

## Self-Healing Hydrogels Formed in Catanionic Surfactant Solutions

### -Supporting Information-

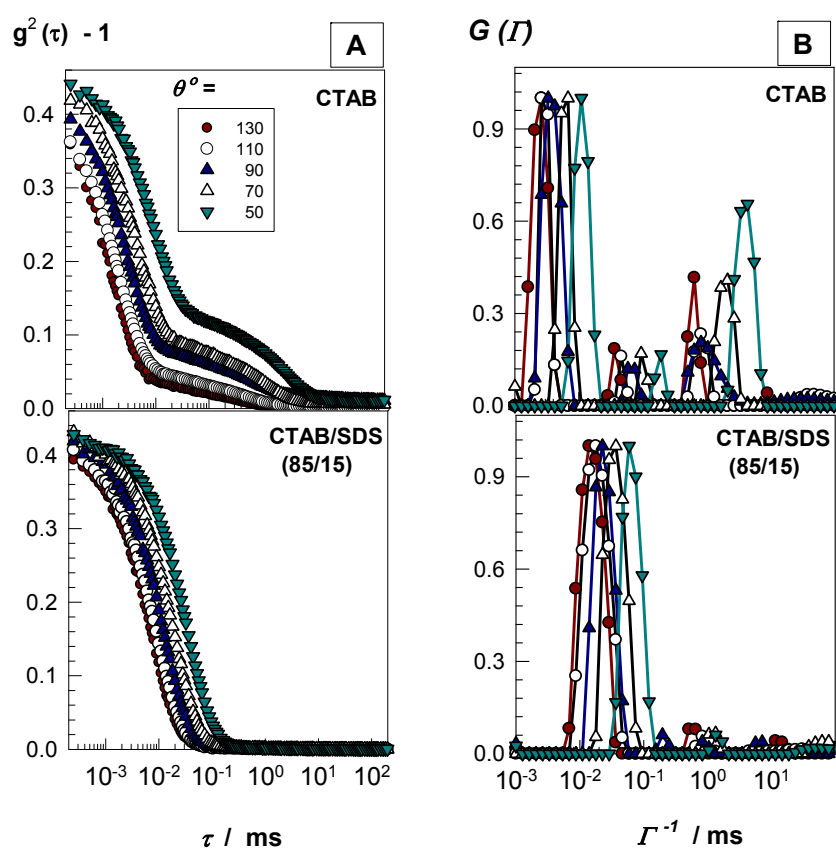
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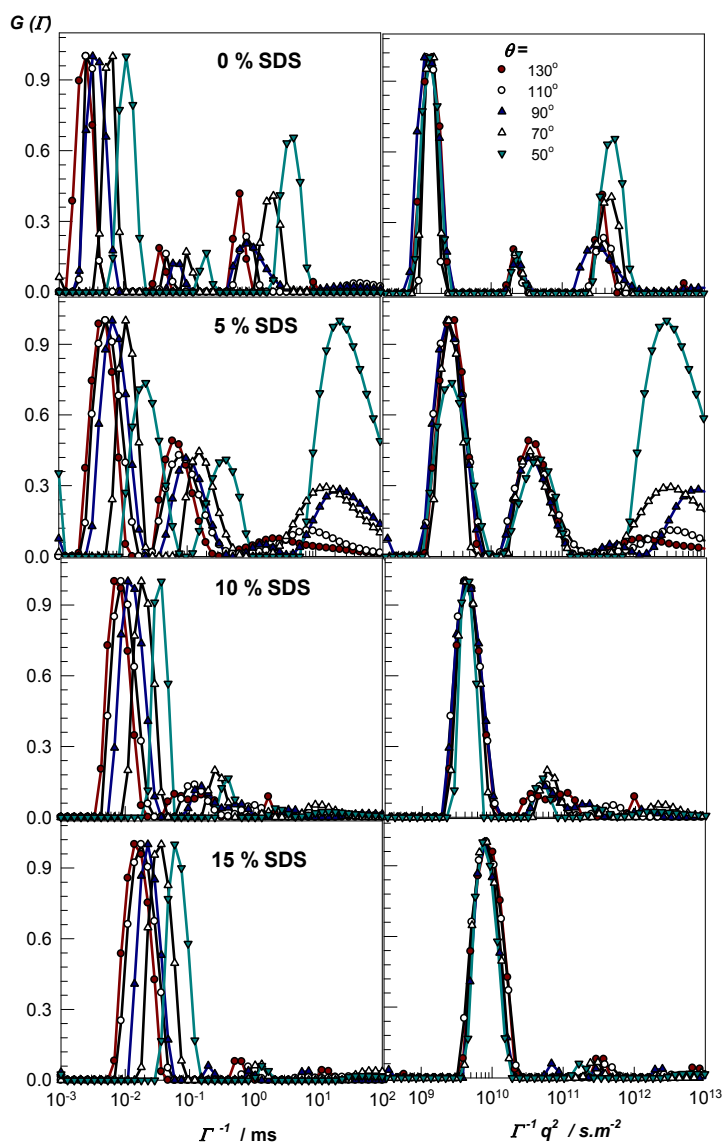
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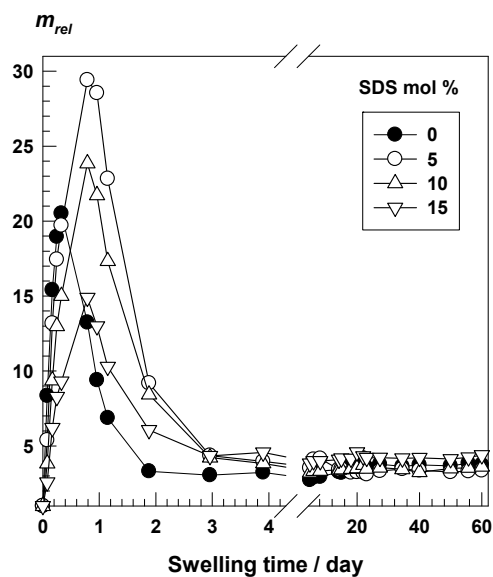
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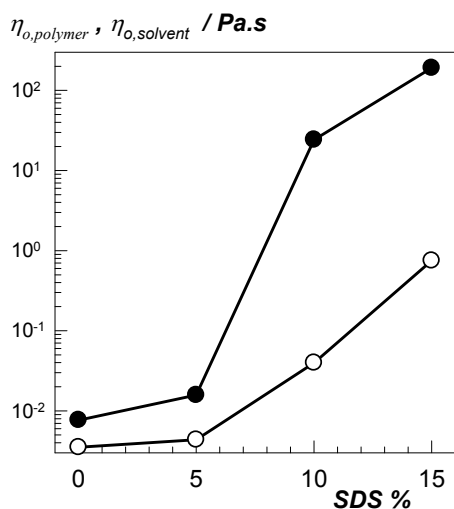
**Figure S1.** (A, B): ICFs and  $G(I)$ 's of CTAB (top) and CTAB/SDS (85/15) solutions (bottom) at various angles  $\theta$  indicated. Concentration = 0.24 M. Temperature = 35°C.



**Figure S2.**  $G(I)$  vs  $I^{-1}$  (left) and  $G(I)$  vs  $I^{-1}q^2$  plots (right) at various angles  $\theta$  for 0.24 M CTAB/SDS solutions at various SDS contents indicated. For a diffusion process, since  $I^{-1}$  of a particular mode is  $q^2$  dependent and is related to the diffusion coefficient as  $I = D q^2$ , the overlap of  $G(I)$ 's recorded at different angles into a single peak in  $G(I)$  vs  $I^{-1}q^2$  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 ( $\eta_{o,solvent}$ , open symbols) and with the polymers isolated from gels ( $\eta_{o,polymer}$ , filled symbols) as a function of SDS content. Polymer concentration = 0.5 w/v %. Temperature = 35°C.