Supplementary Material (ESI) for Chemical Communications

Fabrication of Mechanically Improved Hydrogels Using A Movable Cross-linker Based on Vinyl Modified Polyrotaxane

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Supporting Information

Experimental

^{1}H NMR spectra were carried out with 400MHz NMR A-400 (JEOL) spectrometer. Tetramethylsilane (TMS) was used as an internal standard for the analysis of chemical shifts. Fourier transform infrared spectroscopy spectra were observed by Bio Rad FTS 6000 spectrometer.

The static degree of swelling for every gel sample was measured by inverted microscope. The cylindrical gel having diameter of about 270 μm as prepared state was used for each measurements. The equilibrium degrees of swelling, $d/\ d_0$, (d = the equilibrium state of a gel at certain condition and d_0 = the gel at preparative state or the diameter of the cylinder) were observed against the change of temperatures.

Table S1. Sample codes of TN gels

Sample codes (TN gel)	NIPA Monomer (M)	BIS (mM)	AIBN (mM)	[NIPA]/[BIS]	Solvent
TN_1	2	100.0	8.13	20	DMSO
TN_2	2	66.7	8.13	30	DMSO
TN_3	2	33.4	8.13	60	DMSO
TN_4	2	20.0	8.13	100	DMSO

Table S2. Sample codes of RN gels

Sample codes (RN gel)	NIPA Monomer (M)	MPR (wt%)	AIBN (mM)	Solvent
RN_1	2	4.0	8.13	DMSO
RN_2	2	2.7	8.13	DMSO
RN_3	2	1.4	8.13	DMSO
RN_4	2	0.8	8.13	DMSO

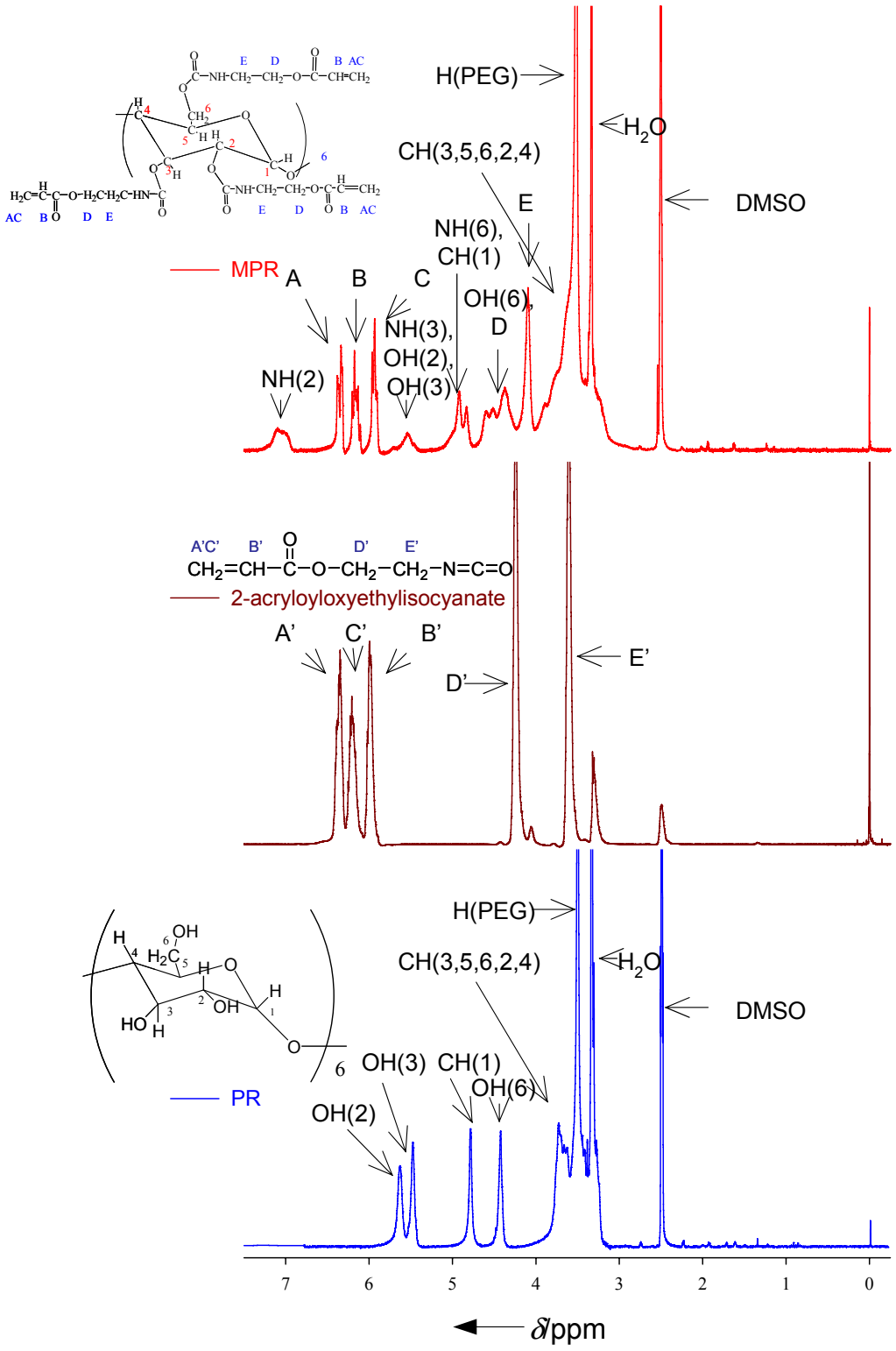

Figure S1. ^{1}H-NMR spectra of PR, 2-acryloyloxyethyl isocyanate and MPR in DMSO-d_6 with 1% TMS. All of the characteristics peaks of PR and MPR come from the α-cyclodextrin and modified α-cyclodextrin group. (The number inside the parentheses depicts the carbon position of 1,4 linked α-D-glucopyranoside unit of α-cyclodextrin).

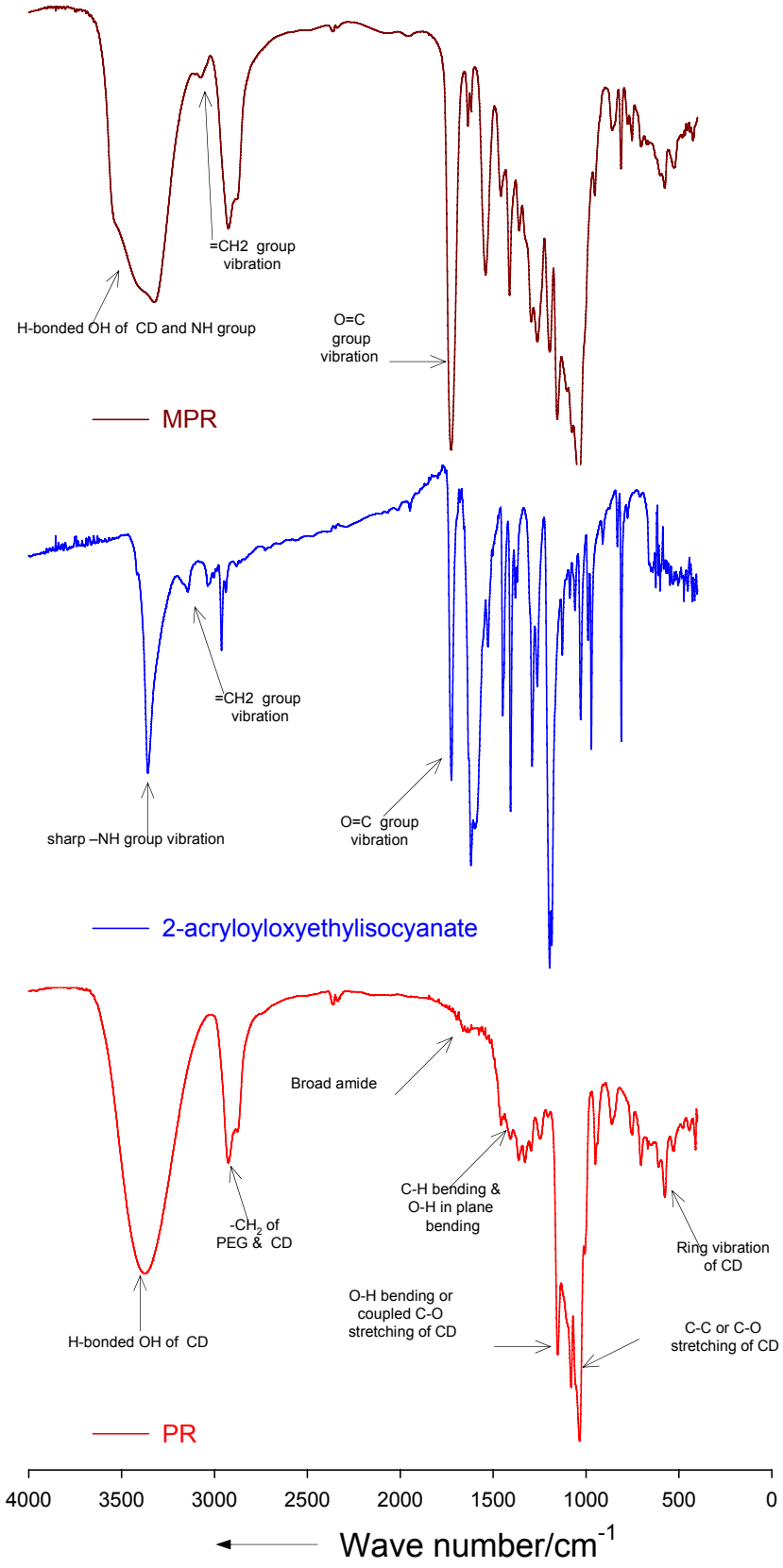

Figure S2. FT-IR spectra of PR, 2-acryloyloxyethyl isocyanate and MPR.