Electronic Supplementary Material (ESI) for Polymer Chemistry

Supporting Information

A Simple Combination of Higher Oxidation State FeX_3 and Phosphine or Amine Ligand for Living Radical Polymerization of Styrene, Methacrylate, and Acrylate

Hiroshi Aoshima,[a] Kotaro Satoh,[a] Tomonari Umemura,[b] and Masami Kamigaito*[a]

[a]Department of Applied Chemistry, Graduate School of Engineering, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan, [b]EcoTopia Science Insitute, Nagoya University, Furo-cho, Chikusa-ku, Nagoya 464-8603, Japan

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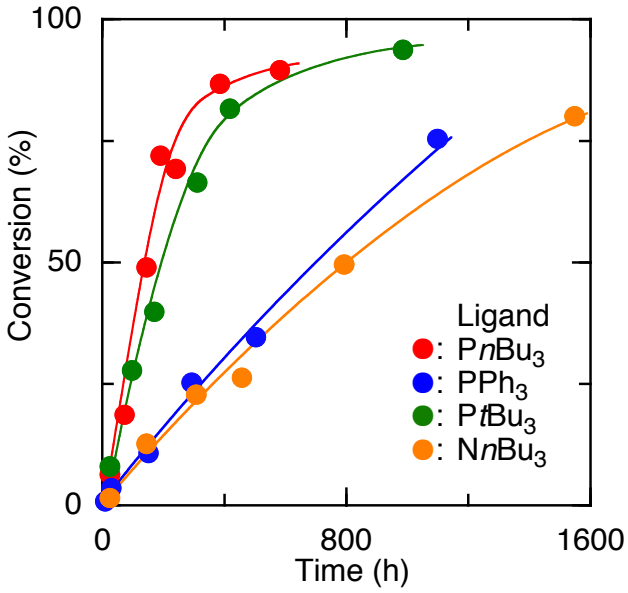

Figure S1. Time-conversion curves of living radical polymerization of styrene with **1**/$FeCl_3$/ligand system: $[styrene]_0$ = 4.0 M, $[\mathbf{1}]_0$ = 40 mM, $[FeCl_3]_0$ = 10 mM, $[ligand]_0$ = 20 mM in toluene at 100 °C.

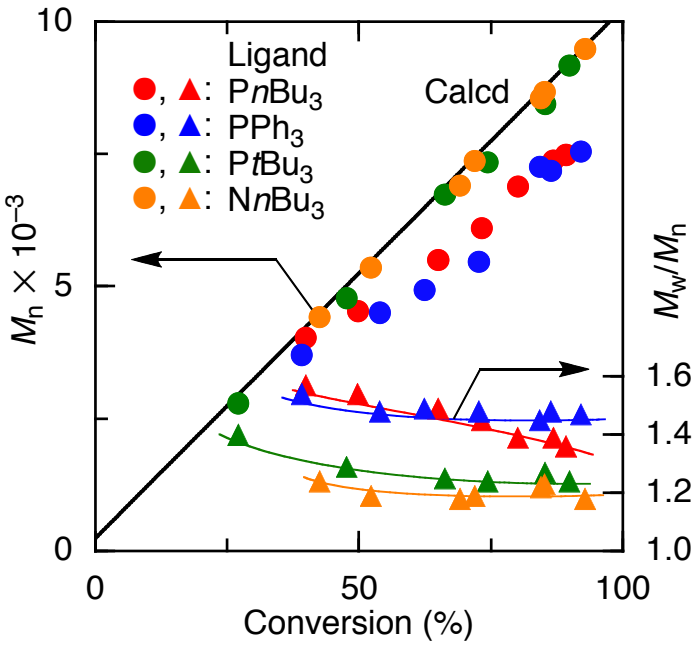

Figure S2. M_n and M_w/M_n of PMMA obtained in the living radical polymerization of MMA with $FeCl_3$/ligand: $[MMA]_0$ = 2.0 M, $[\mathbf{1}]_0$ = 20 mM, $[FeCl_3]_0$ = 10 mM, $[ligand]_0$ = 20 mM in toluene at 100 °C.

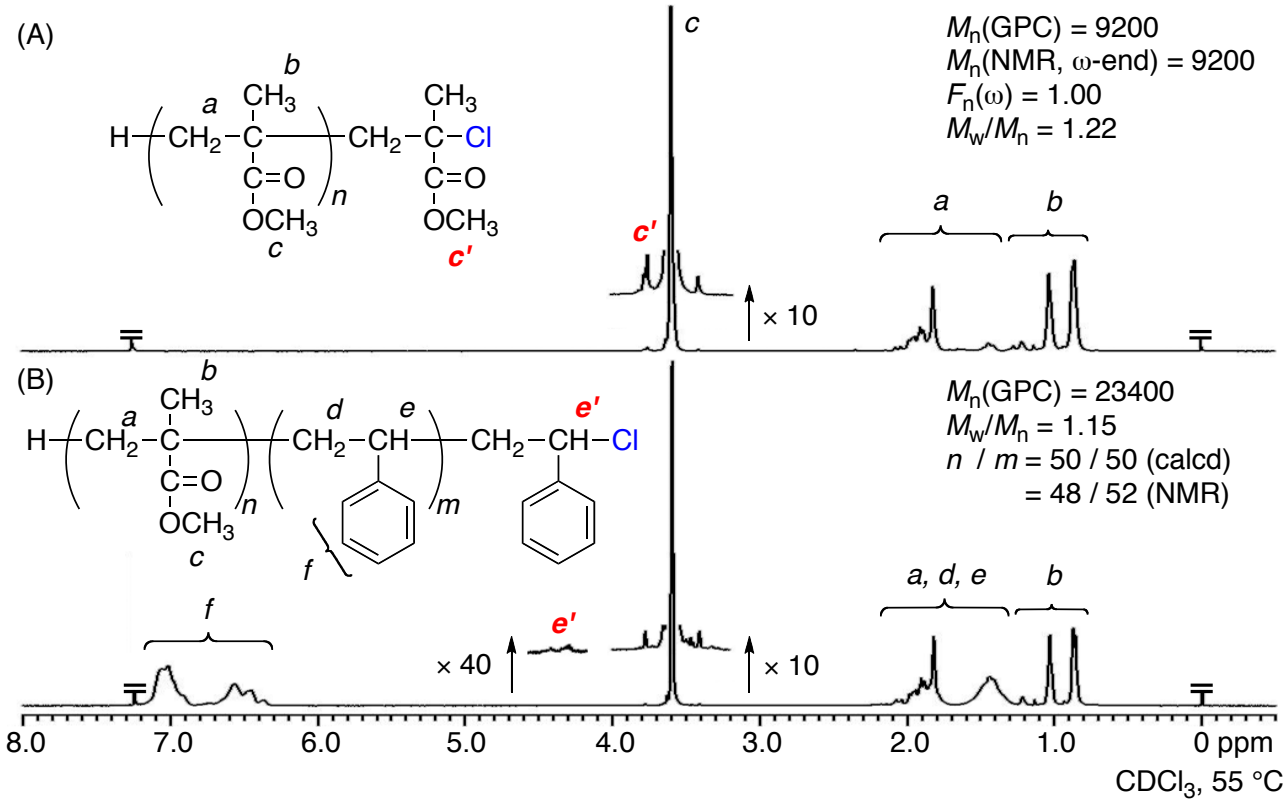

Figure S3. ^{1}H NMR spectra ($CDCl_3$, 55 °C) of PMMA-Cl (A) and PMMA-*b*-polystyrene block copolymer (B): (A) was synthesized with **1**/$FeCl_3$/P*t*Bu_3 (20/10/10 mM) in toluene at 80 °C (MMA Conversion = 63%). Styrene was polymerized with the PMMA-Cl/$FeCl_3$/P*n*Bu_3 (40/10/20 mM) in toluene at 100 °C: $[styrene]_0$ = 4.0 M.

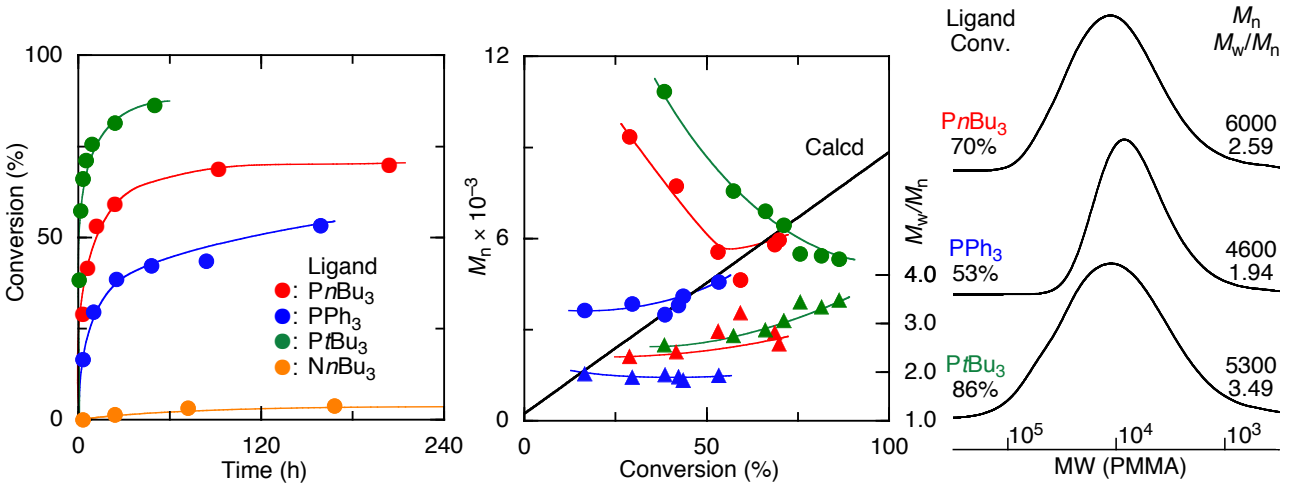

Figure S4. Time-conversion, M_n, M_w/M_n, and SEC curves of living radical polymerization of MA with $FeCl_3$/ligand: $[MA]_0$ = 2.0 M, $[\mathbf{1}]_0$ = 20 mM, $[FeCl_3]_0$ = 10 mM, [ligand]$_0$ = 20 mM in toluene at 100 °C.

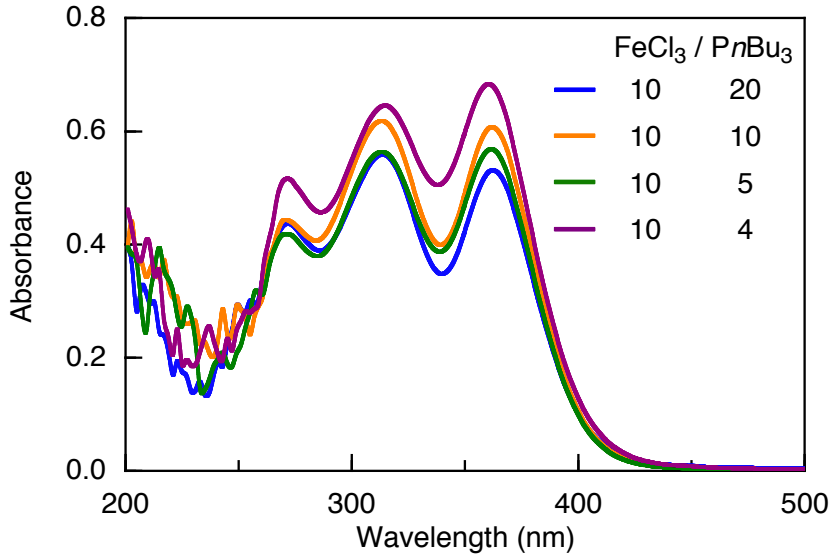

Figure S5. UV–Vis spectra of $FeCl_3$/P*n*Bu$_3$: $[FeCl_3]_0$ = 0.10 mM, $[PnBu_3]_0$ = 0.04–0.20 mM in EtOAc at 25 °C.