Supplementary Information

Water-Soluble Conjugated Polymer Brush with Multihydroxy Dendritic Side Chains

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Fig. S1 TGA curves of PFBT-Br, PFBT-OH, PFBT-g-HPG, PFBT-g-HPG-COOH and PFBT-g-HPG-OA.
The technique of inverse-gated $^{13}$C NMR can produce carbon signals of high qualities despite the decoupling of $^1$H, because of long delay time up to 10 s and high number of scans. Since the dendritic, linear and terminal carbons caused signals with different chemical shifts, their inverse-gated $^{13}$C NMR spectrum offered the opportunity to calculate the degree of branching. The mechanism for measuring DB of hyperbranched polyglycerol by inverse-gated $^{13}$C NMR measurement can be found in literature (A. Sunder, R. Hanselmann, H. Frey, R. Mühlaupt, *Macromolecules*, 1999, **32**, 4240–4246.).

**Fig. S2**

Inverse-gated $^{13}$C NMR spectrum of PFBT-g-HPG (solvent: DMSO-$d_6$).
Fig. S3 TEM image of PFBT-g-HPG prepared from aqueous solution at high magnification.

Fig. S4 AFM height (a) and phase (b) images of PFBT-g-HPG prepared from aqueous solution.
**Fig. S5**

![Graph](image1.png)

**Fig. S5** LLS result of PFBT-g-HPG in DMF water at [RU] = 20 µM.

**Fig. S6**

![Image](image2.png)

**Fig. S6** 3D confocal fluorescence image of cell line MCF–7 with incubation of PFBT-g-HPG ([RU] = 1µM) for 2 h.
**Fig. S7**

Confocal fluorescence image (a) and bright-field image (b) of cell line MCF–7 without incubation of PFBT-g-HPG.
Fig. S8

(a) 1H NMR spectra of PFBT-g-HPG-COOH (a) (solvent: CD$_3$OD) and PFBT-g-HPG-OA (b) (solvent: CDCl$_3$).

(b) 1H NMR spectra of PFBT-g-HPG-COOH (a) (solvent: CD$_3$OD) and PFBT-g-HPG-OA (b) (solvent: CDCl$_3$).