

SUPPLEMENTARY INFORMATION

**Thermodynamic analysis of alkali metal complex formation of polymer-bonded 15-crown-5**

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**$^1\text{H}$  NMR Spectra**

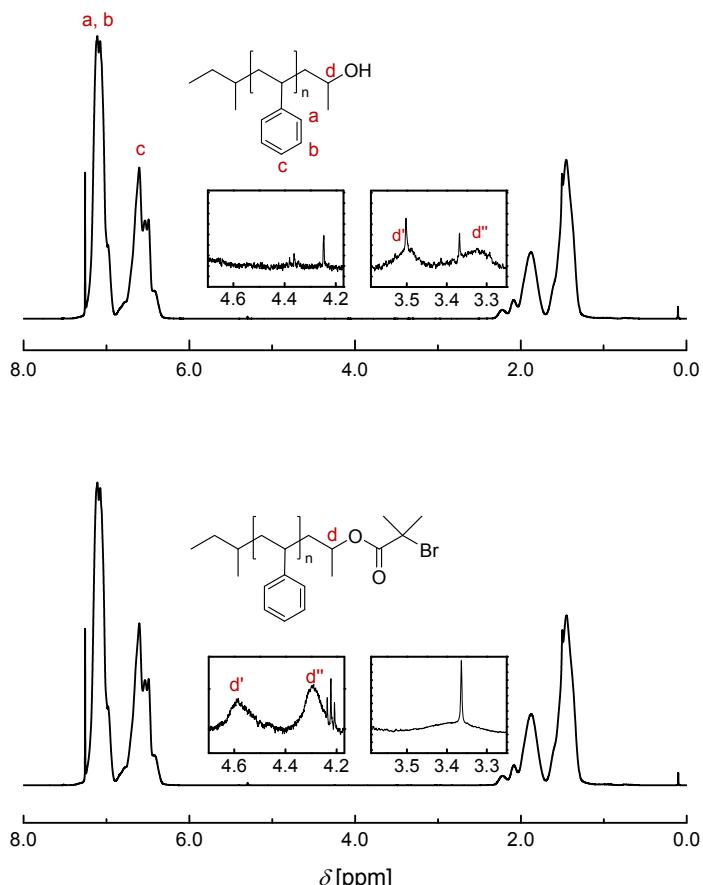


Figure S 1:  $^1\text{H}$  NMR Spectra of PS-OH (top) and PS-Br (bottom). The insets show a downfield shift of the  $\alpha$ -proton upon esterification.

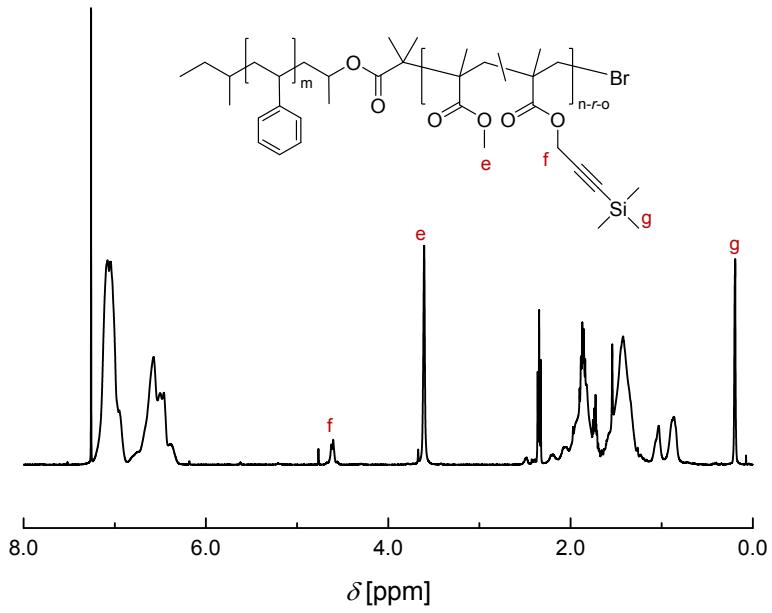


Figure S 2: <sup>1</sup>H NMR spectrum of dried block copolymer polystyrene-*block*-poly(methyl methacrylate-*random*-trimethylsilyl propargyl methyl methacrylate) (PS-*b*-P(MMA-*r*-TMS-PgMA)).

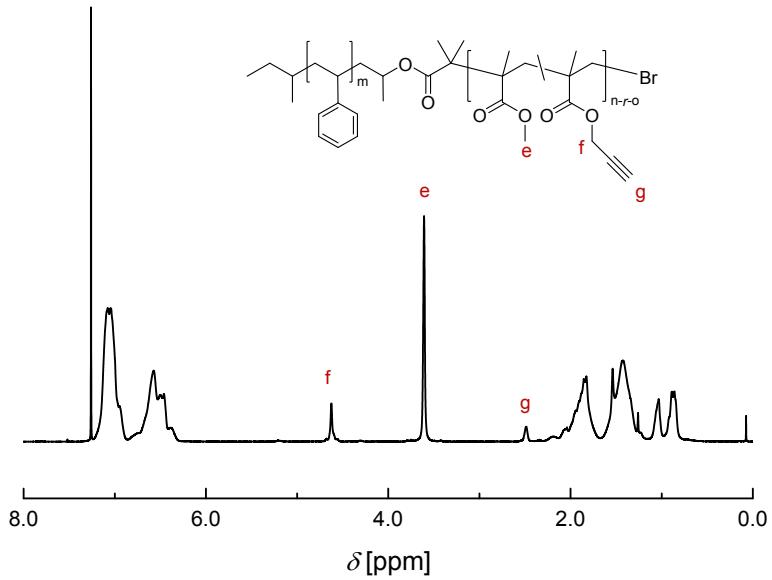


Figure S 3: <sup>1</sup>H NMR spectrum of dried block copolymer polystyrene-*block*-poly(methyl methacrylate-*random*-propargyl methyl methacrylate) (PS-*b*-P(MMA-*r*-PgMA)).

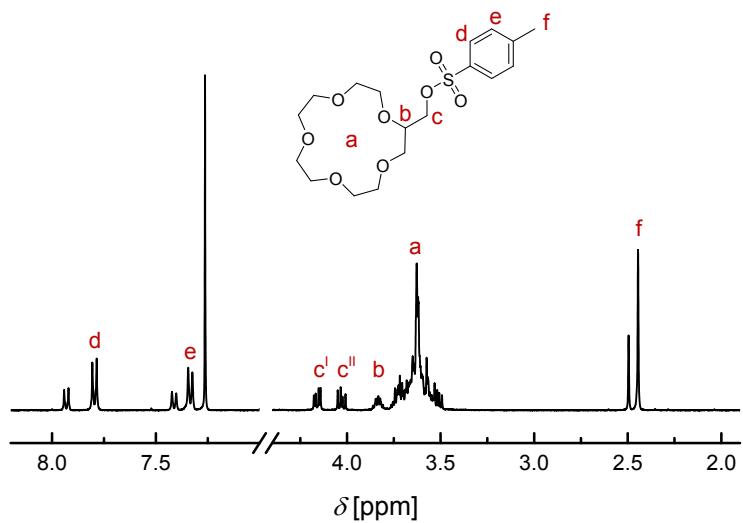


Figure S 4:  $^1\text{H}$  NMR spectrum of 2-tosylmethyl-15-crown-5.

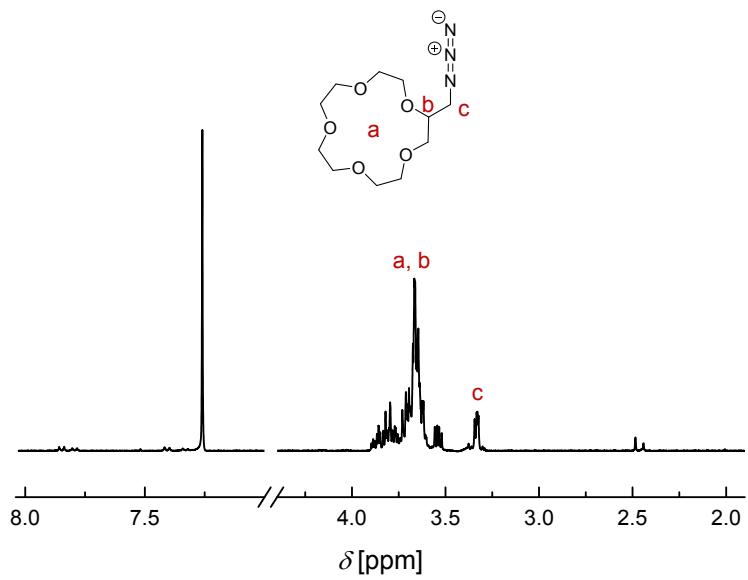


Figure S 5:  $^1\text{H}$  NMR spectrum of 2-azidomethyl-15-crown-5.

## IR Spectrometry

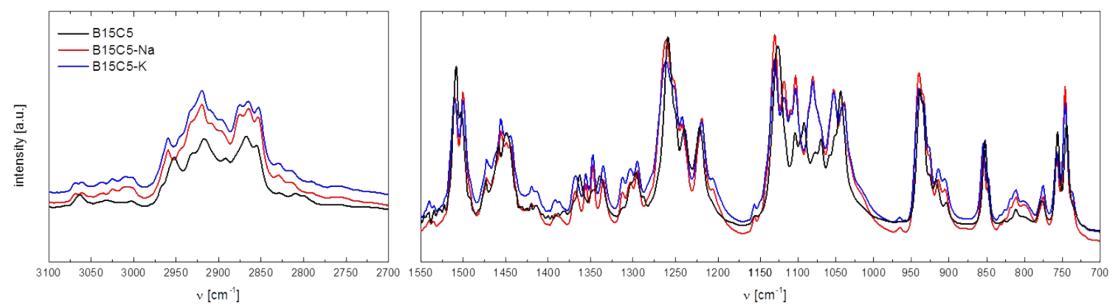


Figure S 6: IR spectra of benzo-15-crown-5 and its complexes with sodium and potassium ions.

## Mass Spectrometry

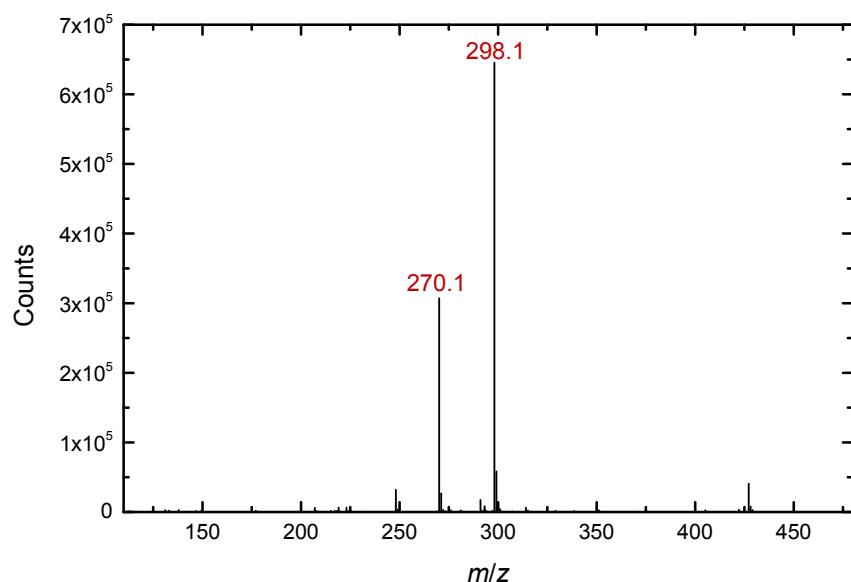


Figure S 7: Electrospray ionization mass spectrum of 2-azidomethyl-15-crown-5.

## SEC Traces

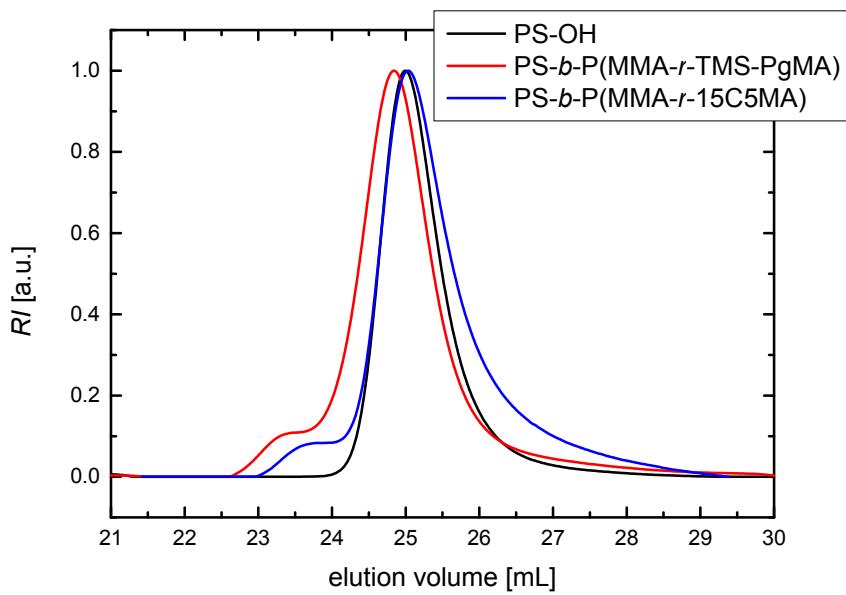


Figure S 8: SEC traces (relative signal intensity (RI) *versus* elution volume) of the macroinitiator (PS-OH, black), the diblock copolymer (PS-*b*-P(MMA-*r*-TMA-PgMA), red) and the side chain modification of BCP (PS-*b*-P(MMA-*r*-15C5MA), blue).

## Solvent extraction

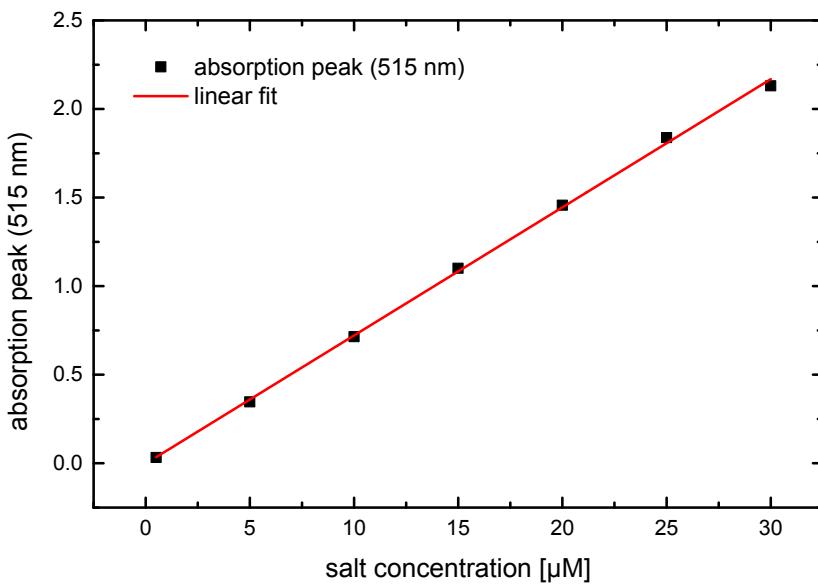


Figure S 9: Absorption maxima of EE(Na) at  $\lambda_{\text{max}} = 515 \text{ nm}$  versus concentration of EE(Na) in water.

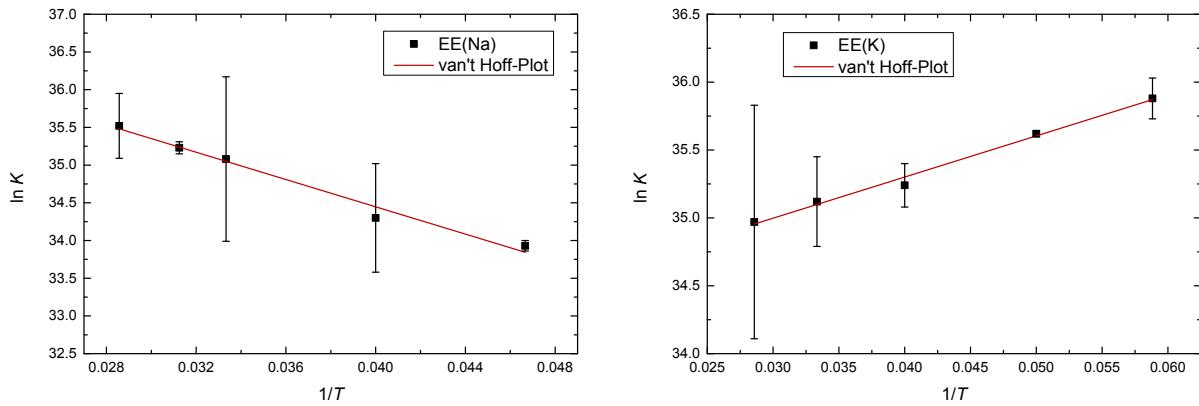


Figure S 10: The van't Hoff plots of temperature-dependent phase extractions with Poly15C5 of EE(Na) (left) and of EE(K) (right).