Supporting Information for

Full pH-range responsive hyperbranched polyethers: synthesis and responsiveness

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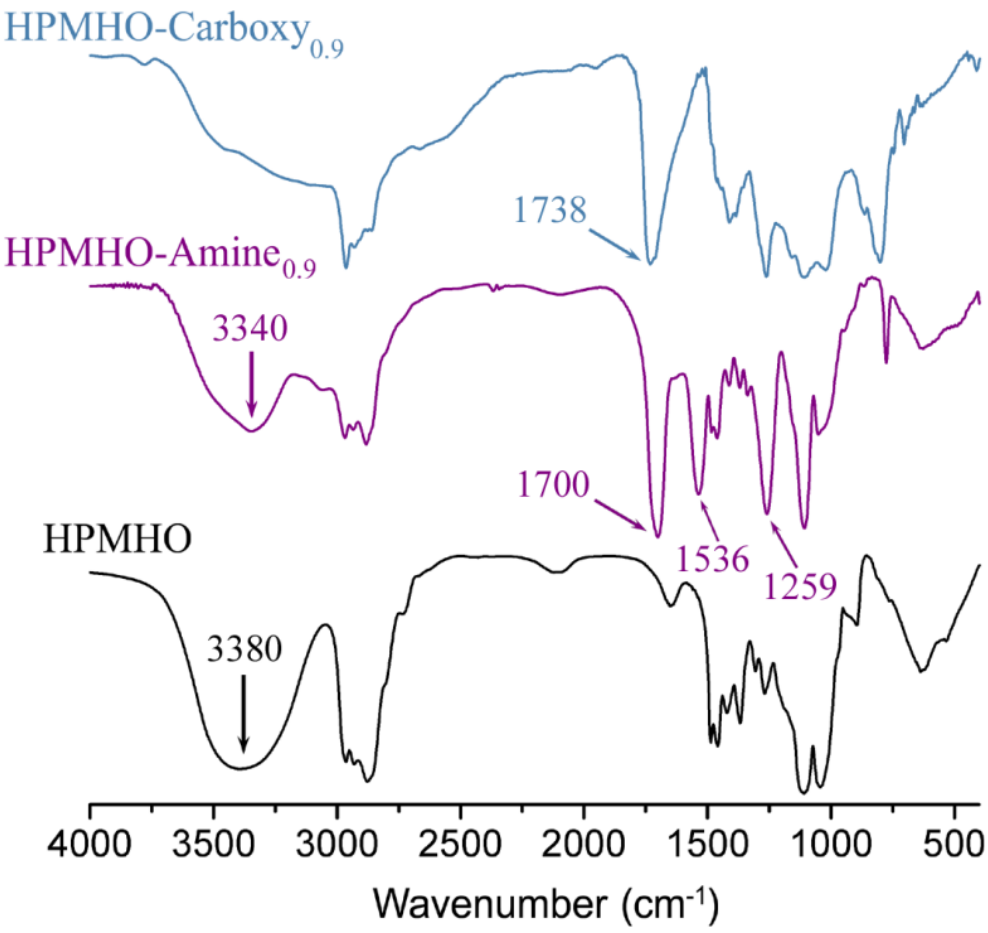

Figure S1. FTIR spectra of HPMHO, HPMHO-Amine and HPMHO-Carboxy.

IR (cm^{-1}): 3380 ($\nu_{as\ OH}$), 3340 ($\nu_{s\ NH}$), 2965 ($\nu_{as\ CH3}$), 2930 ($\nu_{as\ CH2}$), 2881 ($\nu_{s\ CH3}$), 2858 ($\nu_{s\ CH2}$), 1738 ($\nu_{C\text{-}C=O}$), 1700 ($\nu_{N\text{-}C=O}$), 1536 (δ_{NH}), 1259 ($\nu_{s\ C\text{-}N}$), 1255 ($\nu_{as\ C\text{-}O\text{-}C}$), 1044 ($\nu_{s\ C\text{-}O\text{-}C}$).

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.