

Electronic Supplementary Information (ESI)

Synthesis of polymer macrogels with rapid and significant response to glucose concentration changes

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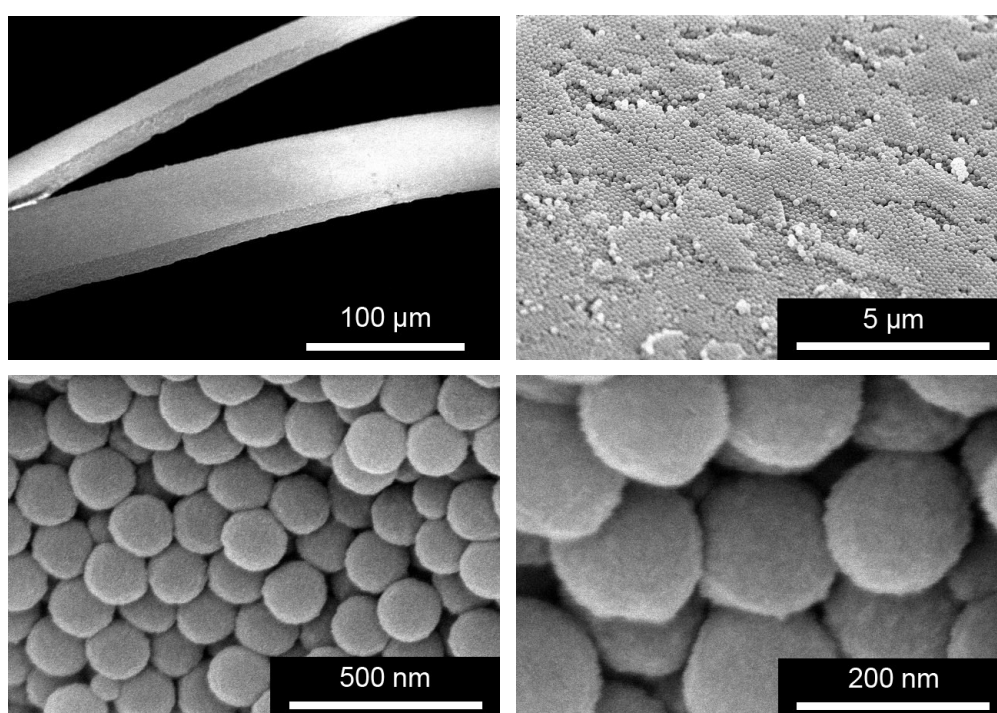


Fig. S1 Typical SEM images of the concentrated pPBA microgels.

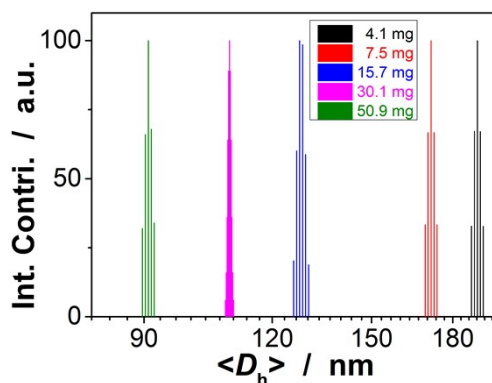


Fig. S2 DLS size distribution of the microgels synthesized with different amount of SDS. The feeding amount of 4-VPBA was set to 67.6 mg. DLS measurements were made in 5.0 mM PBS of pH = 7.4 at 37.0 °C.

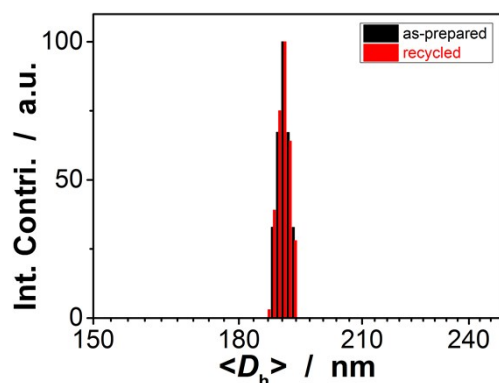


Fig. S3 DLS size distribution of the as-prepared and recycled pPBA microgels, where the recycled microgels were obtained by dialysis of the CCA of the concentrated microgels. DLS measurements were made in 5.0 mM PBS of pH = 7.4 at 37.0 °C.

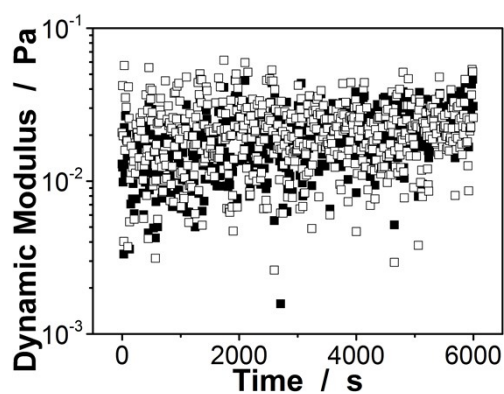


Fig. S4 Evolution of the dynamic modulus (\blacksquare : G' ; \square : G'') with time of the simply concentrated microgels under otherwise the same conditions for macrogels synthesis (the first 100 min).

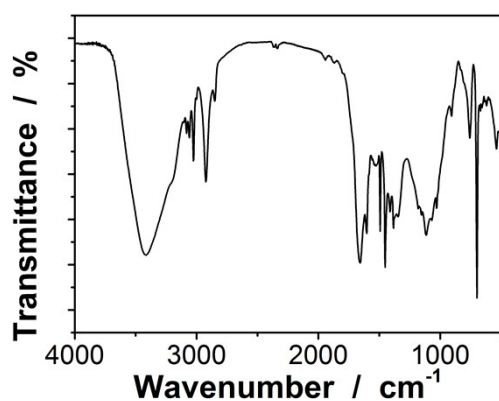


Fig. S5 FTIR spectra of the as prepared macrogels.

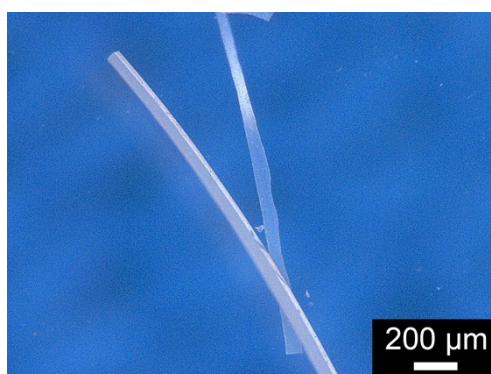


Fig. S6 Typical photomicrographs of the proposed macrogels in the dry state.

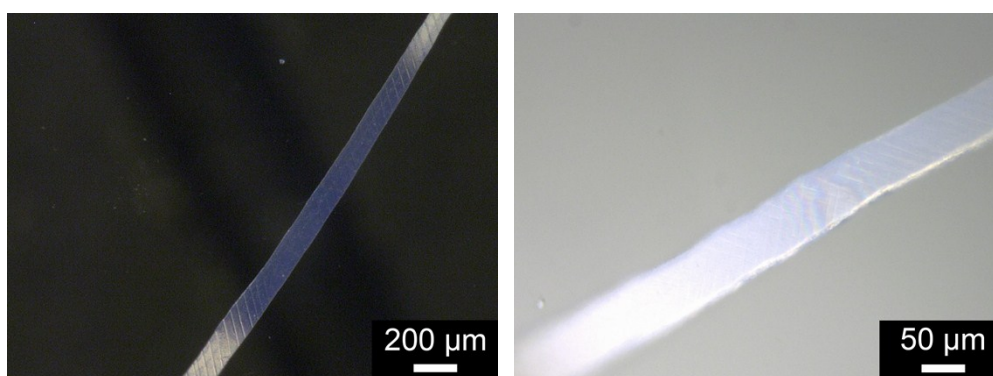


Fig. S7 Typical photomicrographs of the proposed macrogels in the dry state under high resolution microscope.

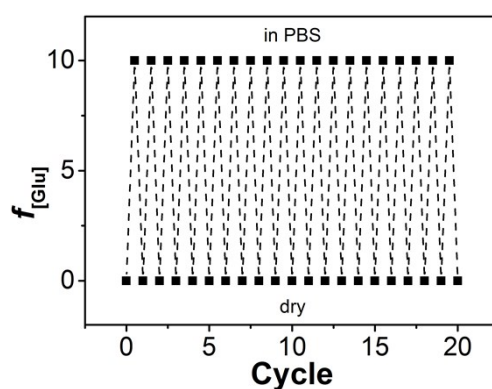


Fig. S8 Swelling and drying cycles upon the repeated addition and removal of PBS (5.0 mM, pH = 7.4, [Glu] = 0.0 mM) bathing medium of the macrogels. All measurements were made at 37.0 °C.

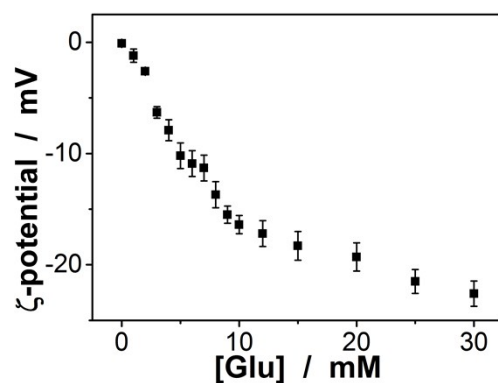


Fig. S9 Glucose-dependent ζ -potential of the pPBA microgels. All measurements were made in 5.0 mM PBS of pH = 7.4 at 37.0 °C.

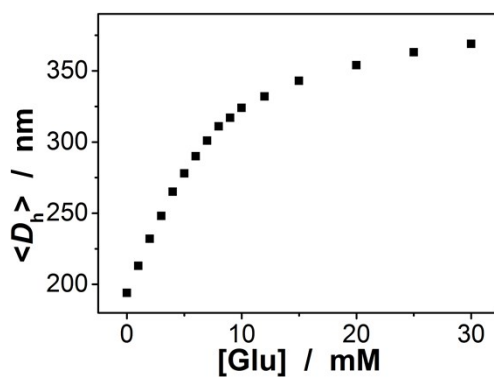


Fig. S10 Glucose-dependent $\langle D_h \rangle$ of the pPBA microgels. DLS measurements were made in 5.0 mM PBS of pH = 7.4 at 37.0 °C.

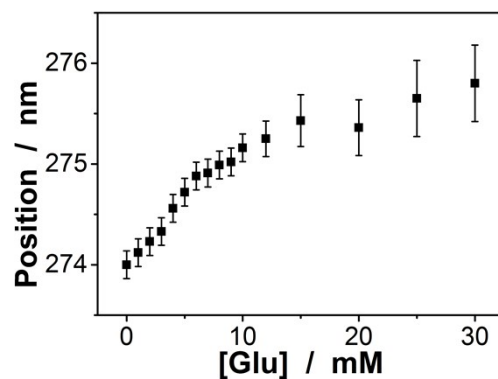


Fig. S11 Glucose-dependent position of the (1,1,0) reflection. All measurements were made in 5.0 mM PBS of pH = 7.4 at 37.0 °C.

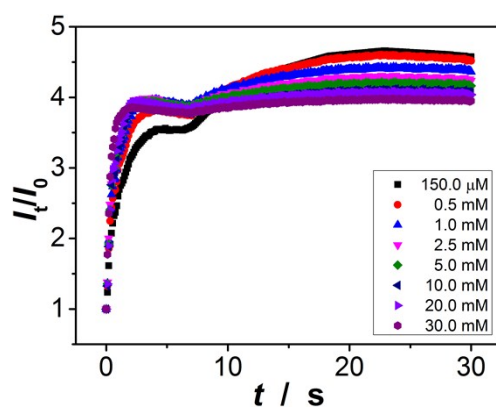


Fig. S12 Characteristic kinetics of the response of the pPBA microgels (which were used for the synthesis of the macrogels). All measurements were made in 5.0 mM PBS of pH = 7.4 at 37.0 °C.

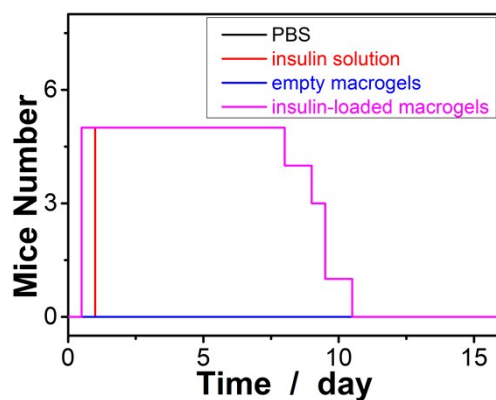


Fig. S13 Changes of the mice number in different groups within the normoglycemic range (<11.1 mM) over the administration time.

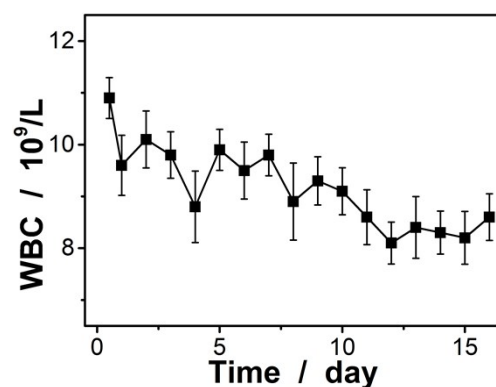


Fig. S14 The effect of the treatment with insulin-loaded macrogels on the WBC of STZ-induced diabetic mice, showing *in vivo* toxicity. Results are mean \pm SD ($n = 5$).