Supporting Information

Mussel-inspired polydopamine-modified silk nanofibers as an eco-friendly and high-efficient adsorbent for cationic dye

Heng He [a], Minggang Huang [b], Zhiwei Gao [c], Yifan Zhou [a], Yuxiang Zhao [a], Yan Chen [a], Yingchun Gu [a, *], Sheng Chen [a, *], Bin Yan [a]

[a] College of Biomass Science and Engineering, National Engineering Laboratory for Clean Technology of Leather Manufacture, Sichuan University, Chengdu 610065, China

[b] Key Laboratory of Fine Chemical Application Technology of Luzhou, Luzhou 646099, China

[c] Xinjiang Xinchun Petroleum Development Co., Ltd., Sinopec, Dongying 257000, China

* Corresponding author. E-mail addresses: chensheng@scu.edu.cn (S. Chen), guyingchun@scu.edu.cn (Y.C. Gu).

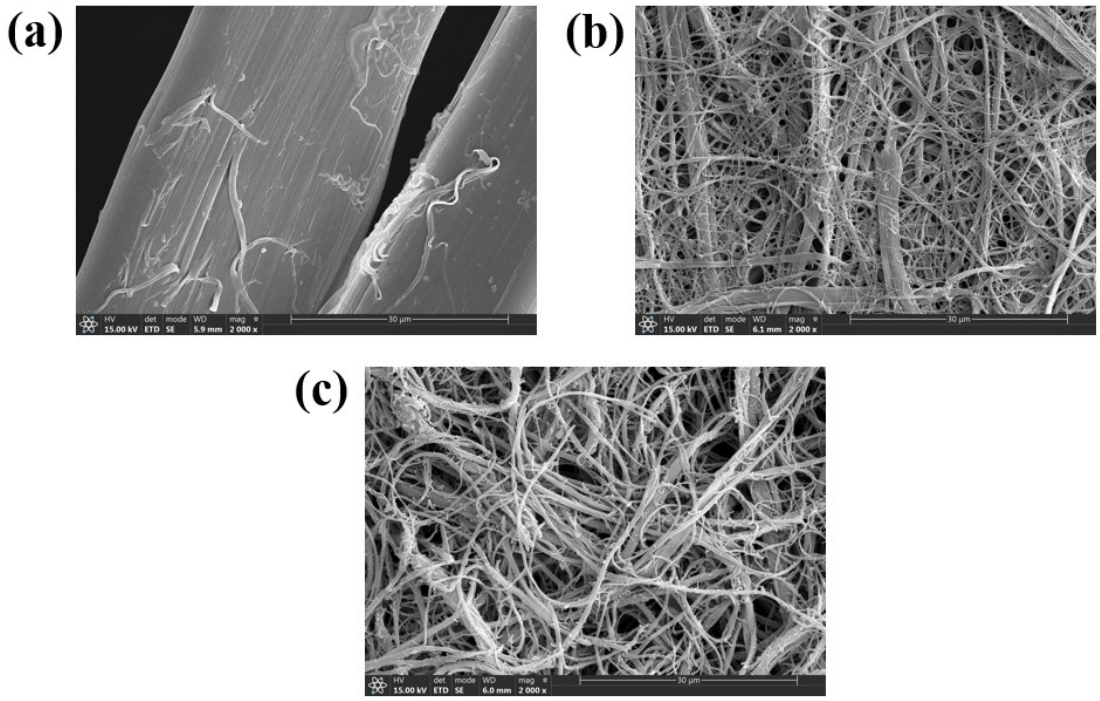

Figure S1. 2000× SEM images of silk (a), SNFs (b), SNFs@PDA (c).

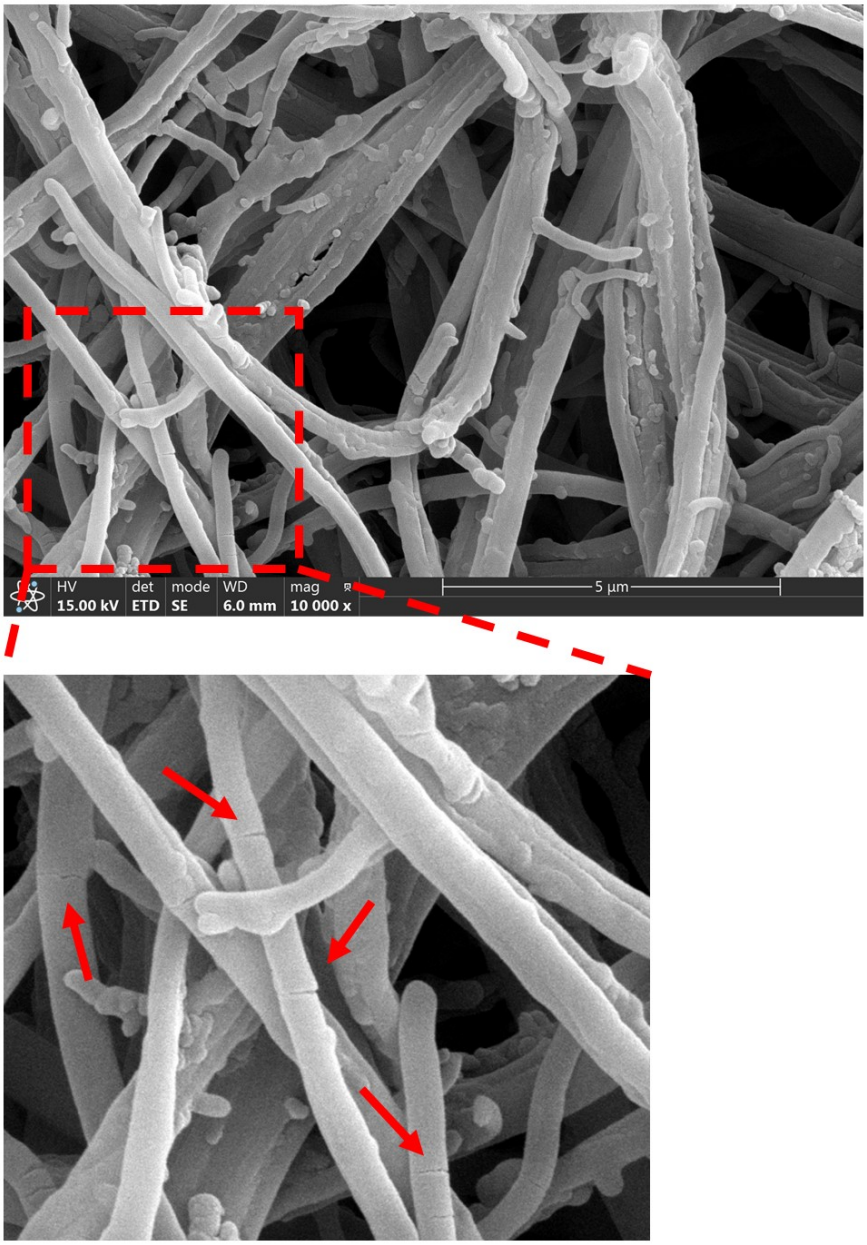

Figure S2. The details SEM of SNF@PDA.

Figure S3. The SEM image of SNFs@PDA with SNFs mass ratio PDA is 1 to 1.5.

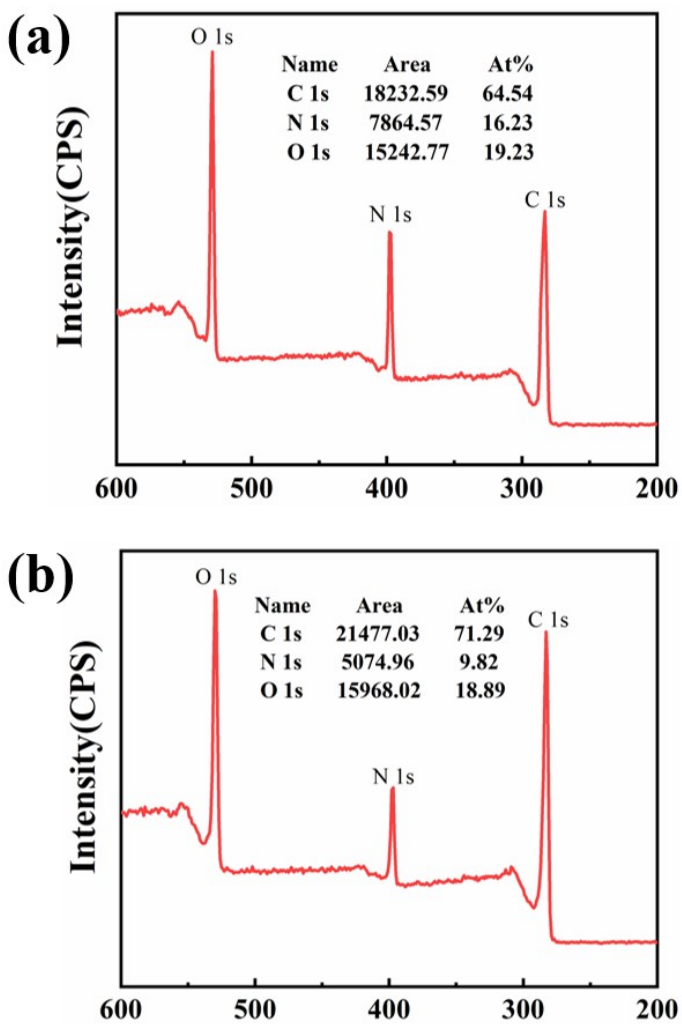

Figure S4. Full-range XPS spectra of SNFs (a) and SNFs@PDA (b).

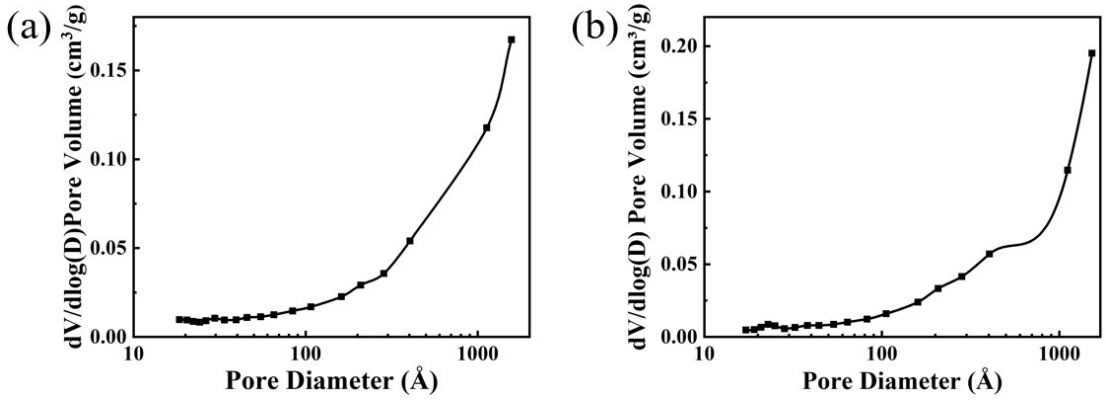

Figure S5. The pore size distribution of SNFs (a) and SNFs@PDA (b).

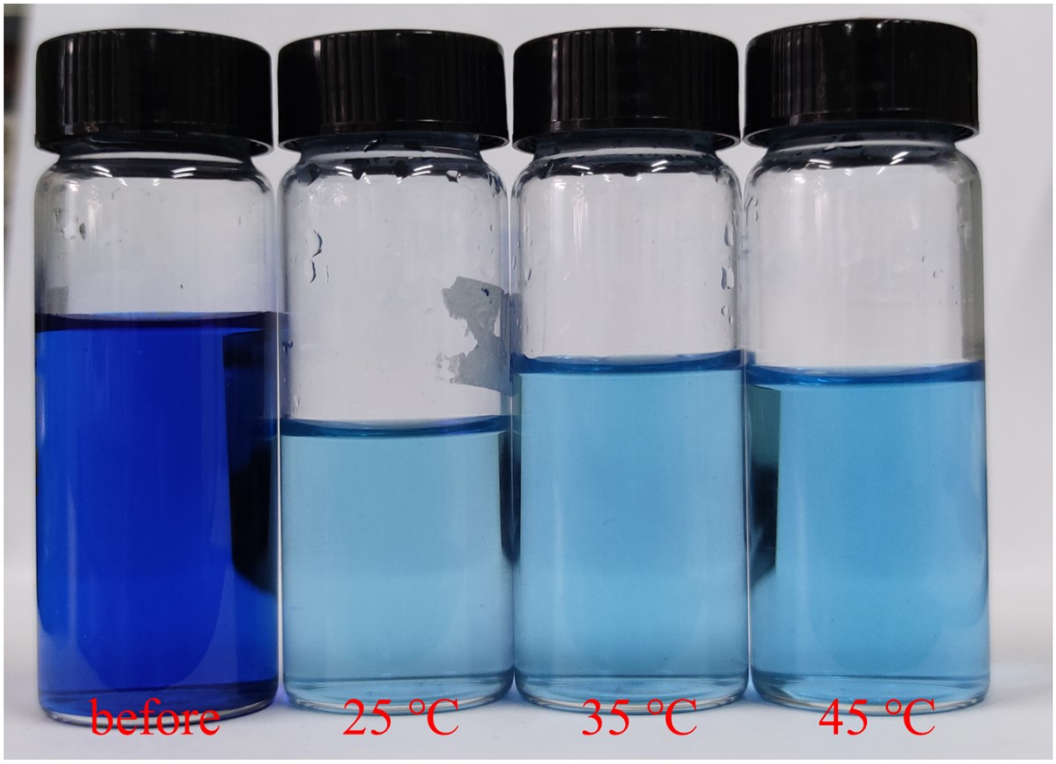

Figure S6. Digital photos before and after adsorption at different temperatures.

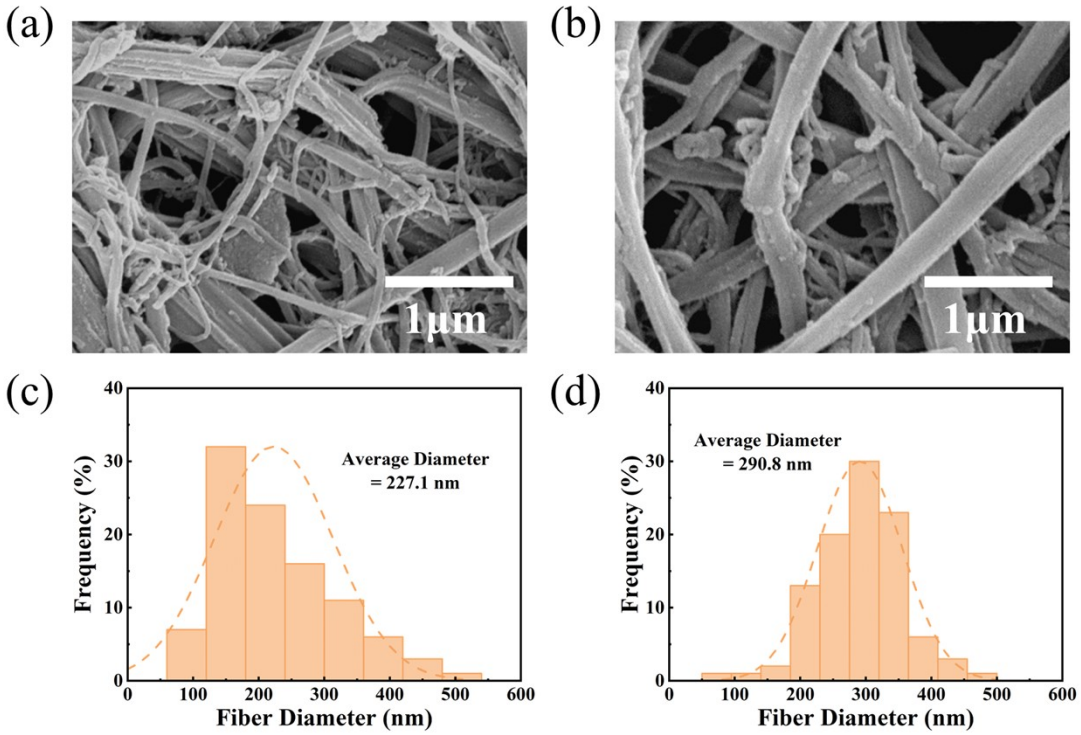

Figure S7. SEM images and diameter statistics of SNFs mass ratio PDA is 1 to 0.5 (a, c) and SNFs mass ratio PDA is 1 to 1.5 (b, d).

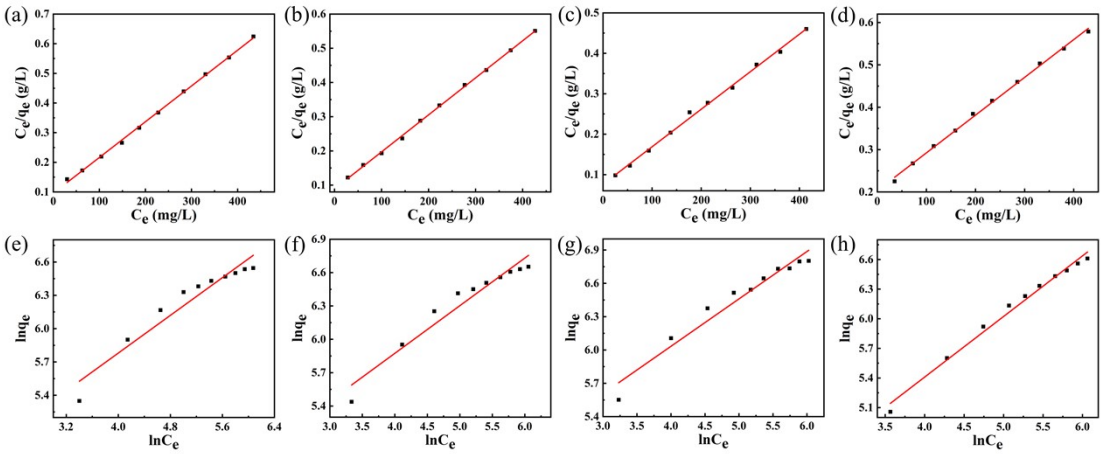

Figure S8. (a), (b), (c) and (d) is the Langmuir isotherm model for 12h, 18h, 24h, 30h, respectively; (e), (f), (g) and (h) is the Freundlich isotherm model for 12h, 18h, 24h, 30h, respectively.

Table S1. Isothermal adsorption model at pH 7 for SNFs@PDA with different polymerization reaction times to DA.

Langmuir model					Freundlich model		
name	q_m (mg/g)	K_L (L/mg)	R_L	R^2	K_F (L/mg)	n	R^2
12h	826.44	0.0126	0.1365-0.6125	0.998	59.33	2.36	0.928
18h	925.92	0.0121	0.1414-0.6223	0.999	64.11	2.33	0.944
24h	1077.42	0.0122	0.1408-0.6211	0.997	75.71	2.37	0.953
30h	1122.16	0.0043	0.3131-0.8201	0.997	81.43	2.41	0.988

12h, 18h, 24h, and 30h are the corresponding times for the dopamine polymerization reaction, respectively.