

Electronic Supplementary Information (ESI)

Switchable glucose-responsive volume phase transition behavior of poly(phenylboronic acid) microgels

Mingming Zhou,^a Fan Lu,^a Xiaomei Jiang,^b Qingshi Wu,^a Aiping Chang,^a and Weitai Wu*^a

^a *State Key Laboratory for Physical Chemistry of Solid Surfaces, The Key Laboratory for Chemical Biology of Fujian Province, and Department of Chemistry, College of Chemistry and Chemical Engineering, Xiamen University, Xiamen 361005, Fujian, China*

^b *Clinical Laboratory, Huli Center for Maternal and Child Health, Xiamen 361009, Fujian, China*

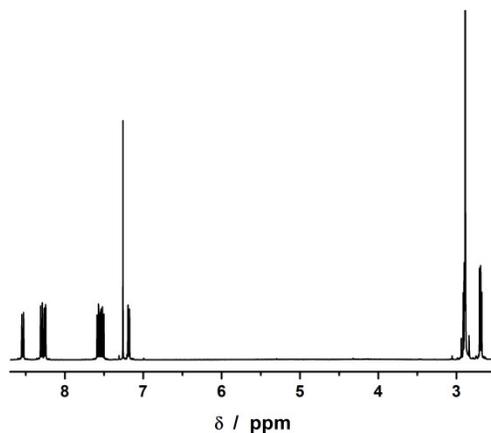


Figure S1. ¹H NMR of 2-dansylaminoethylamine in CDCl₃.

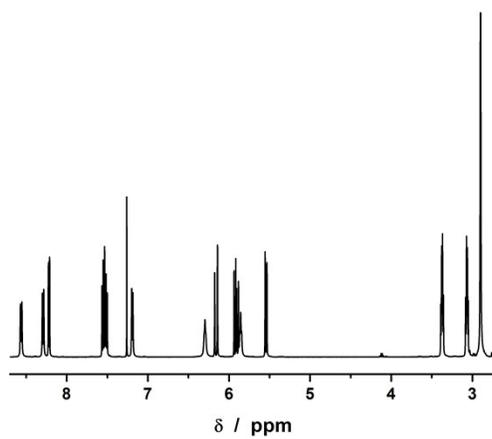


Figure S2. ^1H NMR of DAEAM in CDCl_3 .

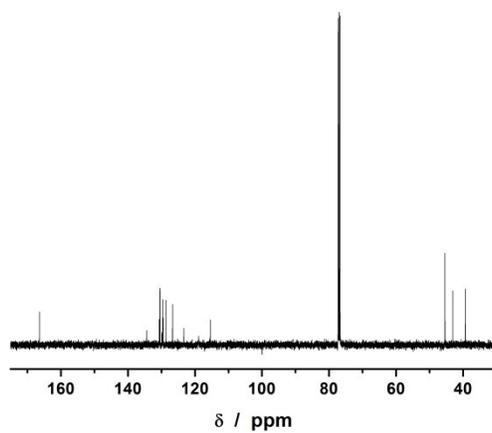


Figure S3. ^{13}C NMR of DAEAM in CDCl_3 .

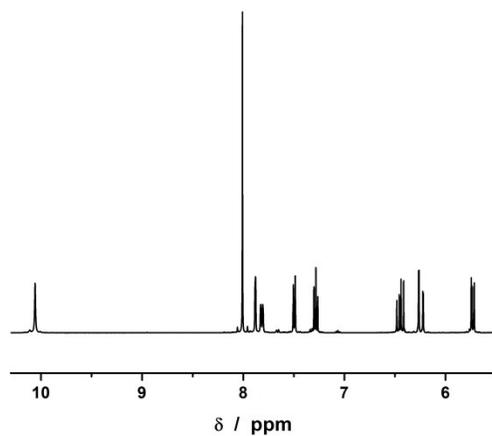


Figure S4. ^1H NMR of 3-VAPBA in DMSO-d_6 .

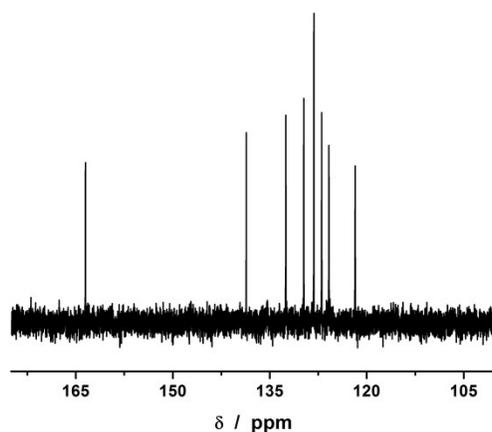


Figure S5. ^{13}C NMR of 3-VAPBA in DMSO-d_6 .

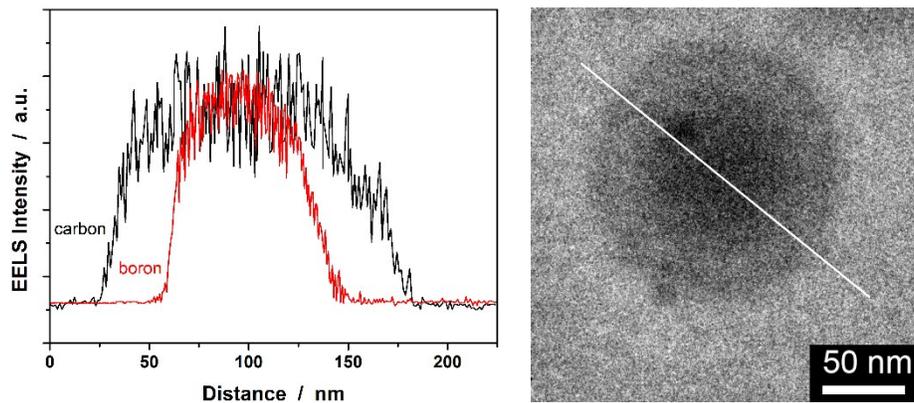


Figure S6. A typical electron energy loss spectroscopy (EELS) of the microgels (pPBA-2) along the line in the TEM image.

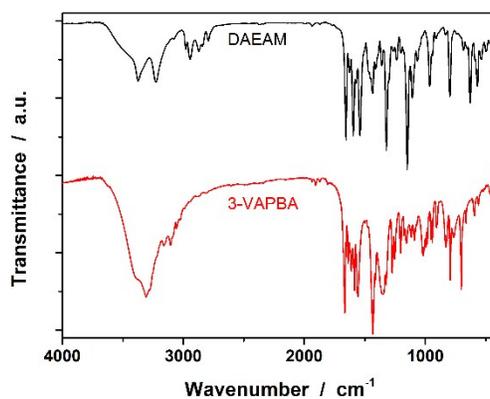


Figure S7. FTIR spectra of 3-VAPBA and DAEAM.

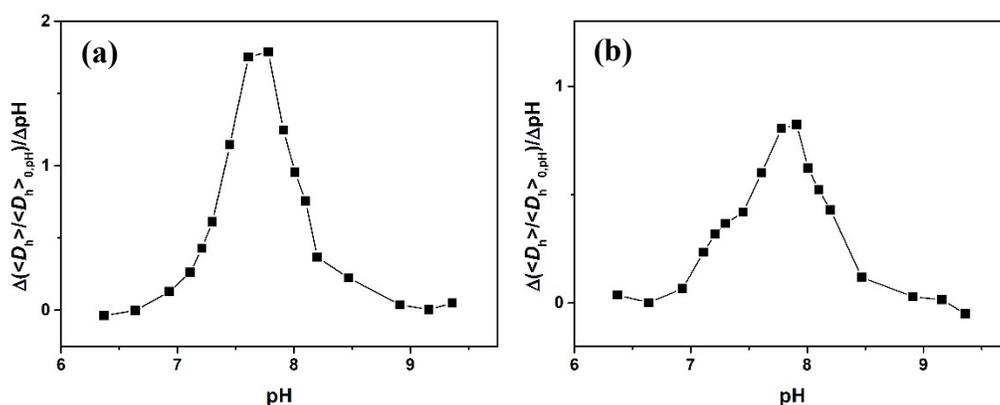


Figure S8. 1st derivative of the normalized hydrodynamic diameter, $\langle D_h \rangle / \langle D_h \rangle_{0, \text{pH}}$, of (a) pPBA-1 and (b) pPBA-2 microgels.

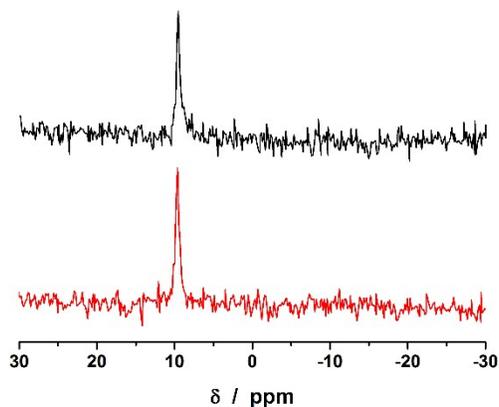


Figure S9. ¹¹B NMR spectrum of the control samples synthesized following pPBA-1 (up) and pPBA-2 microgels (down) but without DAEAM, in D₂O of pH = 7.4, measured at 25.0 °C.

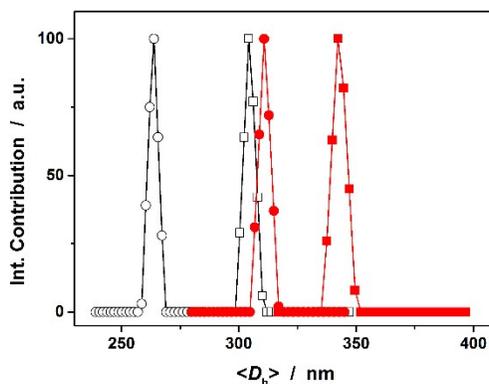


Figure S10. DLS $\langle D_h \rangle$ distribution of pPBA-1 (open symbols) and pPBA-2 (solid symbols) microgels upon adding 0.0 mM (\square, \blacksquare) or 200.0 mM (\circ, \bullet) glucose.

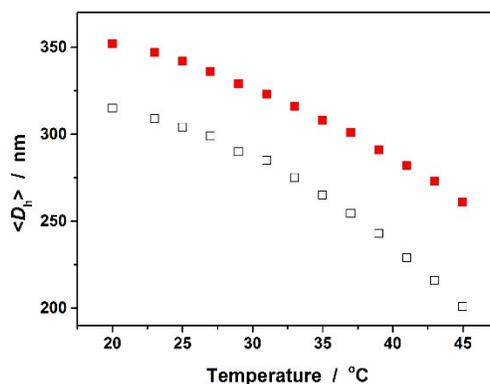


Figure S11. The solution temperature-dependent $\langle D_h \rangle$ of pPBA-1 (□) and pPBA-2 (■) microgels. All measurements were made in PBS of pH = 7.4 and at a scattering angle $\theta = 45^\circ$.

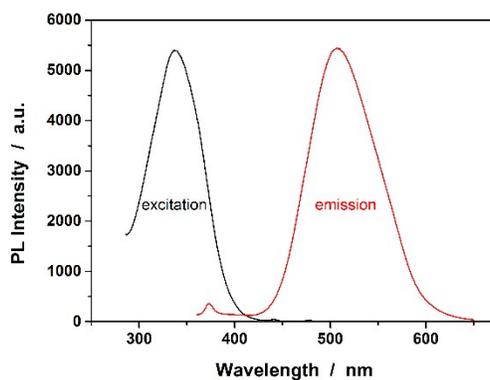


Figure S12. PL spectrum for DAEAM. The excitation spectrum is also presented.

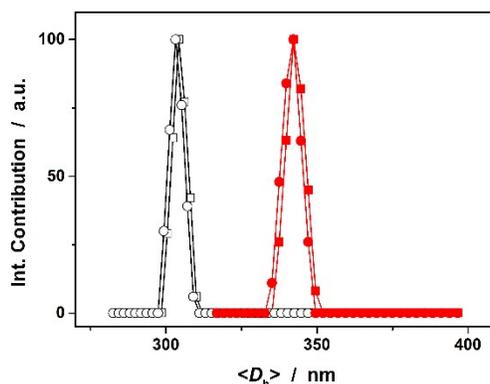


Figure S13. DLS $\langle D_h \rangle$ distribution of pPBA-1 (open symbols) and pPBA-2 (solid symbols) microgels before (□, ■) and after (○, ●) ten cycles of adding (25.0 mM) and removing (0.0 mM) of glucose. All measurements were made in PBS of pH = 7.4 at 25.0 °C and a scattering angle $\theta = 45^\circ$.

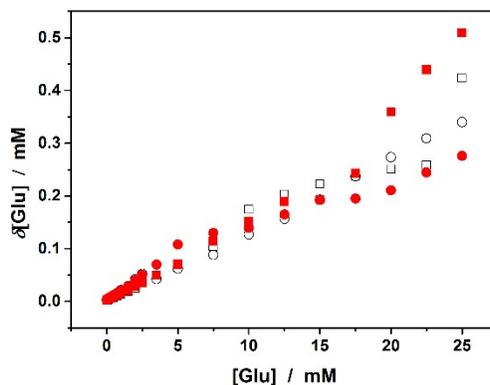


Figure S14. The glucose resolution ($\delta[\text{Glu}]$) as a function of the glucose concentration $[\text{Glu}]$ by employing pPBA-1 (open symbols) and pPBA-2 (solid symbols) microgels at 25.0 °C (■,□) and 37.0 °C (●,○). All measurements were made in PBS of pH = 7.4.

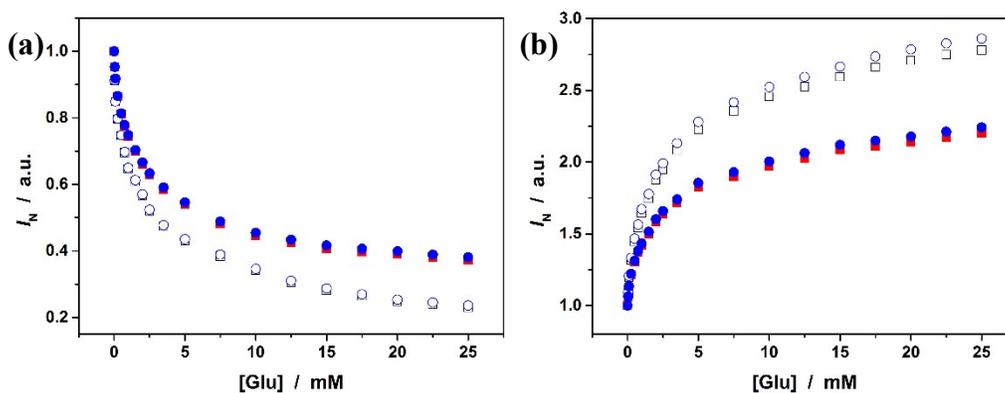


Figure S15. PL response of pPBA-1 (open symbols) and pPBA-2 (solid symbols) microgels upon adding glucose. All measurements were made in 5.0 mM PBS of pH = 7.4 at (a) 25.0 °C and (b) 37.0 °C, in the absence (■,□) and presence of 0.1 mM fructose (●,○).