Self-Healing Hydrogels Formed in Catanionic Surfactant Solutions

-Supporting Information-

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Figure S1. (A, B): ICFs and $G(I)$'s of CTAB (top) and CTAB/SDS (85/15) solutions (bottom) at various angles $\theta$ indicated. Concentration = 0.24 M. Temperature = 35°C.
Figure S2. $G(\Gamma)$ vs $\Gamma^{-1}$ (left) and $G(\Gamma)$ vs $\Gamma^{-1}q^2$ plots (right) at various angles $\theta$ for 0.24 M CTAB/SDS solutions at various SDS contents indicated. For a diffusion process, since $\Gamma$ of a particular mode is $q^2$ dependent and is related to the diffusion coefficient as $\Gamma = D q^2$, the overlap of $G(\Gamma)$’s recorded at different angles into a single peak in $G(\Gamma)$ vs $\Gamma^{-1}q^2$ plots (right) indicates existence of diffusive processes in CTAB/SDS solutions.
**Figure S3.** Relative weight swelling ratio $m_{rel}$ of the gels in water shown as a function of the swelling time. SDS contents of CTAB/SDS solutions used in the gel preparation are indicated. Temperature = 35°C. The maximum value of $m_{rel}$ attained after about one day decreases as the SDS amount in CTAB/SDS solution used in the gel preparation increases. This is attributed to the neutralization of the surfactant solution with rising SDS amount, reducing the initial charge density of gels.

**Figure S4.** Zero shear viscosity for CTAB/SDS solutions without ($\eta_{o,\text{solvent}}$, open symbols) and with the polymers isolated from gels ($\eta_{o,\text{polymer}}$, filled symbols) as a function of SDS content. Polymer concentration = 0.5 w/v %. Temperature = 35°C.