Supporting Information

Electrostatic Assembly Of Functional Polymer Combs Onto Gold Nanoparticle Surfaces: Combining RAFT, Click And LbL To Generate New Hybrid Nanomaterials

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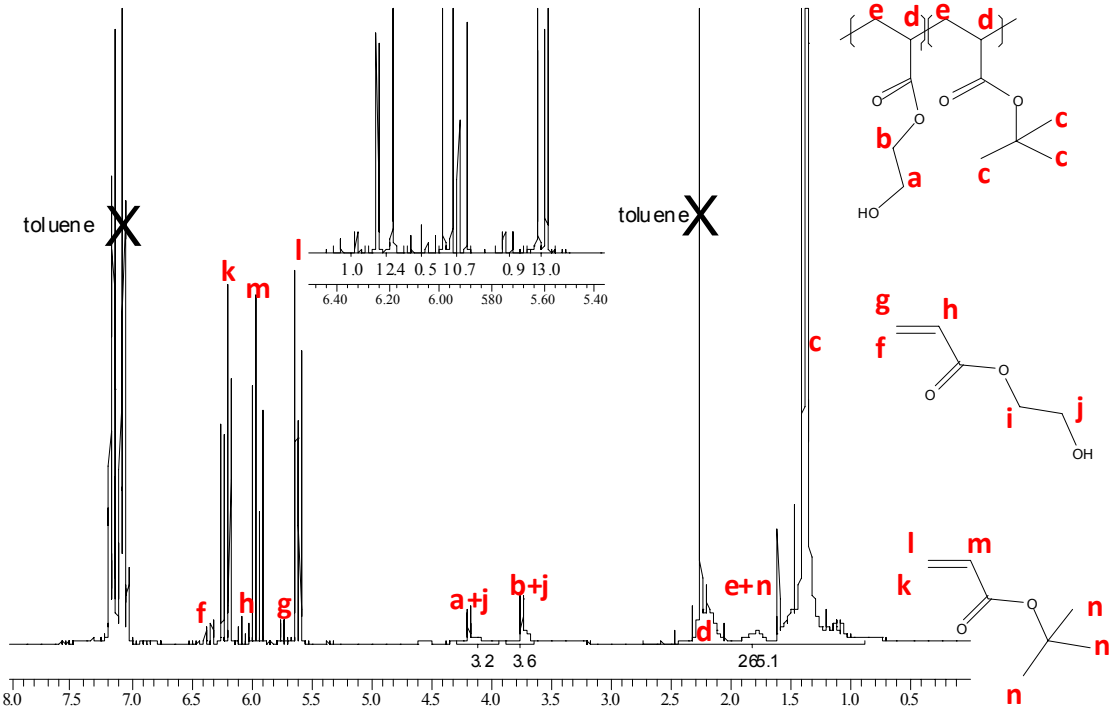


Figure SI-1: ^{1}H NMR of the *t*BA copolymerisation with HEA used for the determination of conversion.

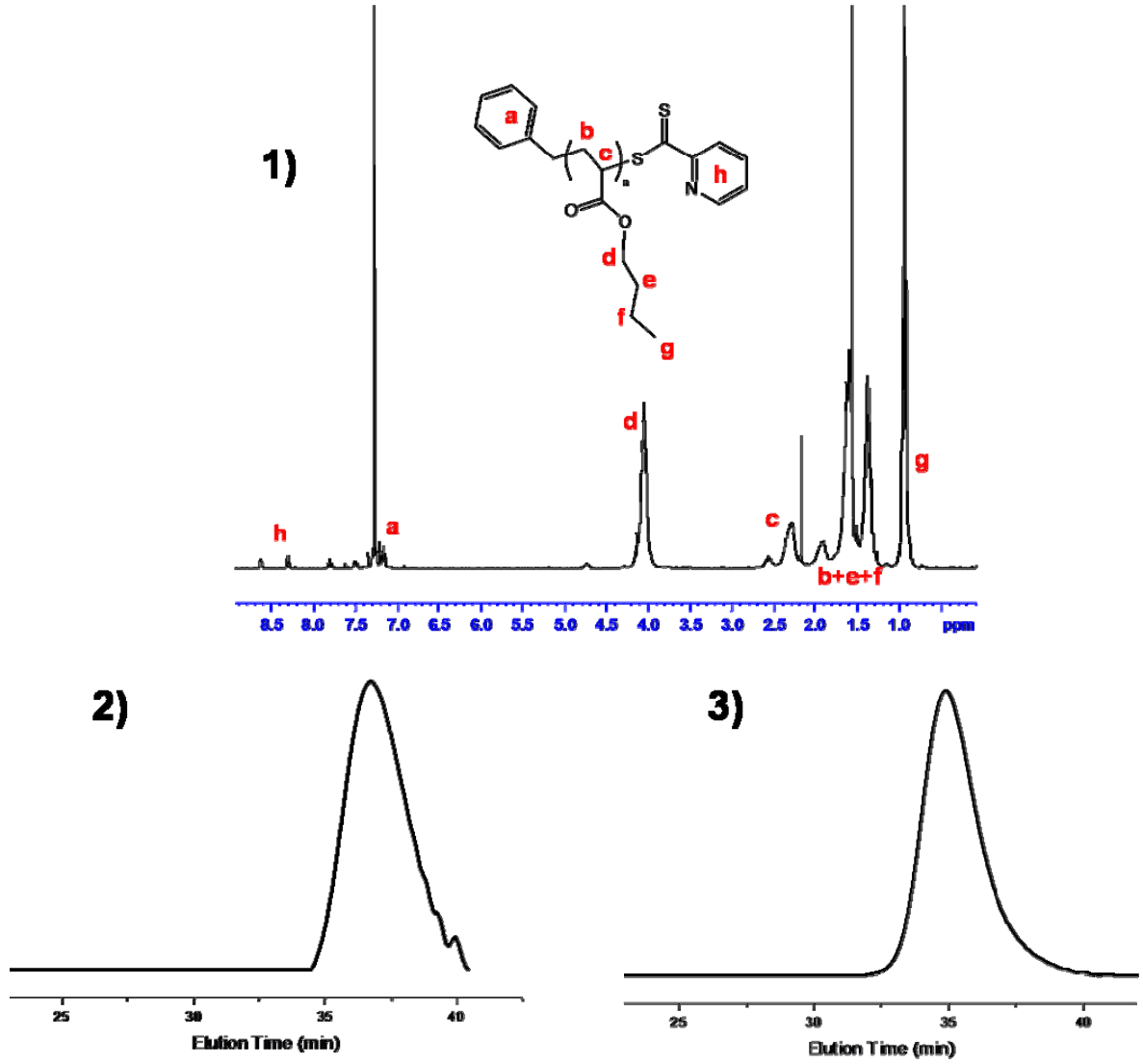


Figure SI-2: PnBA. 1) ^{1}H NMR of PnBA 1. 2) GPC trace (in THF) of PnBA 1. 3) GPC trace of PnBA 2.

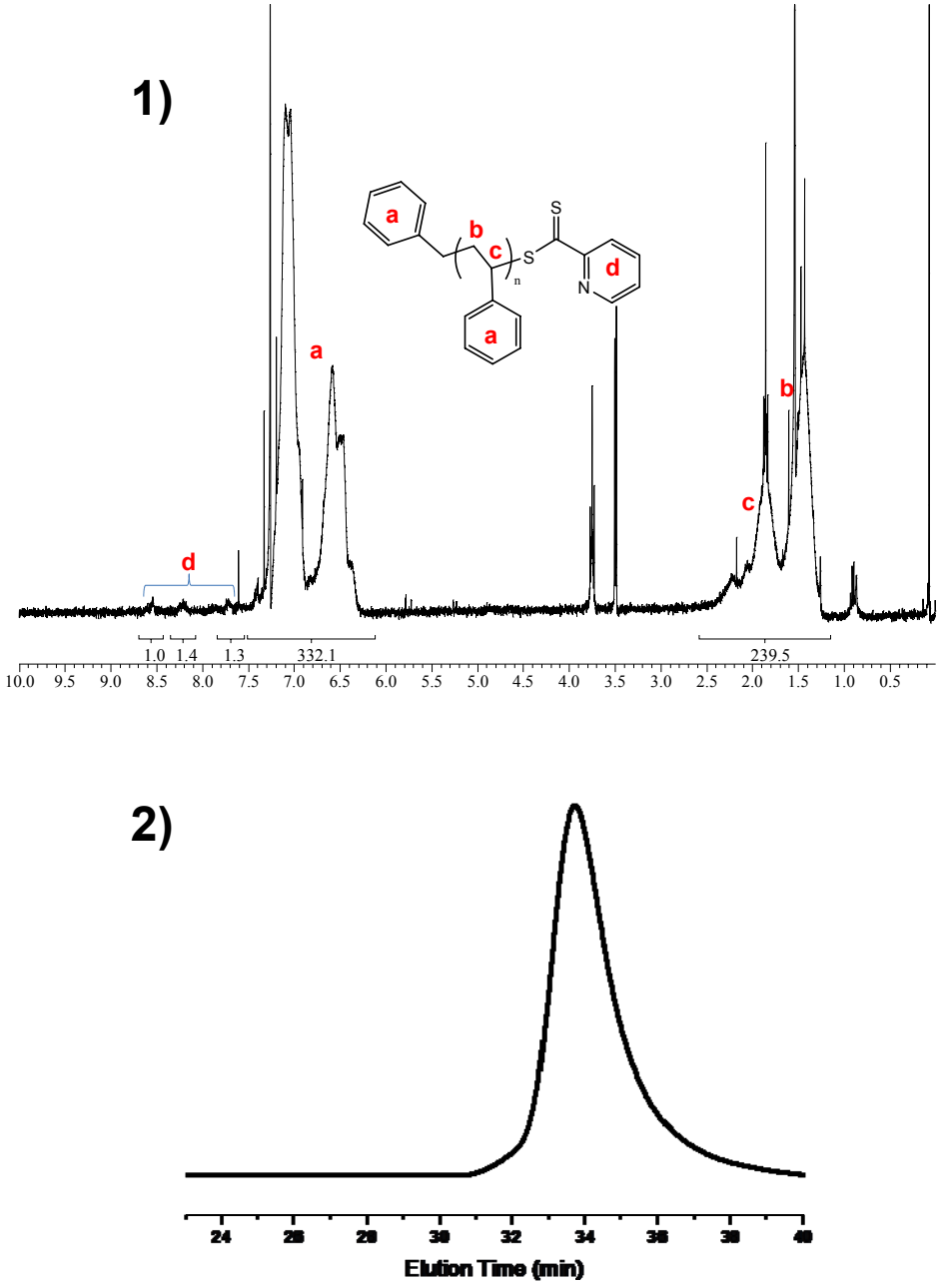


Figure SI-3: PS. 1) ^{1}H NMR of PS. 2) GPC trace (in THF) of PS.

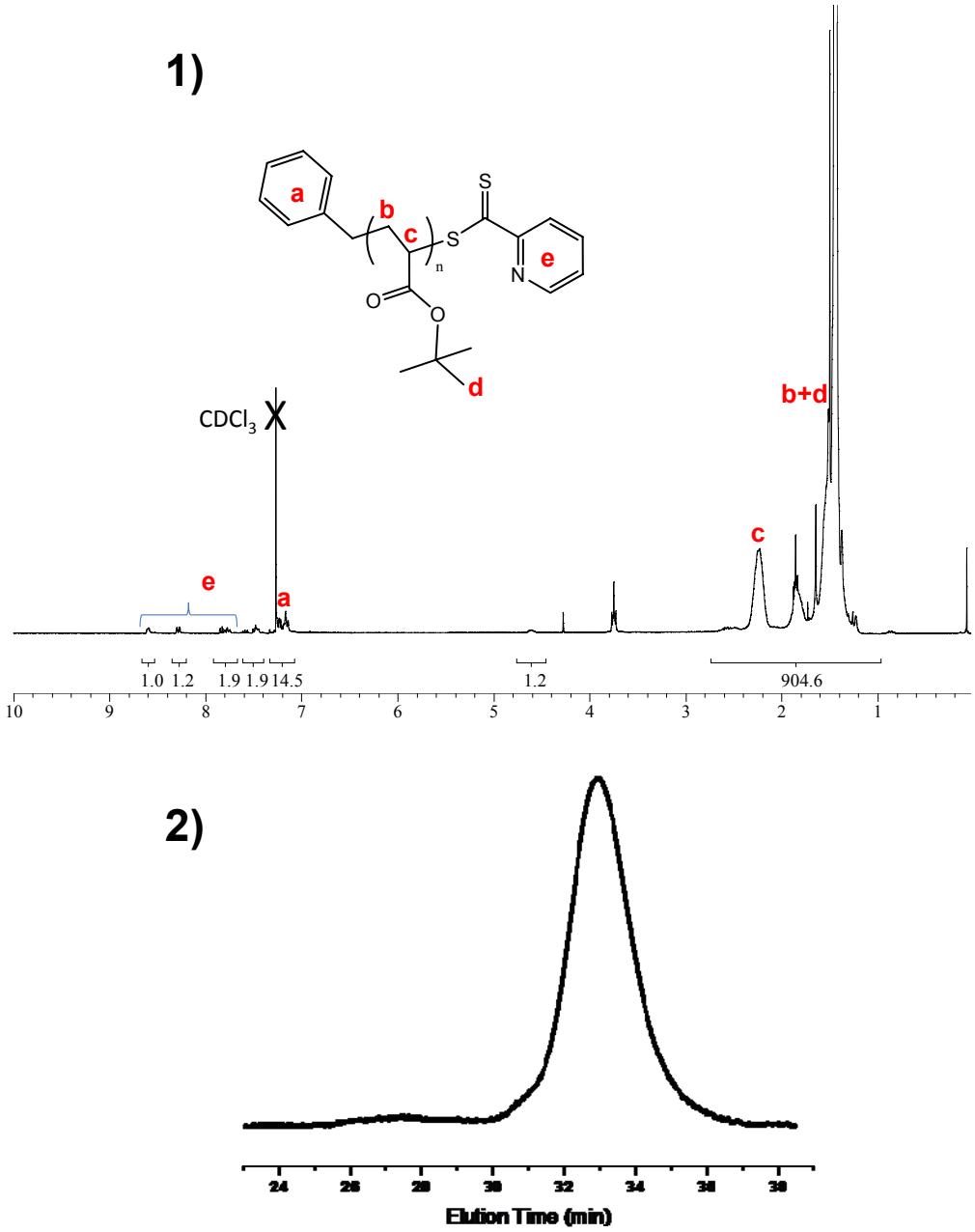


Figure SI-4: 1) ^{1}H NMR of PtBA. 2) GPC trace (in THF) of PtBA.

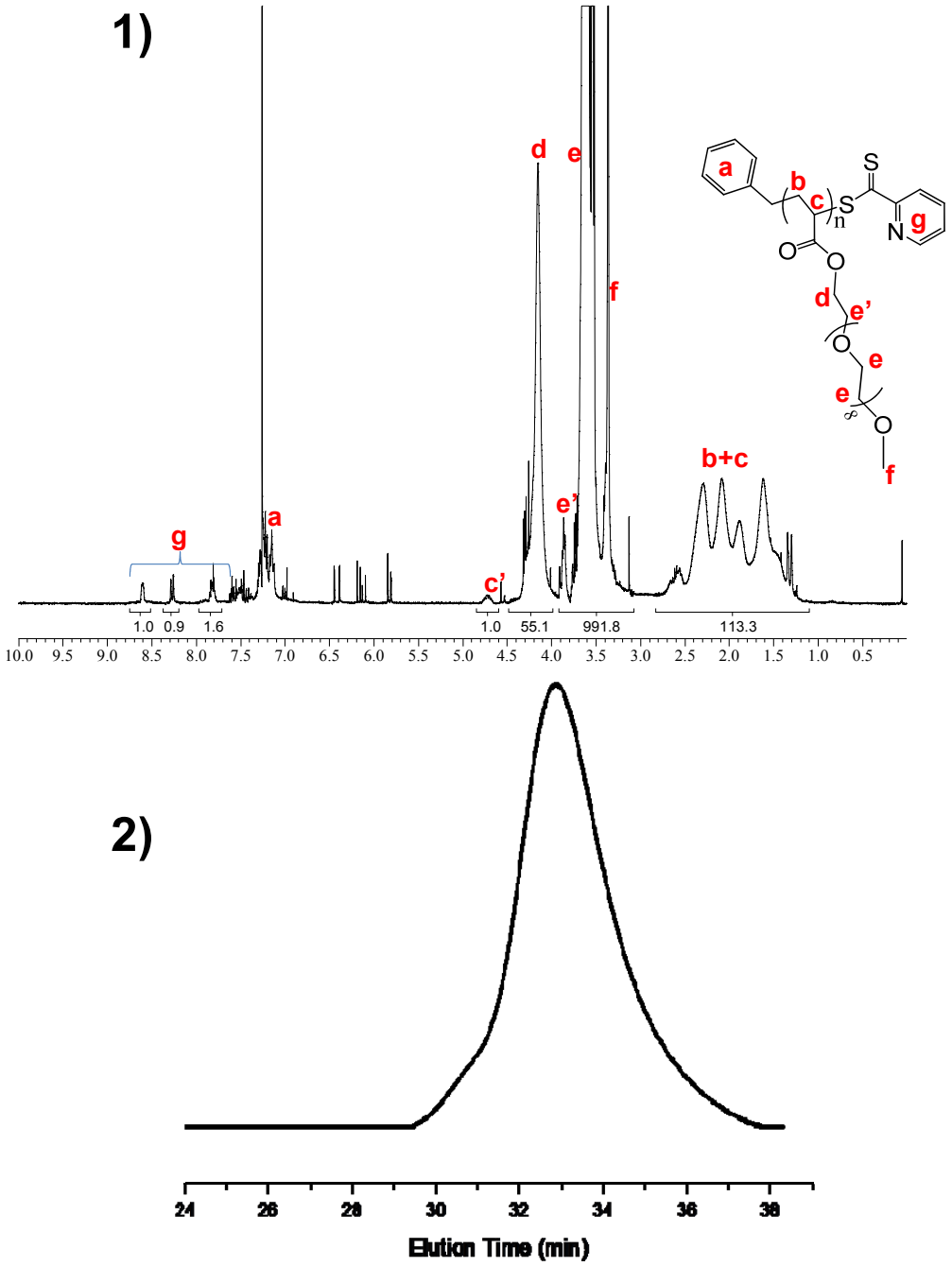


Figure SI-5: 1) ^{1}H NMR of POEGMEA (Note: c' indicates the CH in adjacent position of RAFT end-group, i.e. –S-(CS)-; 2) GPC trace (in DMAc) of POEGMEA.

Table SI-1: Results from the UV titration of the diene functionality on the backbone.

A_0	c_0 mol/L	A_f	c_f	c_0-c_f	Nb diene
0.945	0.0175	0.391	0.0072	0.0103	5.9
0.956	0.0177	0.353	0.0065	0.0112	6.4
0.939	0.0178	0.346	0.0064	0.011	6.3

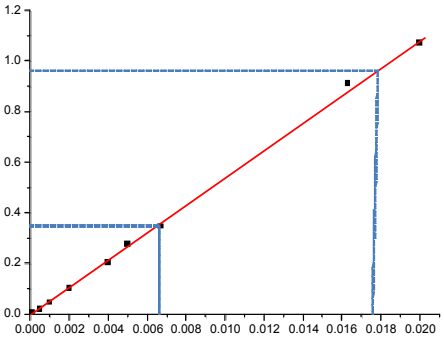


Figure SI-6. UV calibration curve of benzyl pyridin-2-yldithioformate in chloroform solution at λ = 517 nm. A_0, A_f, c_0 and c_f are the absorbance and the concentration of the P(*t*BA-*r*-HEAdiene) dosage solution at time zero and at the end.

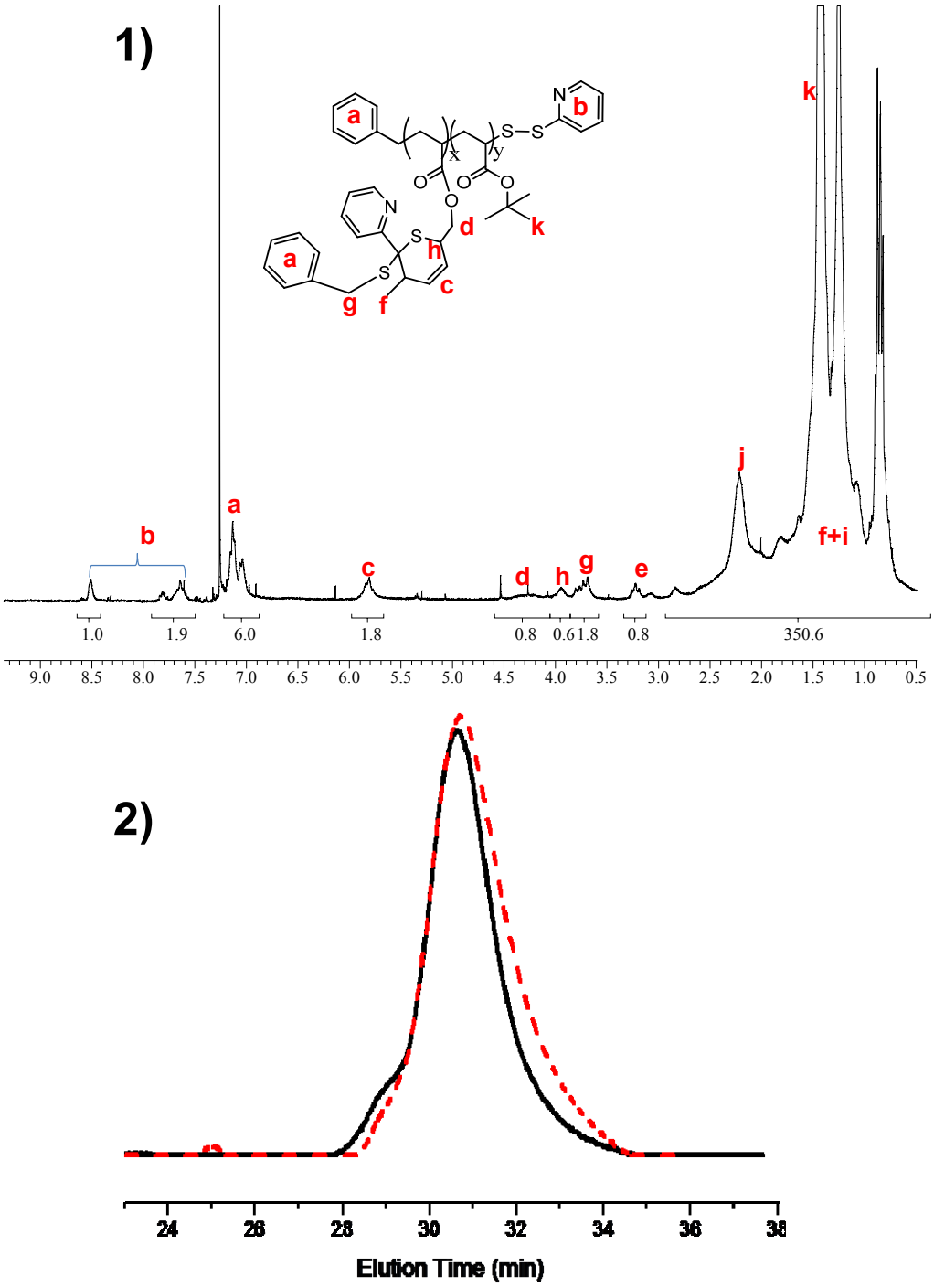


Figure SI-7: ^{1}H NMR of the P*t*BA-r-HEAdiene used for the diene titration by UV spectroscopy.

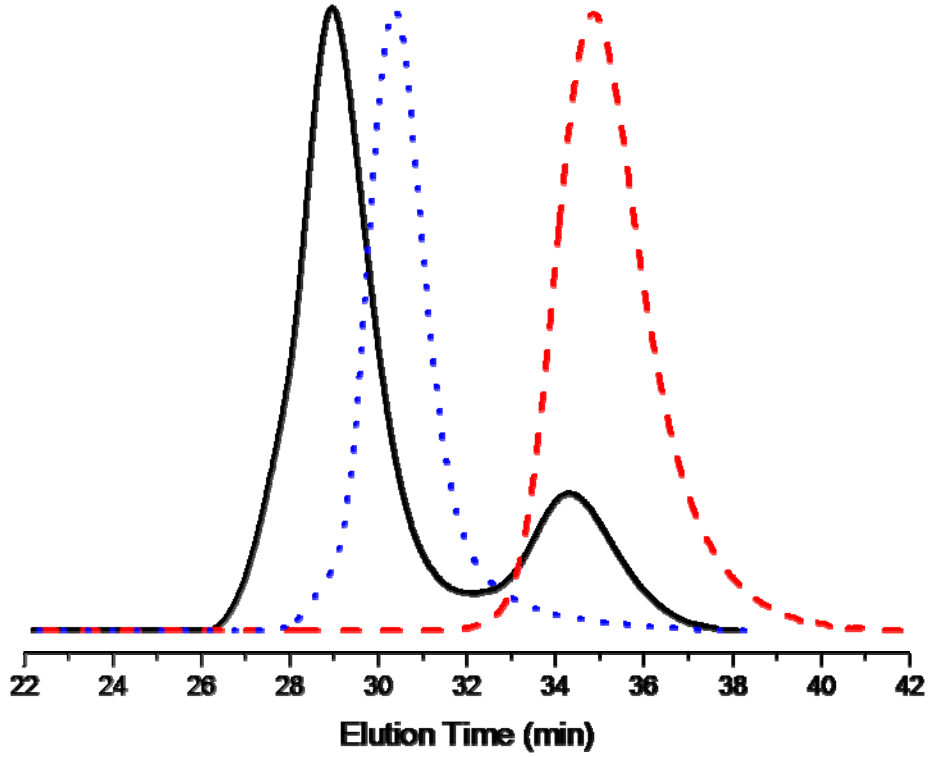
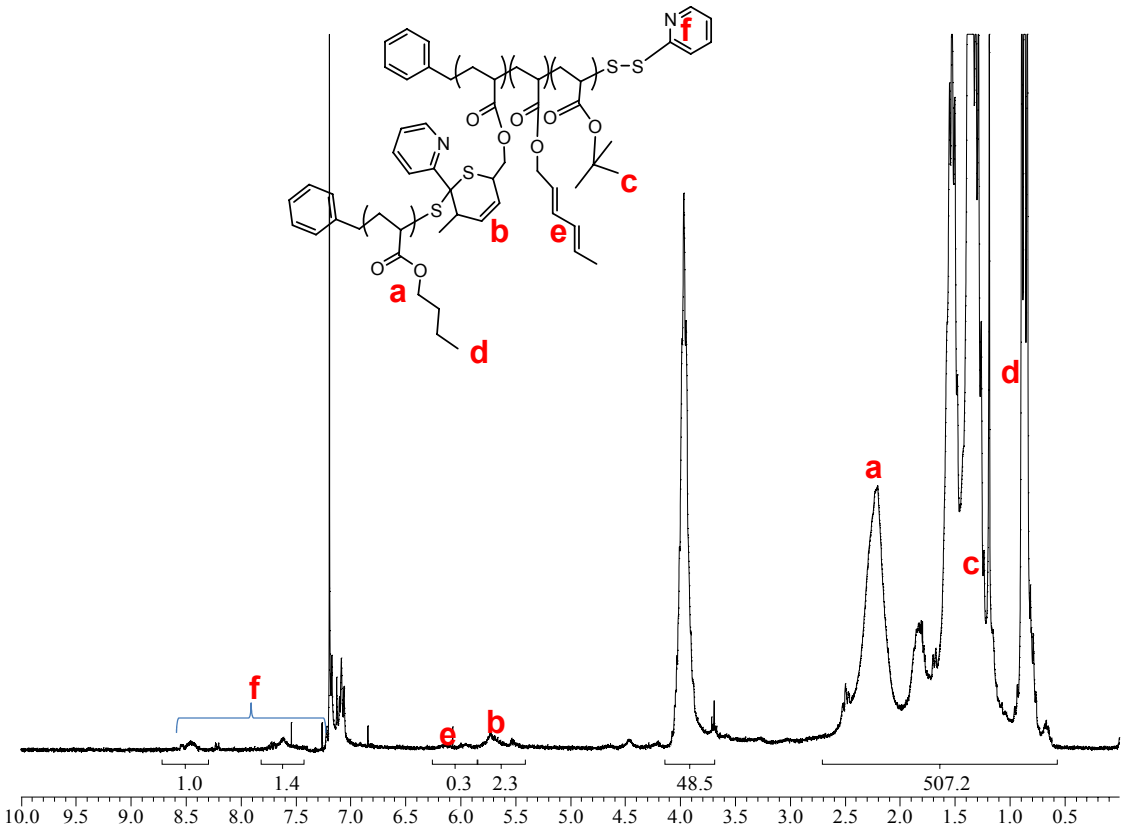


Figure SI-8: Superposition of the GPCs traces (in THF) of P*n*BA 2 (dash), P(*t*BA-r-HEAdiene) (dot) and P*t*BA-g-P*n*BA2 X=1 (full line).



FigureSI-9: ^{1}H NMR Spectrum of P*t*BA-g-P*n*BA2 (X=1).

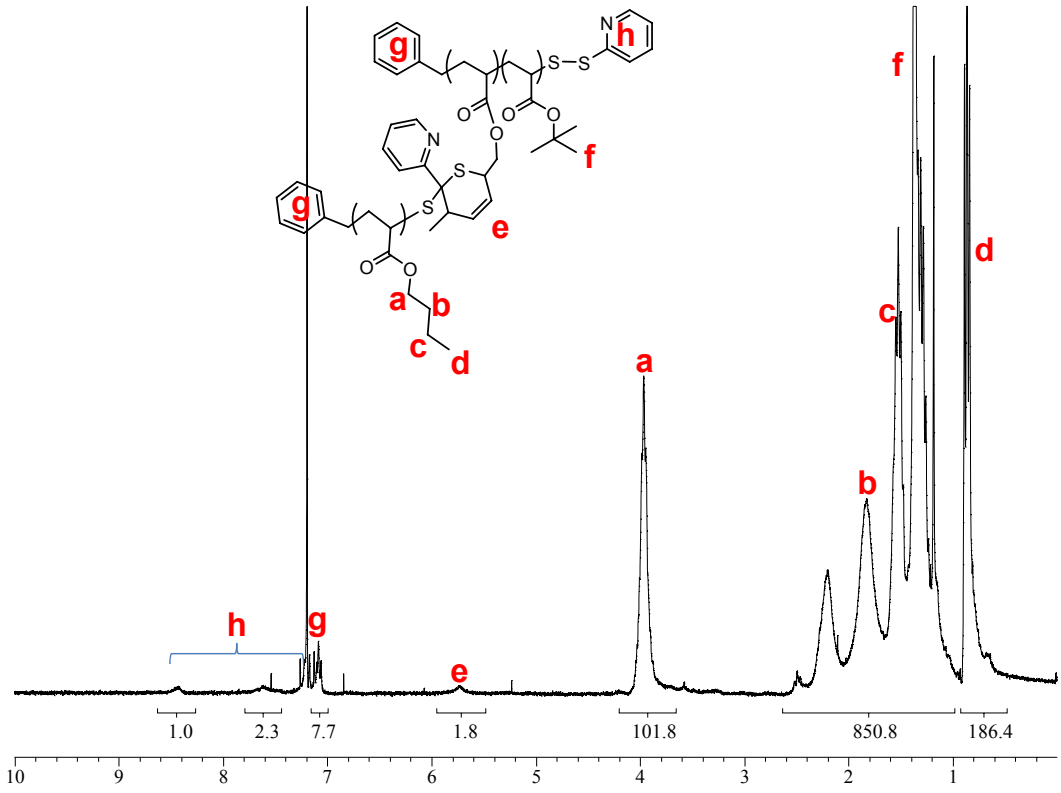


Figure SI-10: ^{1}H NMR Spectrum of P*t*BA-g-P*n*BA2 (X=1.5).

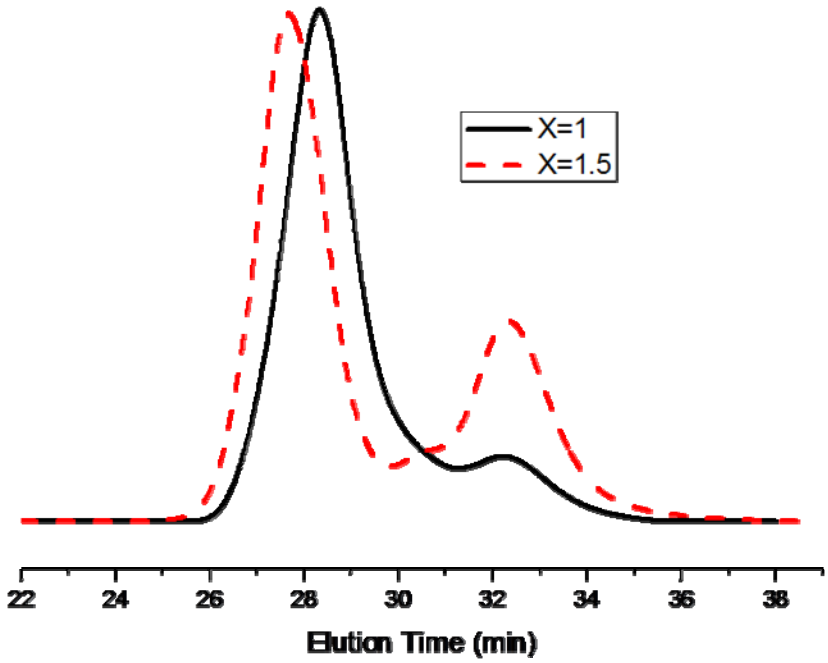


Figure SI-11: Superposition of the GPCs traces (in THF) of P*t*BA-g-P*t*BA X=1 (full line) and P*t*BA-g-P*t*BA X=1.5 (dash).

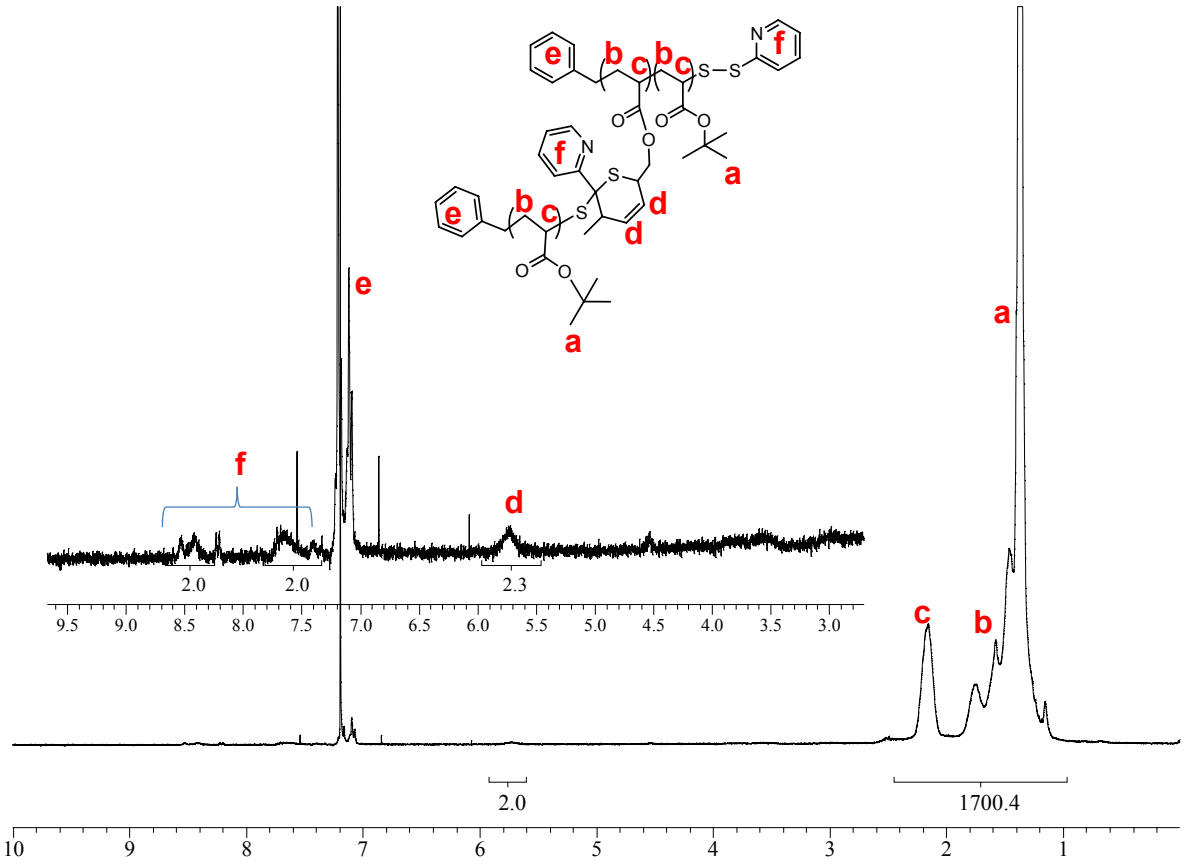


Figure SI-12. ^{1}H NMR spectrum of P*t*BA-g-P*t*BA X=1.5.

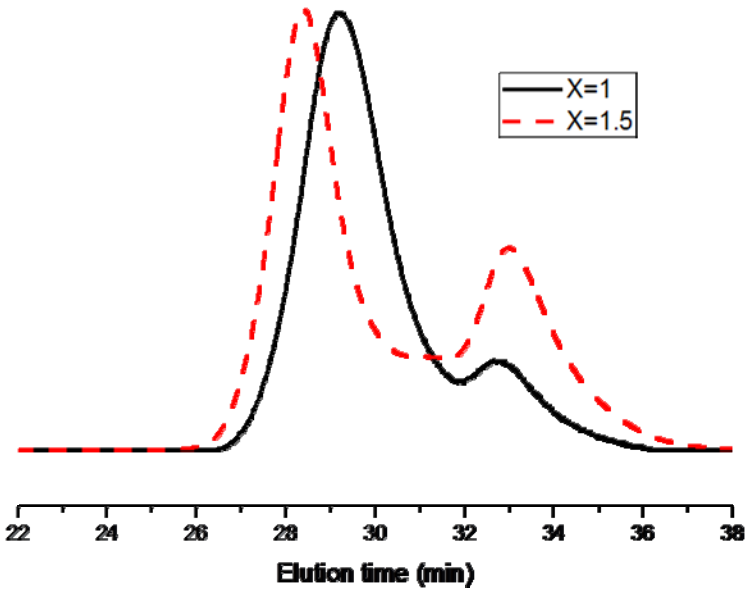


Figure SI-13. GPS: Superposition of the GPCs traces (in THF) of P*t*BA-g-PS X=1 (full line) and P*t*BA-g-PS X=1.5 (dash).

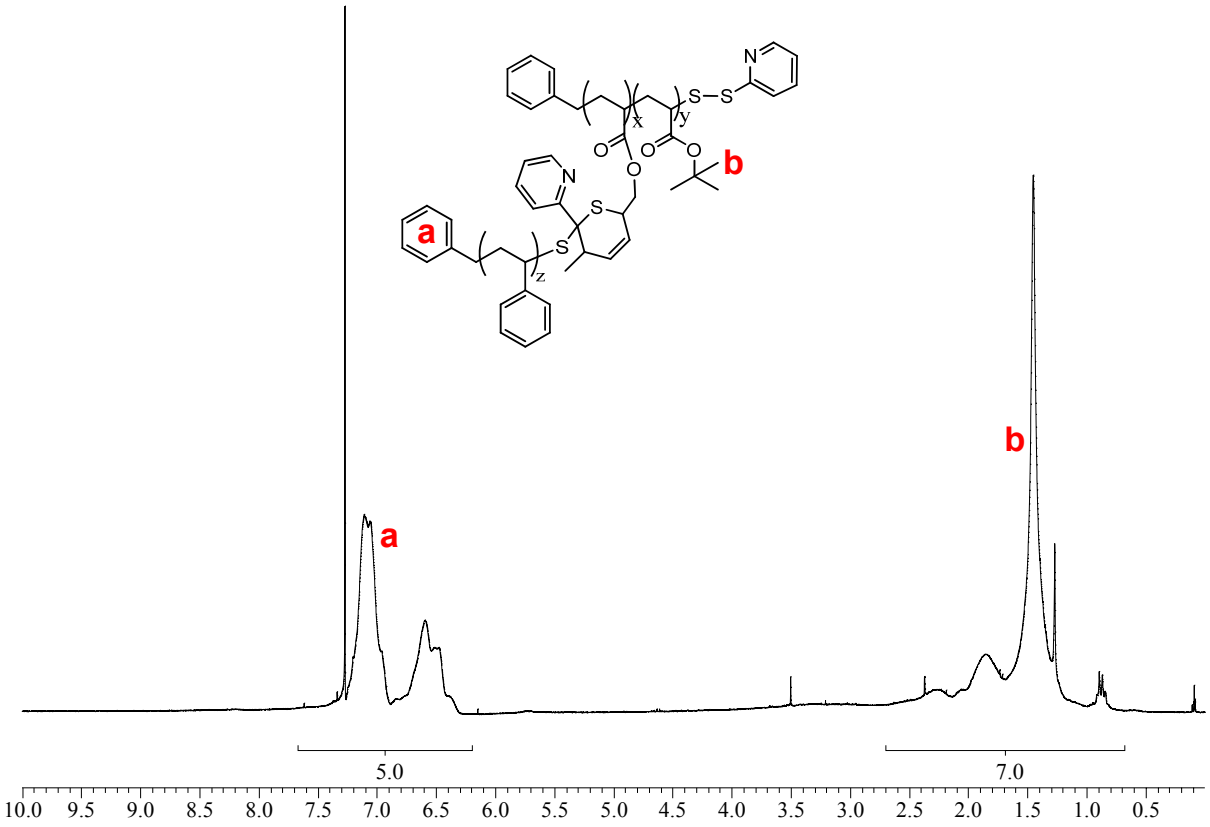


Figure SI-14: ^{1}H NMR spectrum of P*t*BA-g-PS X=1.5.

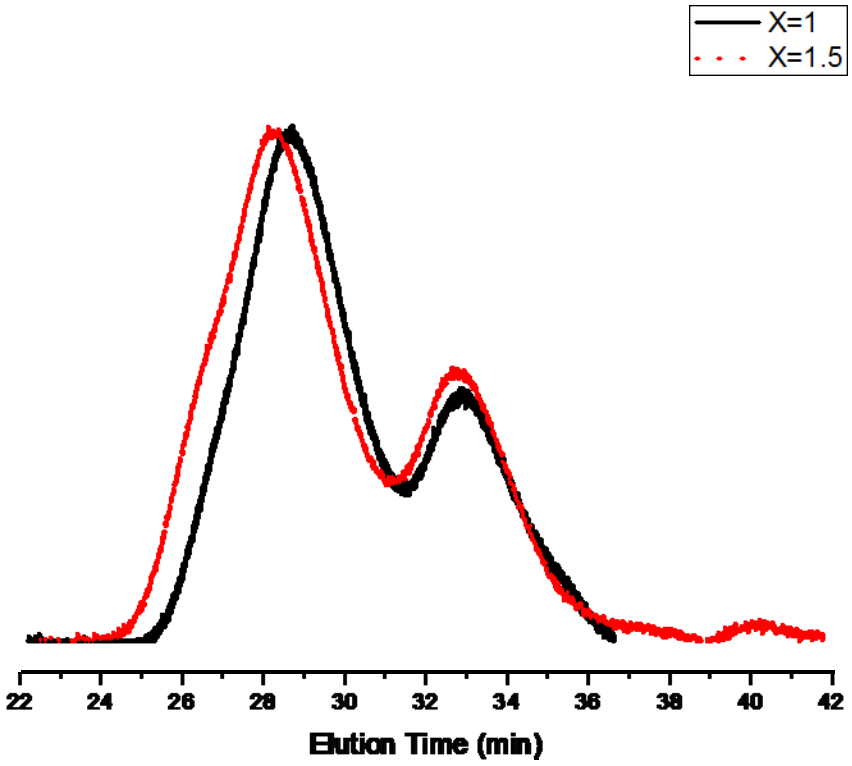


Figure SI-15: Superposition of the GPCs traces (in THF) of P*t*BA-g-POEGMEA X=1 (full line) and P*t*BA-g-POEGMEA X=1.5 (dash).

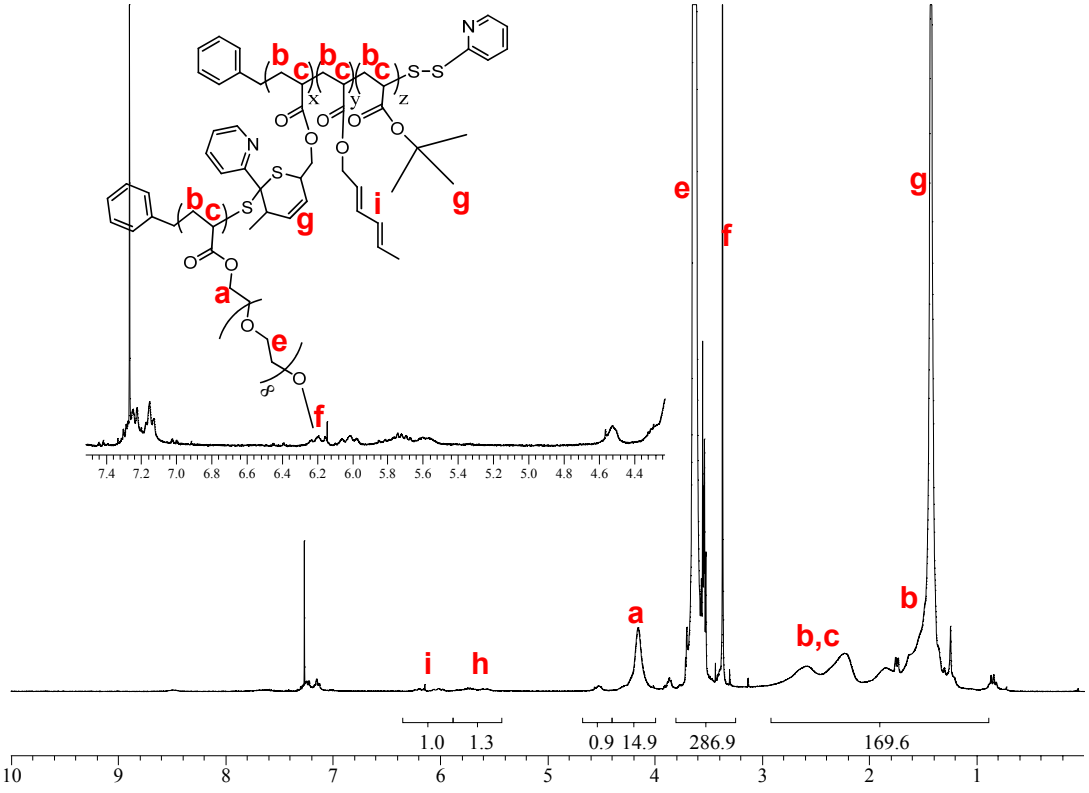


Figure SI-16: ^{1}H NMR spectrum of P*t*BA-g-POEGMEA X=1.5.

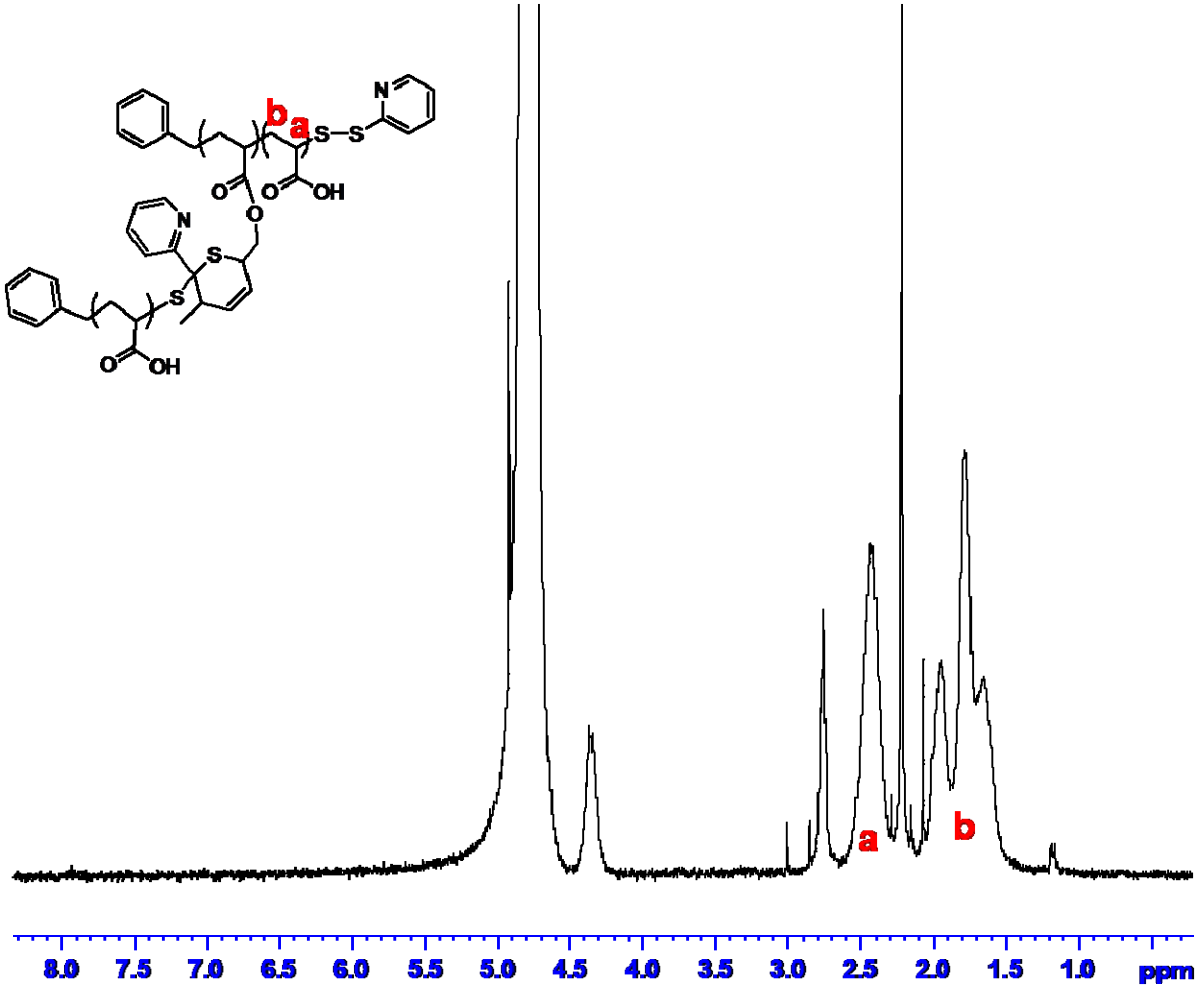


Figure SI-17: ^{1}H NMR spectrum of PAA-g-PAA.

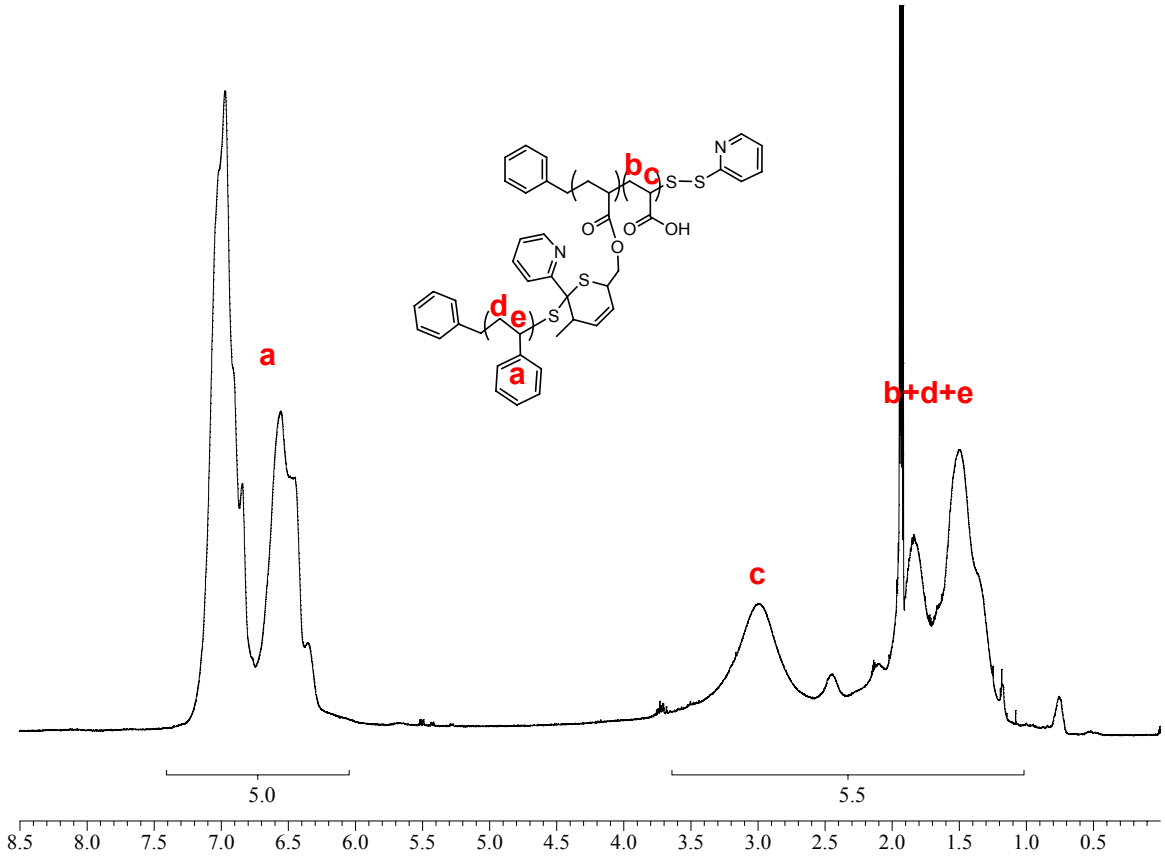


Figure SI-18: ^{1}H NMR spectrum of PAA-g-PS.

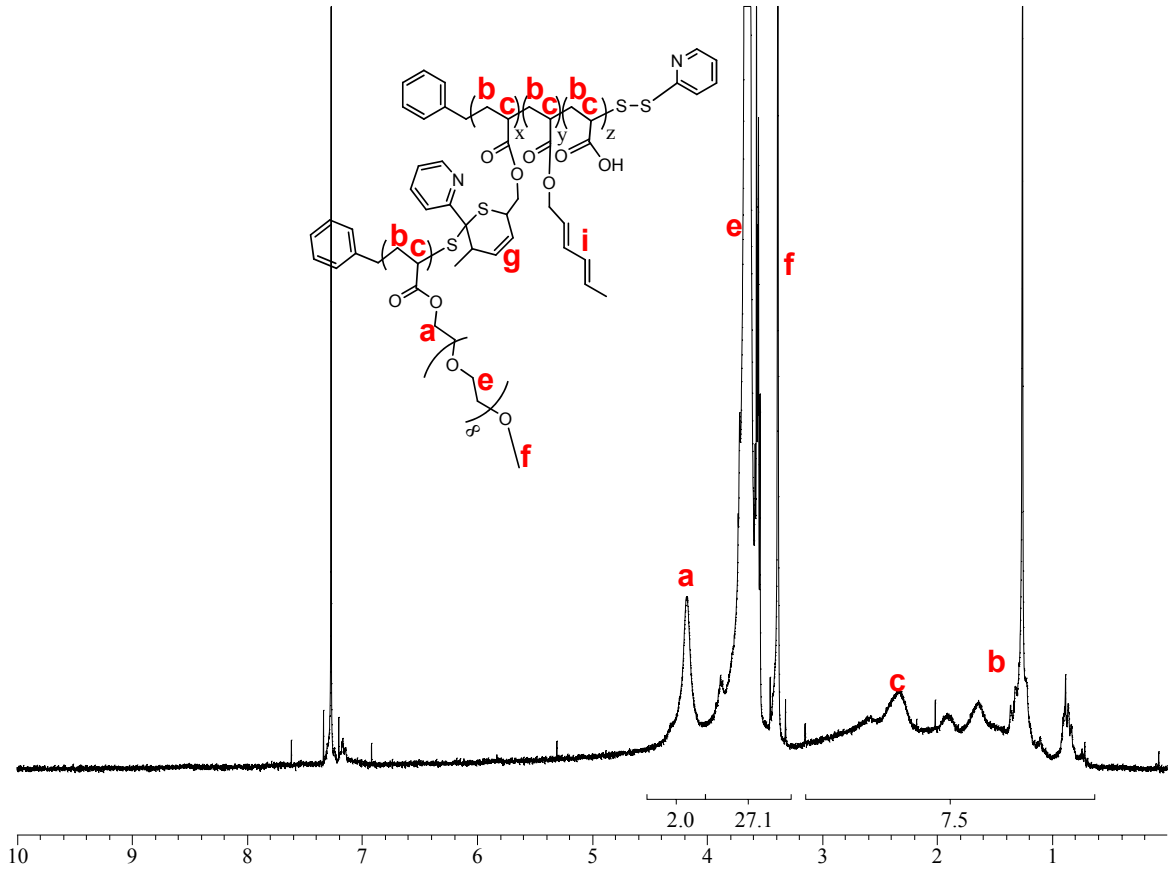


Figure SI-19: ^{1}H NMR spectrum of PAA-g-POEGMEA X=1.5.

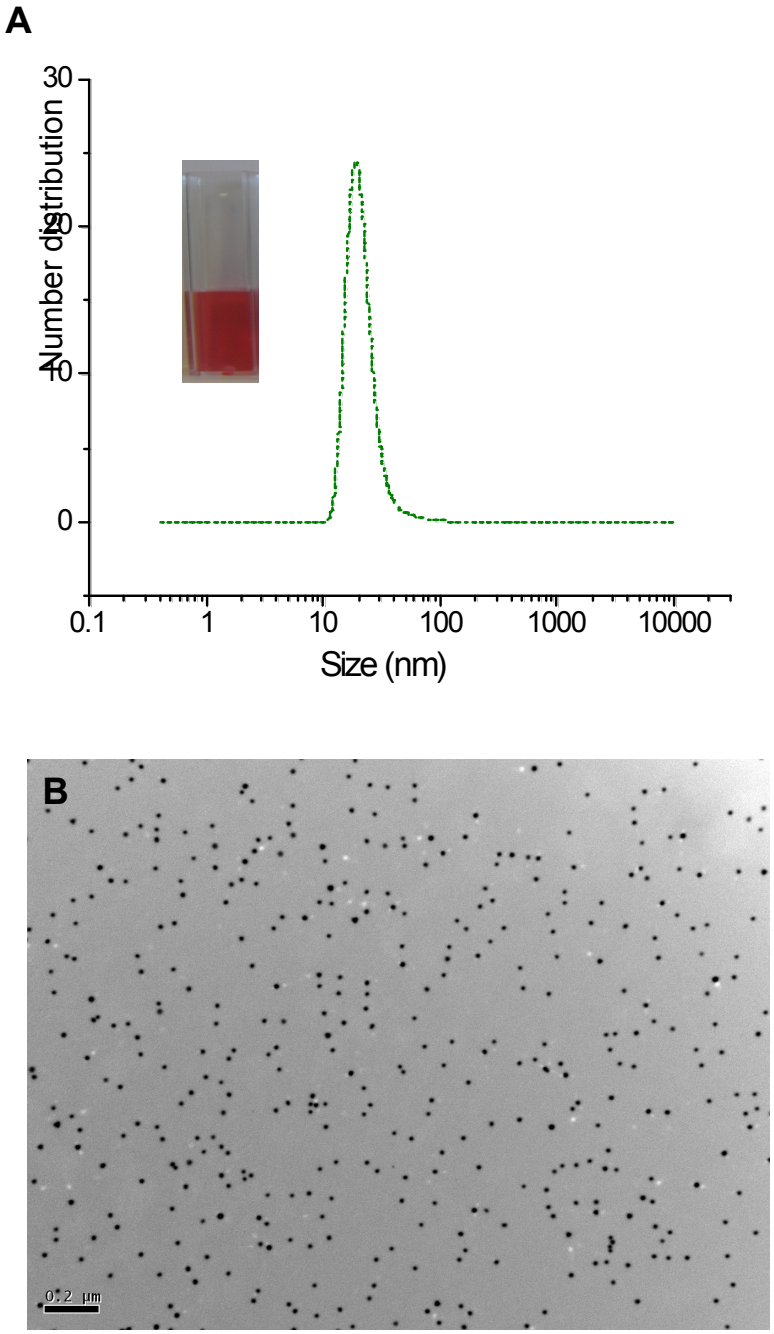
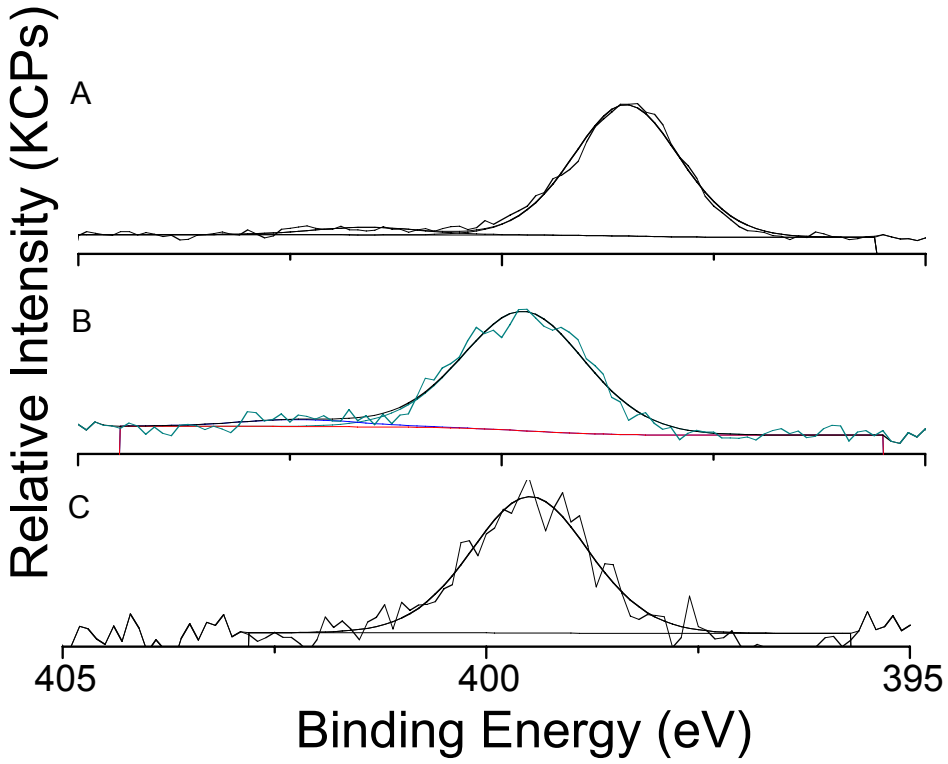


Figure SI-20: A- Dynamic light scattering of "naked" gold nanoparticles, inset: typical picture of the GNPs solution; B- TEM pictures of "naked" GNPs.



	N/O atomic ratio	N/C atomic ratio
GNPs/PEI	**0.20**	**0.6**
GNPs/PEI/PAA	**0.10**	**0.22**
GNPs/PEI/PAA-g-POEGMEA	**0.02**	**0.02**

Figure SI-21: XPS spectra of GNPs modified polymers formed by the LBL process; N (1s) spectra of **A**- GNPs/PEI; **B**- GNPs/PEI//PAA; **C**- GNPs/PEI/PAA-*g*-POEGMEA; B- N/O and N/C atomic ratios for GNPs/PEI, GNPs/PEI/PAA and GNPs/PEI/PAA-g-POEGMEA.

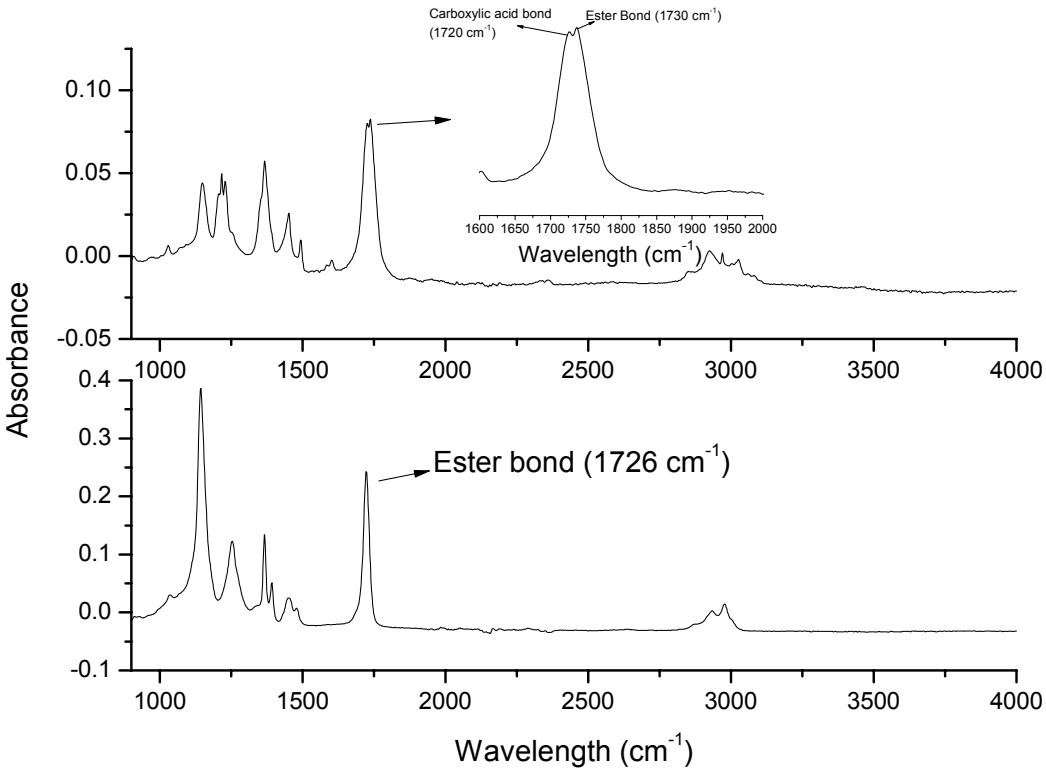


Figure SI-22: ATR-IRTF spectra of (top) purified P*t*BA-g-PS X=1.5 and (bottom) purified of P*t*BA-g-P*t*BA X=1.5.

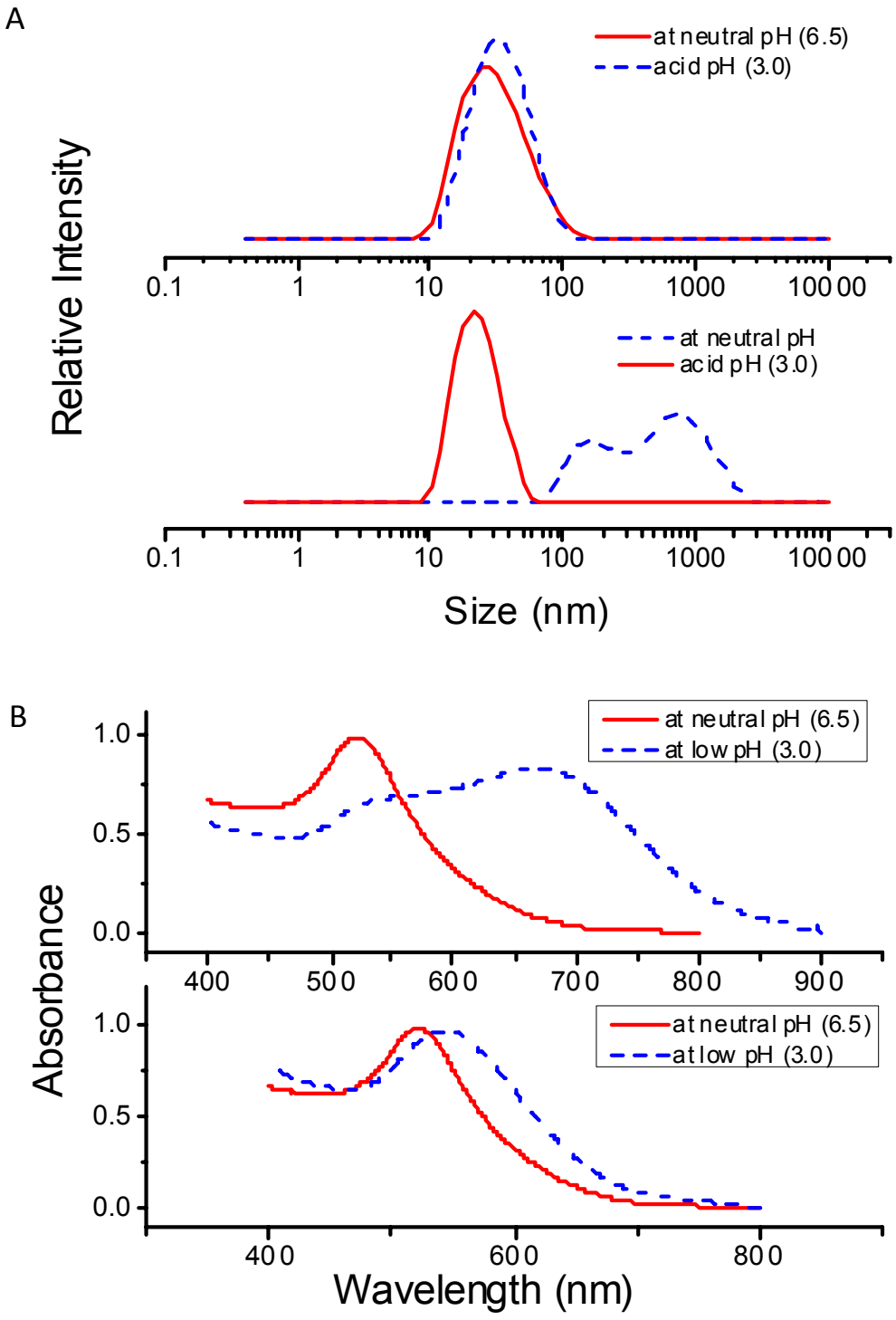


Figure SI-23: A- Dynamic light scattering of (top) GNPs/PEI/PAA-*g*-POEGMEA and (bottom) GNPs/PEI//PAA; B- UV-visible of (top) GNPs/PEI//PAA and (bottom) GNPs/PEI/PAA-*g*-POEGMEA at different pH.