

Supporting Information

Reversible Chain Transfer Catalyzed Polymerization in Miniemulsion Systems with Tetraiodomethane as a Catalyst

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1. Pseudo first order plots of miniemulsion RTCP and miniemulsion ITP at 60°C

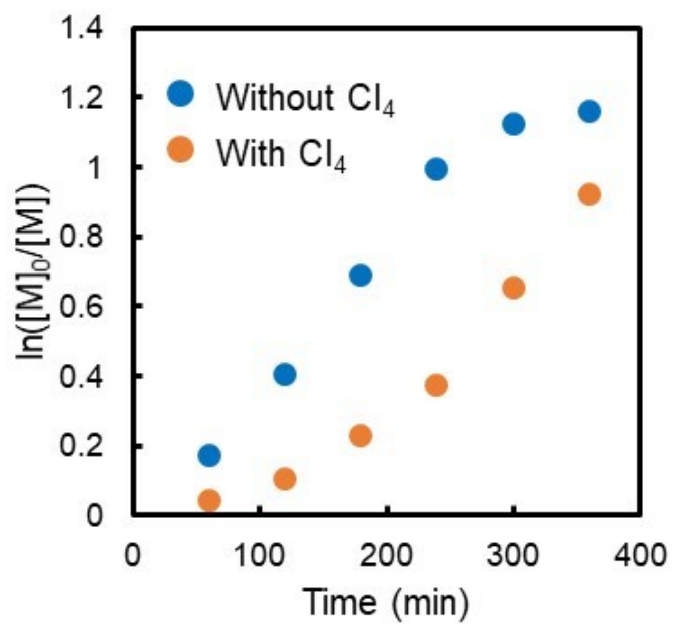


Fig. S1. (a) Pseudo first order plots of miniemulsion RTCP and reference miniemulsion polymerization without Cl₄, Surfactant: Brij98, Temperature: 60 °C

2. Size change of monomer droplets in miniemulsion RTCP with Cl_4

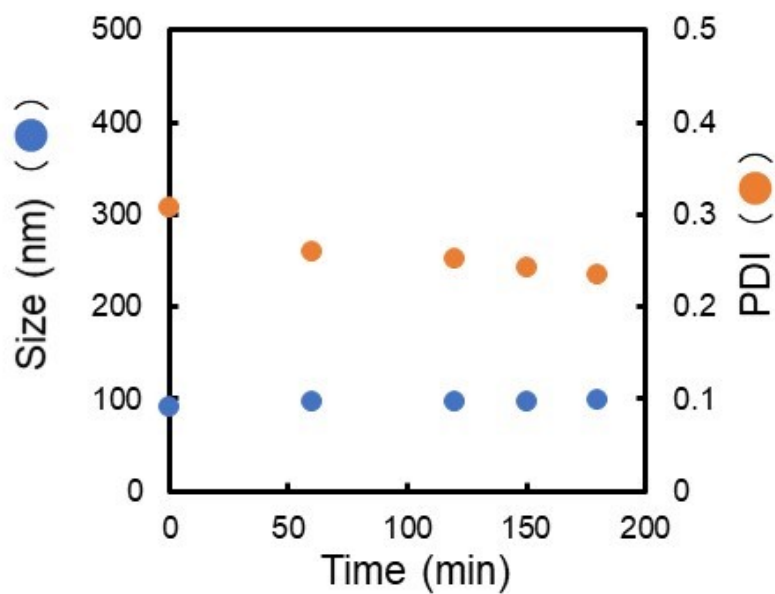


Fig. S2. Particle size and PDI of MMA droplets at various incubation times in miniemulsion RTCP system without initiator. Surfactant: Brij98, Temperature: 60 °C.

3. Size change of monomer droplets in reference miniemulsion polymerization without Cl_4

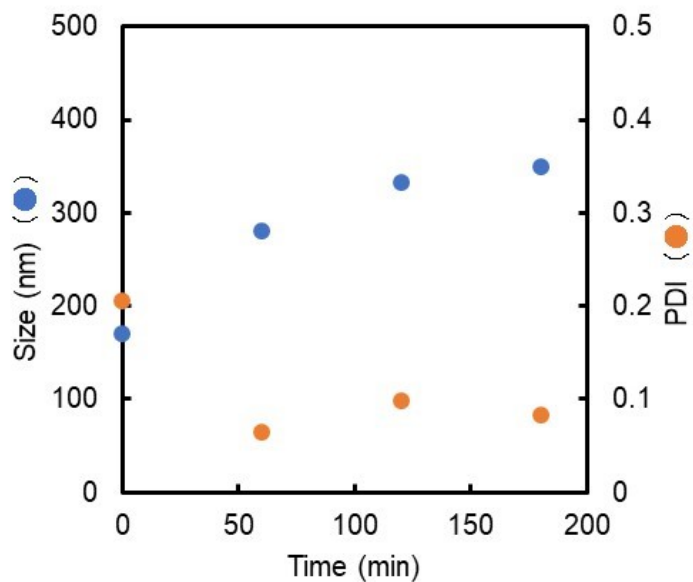


Fig. S3. Particle size and PDI of MMA droplets at various incubation times in reference miniemulsion polymerization system without initiator and catalyst. Surfactant: Brij98, Temperature: 60 °C.

4. Polymerization control of miniemulsion RTCP with Brij98 at 80°C

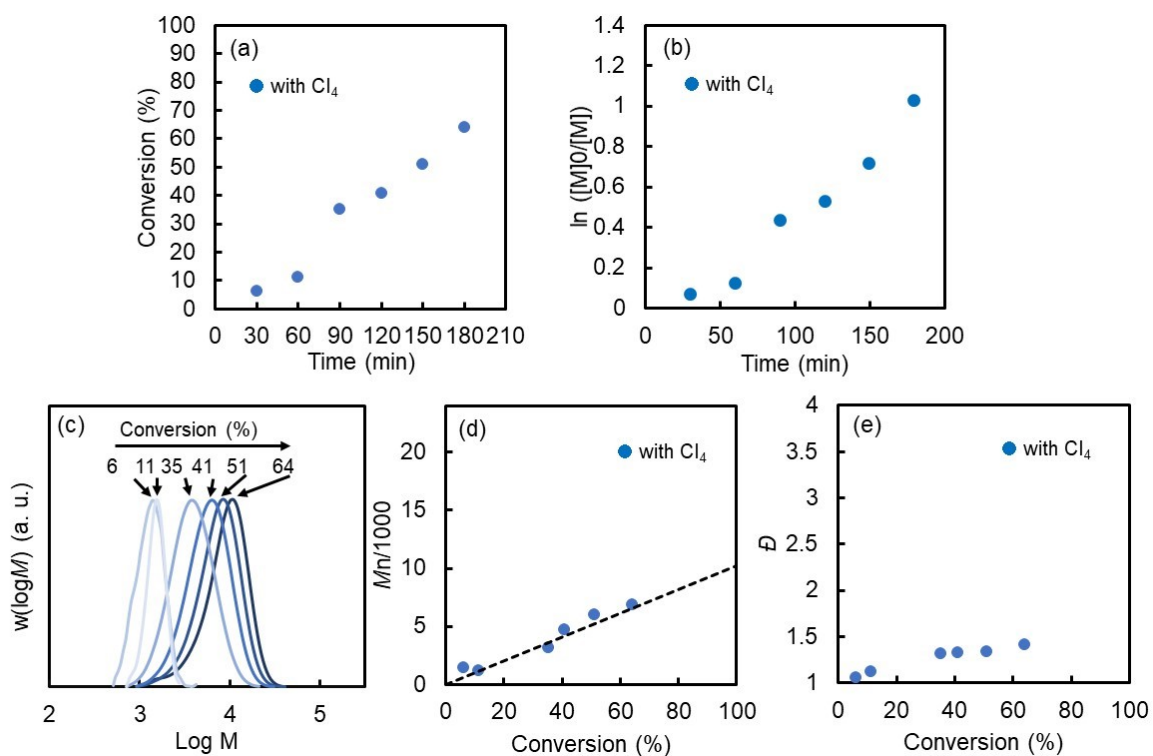


Figure S4. Time-conversion plot (a), pseudo first order plot (b), molecular weight distributions (c), M_n (d) and dispersity values (e) at various conversions for miniemulsion RTCP of MMA with Cl_4 as a catalyst. The dashed line in (d) is theoretical number-averaged molecular weights. Surfactant: Brij98, Temperature: 80°C.

5. Polymerization control of reference miniemulsion polymerization with Brij98 at 80°C

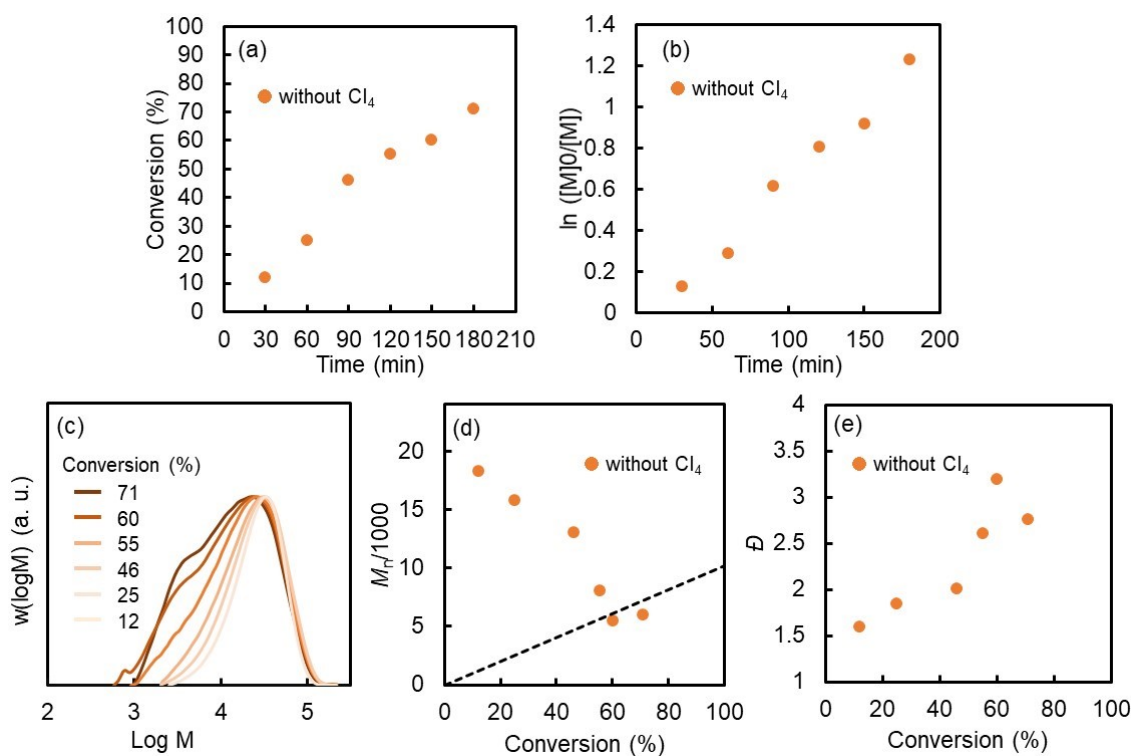


Figure S5. Time-conversion plot (a), pseudo first order plot (b), molecular weight distributions (c), M_n (d) and dispersity values (e) at various conversions for miniemulsion RTCP of MMA with Cl_4 as a catalyst. The dashed line in (d) is theoretical number-averaged molecular weights. Surfactant: Brij98, Temperature: 80°C.

6. Size distributions and SEM image of miniemulsion RTCP with Brij98 at 80°C

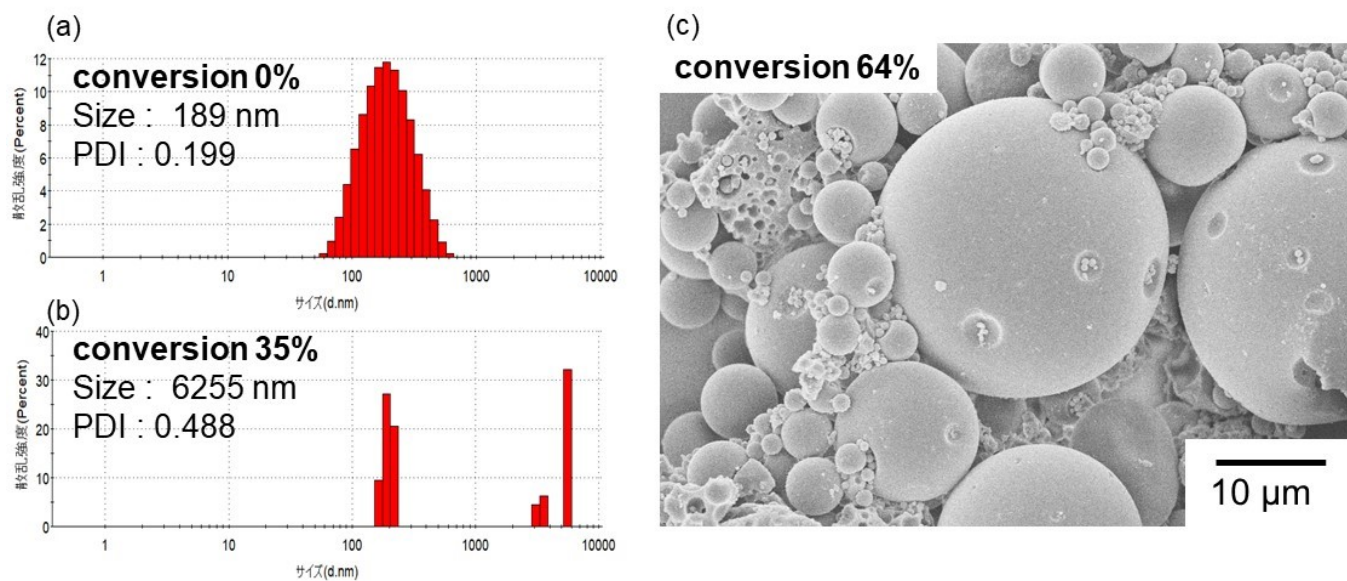


Figure S6. Particle size distributions [conversion: 0% (a), 35% (b)], and SEM image [conversion: 64% (c)] of PMMA particles of miniemulsion RTCP of MMA with Cl_4 as a catalyst. Surfactant: Brij98, Temperature: 80°C.

7. Size change of monomer droplets in miniemulsion RTCP at various temperatures

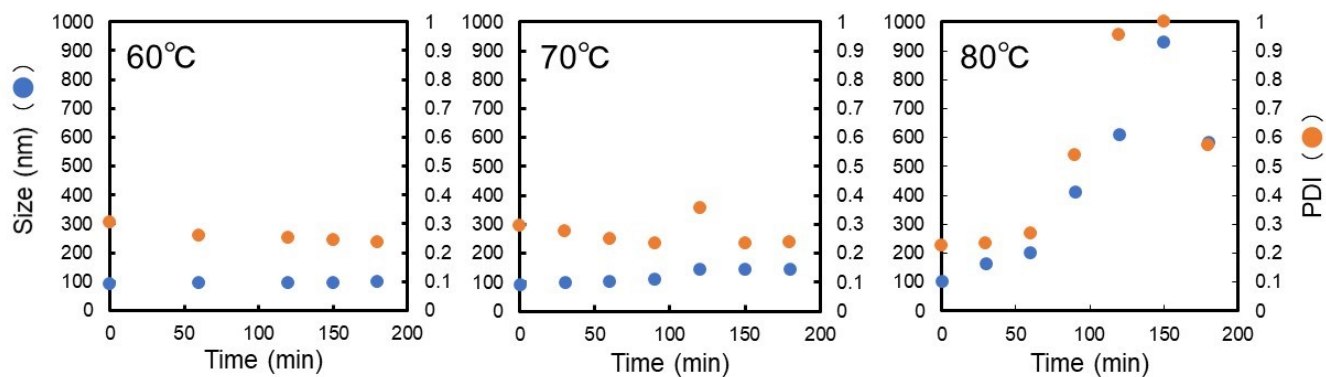


Figure S7. Sizes of MMA droplets containing chain transfer agents, catalyst, hydrophobe in Brij98 aqueous solution at various incubation times under different temperature. Temperature (°C): (a) 60°C, (b) 70°C, (c) 80°C

8. Pseudo first order plots of miniemulsion RTCP at 80°C

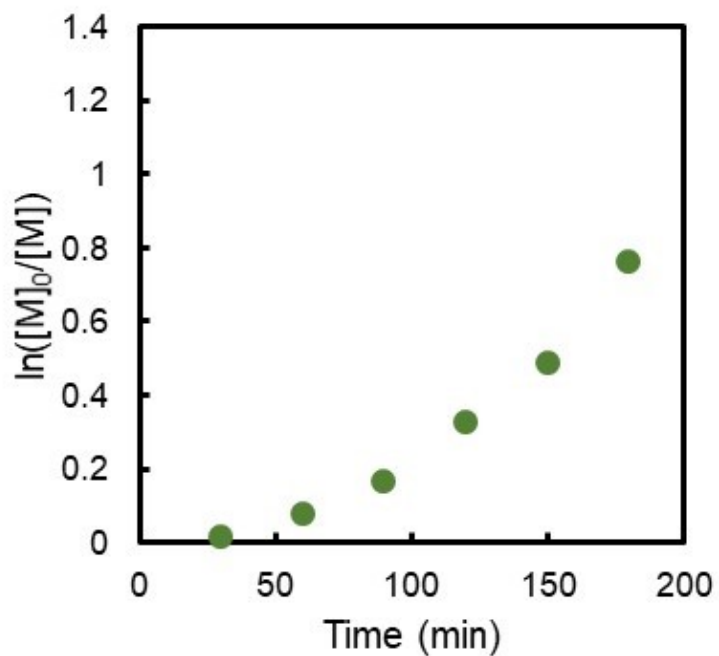


Fig. S8. Pseudo first order plot of miniemulsion RTCP conversions of MMA with Cl_4 as the catalyst.

Surfactant: TTAB, Temperature: 80 °C.

9. Particle size distributions of PMMA particles prepared by miniemulsion RTCP with different TTAB concentrations

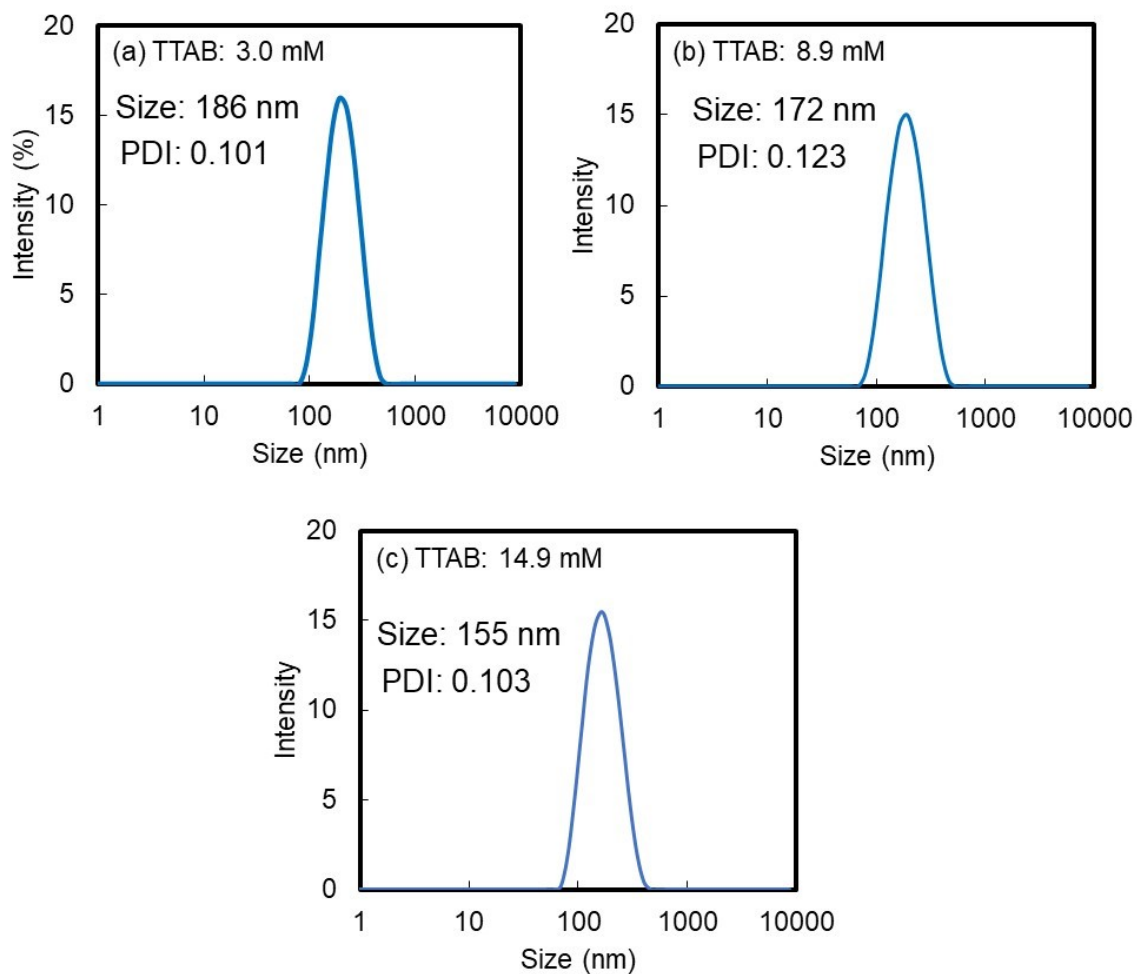


Figure S9. Particle size distributions of PMMA particles obtained by the miniemulsion RTCP with Cl_4 as a catalyst in the presence of different TTAB concentrations. TTAB concentration; (a) 3.0 mM, (b) 8.9 mM, (c) 14.9 mM.

10. Pseudo first order plots of miniemulsion RTCP with different TTAB concentrations

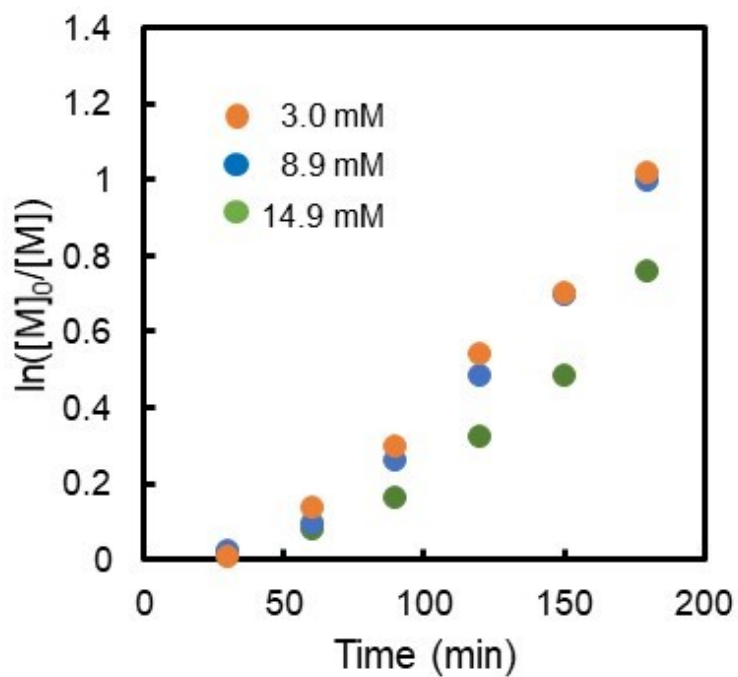


Figure S10. Pseudo first order plot of PMMA particles obtained by the miniemulsion RTCP with Cl_4 as a catalyst in the presence of different TTAB concentrations. TTAB concentration; (a) 3.0 mM, (b) 8.9 mM, (c) 14.9 mM.

11. Pseudo first order plots of miniemulsion RTCP with different target DPs

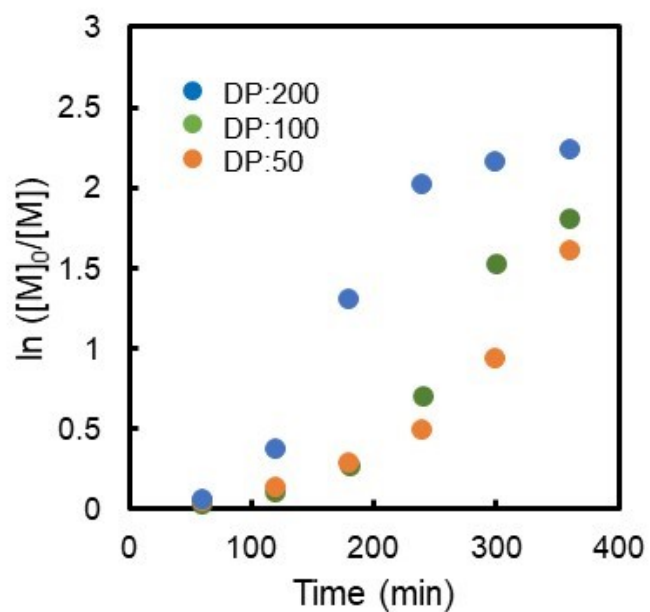


Figure S11. Pseudo first order plot of miniemulsion RTCP of MMA with Cl_4 as the catalyst using different target DPs. Target DP: 200 in (d, g), 100 in (e, h), and 50 in (f, i). Surfactant: TTAB, Temperature: 60 °C.

12. Particle size distributions of monomer-swollen PMMA particles prepared by miniemulsion RTCP.

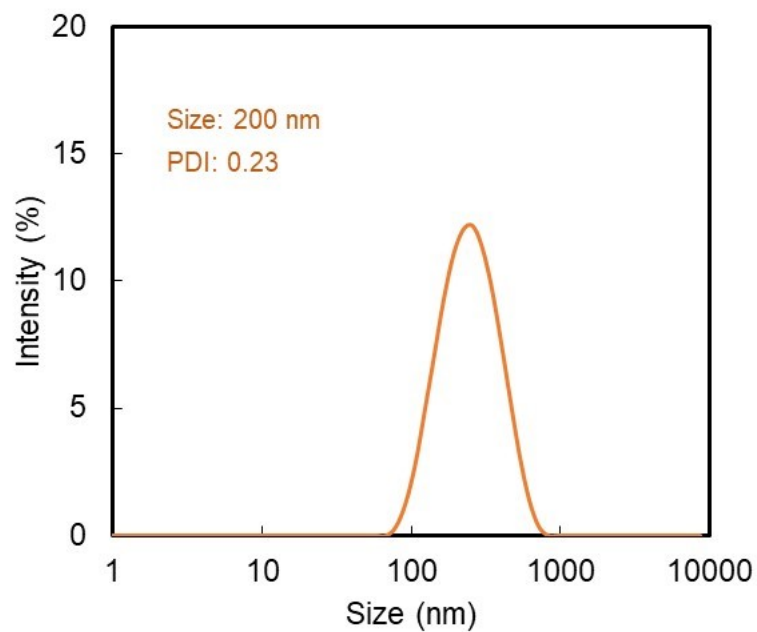


Fig. S12. Particle size distributions of monomer-swollen PMMA particles synthesized by the miniemulsion RTCPs for chain extension test.

13. Pseudo first order plots of miniemulsion RTCP of different monomers

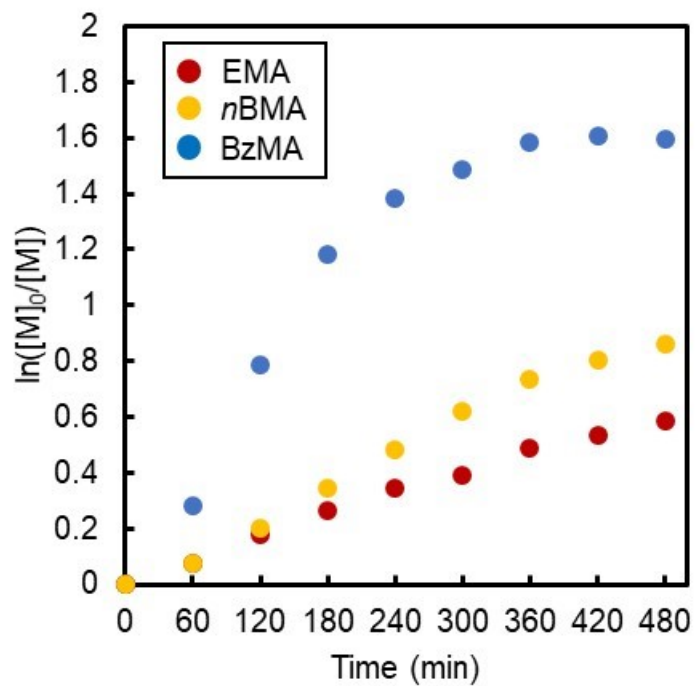


Figure S13. Pseudo first order plot of miniemulsion RTCP of EMA, *n*BMA, and BzMA with Cl_4 as the catalyst. Surfactant: Brij98, Temperature: 60 °C.