mol, 1.15
39.4 %, 16300 g/mol, 1.12
59.3 %, 21500 g/mol, 1.17
62.5 %, 23600 g/mol, 1.16
64.4 %, 23500 g/mol, 1.20
66.4 %, 23100 g/mol, 1.21
67.0 %, 23100 g/mol, 1.21
3.5
4.0
4.5
5.0
5.5
Slice logMW


c:40^{0}C
12.0 %, 11000 g/mol, 1.12
25.3 %, 12400 g/mol, 1.13
44.0 %, 15400 g/mol, 1.17
67.8 %, 21800 g/mol, 1.21
71.9 %, 23200 g/mol, 1.23
76.7 %, 27900 g/mol, 1.20
83.6 %, 26700 g/mol, 1.22
88.9 %, 25700 g/mol, 1.21
3.2
3.6
4.0
4.4
4.8
5.2
Slice logMW

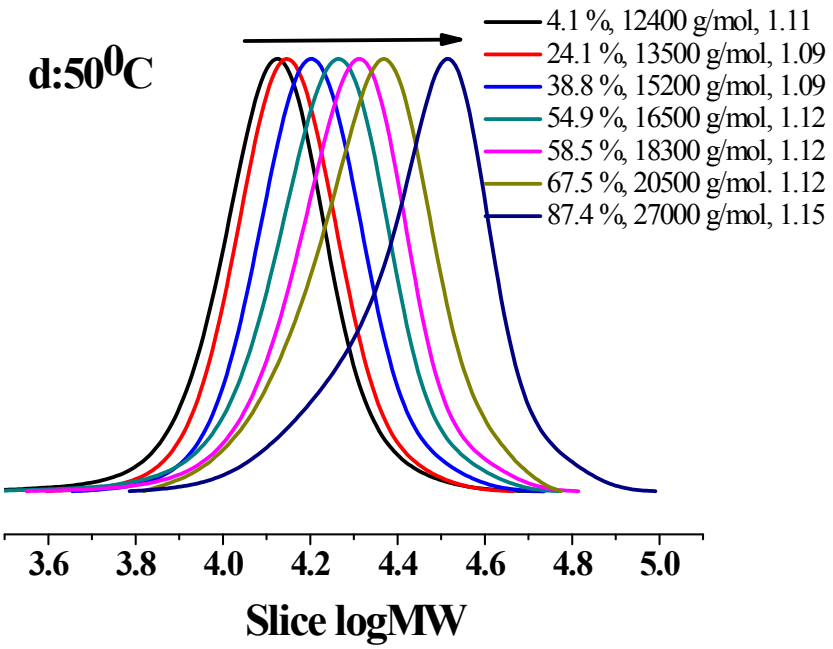
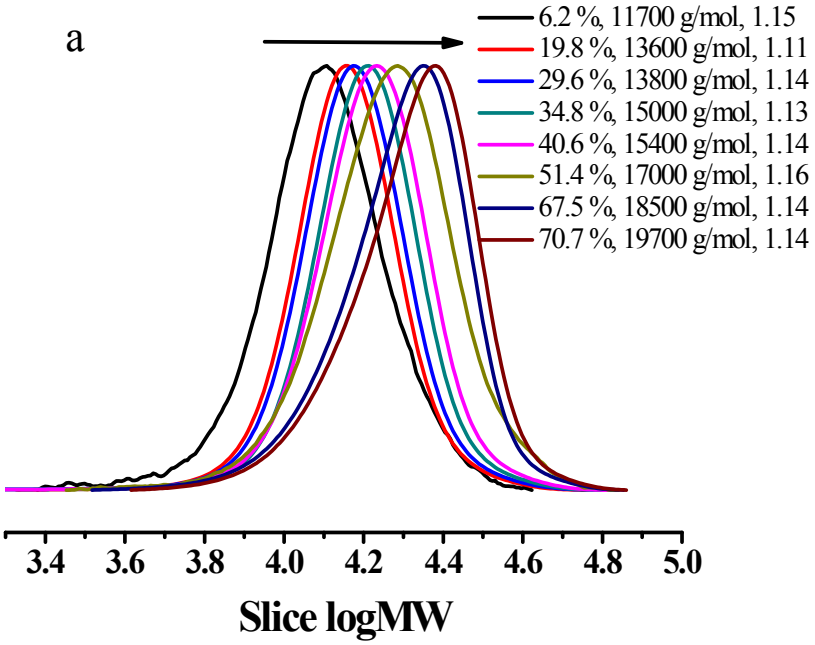
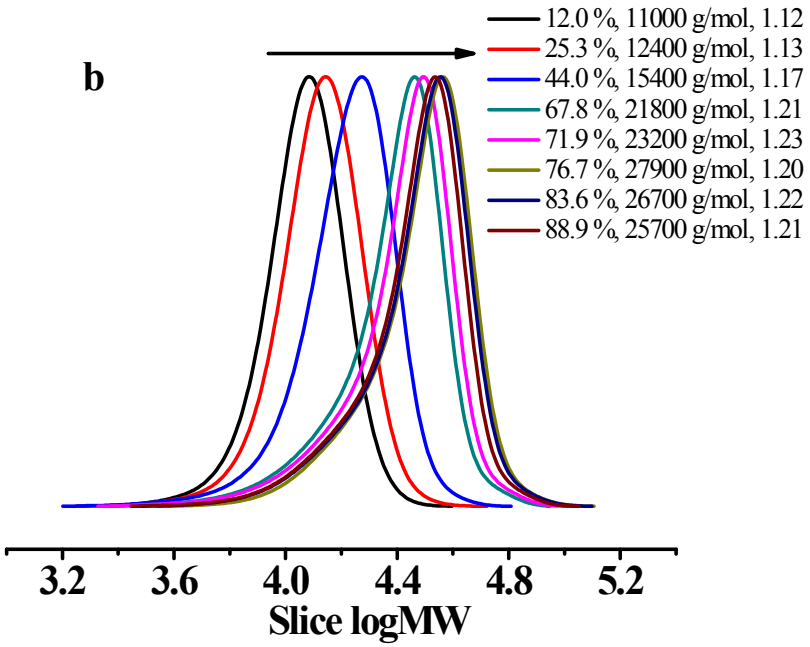
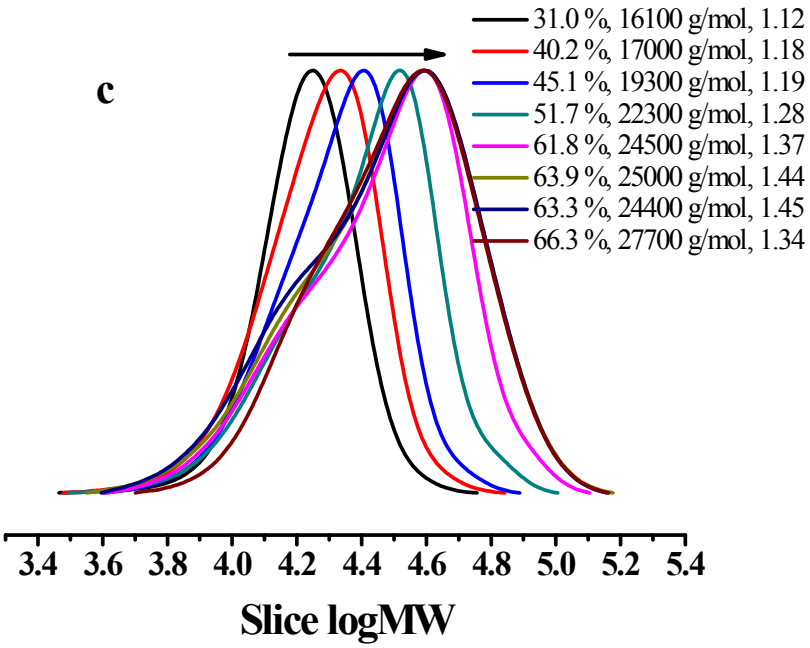


Fig. 2S Illustration of GPC curves of the PMMA obtained by the photo-induced RAFT solution polymerization of MMA in the presence of CPDN with $Mn_2(CO)_{10}$ under green-light irradiation (λ_{max} = 565 nm) at (a) 20℃ , (b) 30℃ , (c) 40℃ , and (d) 50℃ . $[MMA]_0/[Mn_2(CO)_{10}]_0/[CPDN]_0$ = 200/0.2/1, $V_{MMA} = V_{THF}$ = 7.5 mL.




b
12.0 %, 11000 g/mol, 1.12
25.3 %, 12400 g/mol, 1.13
44.0 %, 15400 g/mol, 1.17
67.8 %, 21800 g/mol, 1.21
71.9 %, 23200 g/mol, 1.23
76.7 %, 27900 g/mol, 1.20
83.6 %, 26700 g/mol, 1.22
88.9 %, 25700 g/mol, 1.21
3.2
3.6
4.0
4.4
4.8
5.2
Slice logMW


c
31.0 %, 16100 g/mol, 1.12
40.2 %, 17000 g/mol, 1.18
45.1 %, 19300 g/mol, 1.19
51.7 %, 22300 g/mol, 1.28
61.8 %, 24500 g/mol, 1.37
63.9 %, 25000 g/mol, 1.44
63.3 %, 24400 g/mol, 1.45
66.3 %, 27700 g/mol, 1.34
3.4
3.6
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4.0
4.2
4.4
4.6
4.8
5.0
5.2
5.4
Slice logMW

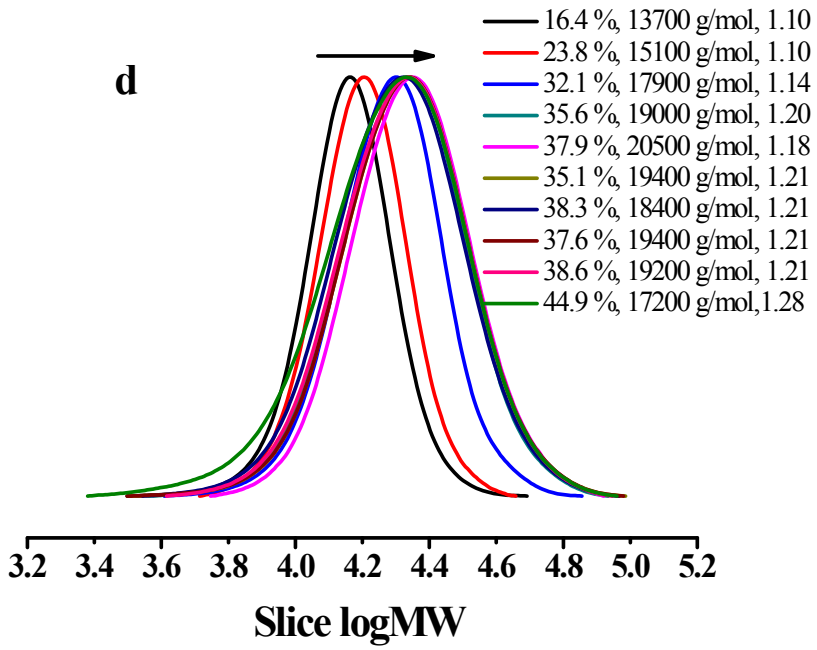

Fig. 3S Illustration of GPC curves of the PMMA obtained by the photo-induced RAFT solution polymerization of MMA in the presence of CPDN with $Mn_2(CO)_{10}$ under green-light irradiation (λ_{max} = 565 nm) at 40℃ . (a) the ratios of $[MMA]_0/[Mn_2(CO)_{10}]_0/[CPDN]_0$ was 200/0.01/1; (b) the ratios of $[MMA]_0/[Mn_2(CO)_{10}]_0/[CPDN]_0$ was 200/0.2/1; (c) the ratios of $[MMA]_0/[Mn_2(CO)_{10}]_0/[CPDN]_0$ was 200/0.5/1; (d) the ratios of $[MMA]_0/[Mn_2(CO)_{10}]_0/[CPDN]_0$ was 200/1/1. $V_{MMA} = V_{THF}$ = 7.5 mL.

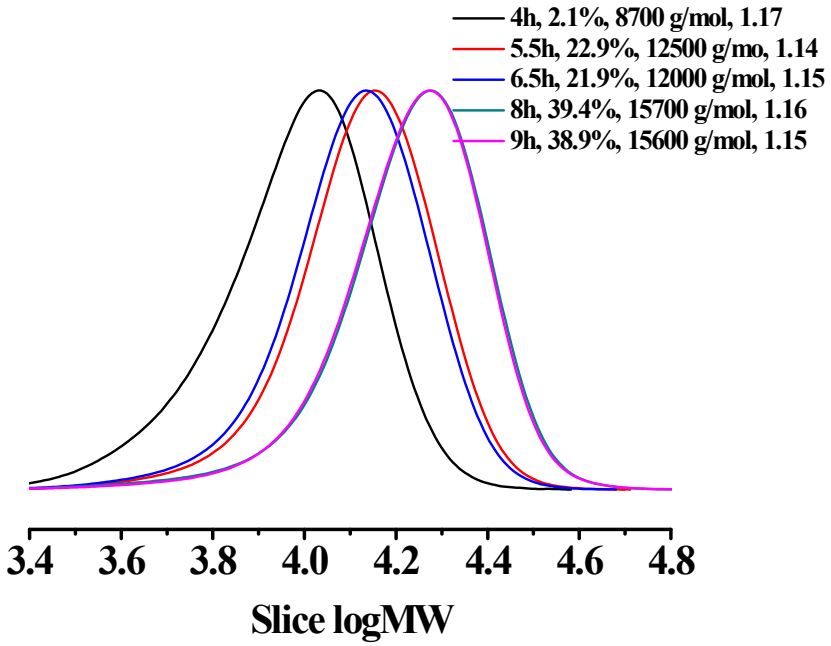

Fig. 4S Illustration of GPC curves of the PMMA polymerized by the bulk polymerization of MMA with light and dark (on and off) periods in the presence of CPDN with $Mn_2(CO)_{10}$ at 40℃ ,

$[MMA]_0/[Mn_2(CO)_{10}]_0/[CPDN]_0 = 200/0.2/1$, $V_{MMA} = 10$ mL.

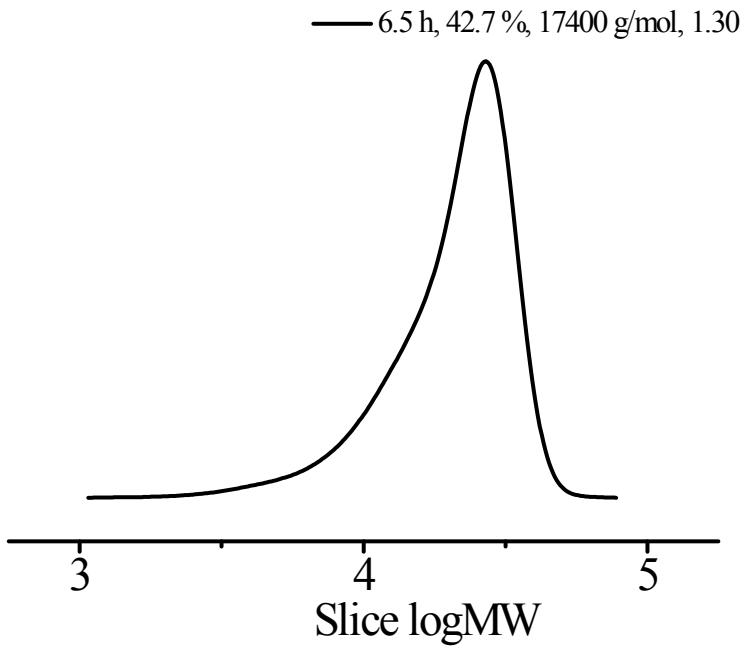

Fig. 5S Illustration of GPC curve of the PMMA prepared by rhe photo-induced RAFT bulk polymerization of MMA under sunlight irradiation at 40℃ . $[MMA]_0/[Mn_2(CO)_{10}]_0/[CPDN]_0 = 200/0.2/1$, $V_{MMA} = 2$ mL.