Supporting Information

Responsive Nanogel-Based Dual Fluorescent Sensors for Temperature and Hg$^{2+}$ Ions with Enhanced Detection Sensitivity

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Scheme S1. Synthetic routes employed for the preparation of NPTUA-labeled thermoresponsive PNIPAM nanogels as dual fluorescent sensors for temperature and Hg$^{2+}$ ions.
Figure S1. $^1$H NMR spectra recorded for (a) NP-Br (1) in CDCl$_3$, (b) NP-NH$_2$ (2) in $d_6$-DMSO, and (c) NPTUA monomer (3) in $d_6$-DMSO.
**Figure S2.** Time-dependence of fluorescence emission intensities ($\lambda_{ex} = 390$ nm, $\lambda_{em} = 482$ nm; slit widths: Ex. 10 nm, Em. 10 nm) recorded upon stopped-flow mixing 0.05 g/L aqueous dispersion of P(NIPAM-co-NPTUA) nanogels ([NPTUA] = 5.0 × 10⁻⁷ M) with (a) pure water and (b) 5 equiv. of Hg²⁺ at 25 °C.
Figure S3. Normalized fluorescence intensity changes ($\lambda_{ex} = 390$ nm; slit widths: Ex. 5 nm, Em. 5 nm) recorded for 0.05 g/L aqueous dispersion of P(NIPAM-co-NPTUA) nanogels ([NPTUA]=5.0 x 10^{-7} M) upon gradual addition of Hg^{2+} (0-2 equiv.) at (a) 25 °C, $\lambda_{em} = 482$ nm and (b) 40 °C, $\lambda_{em} = 457$ nm, respectively. The inset shows the determination of detection limit.