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: $[\text{NIPAAm}]_0 = 2000$ mM, $[\text{CTA-1}]_0 = 20$ mM, $[\text{AIBN}]_0 = 2.0$ 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) $[\text{DMAAm}] = 2000$ mM, $[\text{NHSA}] = 200$ mM, $[\text{PNIPAAm macro-CTA}] = 20$ mM in 1,4-dioxane at 60°C, $[\text{AIBN}] = 2.0$ mM; (End modification) $[\text{polymer}] = 5.0$ mM, $[\text{V-70}] = 200$ 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 D\textsubscript{CD}N and CPG gels obtained by uniaxial tensile test. Here, D\textsubscript{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 D\textsubscript{CD}N, N\textsubscript{CD}D and CPG upon temperature jump. When an isotropic shrinking is observed (D\textsubscript{CD}N and N\textsubscript{CD}D), the relaxation time (\(\tau\)) can be determined from the slope of the line (\(-1/\tau\)) at the late stage of shrinking (\(t > \tau\)): \(t > 400\) s for D\textsubscript{CD}N and \(t > 700\) s for N\textsubscript{CD}D.