Supporting Information

RAFT-synthesized polymers based on new ferrocenyl methacrylates and electrochemical properties

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1. General information

In situ ^{1}H-NMR RAFT polymerizations were carried out in toluene-d_8 at 70°C using CPDB as chain transfer agent (CTA) and AIBN as initiator, at a molar ratio [CPDB]/[AIBN]=5 and [monomers] = 1.5 M (0.45 mmol of monomer **2**, **5**, **8** or **11** in 0.30 mL of toluene-d_8). Each kinetic was followed by ^{1}H-NMR during 15 hours. The concentration of CPDB was adjusted to the final desired number-average molar mass (M_n^{tg}), taking into account a full conversion of monomers and M_n^{th}, calculated as follows:

$$M_n^{th} = \frac{[M]_0}{[CTA]_0} \times M_{monomer} \times conv. + M_{CTA}$$

Where $[M]_0$ and $[CTA]_0$ are the initial concentration monomer and CTA respectively, $M_{monomer}$ and M_{CTA} are the molar mass of the monomer and CTA respectively, and *conv*. is the monomer conversion.

2. ^{1}H-NMR characterizations of monomers **2**, **5**, **8** and **11**

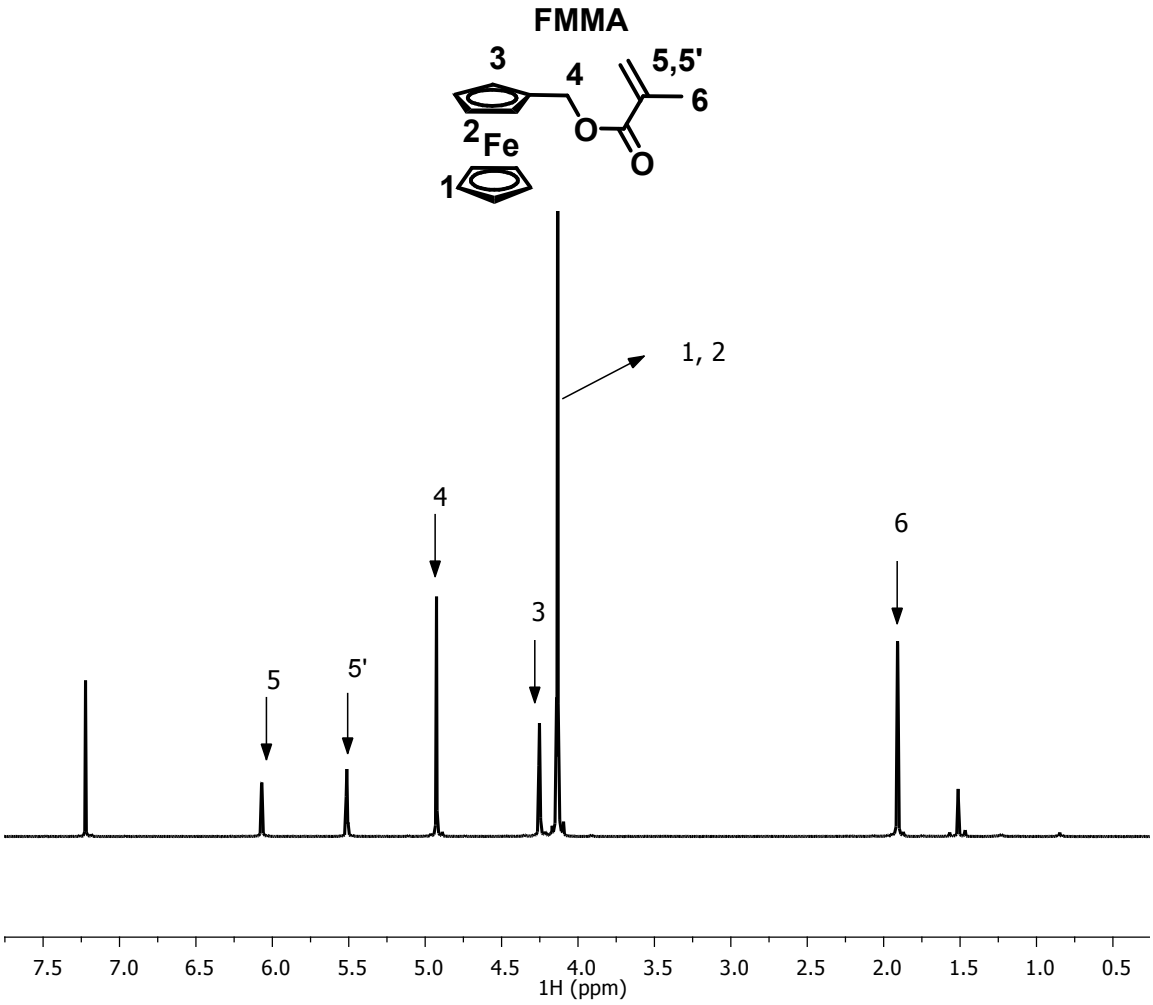


Figure S1. ^{1}H-NMR spectrum of FMMA (**2**) in $CDCl_3$.

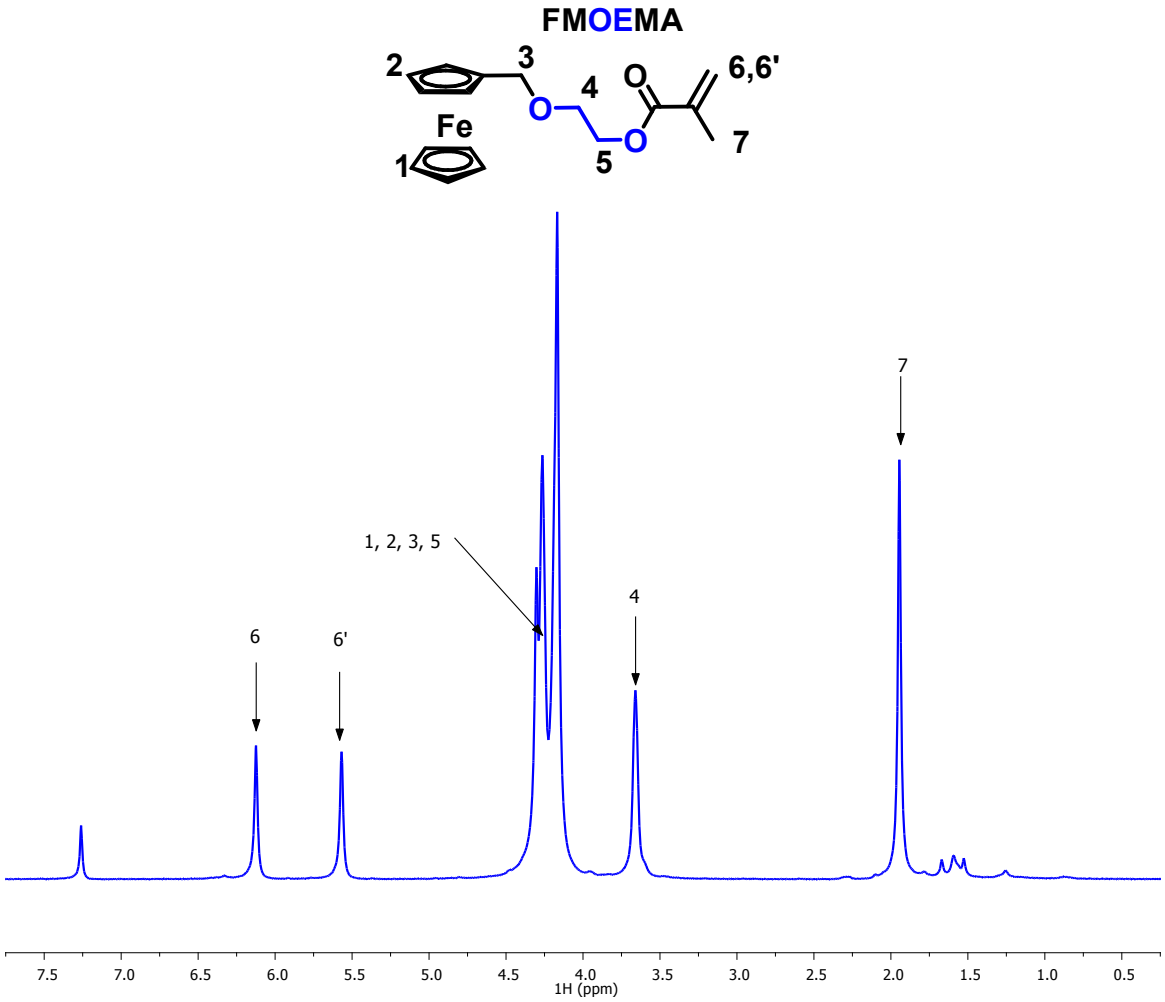


Figure S2. ^{1}H-NMR spectrum of FMOEMA (**5**) in $CDCl_3$.

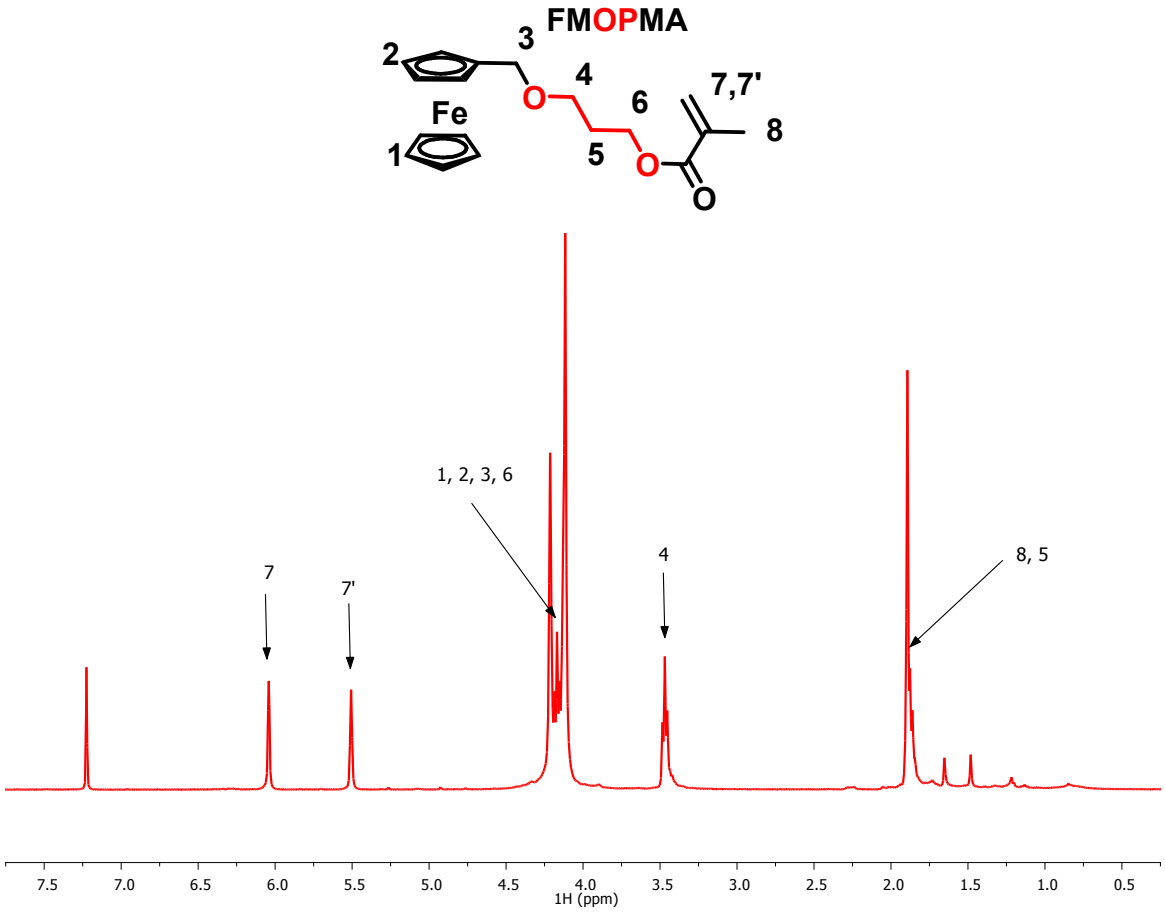


Figure S3. ^{1}H-NMR spectrum of FMOPMA (**8**) in $CDCl_3$.

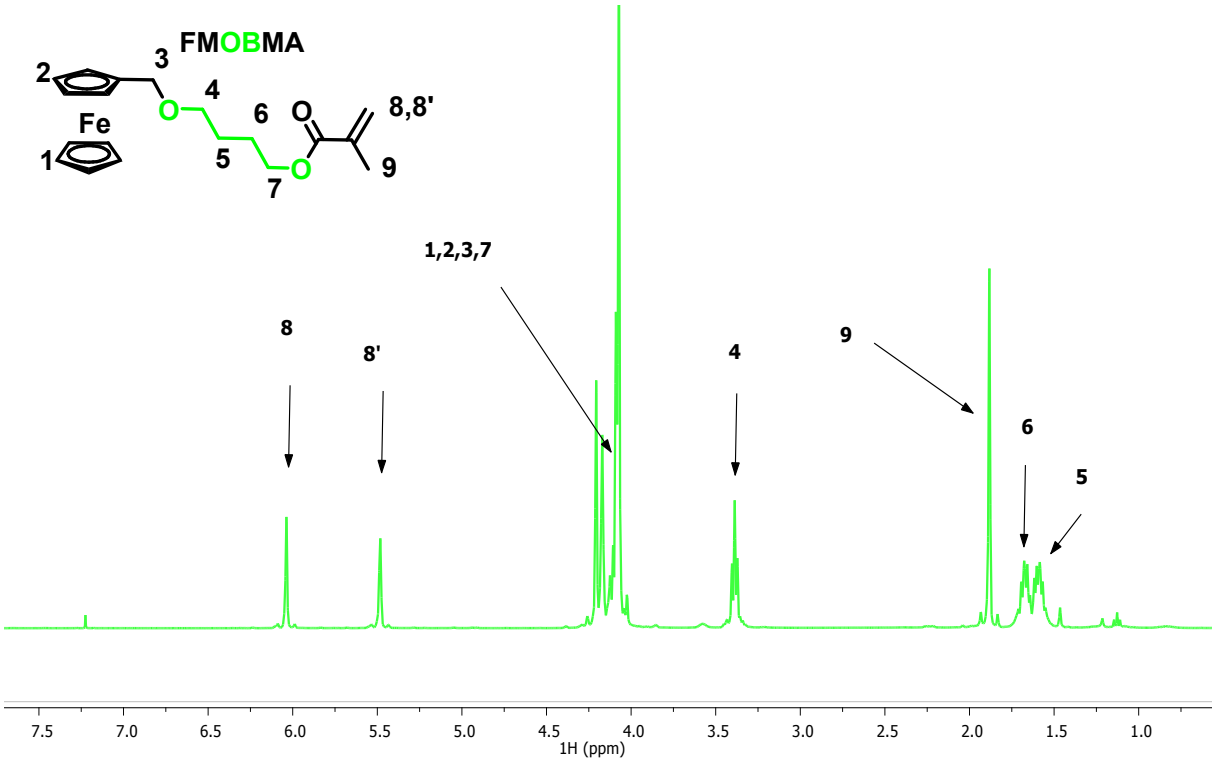


Figure S4. ^{1}H-NMR spectrum of FMOBMA (**11**) in $CDCl_3$.

3. Polymerization kinetics for monomers **2**, **5**, **8** and **11**

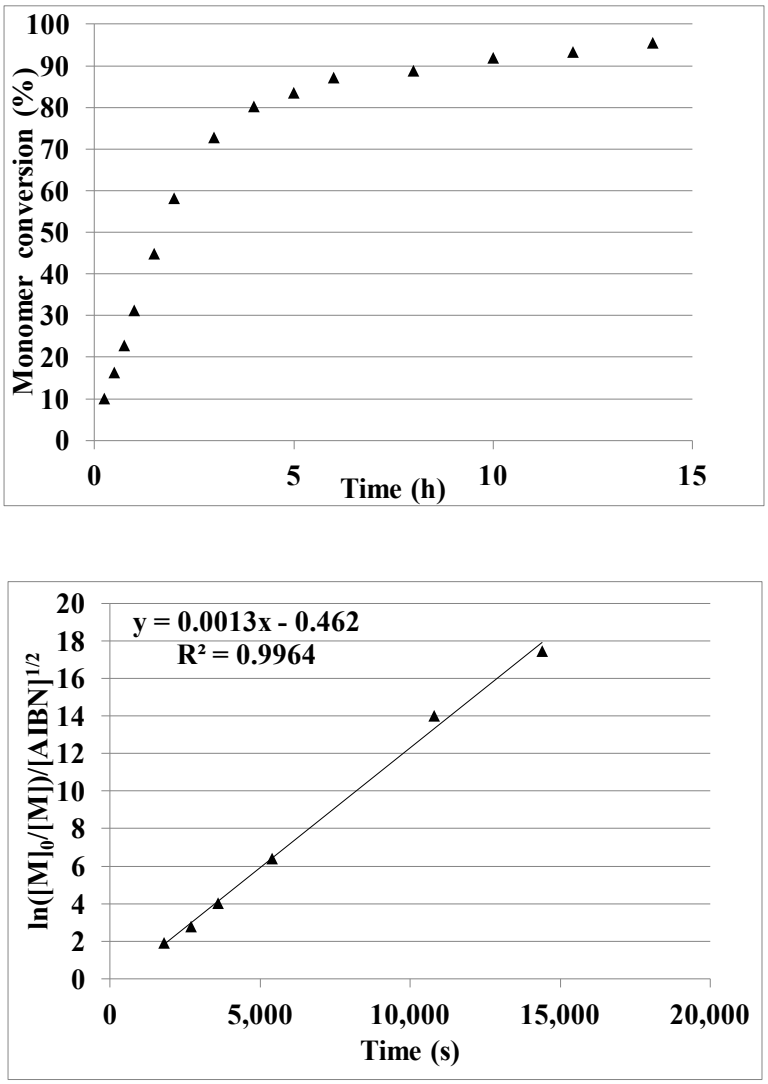


Figure S5. Polymerization kinetics of FMMA **2.**

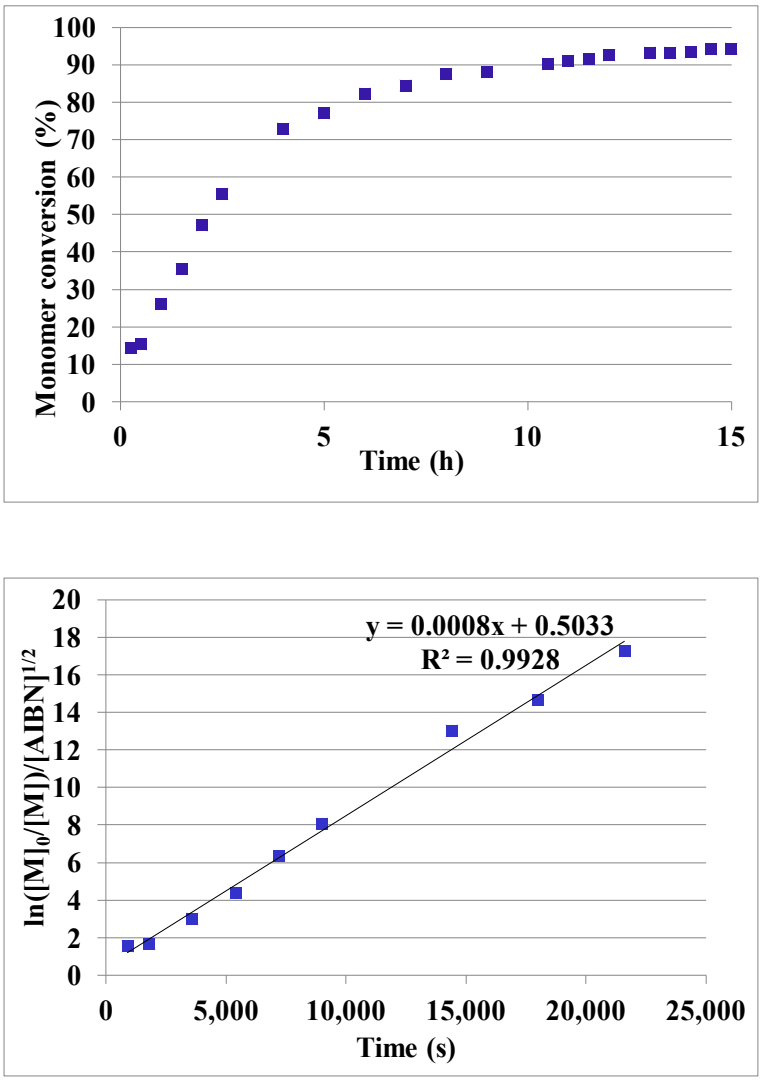


Figure S6. Polymerization kinetics of FMOEMA **5**

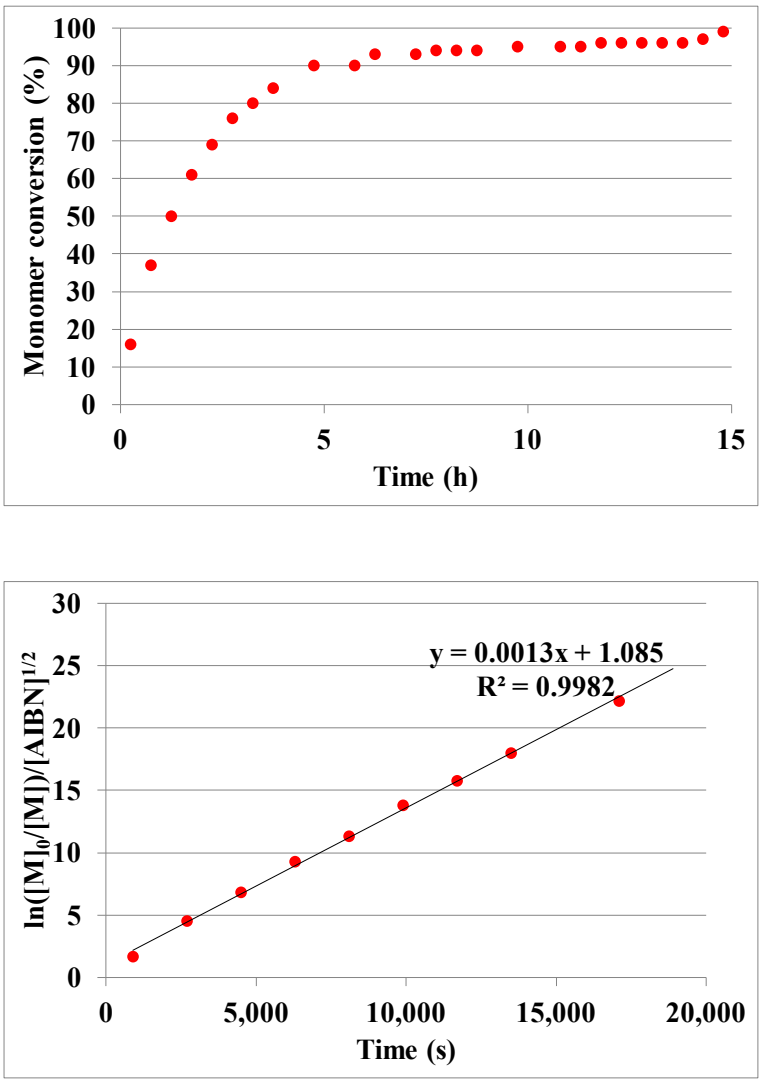


Figure S7. Polymerization kinetics of FMOPMA **8**

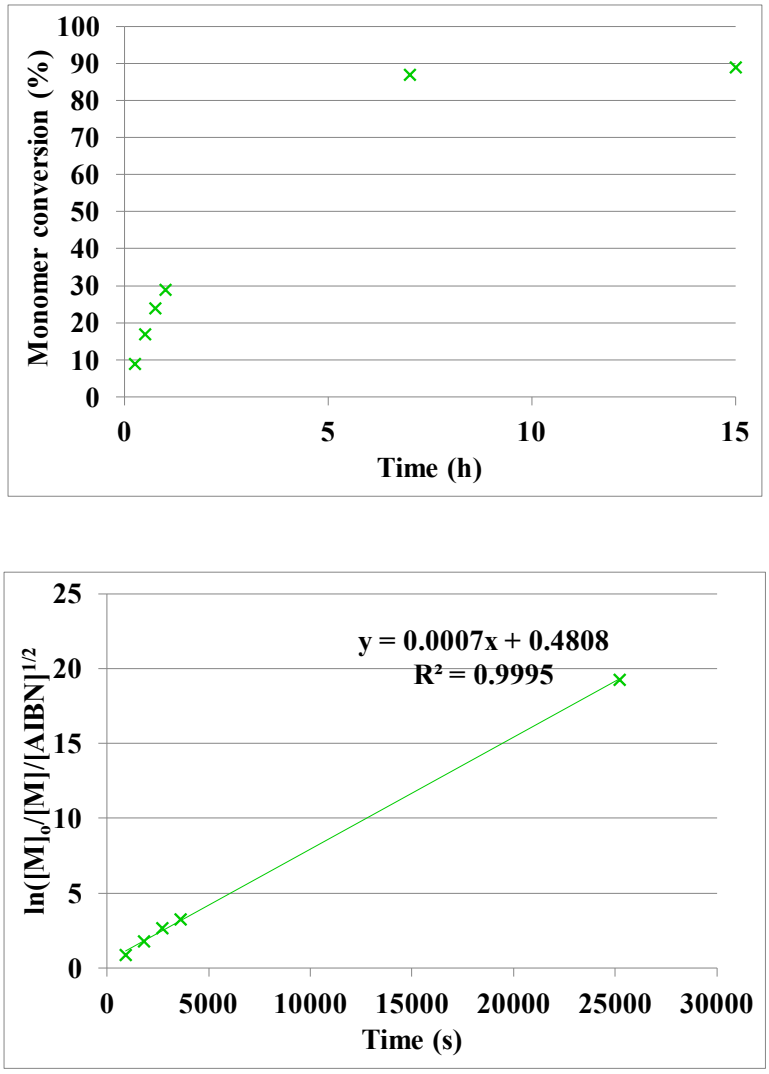


Figure S8. Polymerization kinetics of FMOBMA **11**

4. Comparison of kinetics for monomers **2**, **5**, **8** and **11**

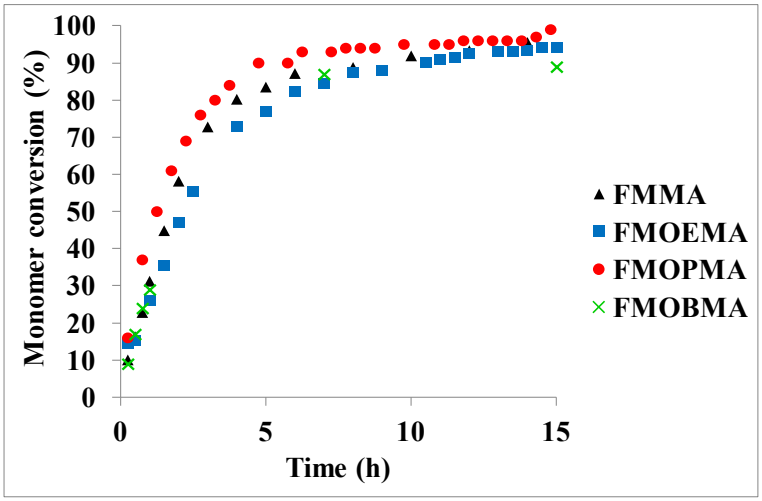
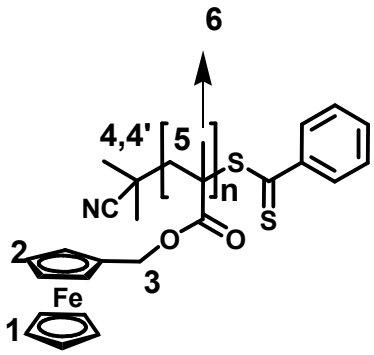


Figure S9. Comparison of kinetics for monomers **2**, **5**, **8** and **11**.

5. ^{1}H-NMR characterizations of homopolymers



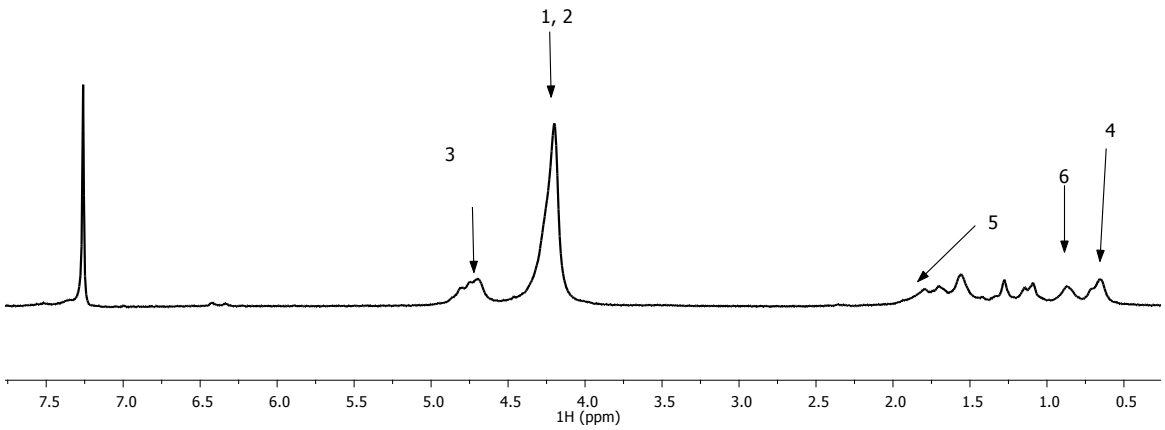
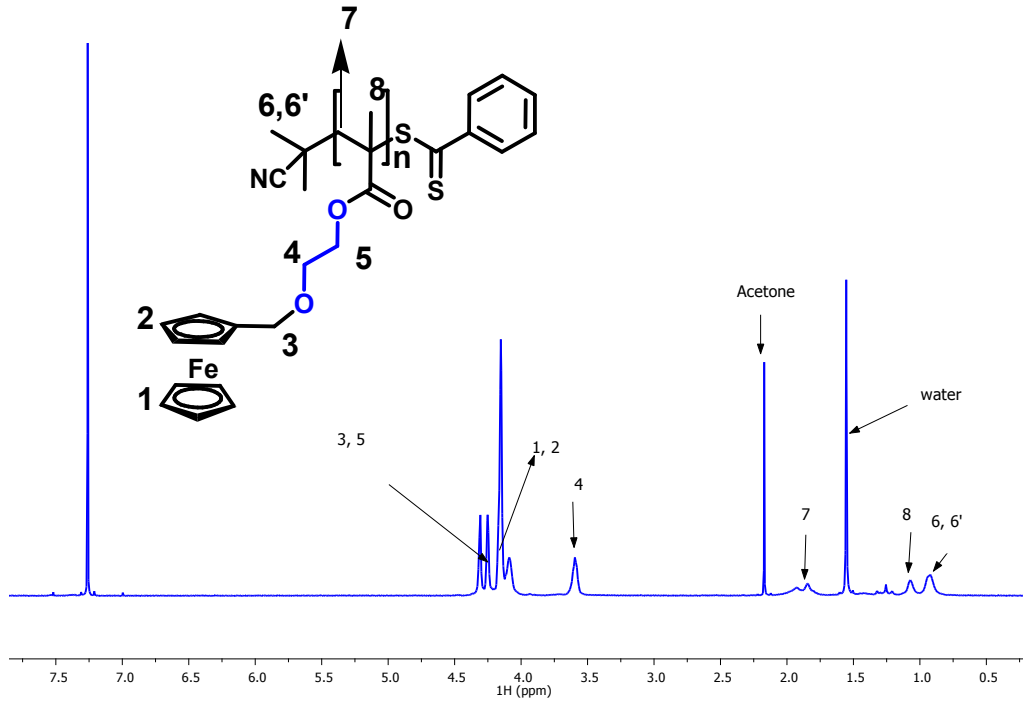


Figure S10. ^{1}H-NMR spectrum of pFMMA in $CDCl_3$.



6, 6’

Figure S11. ^{1}H-NMR spectrum of pFMOEMA in $CDCl_3$.

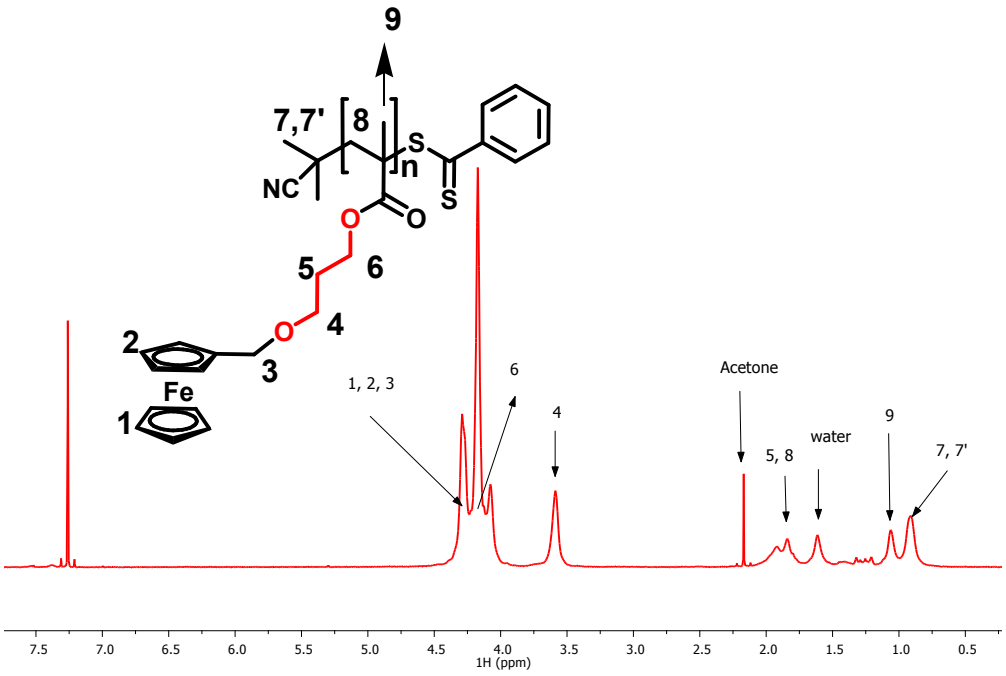


Figure S12. ^{1}H-NMR spectrum of pFMOPMA in $CDCl_3$.

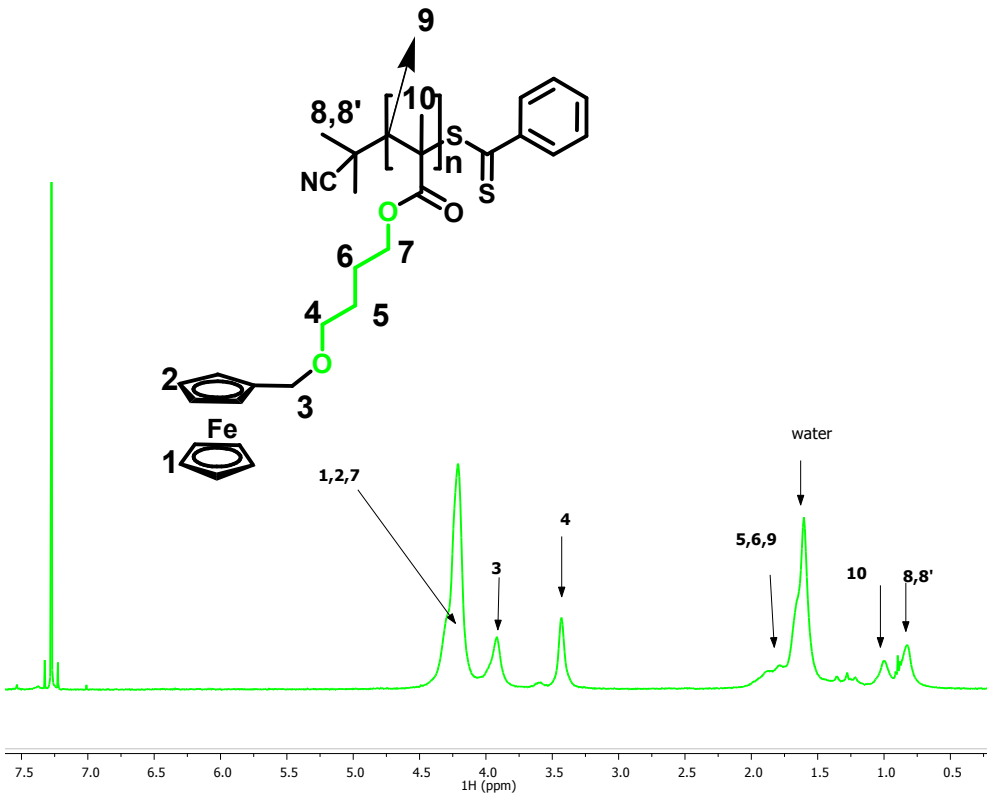


Figure S13. ^{1}H-NMR spectrum of pFMOBMA in $CDCl_3$.

6. DSC thermograms of homopolymers

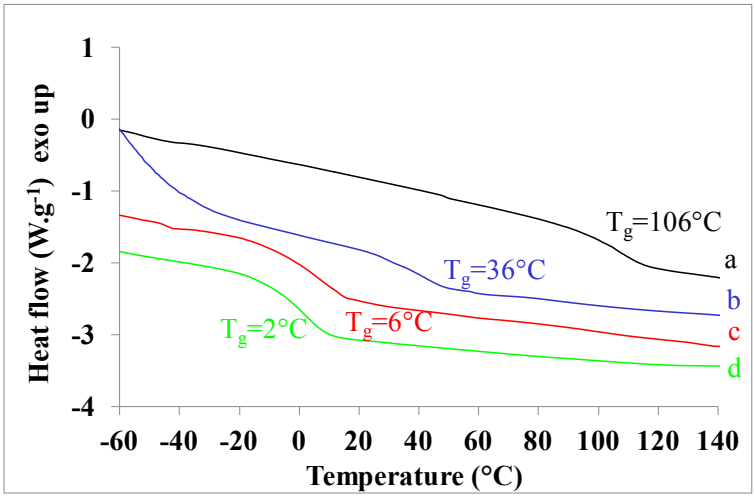


Figure S14. DCS thermograms of (a) pFMMA, (b) pFMOEMA, (c) pFMOPMA and (d) pFMOBMA.

7. Electrochemical properties of monomers and homopolymers

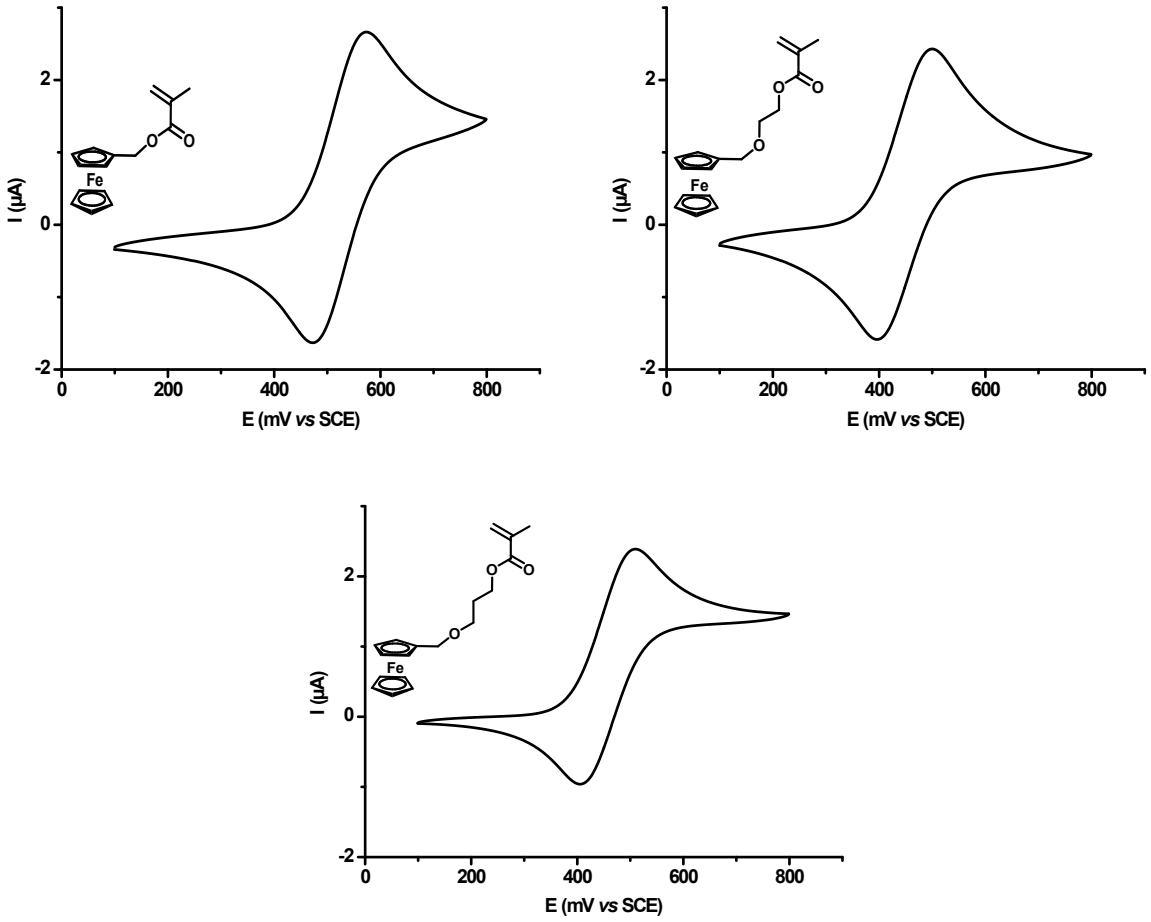


Figure S15. Cyclic voltammograms of FMMA, FMOEMA, FMOPMA and at 1.10^{-3}M in 0.1M *n*-Bu_4NPF_6/CH_2Cl_2 in both cases. Scan rate: 10 mV/s, Pt working electrode, SCE reference.

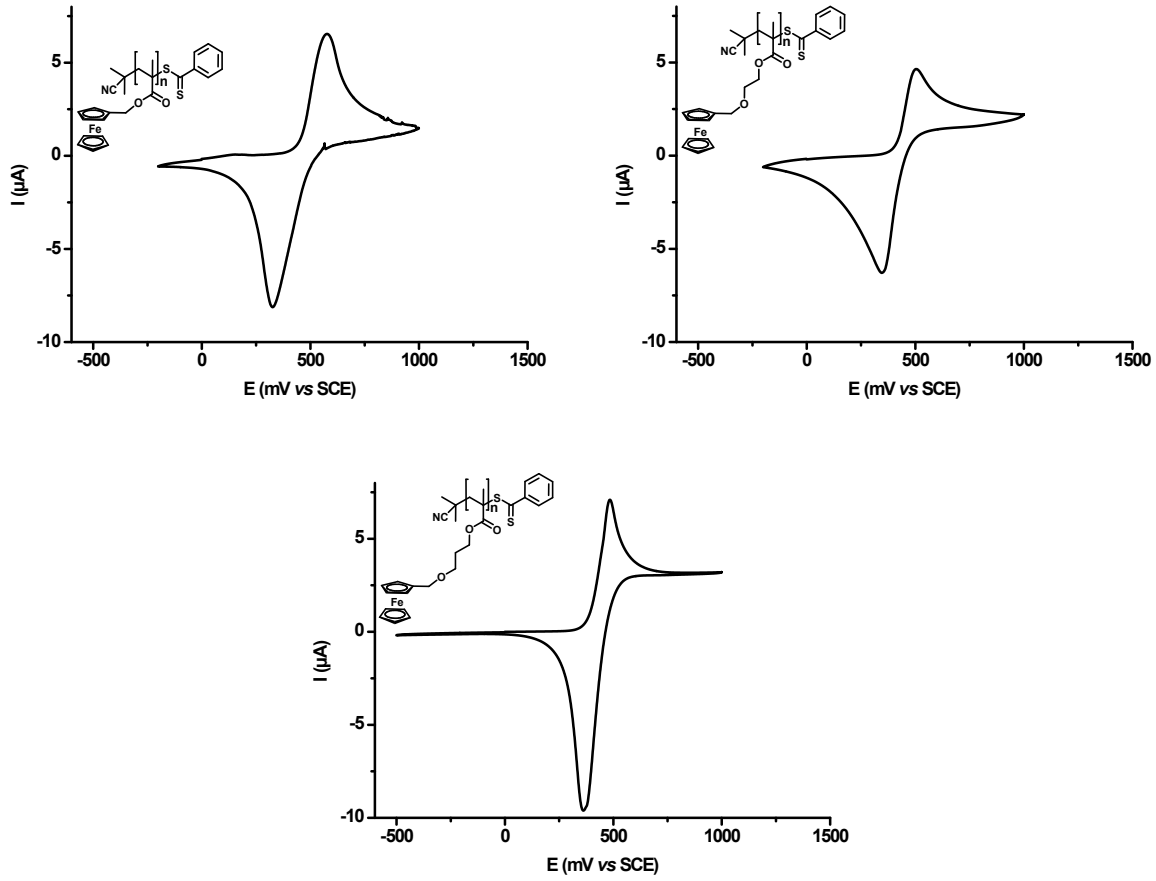


Figure S16. Cyclic voltammograms of pFMMA, pFMOEMA, pFMOPMA, at 1.10^{-4}M in 0.1M *n*-Bu_4NPF_6/CH_2Cl_2 in both cases. Scan rate: 10 mV/s, Pt working electrode, SCE reference.