Supporting Information

Versatile Surface Modification of Hydrogels by Surface-Initiated, Cu^0-Mediated Controlled Radical Polymerization

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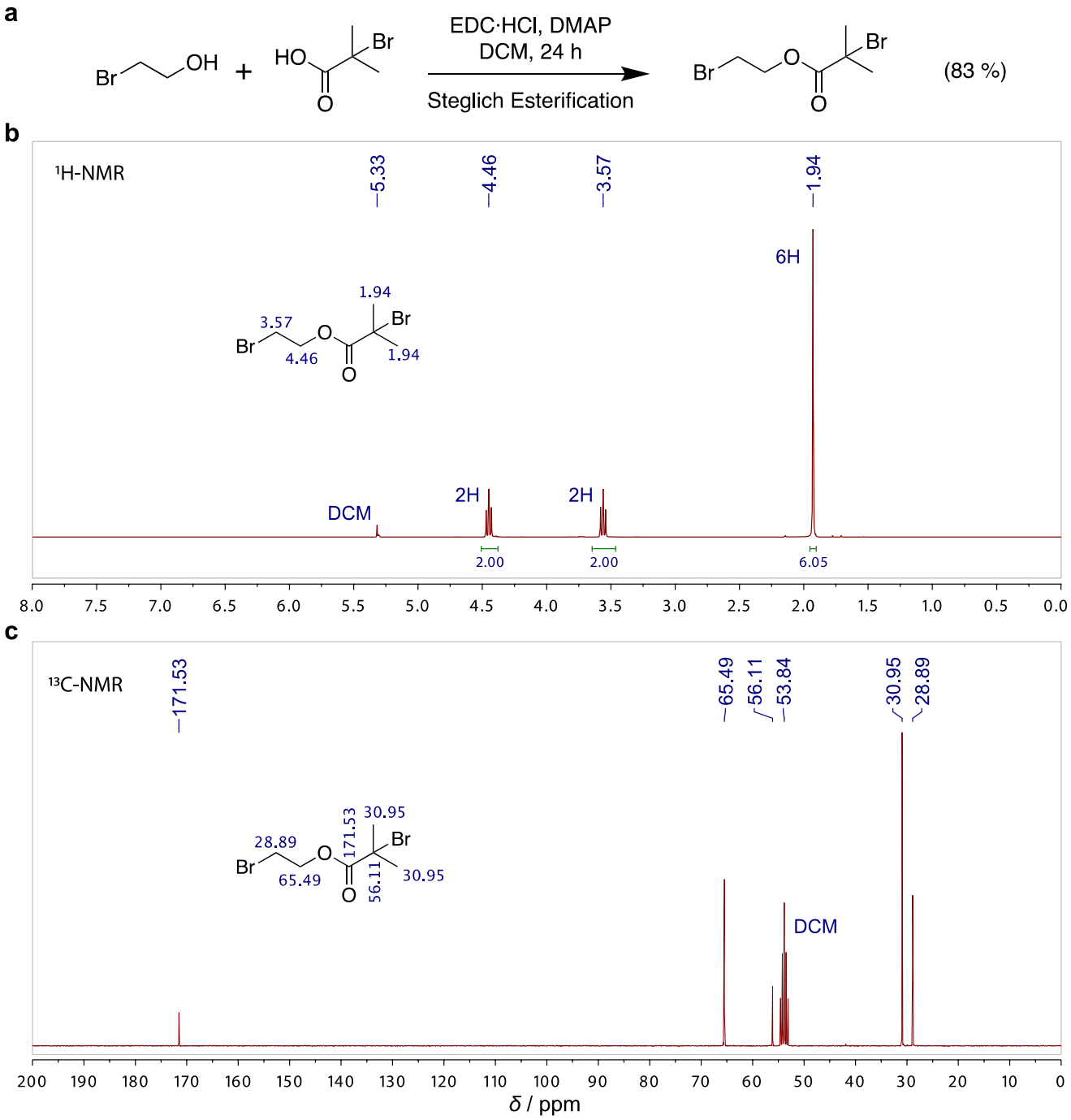

Figure S1. (a) Synthesis route, (b) ^{1}H NMR and (c) ^{13}C NMR spectra of C2-Br modifier.

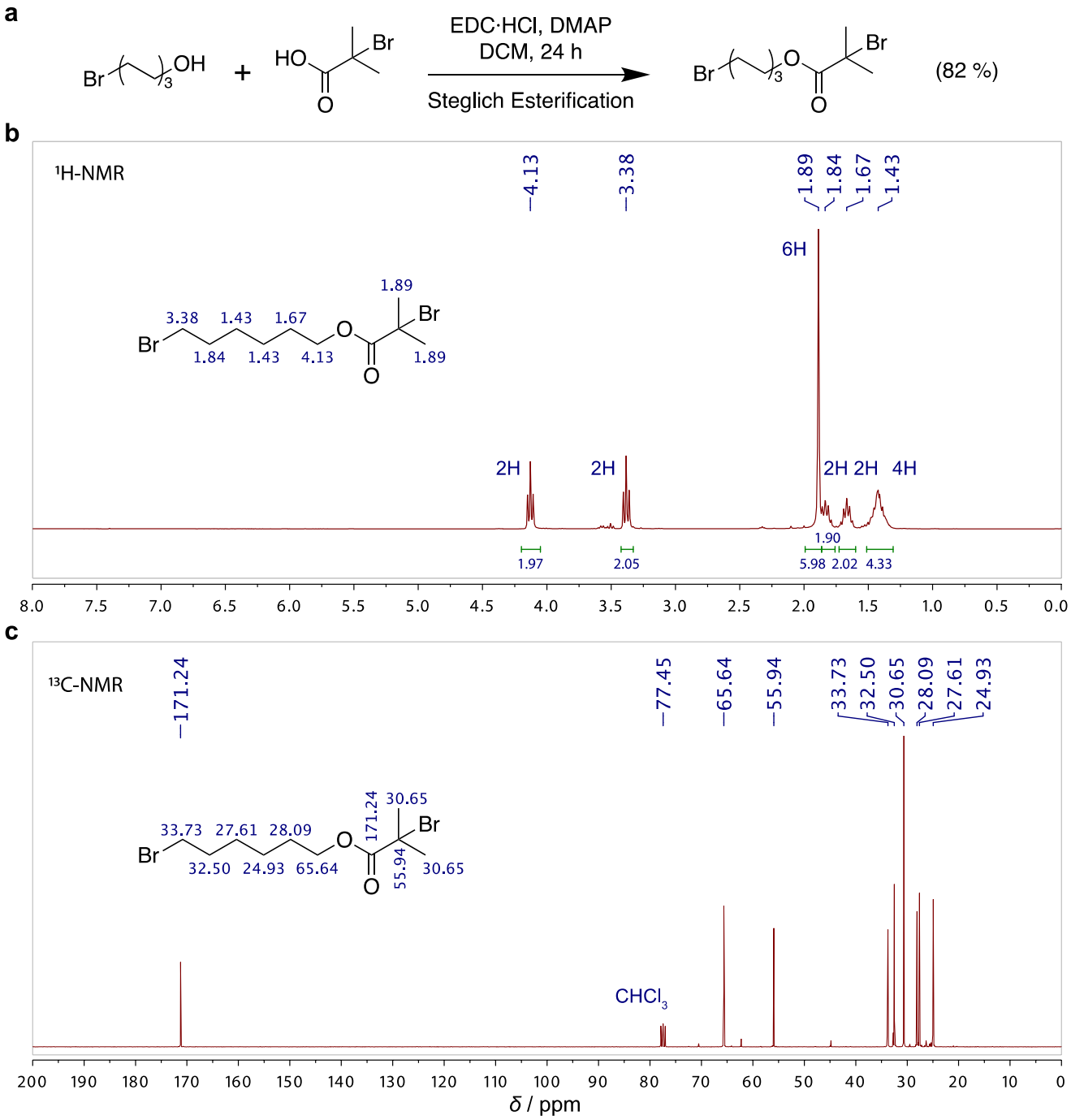

Figure S2. (a) Synthesis route, (b) ^{1}H NMR and (c) ^{13}C NMR spectra of C6-Br modifier.

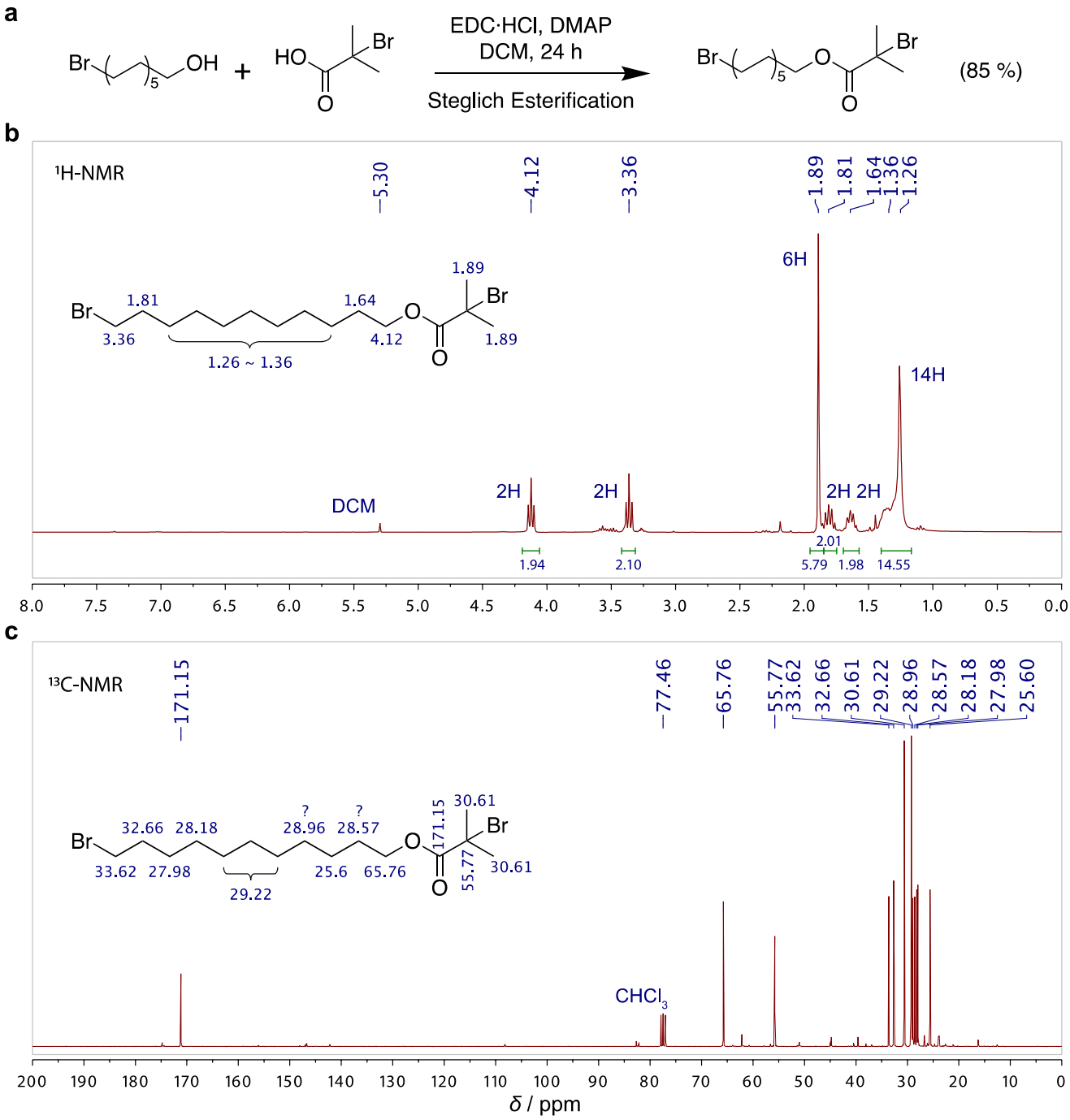

Figure S3. (a) Synthesis route, (b) ^{1}H NMR and (c) ^{13}C NMR spectra of C11-Br modifier.

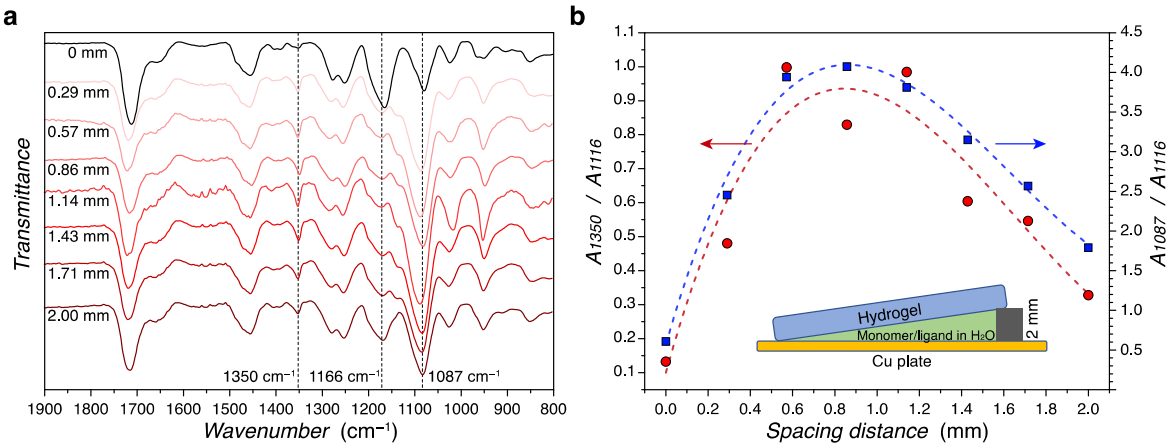

Figure S4. (a) ATR-FTIR spectra of POEGA polymer brushes prepared by using a tilted copper plate with spacing distance between 0 mm and 2 mm. Absorbance at 1087 cm^{-1} and 1350 cm^{-1} are attributed to the C–O stretching and C–H bending for POEGA, respectively. (b) Variations of the absorbance at 1350 cm^{-1} (red) and 1087 cm^{-1} (blue) for POEGA as a function of the spacing distance. The absorbance at 1116 cm^{-1} was used as a reference for the purpose of normalization.

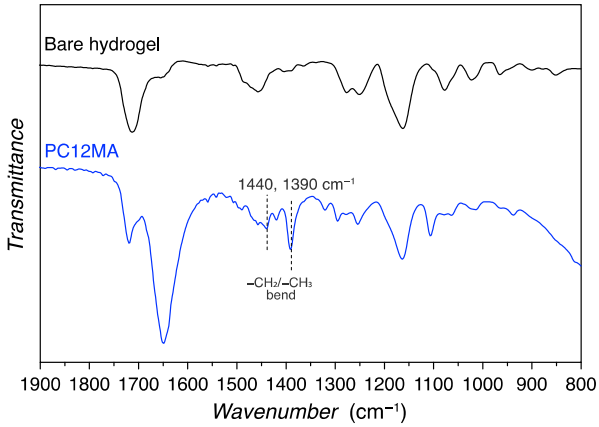

Figure S5. ATR-FTIR spectra of bare hydrogel and PC12MA polymer brush-modified hydrogel.

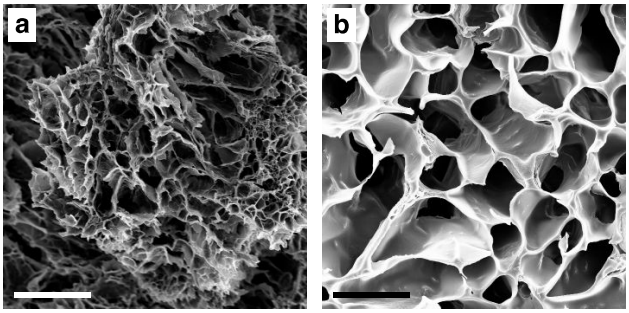

Figure S6. SEM images of (a) p(HEMA-NVP-DMAEMA) hydrogel and (b) PMETAC-modified hydrogel surface (scale bars: 10 μm). The bulk structure of p(HEMA-NVP-DMAEMA) hydrogel exhibited a homogeneous and compact structure with smaller pore sizes, while the surface of PMETAC-modified hydrogel showed a large porous structure due to the high water content.

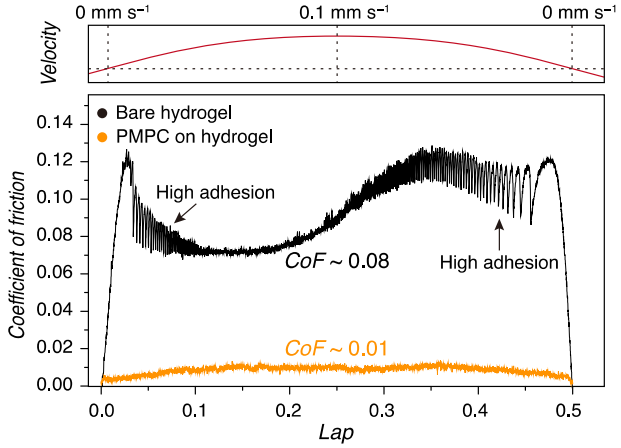

Figure S7. Representative friction loop obtained by a reciprocating pin-on-disc friction test for the bare hydrogel and PMPC polymer brush-modified hydrogel (load 0.6 N, track distance 10 mm, sliding velocity 0.1 mm s^{-1}). The tests were performed at room temperature with hydrogel samples fully immersed in milli-Q water.