Supplementary information

Robust Dual-Physically Cross-Linked Hydrogels with Unique Self-Reinforcing Behavior and Improved Dye Adsorption Capacity

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**Fig. S1** Tensile toughness of uncut specimens and self-healed specimens calculated from Fig. 5b.

**Fig. S2** Tensile toughness of the original and remolded DPC_{1.5} gel calculated from Fig. 6b.
Fig. S3 (a) Time-dependent adsorption of crystal violet (CV) on DPC\textsubscript{1.5} and HA gels.

(b) Pseudo-second-equation fitting for adsorption kinetics of DPC\textsubscript{1.5} and HA gels.

For pseudo-second order equation, the integrated form could be described below

\[
\frac{T}{Q_t} = \frac{T}{Q_{eq}} + \frac{1}{k_2Q_{eq}^2},
\]

where \(Q_{eq}\) and \(Q_t\) (mg/g) are the amounts of dye adsorbed at the equilibrium and time \(T\), respectively, \(k_2\) is the pseudo-first-order rate constant.