Electronic Supplementary Material

Dialdehyde cellulose nanocrystal cross-linked chitosan foam with high adsorption capacity for removal of acid red 134

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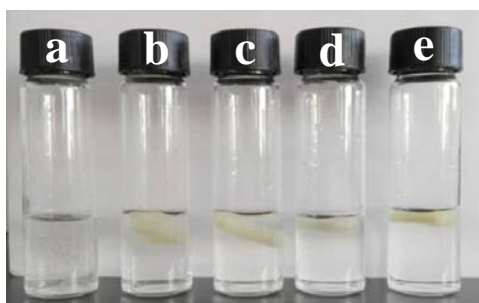
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Figure S1. Photographs of the pure CTS foam and the PAETMAC-g-DACNCs/CTS nanocomposite foams immersed in water at pH 3.5 for 24 h. a, b, c, d and e are Foam-0, Foam-3, Foam-6, Foam-9, and Foam-12, respectively.

Table S1. The calculated mean sizes of nanocrystals in CNCs, DACNCs and PAETMAC-g-DACNCs.

Sample	Aldehyde content	ζ (mV)	a (%)	Particle size

	(mmol/g)			(nm)
CNCs	-	-38.3	-	343.4
DACNCs	5.9	-20.3	-	101.6
PAETMAC-g-DACNCs	5.3	+28.3	9.1	137.2

Table S2 The weight percentage of glucosamine and cross-linking degree in the PAETMAC-g-DACNCs/CTS nanocomposite foam.

Foam	W_{NH_2} (%)	D_c (%)
Foam-0	82.1	-
Foam-3	77.3	5.9
Foam-6	74.3	9.5
Foam-9,	69.2	15.7
Foam-12	64.4	21.6

Table S3 The pseudo-first-order and pseudo-second-order kinetic model parameters (adsorbent dose 200 mg/L; solution temperature 25 ˚C and solution pH 3.5).

c_o (mg/L)	Pseudo-first-order equation			Pseudo-second-order equation		
	Q_e (mg/g)	k_1 (1/min)	R^2	Q_e (mg/g)	k_2 (g/mg·min)	R^2
100	434.0	2.23×10^{-3}	0.9938	531.9	7.11×10^{-6}	0.9984
200	591.8	8.85×10^{-4}	0.9756	787.4	2.38×10^{-6}	0.9956
300	538.9	1.09×10^{-3}	0.9827	819.7	3.87×10^{-6}	0.9999

Table S4 The isotherm parameters (adsorbent dose 200 mg/L; dye solution concentration range 150~950 mg/L; solution temperature 25 ˚C and solution pH 3.5).

Langmuir			Freundlich		
Q_m (mg/g)	b (L/mg)	R^2	k_f [(mg/g).(L/mg)$^{1/n}$]	n	R^2
1238.1	0.0438	0.9999	400.1	5.435	0.8621