# Solution characterization of a hyperbranched polysaccharide carbamate derivative and specific phase separation behavior due to chain branching

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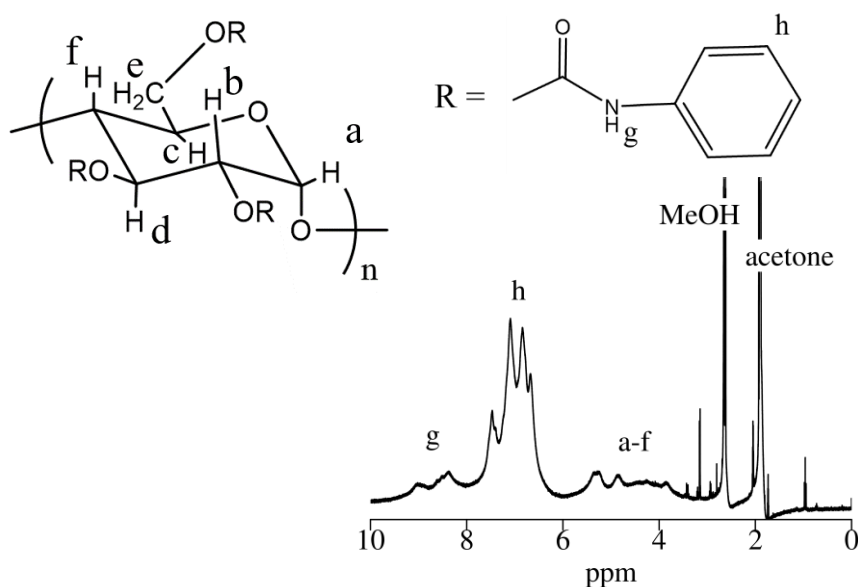* Corresponding author. E-mail address: terao.ken.sci@osaka-u.ac.jp

**Fig. S1.** ^{1}H-NMR spectrum of **HTPC880k** in acetone-$d_6$ at 25 °C.
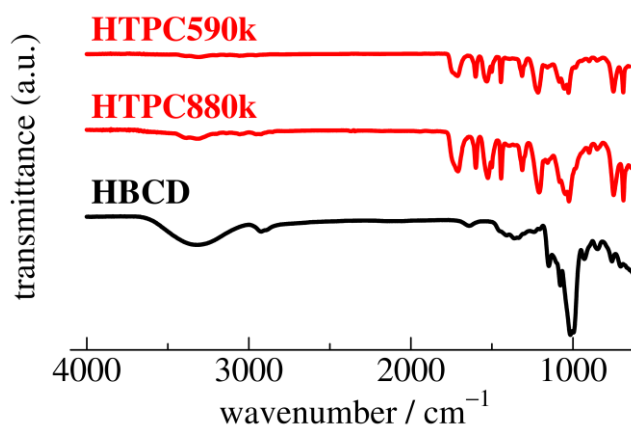


**Fig. S2.** FT-IR spectra for the indicated polysaccharide and polysaccharide derivative samples.
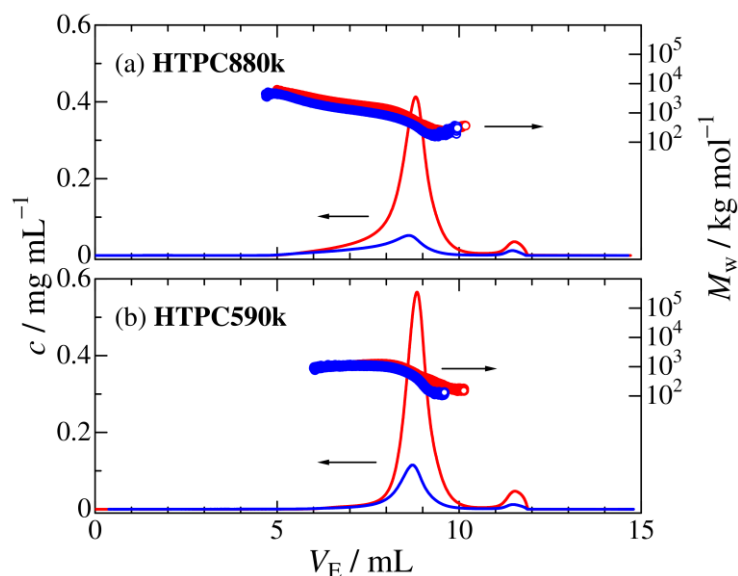
**Fig. S3.** Results of SEC-MALS measurement for **HTPC880k** (a) and **HTPC590k** (b) in THF at 25 °C. Different colored symbols indicate the different concentration of the injected solution. Retention volume $V_E$ dependence of the polymer mass concentration $c$ (blue solid curves) and the weight-average molar mass $M_w$ (red circles).
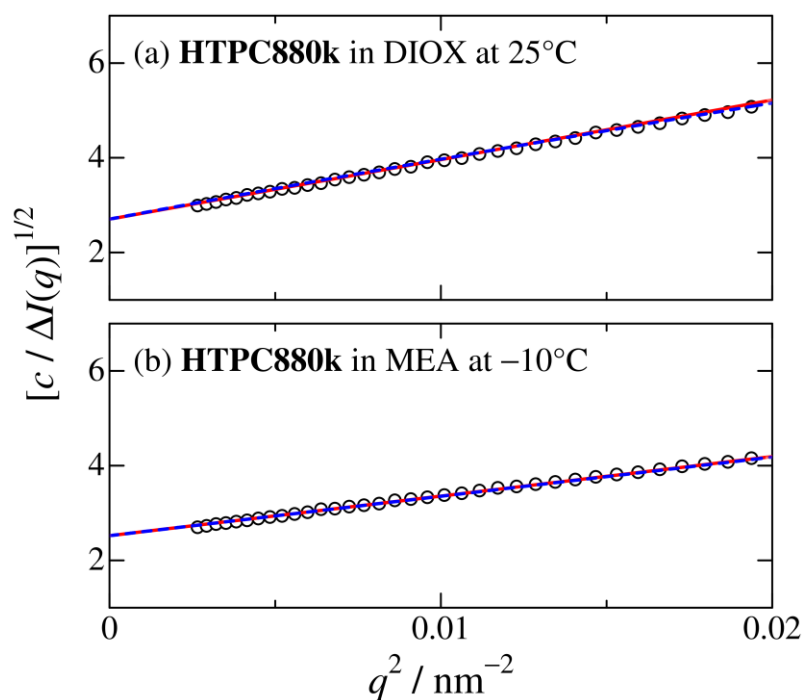


**Fig. S4.** Berry plots for **HTPC880k** in DIOX at 25 °C (a) and in MEA (b) at −10 °C. $\Delta I(q)$, $c$, and $q$ are the excess scattering intensity of X-ray, polymer mass concentration, and the magnitude of the scattering vector, respectively. The solid red and dashed blue lines indicate the initial slope to estimate the radius of gyration $R_g$ and the theoretical values calculated from eqs 1-3 in the main text.
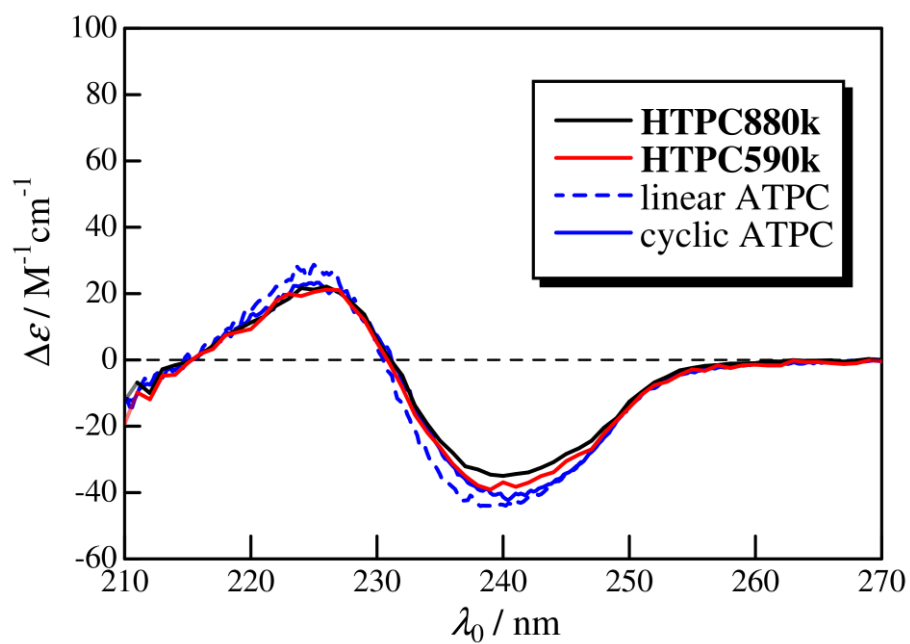
**Fig. S5.** Circular dichroism spectra for **HTPC880k** and **HTPC590k** in DIOX at 25 °C along with that for linear ATPC[1] and cyclic ATPC.[2]

References

1.  K. Terao, T. Fujii, M. Tsuda, S. Kitamura and T. Norisuye, *Polym. J.*, 2009, **41**, 201-207.
2.  K. Terao, N. Asano, S. Kitamura and T. Sato, *ACS Macro Lett*, 2012, **1**, 1291-1294.