Supporting Information for

Full pH-range responsive hyperbranched polyethers: synthesis and responsiveness

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Figure S1. FTIR spectra of HPMHO, HPMHO-Amine and HPMHO-Carboxy.

IR (cm⁻¹): 3380 (ν₆ OH), 3340 (ν₆ NH), 2965 (ν₆ CH₃), 2930 (ν₆ CH₂), 2881 (ν₆ CH₃), 2858 (ν₆ CH₂), 1738 (ν₇ C=O), 1700 (ν₅ N=O), 1536 (δ NH), 1259 (ν₆ C-O), 1044 (ν₆ C-O-C).
Figure S1 presents the FTIR spectra of HPMHO, HPMHO-Amines and HPMHO-Carboxys. The bands at 2956 and 2881 cm\(^{-1}\) are assigned to asymmetric and symmetric -CH\(_3\) stretching vibrations, respectively. The peaks at 2930 and 2881 cm\(^{-1}\) correspond to asymmetric and symmetric -CH\(_2\)- stretching vibration, and the asymmetric and symmetric stretching vibration of C-O-C cause absorption at 1255 and 1044 cm\(^{-1}\). In HPMHO’s spectrum, the band at 3380 cm\(^{-1}\) is ascribed to asymmetric stretching vibration of hydroxyl. After amination, the absorption of N-H stretching appears at 3340 cm\(^{-1}\). The characteristic absorbance of C=O in urethane appears at 1700 cm\(^{-1}\), while the peaks at 1536 and 1259 cm\(^{-1}\) are assigned to shear vibration of N-H and stretching vibration of C-N, respectively. For HPMHO-Carboxys, the absorption of C=O in the ester groups appears at 1738, different from the amination, and also the hydroxy peaks at 3380 cm\(^{-1}\) decreases greatly. All of these results are consistent with the NMR analysis and indicate the success of both amination and carboxylation.