Electronic Supplementary Material (ESI) for RSC Advances.


## Supporting Information for

# Controlled RAFT Synthesis of Side-Chain Oleic Acid Containing Polymers and Their Post-Polymerization Functionalization

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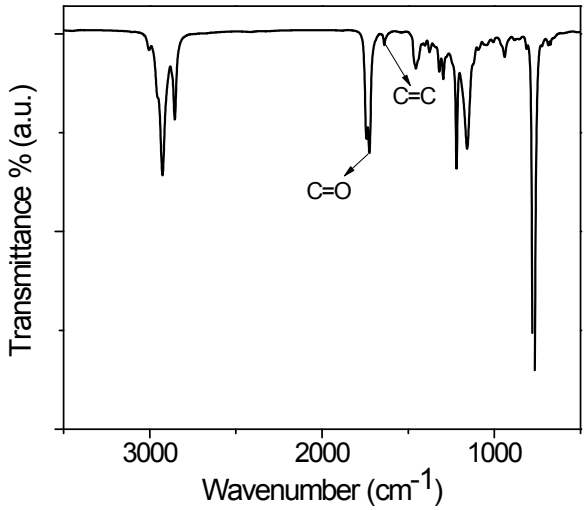



**Fig. S1** FT-IR spectrum of MAEO.

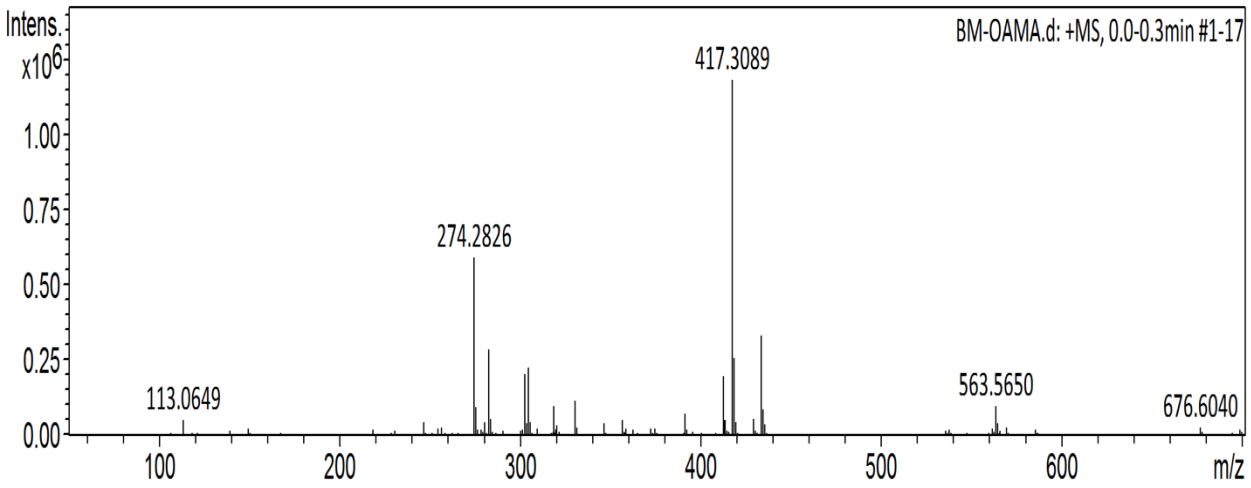



**Fig. S2** ESI-MS spectrum of MAEO (calculated *m*/*z* for [M + $Na^+$]: 417.308 and observed: 417.309).

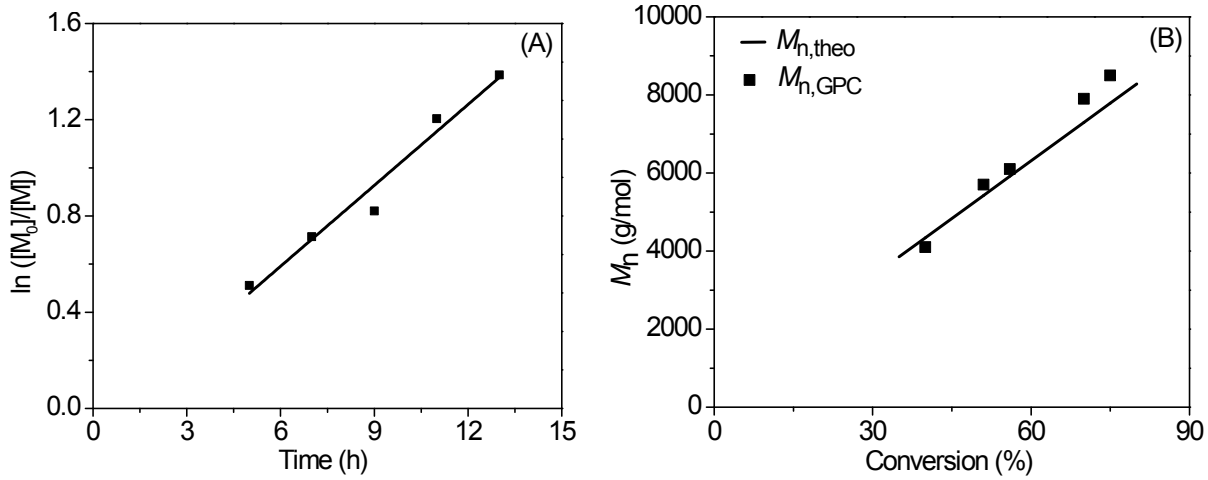



**Fig. S3** First-order kinetic plot for the RAFT polymerization of MAEO (A) and the corresponding $M_n$ versus monomer conversion plot (B). Polymerization reaction was carried out at [MAEO]/[CDP]/[AIBN] = 25:1:0.2 in THF at 60 $^oC$.

**Table S1** Solubility of MAEO and PMAEO at room temperature in different solvents.

| Solvent | MAEO | PMAEO |
|---|---|---|
| Water | - | - |
| Acetone | + | + |
| Chloroform | + | + |
| DCM | + | + |
| Methanol | + | - |
| Ethanol | + | - |
| DMF | + | - |
| DMSO | + | - |
| THF | + | + |
| Pet ether | + | + |
| Diethyl ether | + | + |
| Ethyl acetate | + | + |
| Hexanes | + | + |
| Toluene | + | + |
| Acetonitrile | + | - |

The symbols (+) and (-) indicate soluble and insoluble, respectively.

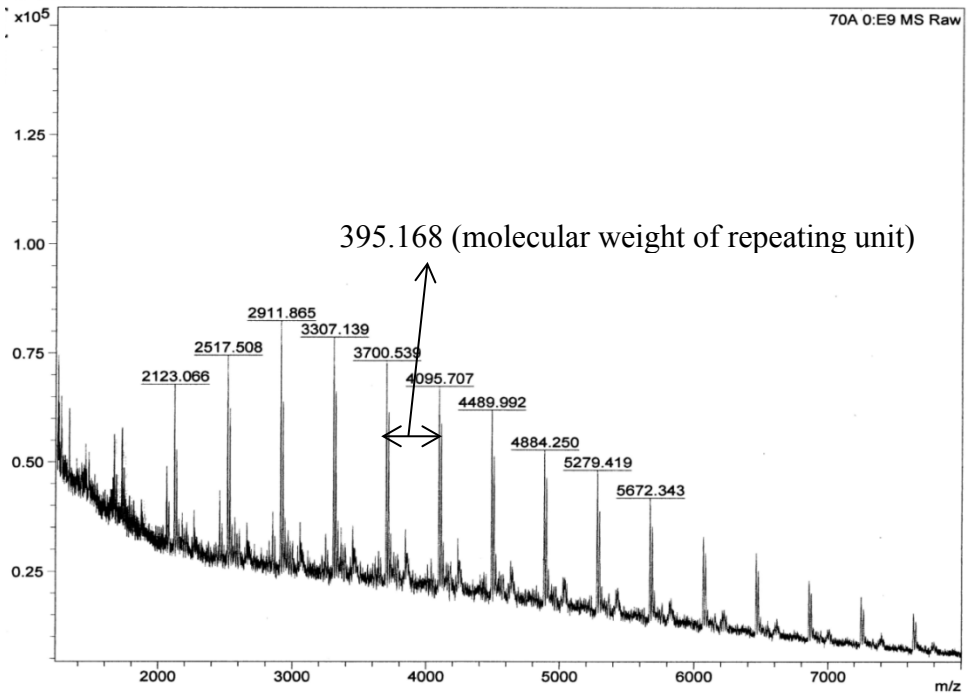



**Fig. S4** MALDI-TOF spectrum of PMAEO ($M_{n,GPC}$ = 3000 g/mol).

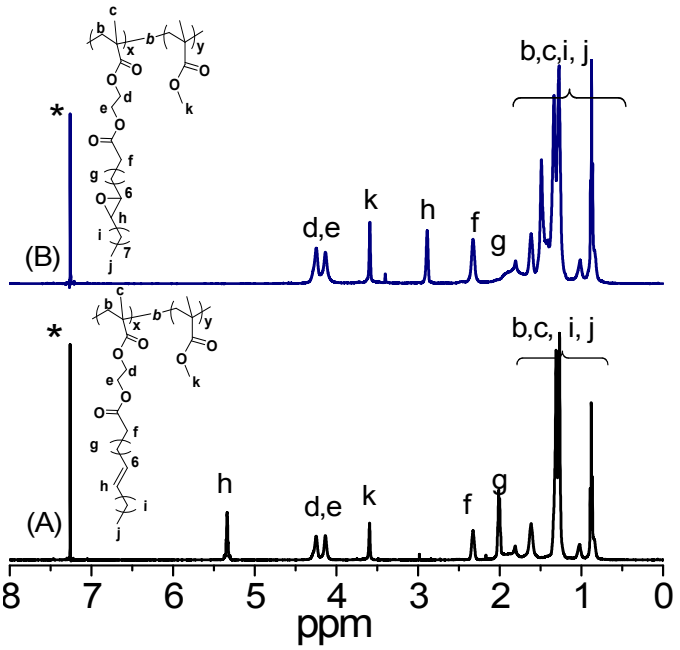



**Fig. S5** $^{1}$H NMR spectra of PMAEO-*b*-PMMA (A) and PMAEO-*b*-PMMA in epoxide form (B). The * indicates $CDCl_3$.

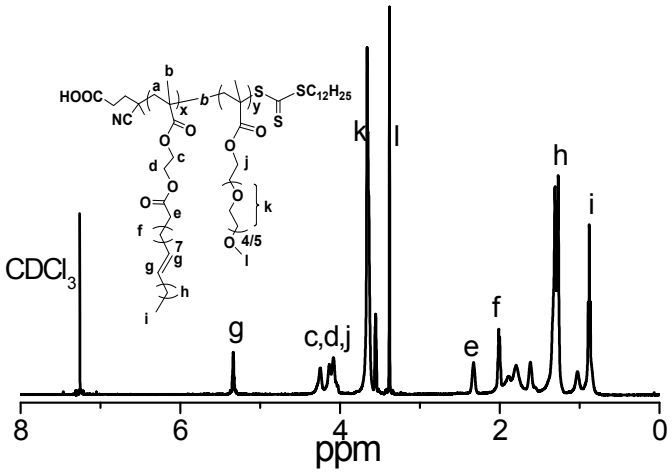



**Fig. S6** $^{1}$H NMR spectra of PMAEO-*b*-PPEGMA.

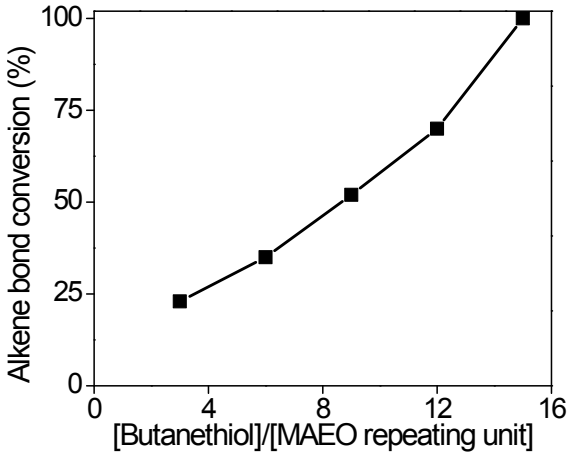



**Fig. S7.** Alkene bond conversion versus ratios of [butanethiol]/[MAEO repeating unit] plot for PMAEO reacting with butanethiol at a constant [MAEO repeating unit]/[AIBN] = 1:1 in THF at 60 °C (reaction time = 12 h). Conversion values were calculated by $^{1}$H NMR spectroscopy based on the consumption of the alkene bonds.

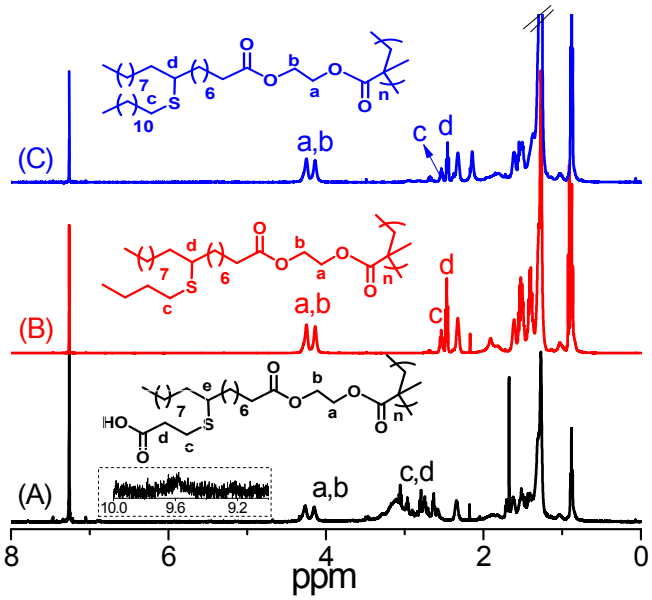
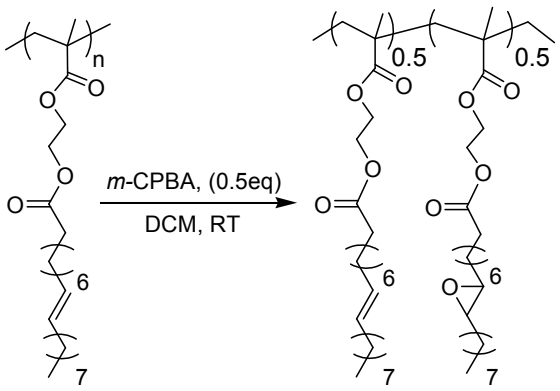



**Fig. S8** $^{1}$H NMR spectra of products from thiol-ene reaction of PMAEO with (A) 3-mercaptopropanoic acid, (B) butanethiol and (C) dodecanethiol. The inset corresponds to -COO*H* peak.




**Scheme S1** Post-polymerization modifications of the double bonds in PMAEO *via* epoxidation reaction at [MAEO repeating unit]/[mCPBA] = 2:1 ratio.

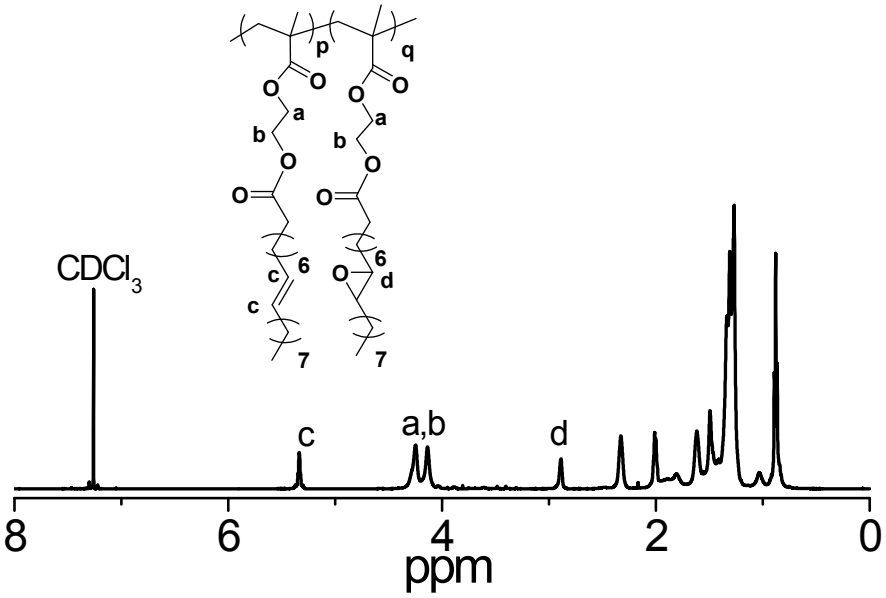



**Fig. S9** $^{1}$H NMR spectrum of epoxide of PMAEO obtained from the reaction at [MAEO repeating unit]/[mCPBA] = 2:1 ratio.