Electronic Supplementary Material (ESI) for Polymer Chemistry.

Electronic Supplementary Information

Swelling Properties of Thermoresponsive/Hydrophilic Conetworks with Functional Crosslinked Domain Structure

Shohei Ida, Hironobu Kitanaka, Tatsuya Ishikawa, Shokyoku Kanaoka, and Yoshitsugu Hirokawa

Department of Materials Science, The University of Shiga Prefecture,

2500 Hassaka, Hikone, Shiga 522-8533, Japan

E-mail: ida.s@mat.usp.ac.jp

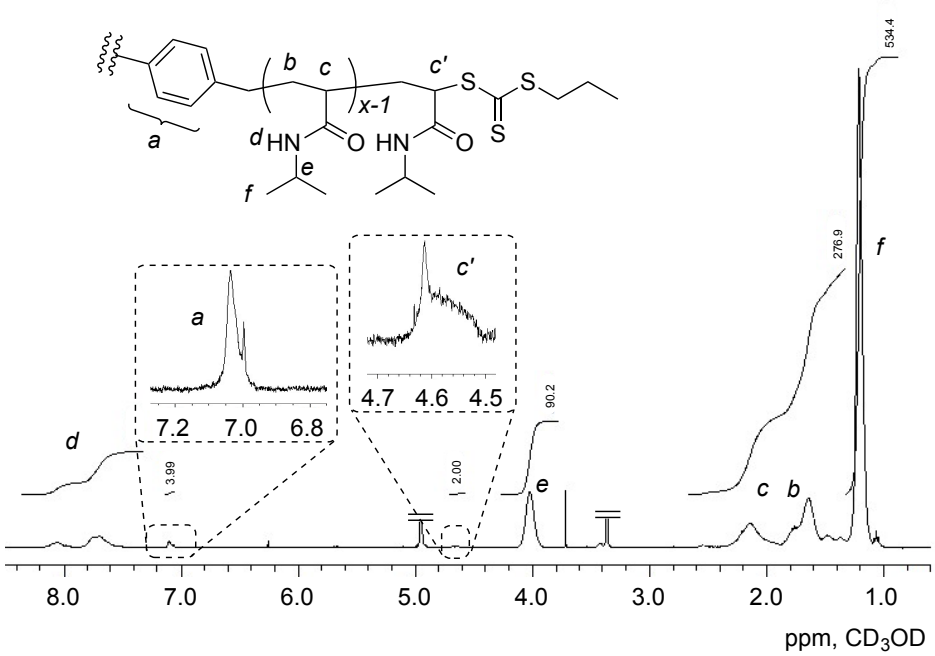

Fig. S1 ^{1}H NMR spectrum of PNIPAAm macro-CTA prepared by RAFT polymerization. Polymerization condition: $[NIPAAm]_0$ = 2000 mM, $[\textbf{CTA-1}]_0$ = 20 mM, $[AIBN]_0$ = 2.0 mM in 1,4-dioxane at 60°C for 24 h. Experimental parameters: relaxation time = 4.0 s, number of scans = 8.

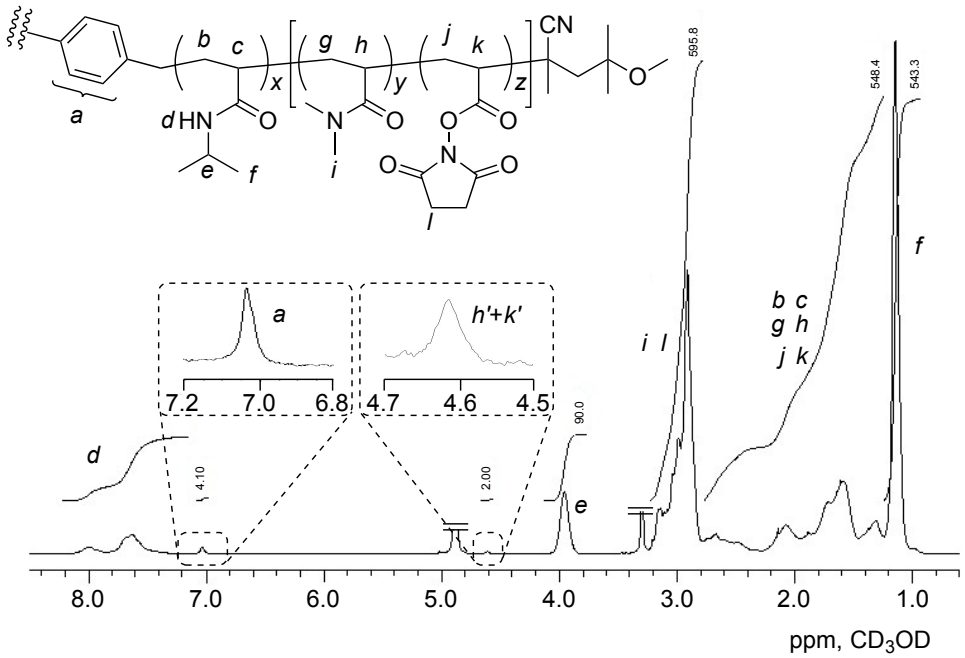

Fig. S2 ^{1}H NMR spectrum of **DND**. Reaction condition: (polymerization) [DMAAm] = 2000 mM, [NHSA] = 200 mM, [PNIPAAm macro-CTA] = 20 mM in 1,4-dioxane at 60°C, [AIBN] = 2.0 mM; (End modification) [polymer] = 5.0 mM, [V-70] = 200 mM in 1,4-dioxane at 40 °C. Experimental parameters: relaxation time = 4.0 s, number of scans = 8.

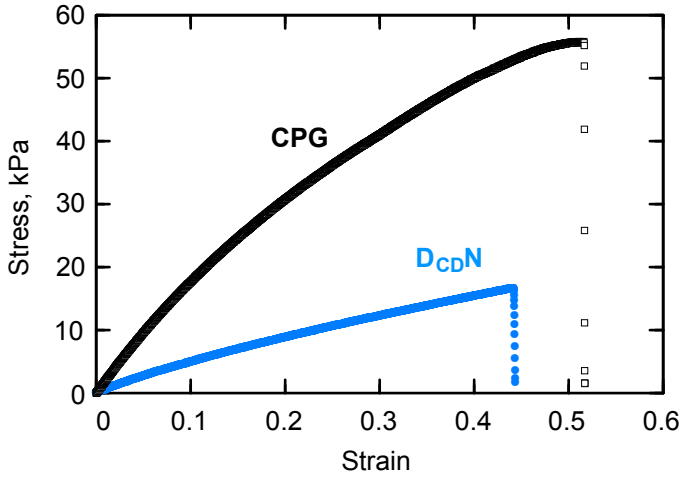

Fig. S3 Stress-strain curves of as-prepared $\mathbf{D_{CD}N}$ and **CPG** gels obtained by uniaxial tensile test. Here, $\mathbf{D_{CD}N}$ gel was prepared in DMF because the gel prepared in THF was difficult to be employed for measurement due to solvent evaporation.

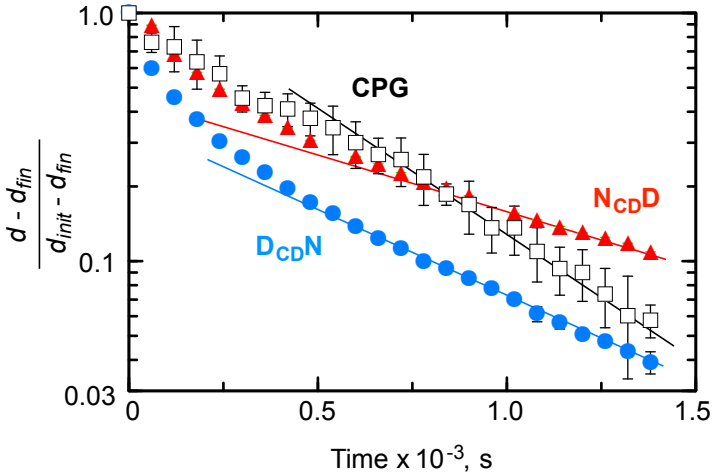

Fig. S4 Kinetic analysis of the shrinking behavior of $\mathbf{D_{CD}N}$, $\mathbf{N_{CD}D}$ and CPG upon temperature jump. When an isotropic shrinking is observed ($\mathbf{D_{CD}N}$ and $\mathbf{N_{CD}D}$), the relaxation time (τ) can be determined from the slope of the line ($-1/\tau$) at the late stage of shrinking ($t > \tau$): $t > 400$ s for $\mathbf{D_{CD}N}$ and $t > 700$ s for $\mathbf{N_{CD}D}$.