Electronic Supplementary Information

for

A Facile and Highly Efficient Strategy for Esterification of Poly (Meth) Acrylic Acid with halogenated compounds at Room Temperature Promoted by 1, 1, 3, 3-Tetramethylguanidine

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Fig. S1 Esterification of PMAA with methyl iodide in DMSO at room temperature (a) at [PMAA] = 0.5 unit mol / L and (b) [PMAA] = 0.25 unit mol / L.

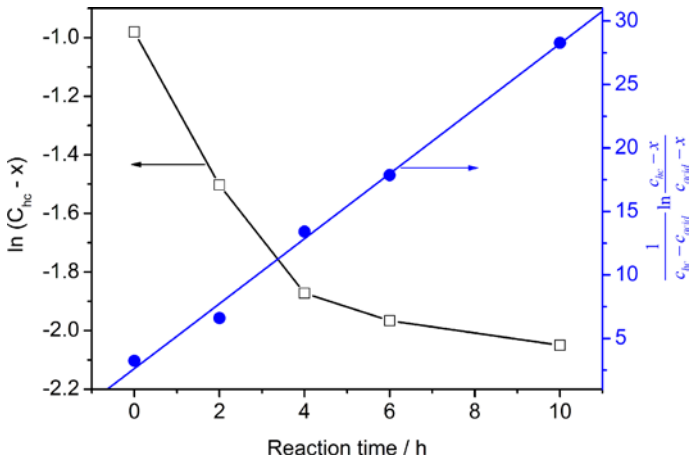

Fig. S2 Kinetics of the reaction of PMAA (0.5 unit mmol) with propargyl bromide (0.75 mmol) in DMSO (1 ml) and water (1ml) mixed solvent at room temperature using TMG (0.5 mmol) as promoter versus reaction time. Where c_{hc} and c_{acid} are the concentrations of halogenated compound and carboxyl groups before reaction. x stands for the consumption of halogenated compound at the time of t. It can be seen that a plot of $(1/(c_{hc} - c_{acid}))\ \ln\ ((c_{hc} - x)/(c_{acid} - x))$ vs. reaction time shows a straight line with slope k, which suggests that the TMG promoted esterification of PMAA with halogenated compounds at room temperature is a S_N2 reaction, if dealing with one carboxyl group as one molecule.

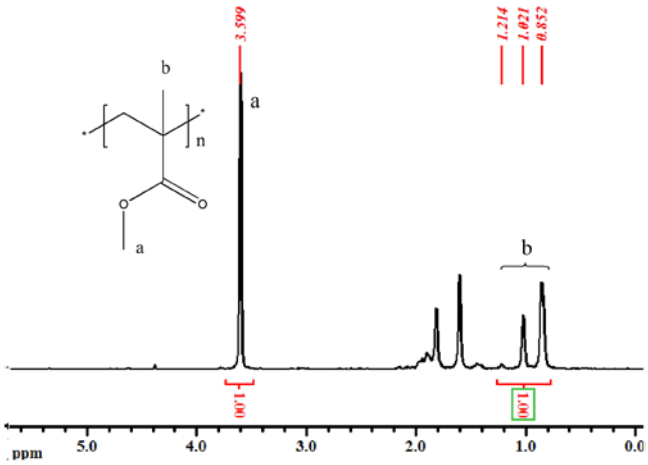

Fig. S3 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (methyl methacrylate) (PMMA)

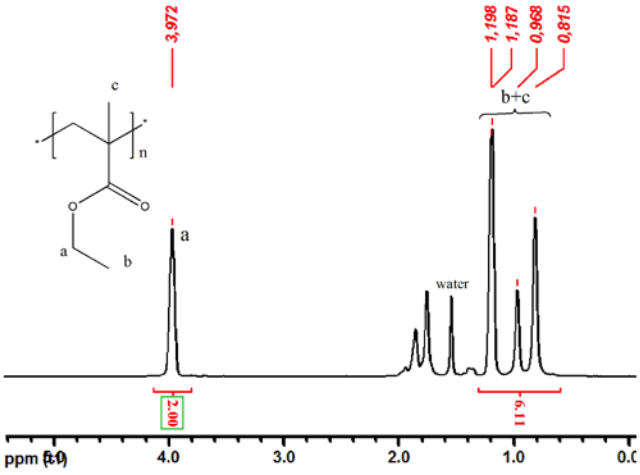

Fig. S4 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (ethyl methacrylate) (PEMA)

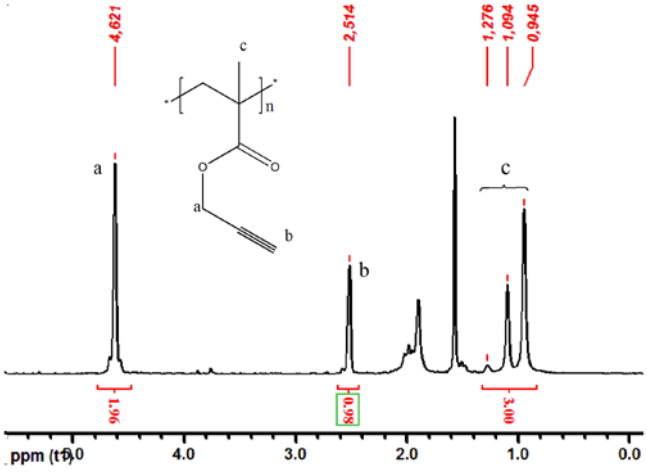

Fig. S5 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (propargyl methacrylate) (PPMA)

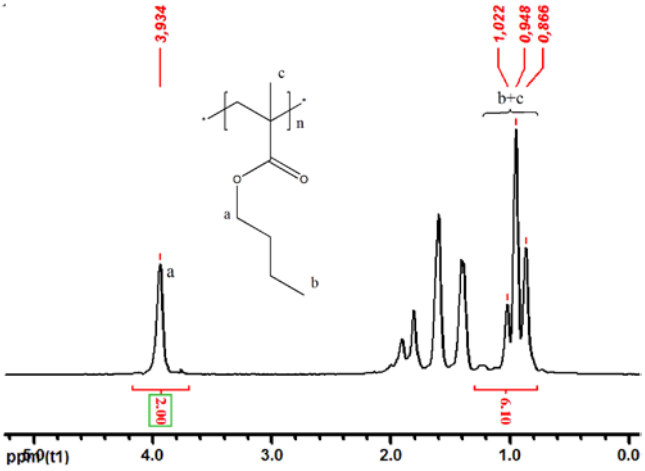

Fig. S6 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (n-butyl methacrylate) (PnBMA)

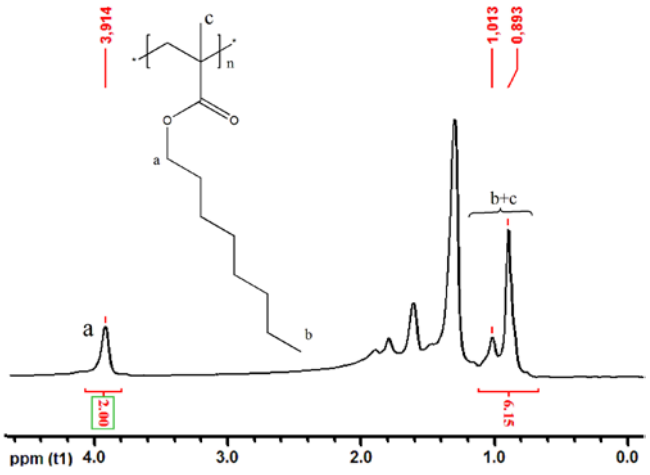

Fig. S7 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (n-octyl methacrylate) (PnOMA)

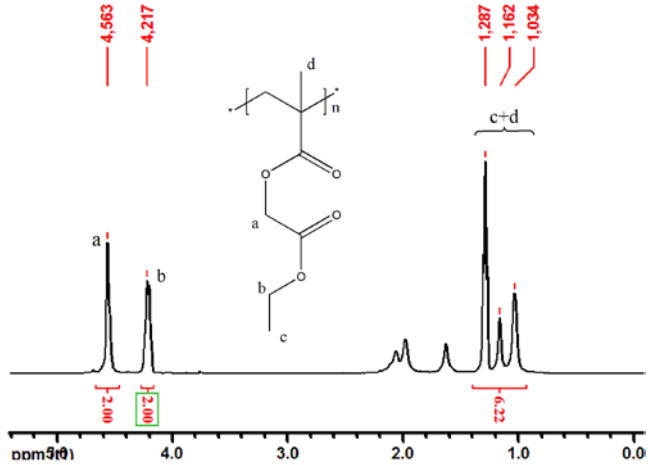

Fig. S8 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (2-ethoxy-2-oxoethyl methacrylate) (PEOOEMA)

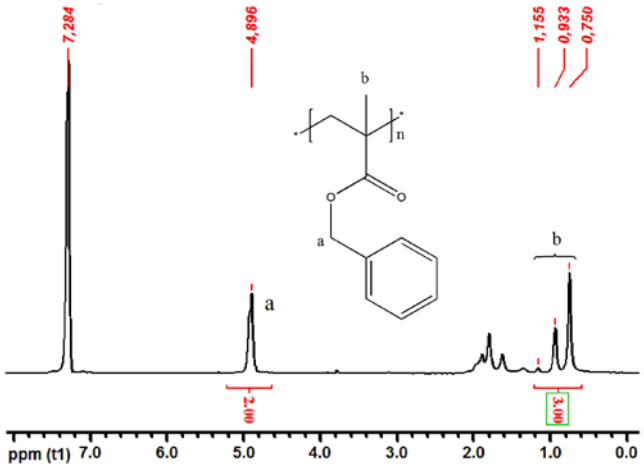

Fig. S9 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (benzyl methacrylate) (PBMA)

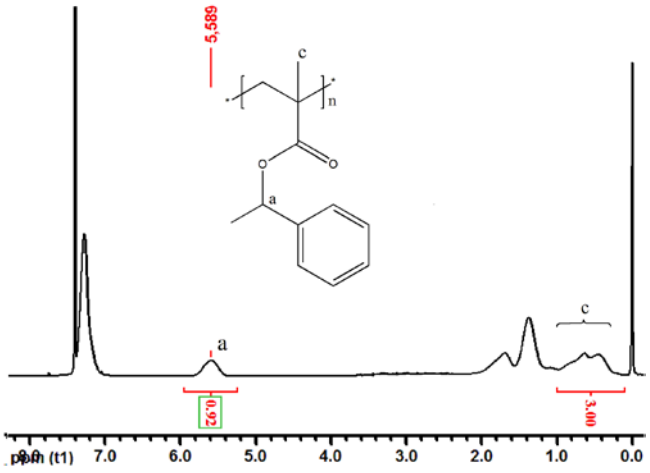

Fig. S10 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (1-phenylethyl methacrylate) (PPEMA)

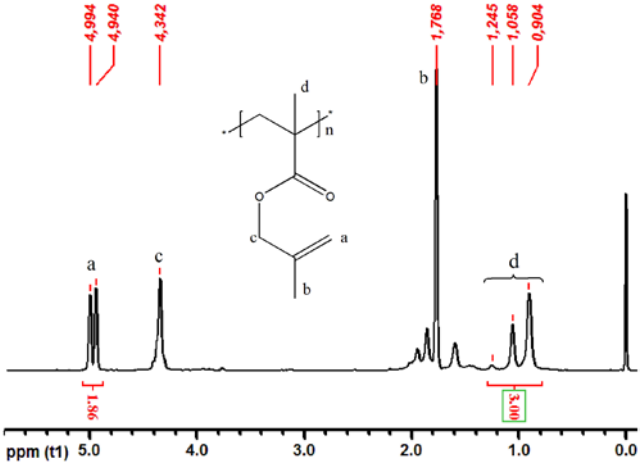

Fig. S11 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (2-methylallyl methacrylate) (PMAMA)

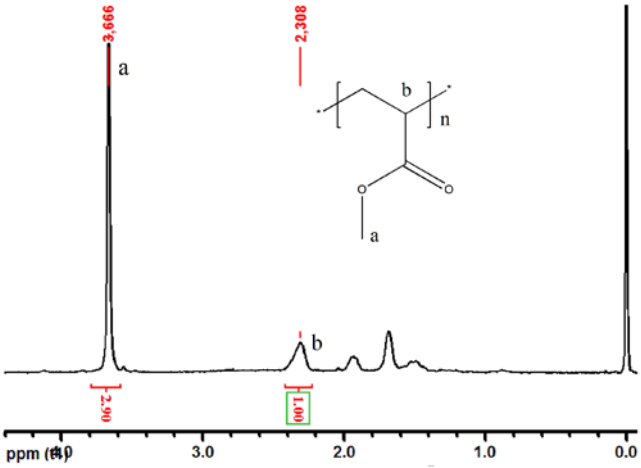

Fig. S12 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (methyl acrylate) (PMA)

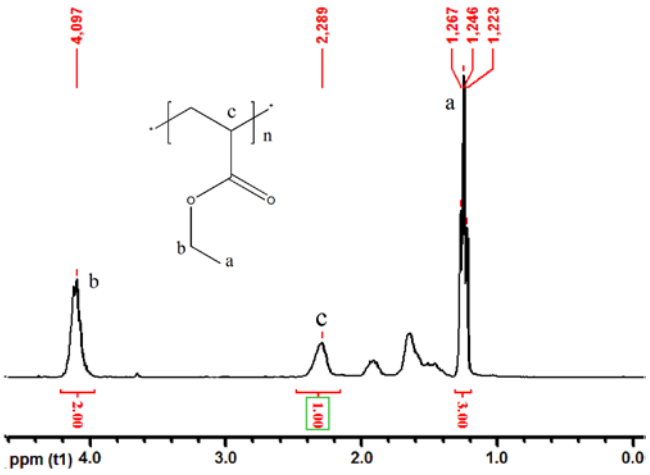

Fig. S13 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (ethyl acrylate) (PEA)

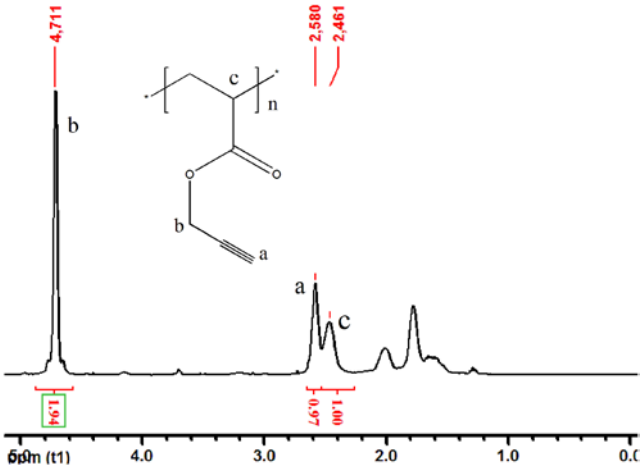

Fig. S14 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (propargyl acrylate) (PPA)

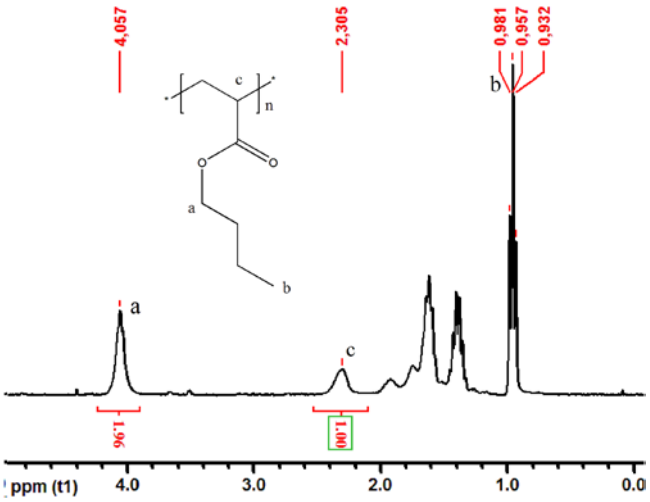

Fig. S15 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (n-butyl acrylate) (PnBA)

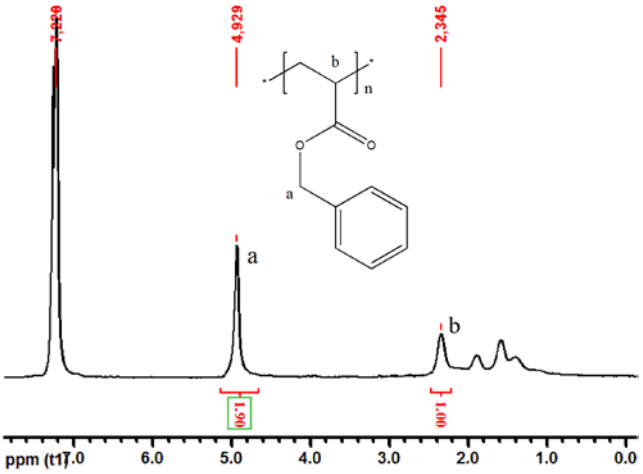

Fig. S16 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (benzyl acrylate) (PBA)

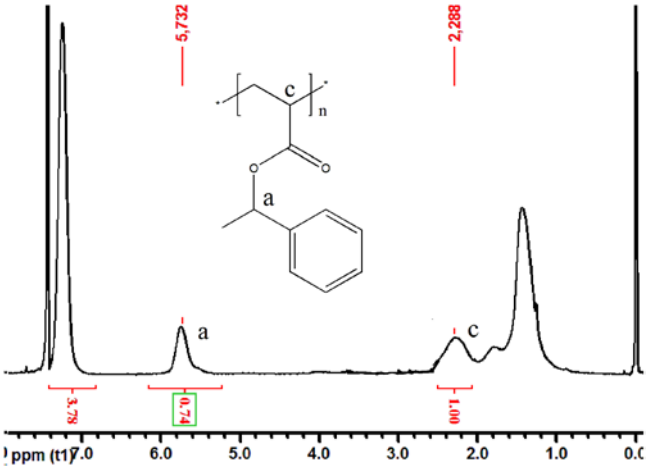

Fig. S17 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (1-phenylethyl acrylate) (PPEA)

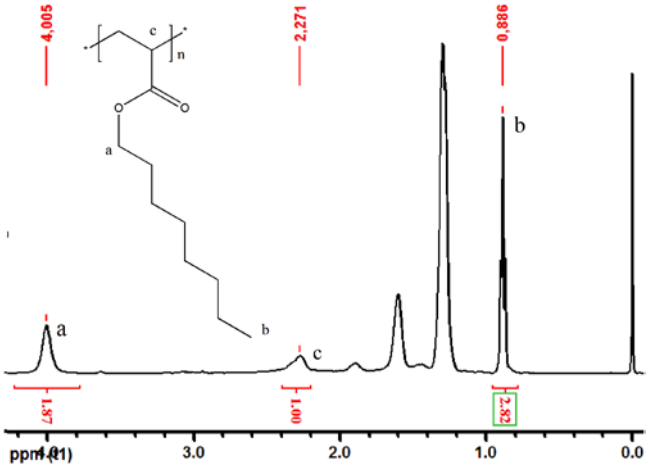

Fig. S18 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (n-octyl acrylate) (PnOA)

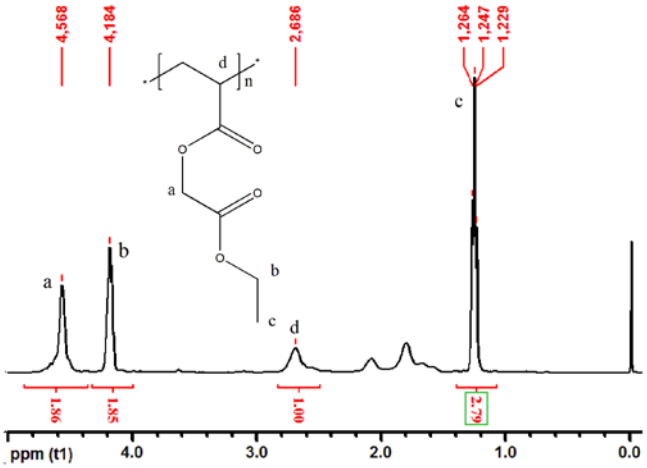

Fig. S19 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of poly (2-ethoxy-2-oxoethyl acrylate) (PEOOEA)

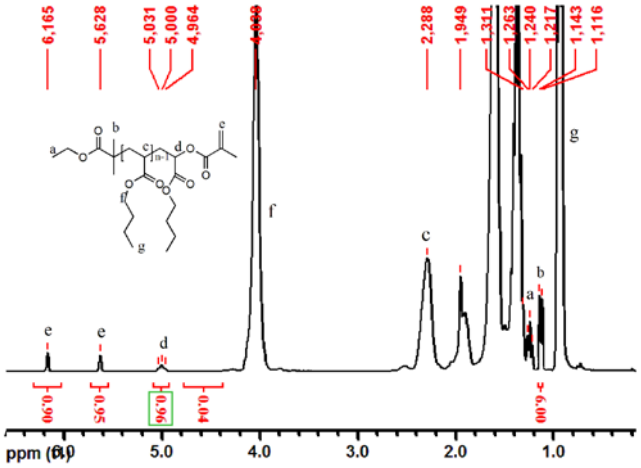

Fig. S20 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of macromonomers obtained by esterification of bromine end-functionalized PnBA with methacrylic acid using TMG as a promoter in THF at room temperature.

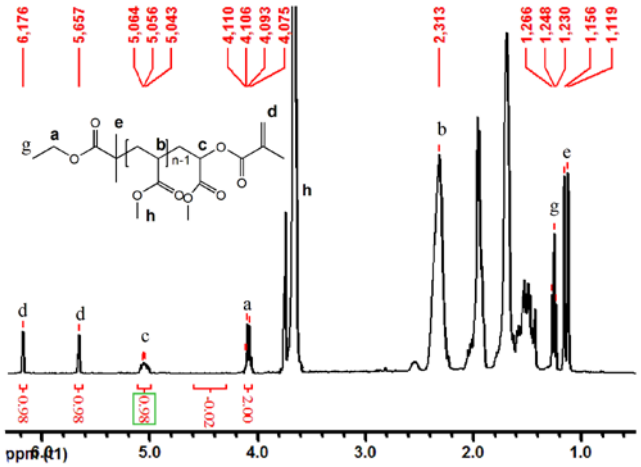

Fig. S21 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of macromonomers obtained by esterification of bromine end-functionalized PMA with methacrylic acid using TMG as a promoter in THF at room temperature.

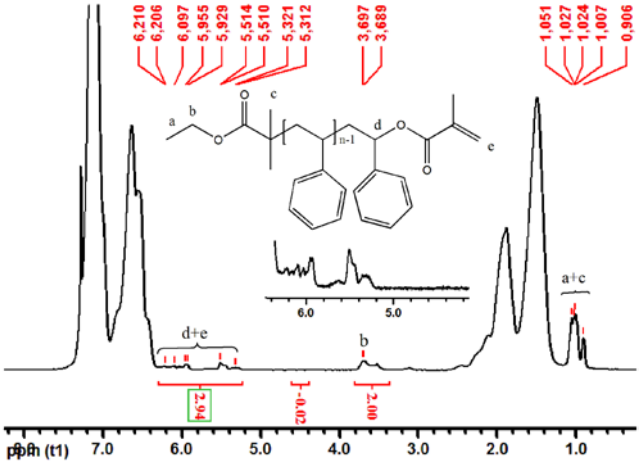

Fig. S22 ^{1}H NMR spectrum ($CDCl_3$, 400 MHz) of macromonomers obtained by esterification of bromine end-functionalized PS with methacrylic acid using TMG as a promoter in THF at room temperature.