Supporting Information

Preparation and UCST-type Phase Behavior of Glycopolypeptide in Alcoholic Solvents

Xi Wang, Chenglong Ge, Ying Ling,* and Haoyu Tang*

Key Laboratory of Polymeric Materials and Application Technology of Hunan Province, Key Laboratory of Advanced Functional Polymer Materials of Colleges and Universities of Hunan Province, College of Chemistry, Xiangtan University, Xiangtan, Hunan, 411105, China

Correspondence to: Haoyu Tang (Email: htang@xtu.edu.cn) and Ying Ling (Email: yingling0202@gmail.com)

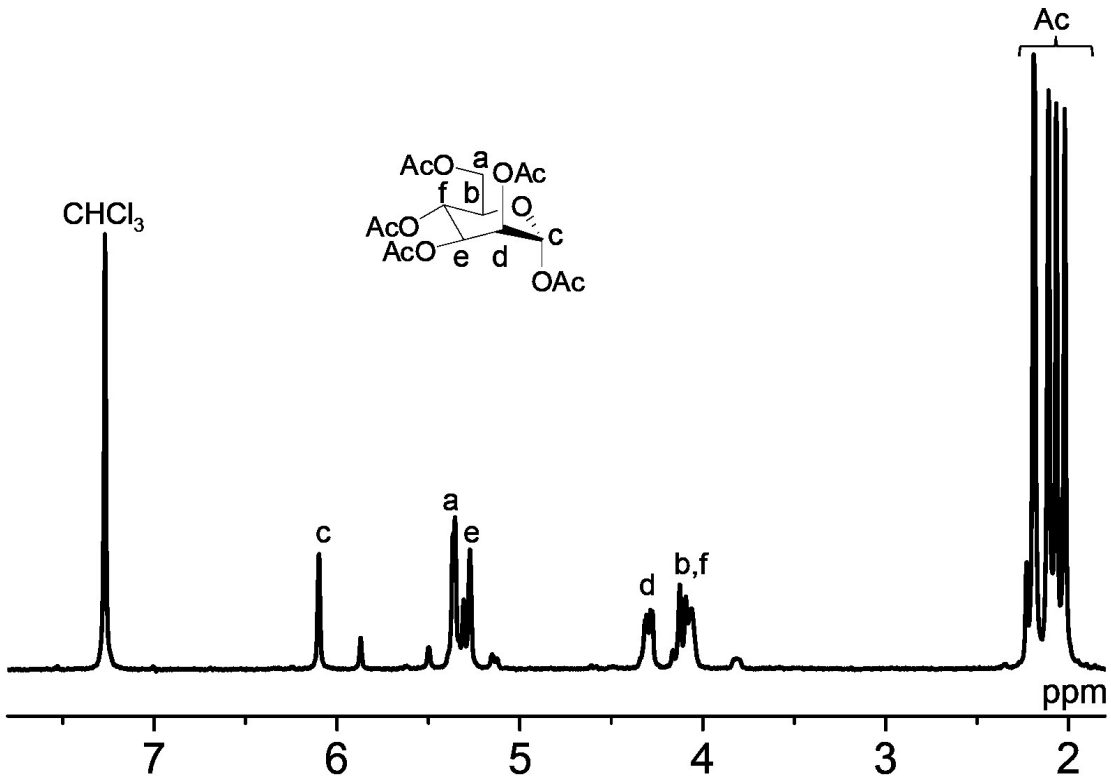

Figure S1. ^{1}H NMR spectrum of **2** in $CDCl_3$.

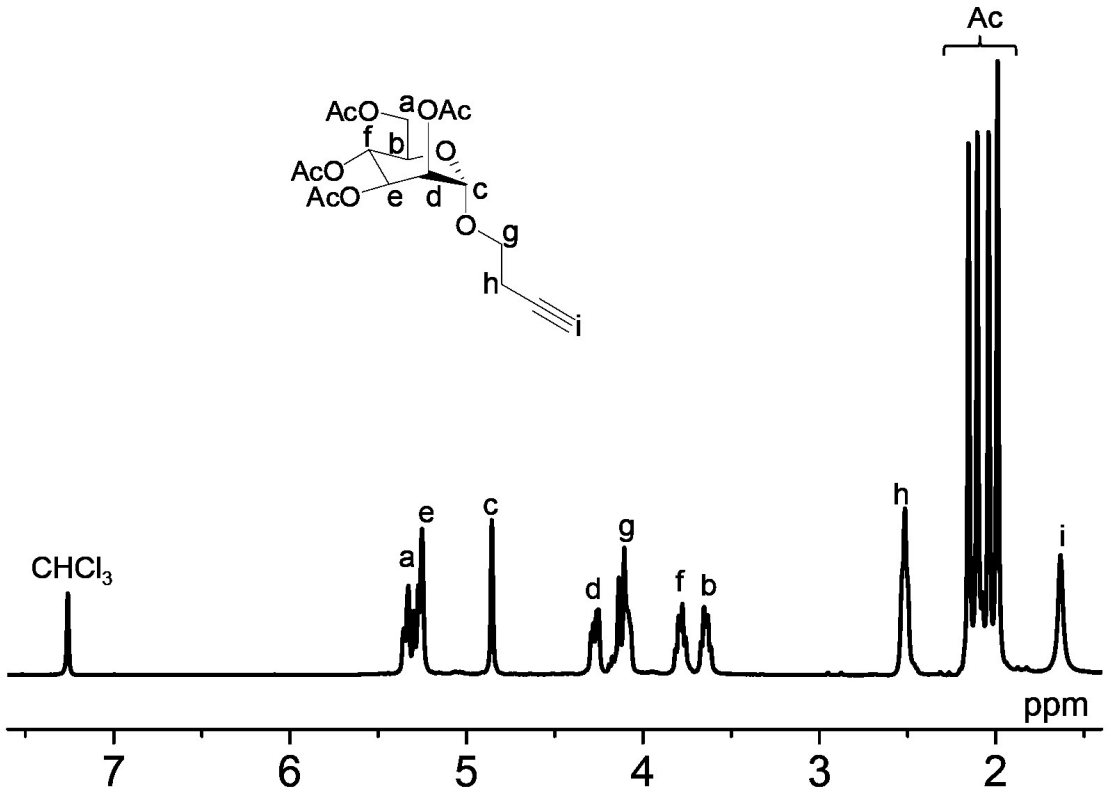

Figure S2. ^{1}H NMR spectrum of **3** in $CDCl_3$.

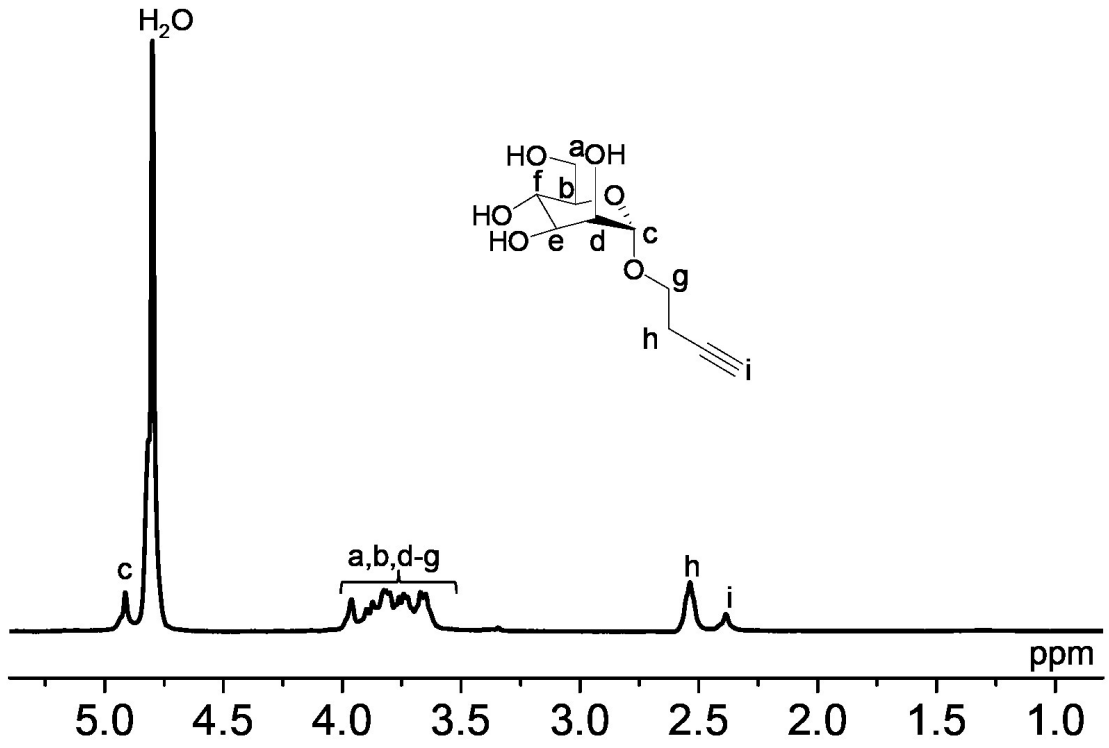

Figure S3. ^{1}H NMR spectrum of **4** in D_2O.

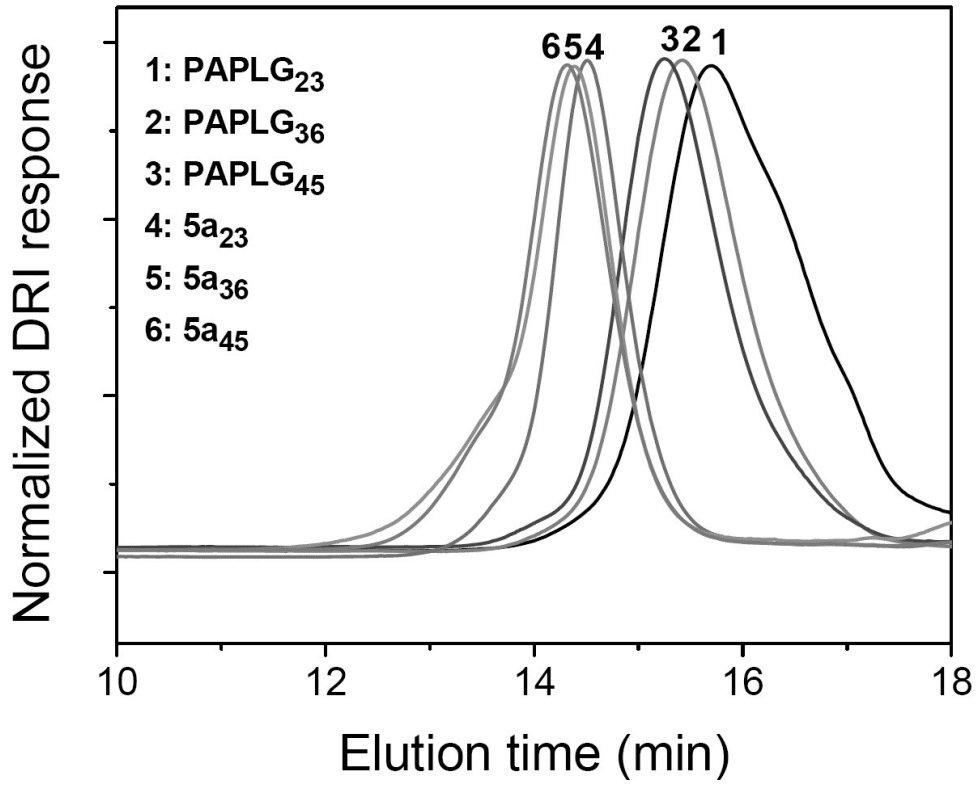

Figure S4. GPC chromatograms of PAPLG (DP = 23, 36, and 45) and **5a** (DP = 23, 36, and 45).

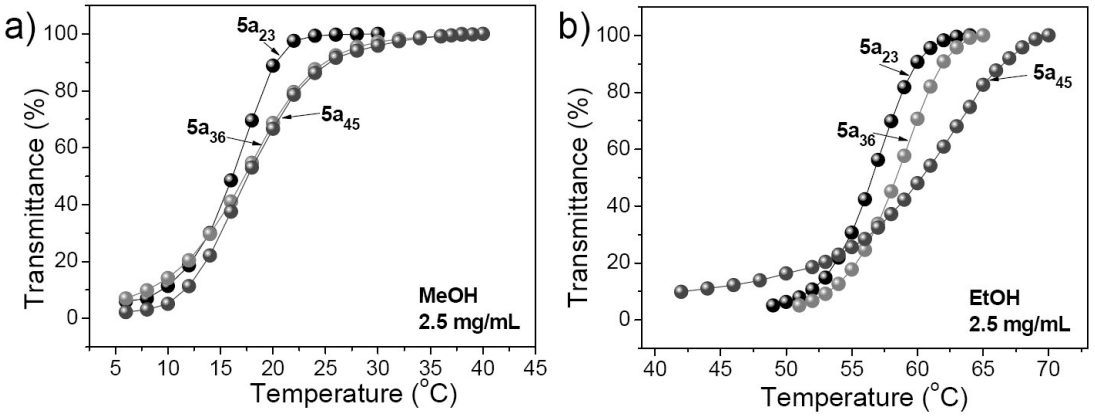

Figure S5. The plots of transmittance at λ = 500 nm versus temperature for the (a) MeOH solution and (b) EtOH solution of **5a** (DP = 23, 36, and 45) at 2.5 mg·mL^{-1}.

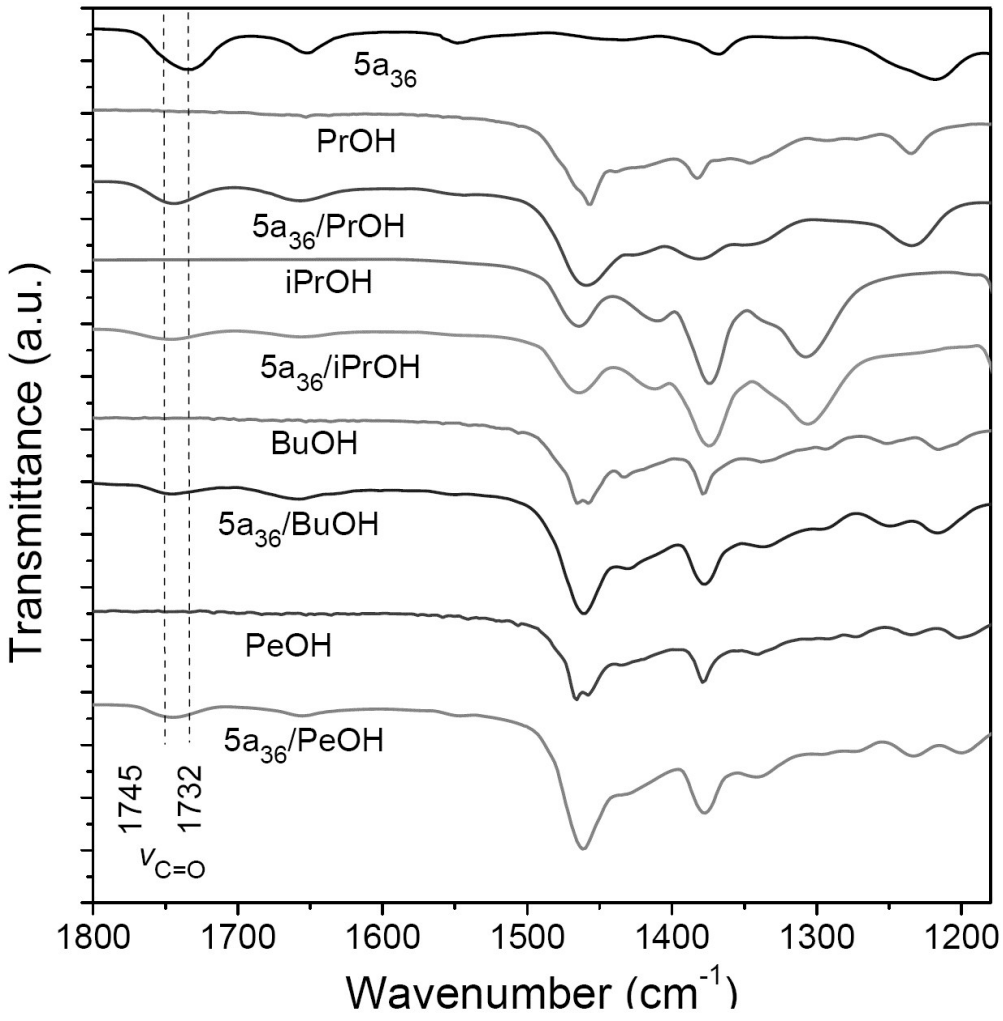

Figure S6. FTIR spectra of neat **5a$_{36}$**, ROH (i.e., PrOH, iPrOH, BuOH, and PeOH), and **5a$_{36}$**/ROH mixtures.

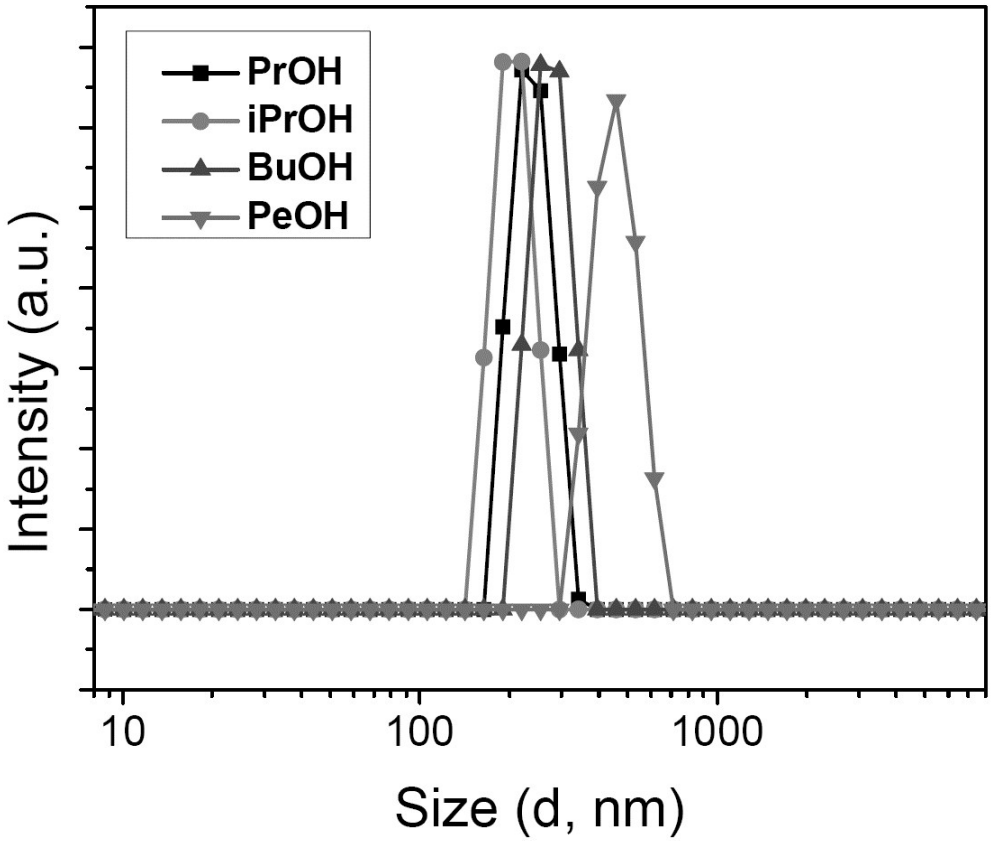

Figure S7. DLS size distribution plots of **5a$_{36}$** in ROH (i.e., PrOH, iPrOH, BuOH, and PeOH) at 1 mg/mL (25 °C).

Table S1. UCST-type phase transition temperature of glycopolypeptides in MeOH at different concentrations.

Name	T_{pt}[a] (°C)		
	1 mg/mL	2.5 mg/mL	5 mg/mL
5a$_{36}$	7.4	17.4	27.4
5c$_{36}$	8.2	22.6	33.4
5d$_{36}$	--[b]	21.5	35.0

[a] UCST-type phase transition temperature in alcoholic solvents determined by variable-temperature UV-vis spectroscopy.
[b] The transmittance at 50% was below 5 °C.

Table S2. DLS results of glycopolypeptides in various alcoholic solvents (1 mg·mL^{-1}, 25 °C).

Name	Diameter (nm), PDI[a]					
	MeOH	EtOH	PrOH	BuOH	PeOH	iPrOH
5a$_{36}$	474.3, 0.262	348.5, 0.271	240.7, 0.104	276.8, 0.121	458.8, 0.170	206.8, 0.363
5c$_{36}$	605.5, 0.213	361.2, 0.258	--[b]	--	--	--
5d$_{36}$	750.3, 0.129	617.3, 0.197	--	--	--	--

[a] Distribution of polymer aggregates in the solvents.
[b] **5c**$_{36}$ and **5d**$_{36}$ were insoluble in PrOH, BuOH, PeOH and iPrOH at the concentration of 1 mg·mL^{-1} (25 °C).

Table S3. UCST-type phase transition temperature of **5a**$_{36}$ in various alcoholic solvents.

Name	T_{pt}[a] (°C)					
	MeOH[b]	EtOH	PrOH	BuOH	PeOH	iPrOH
5a$_{36}$	7.4	51.9	58.3	69.9	77.9	62.2

[a] UCST-type phase transition temperature in alcoholic solvents determined by variable-temperature UV-vis spectroscopy (1 mg·mL^{-1}).
[b]MeOH = methanol, EtOH = ethanol, PrOH = 1-propanol, BuOH = 1-butanol, PeOH = 1-pentanol, iPrOH = isopropanol.