

Main-chain degradable star polymers comprised of pH-responsive hyperbranched cores and thermoresponsive polyethylene glycol-based coronas

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Electronic Supplementary Information

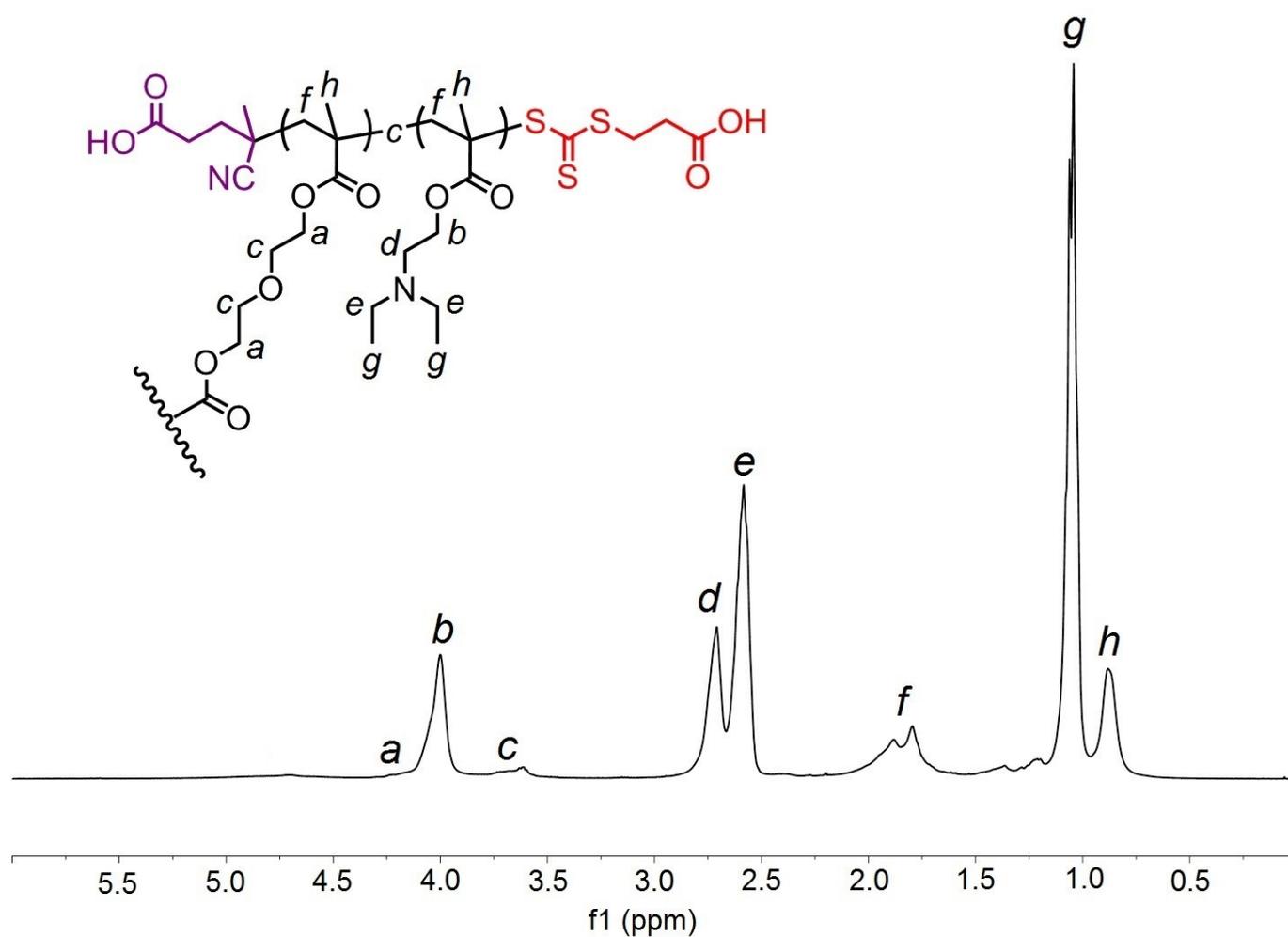


Fig. S1 ¹H NMR (CDCl₃) spectra of HB2.

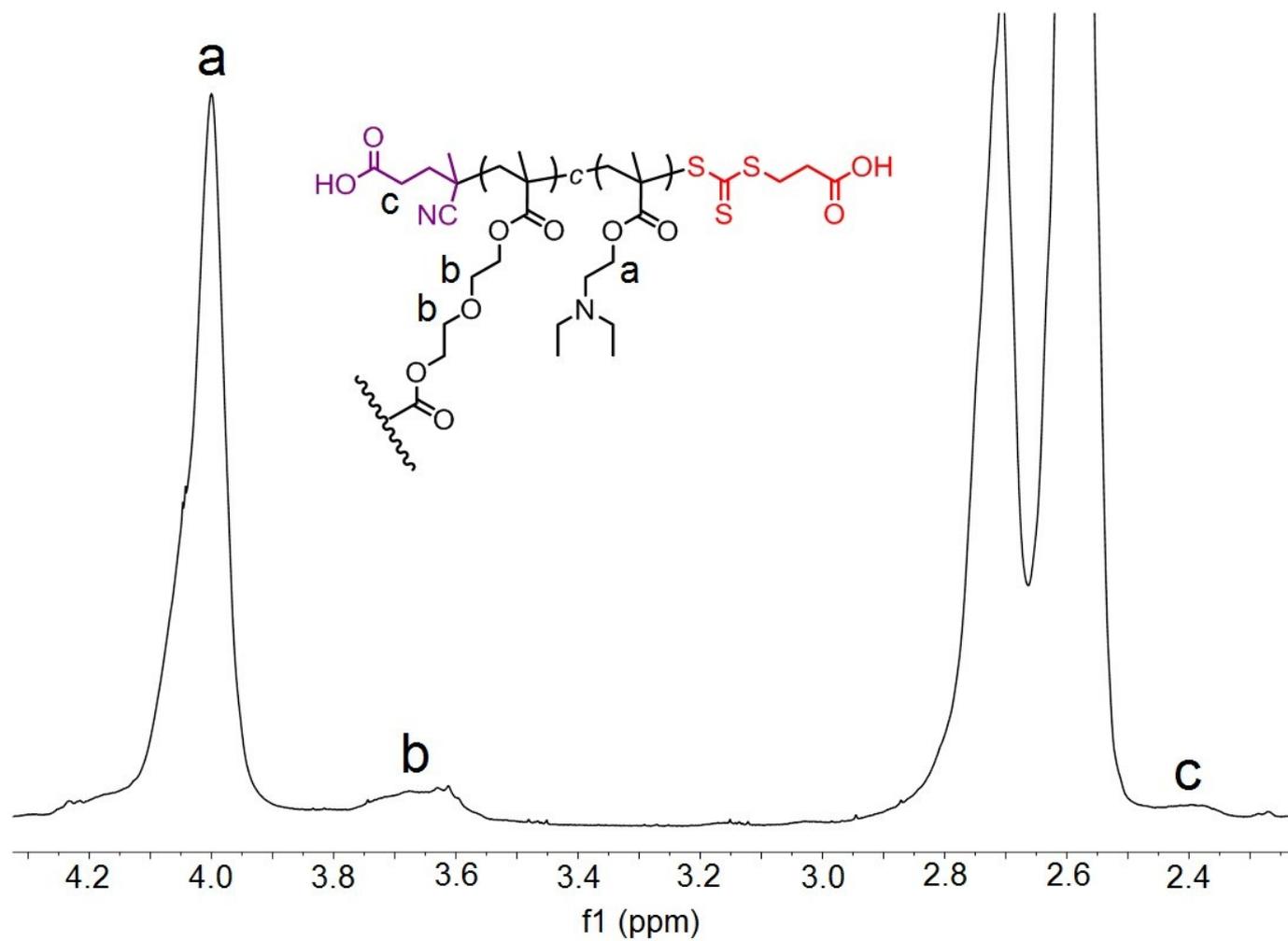


Fig. S2 Expansion of ^1H NMR (CDCl_3) spectra of **HB2** used to determine degree of branching (DB).

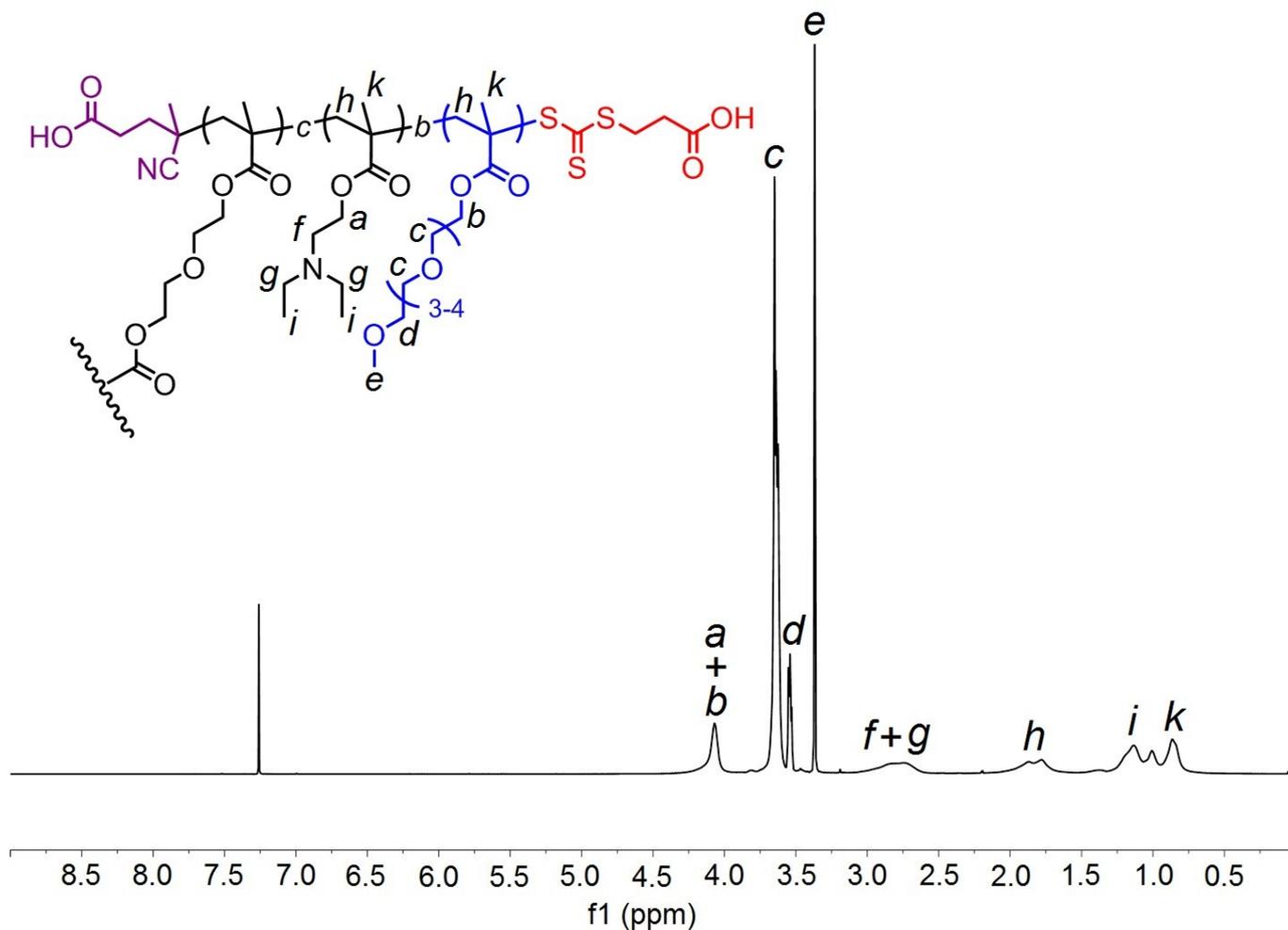


Fig. S3 ¹H NMR (CDCl₃) spectra of SHB2.

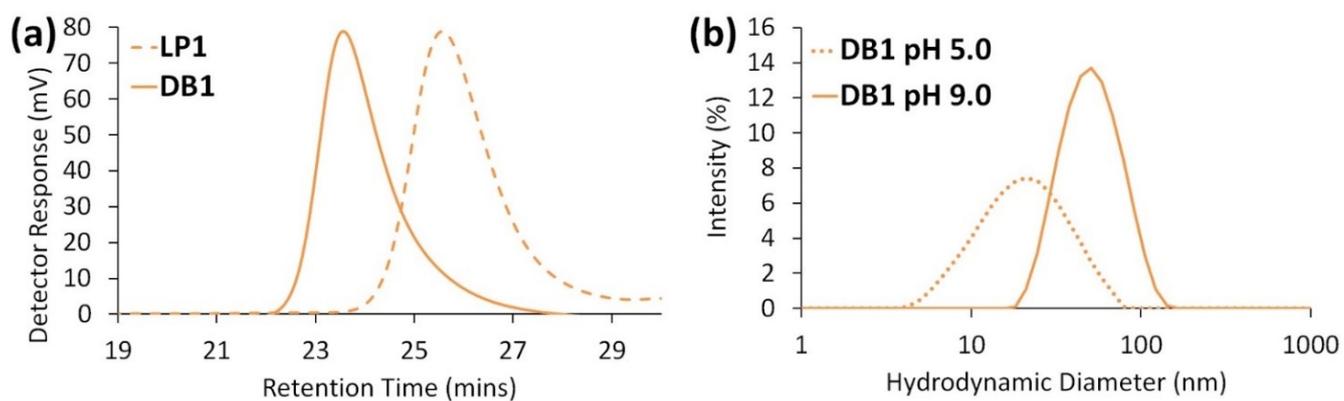


Fig. S4 (a) Size exclusion chromatography (in THF) refractive index traces of LP1 (dashed line) and DB1 (solid line) after chain-extension. (b) Dynamic light scattering analysis (in H₂O) of DB1 (3 mg/mL) at pH 5.0 (dotted line) and pH 9.0 (solid line).

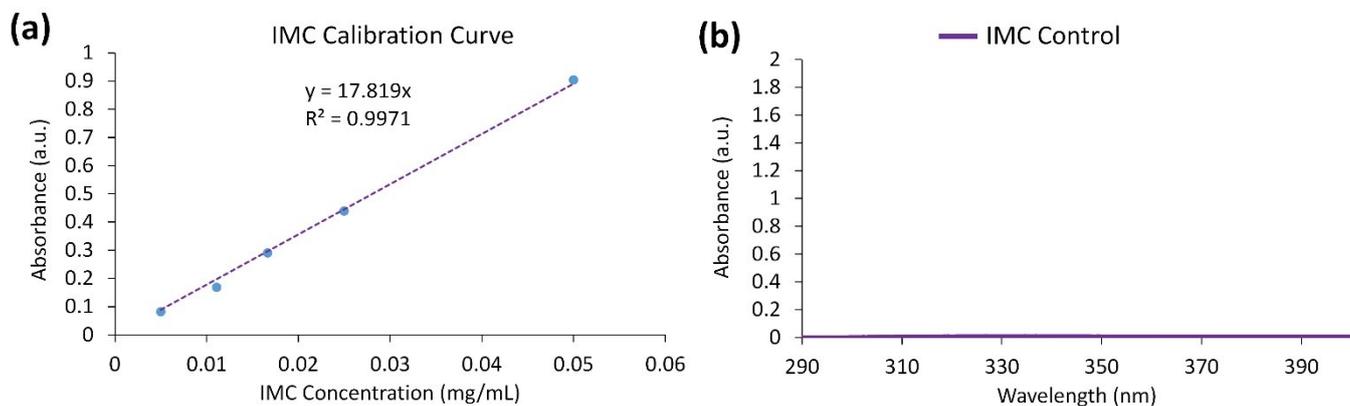


Fig. S5 (a) UV-Vis calibration curve of IMC in EtOH (+ 1 % H₂O by volume) and (b) IMC control experiment displaying no IMC in H₂O without the presence of **SHB2** or **DB1**.

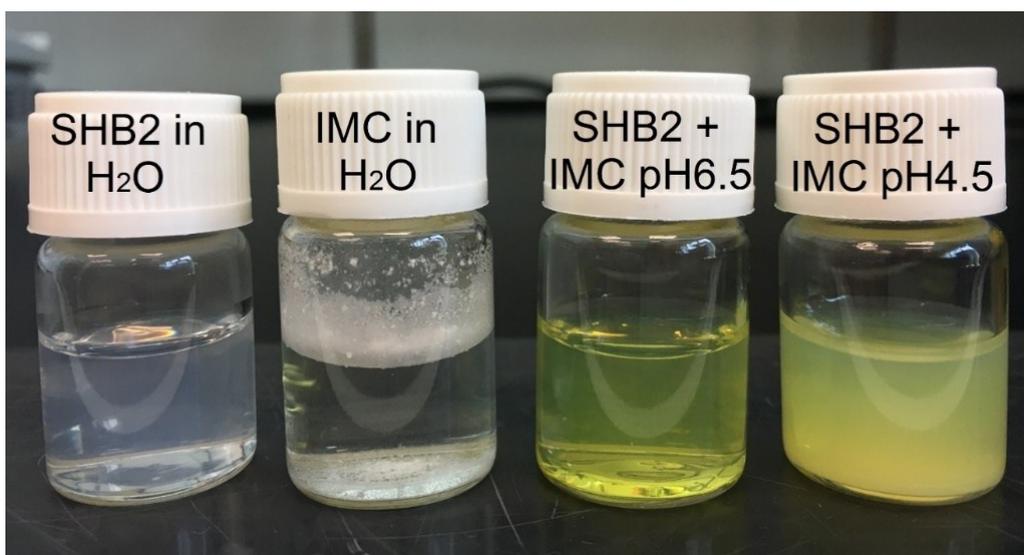


Fig. S6 Photographic visual evidence of IMC uptake facilitated by **SHB2** and subsequent pH-triggered release.

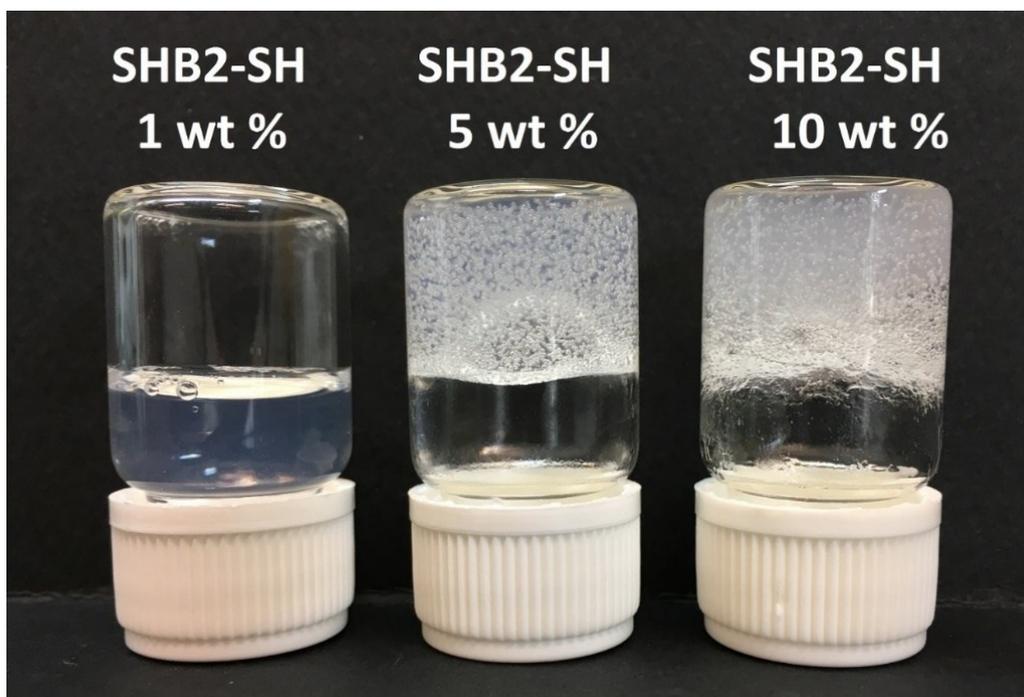


Fig. S7 Hydrogel formation of **SHB2-SH** at 5 and 10 wt %, and unsuccessful gel formation at wt 1 %.

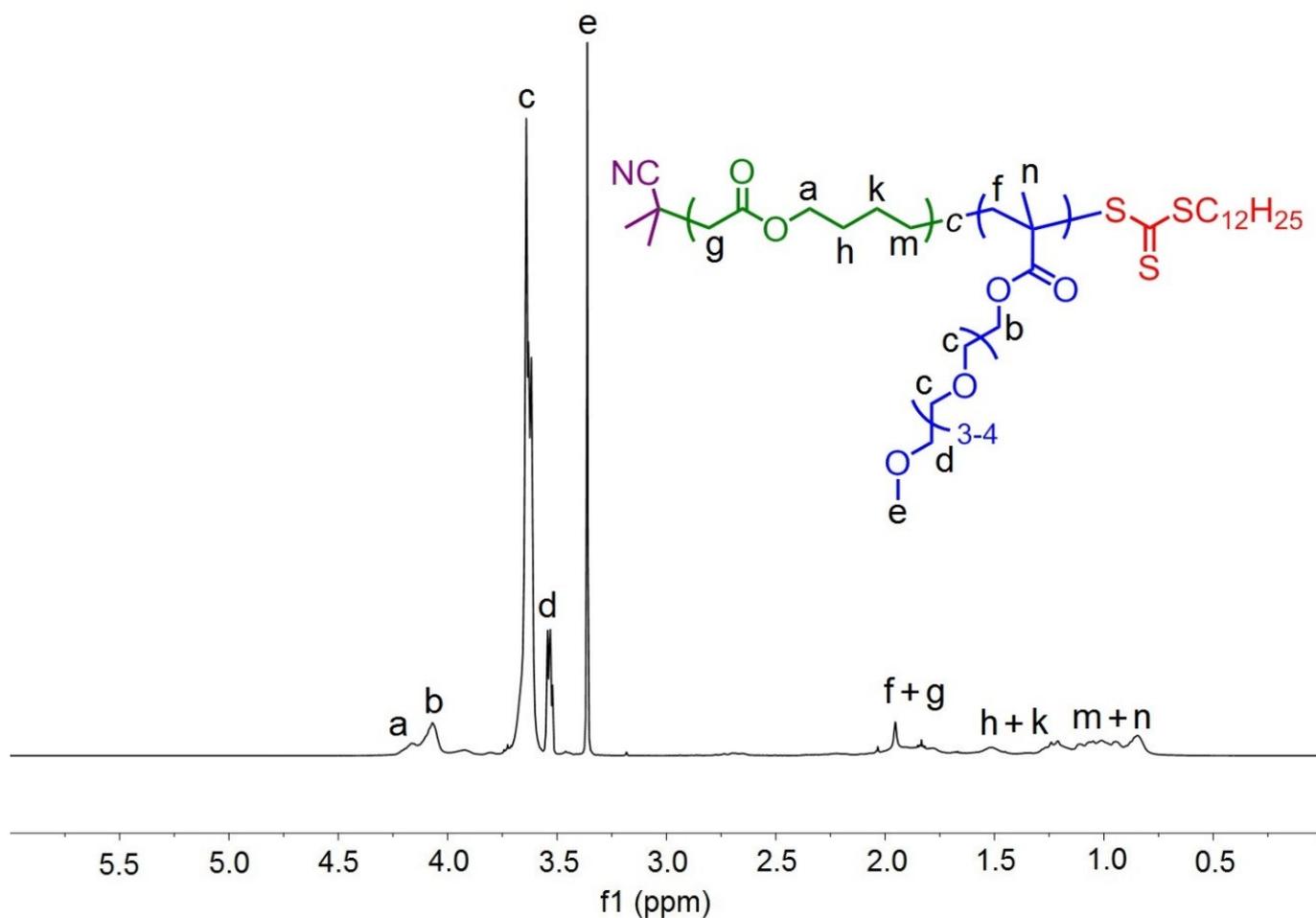


Fig. S8 ^1H NMR (CDCl_3) spectra of LP4.

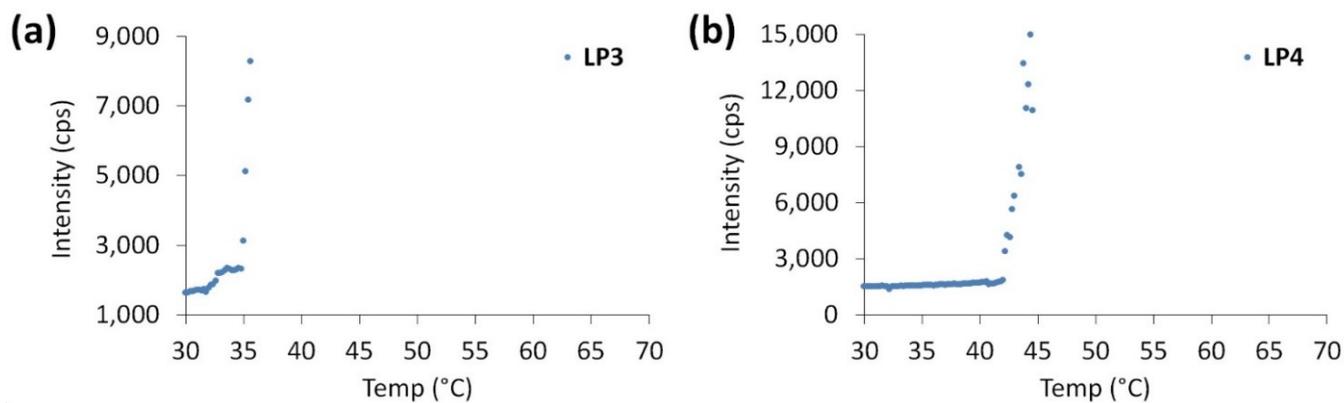


Fig. S9 Lower critical solution temperatures (LCST) of LP3 and LP4, determined by dynamic light scattering (DLS). Phase transition from hydrophilic to hydrophobic, and subsequent precipitation, occurs when the count rate drastically increases.

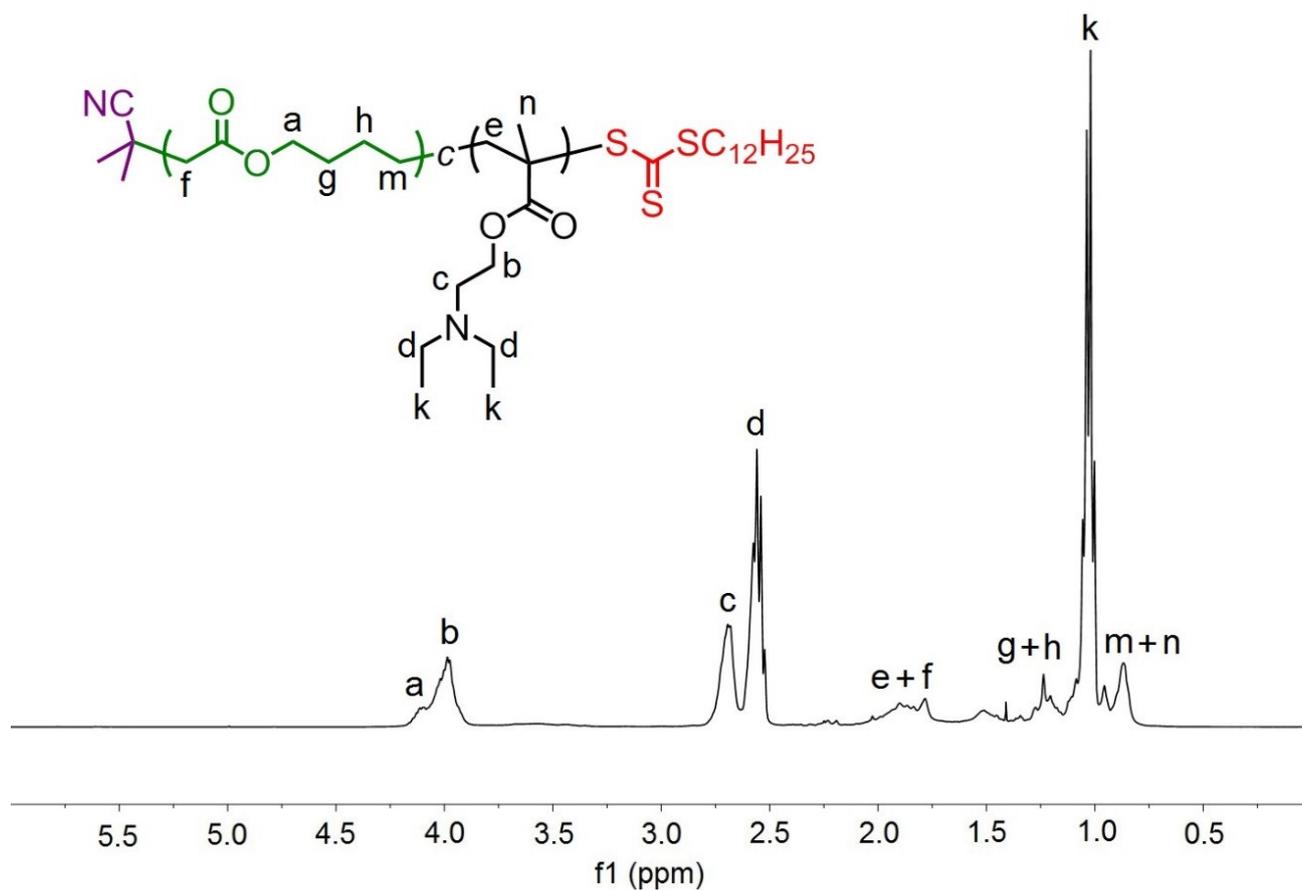


Fig. S10 ^1H NMR (CDCl_3) spectra of LP6.

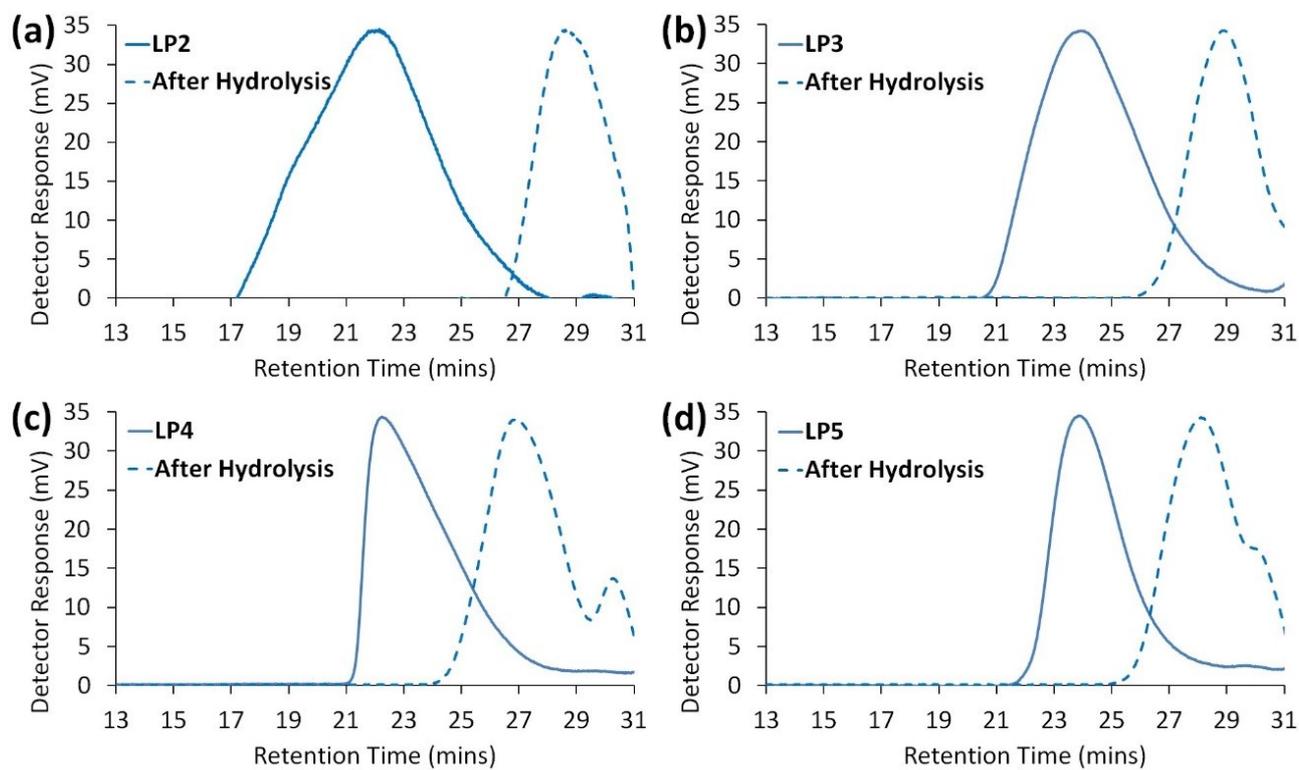


Fig. S11 Size exclusion chromatography (in THF) refractive index traces of (a) LP2, (b) LP3, (c) LP4 and (d) LP5. Each image displays the polymer trace (solid line) and corresponding oligomer sample after hydrolysis (dashed line).

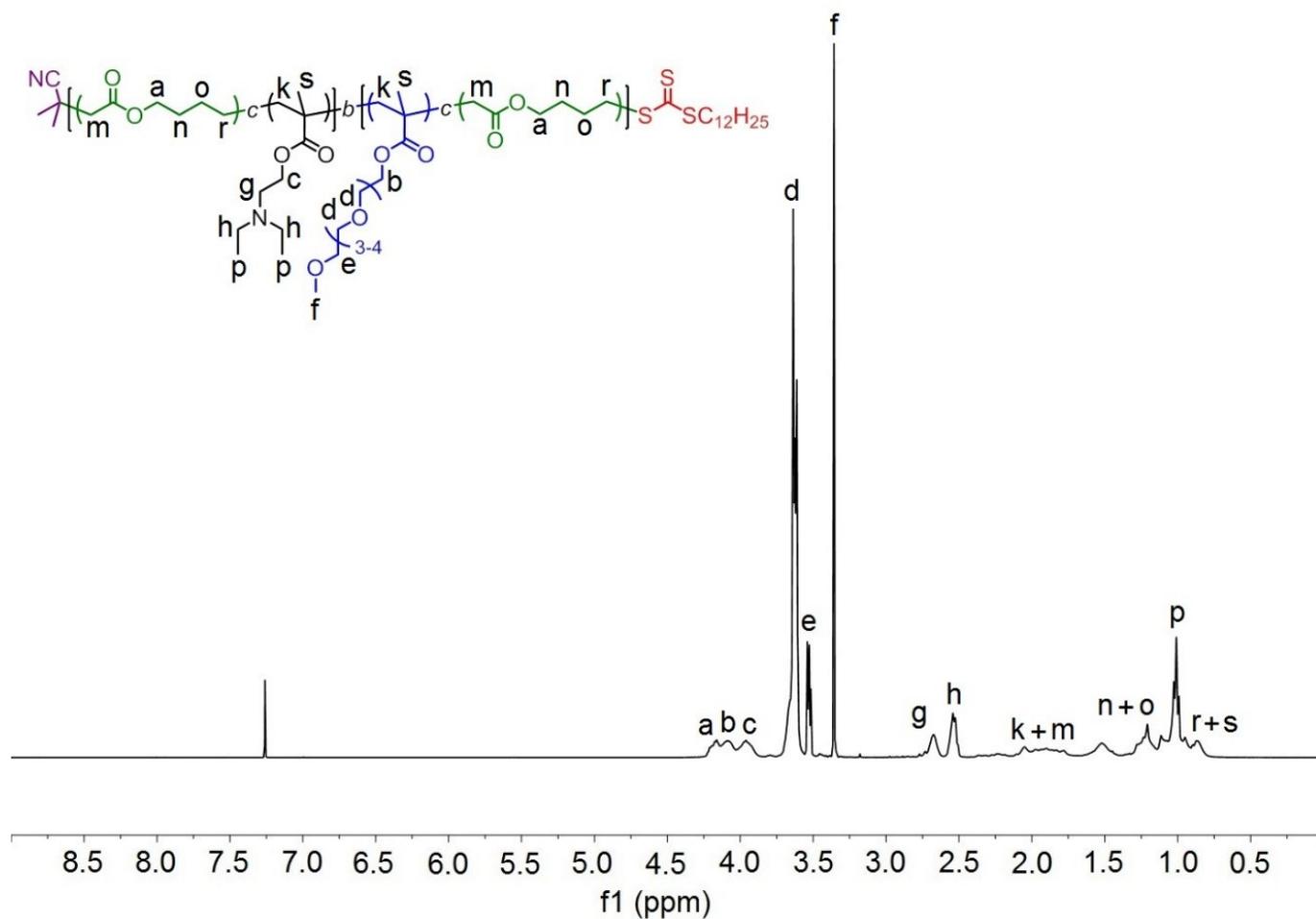


Fig. S12 ^1H NMR (CDCl_3) spectra of DB2.

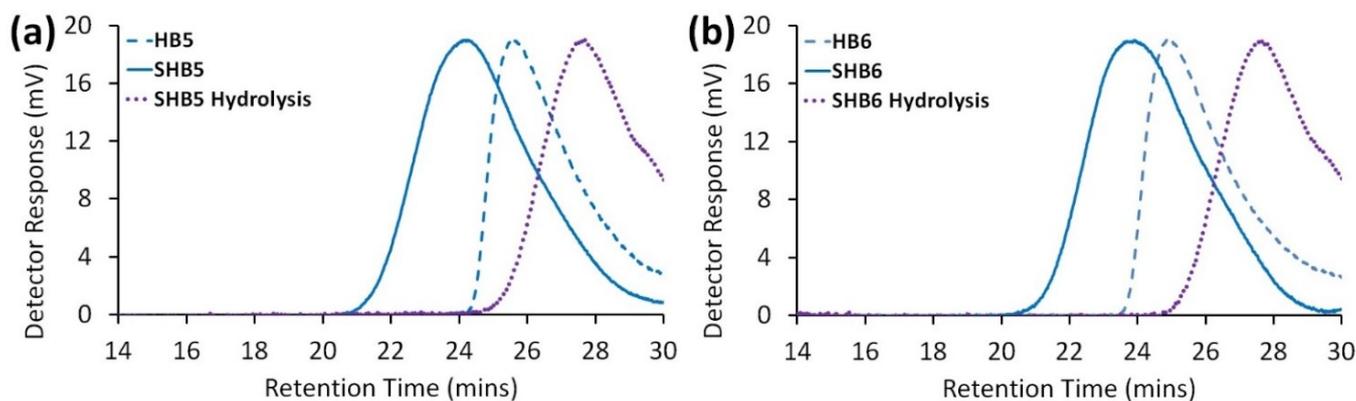


Fig. S13 Size exclusion chromatography (in THF) refractive index traces of (a) HB5, SHB5 and SHB5 Hydrolysis and (b) HB6, SHB6 and SHB6 Hydrolysis.

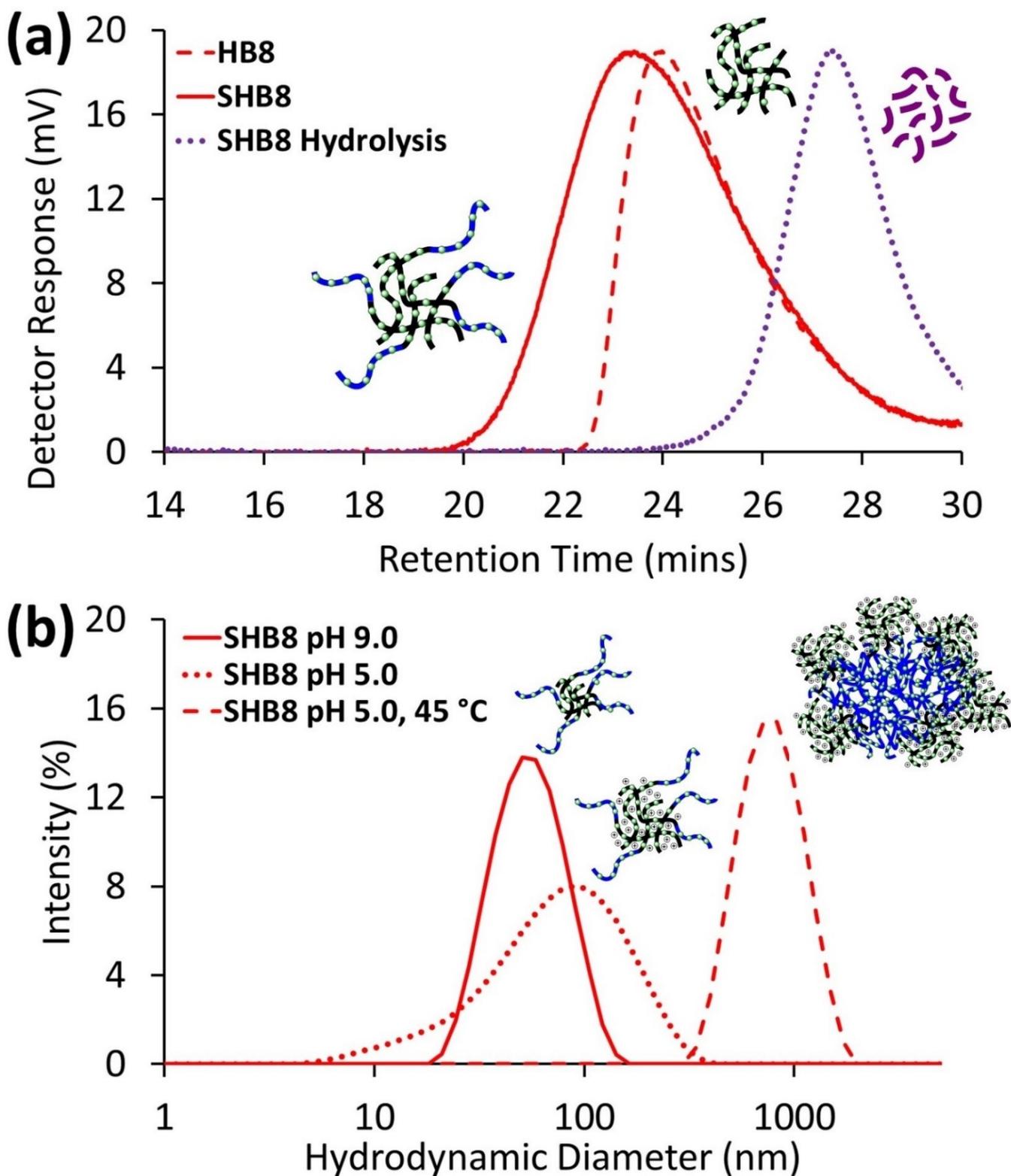


Fig. S14 Size exclusion chromatography (in THF) refractive index traces of (a) hyperbranched polymer **HB8** (dashed line) followed by chain-extension to **SHB8** (solid line) and subsequent hydrolysis of **SHB8** (dotted line). DLS analysis in H₂O (3 mg/mL) of **SHB8** at pH 5.0 (dotted lines) and pH 9.0 (solid lines) and pH 5.0 at 45 °C (dashed lines).