

Supplementary Information

Polydopamine assisting the continuous growth of zeolitic imidazolate framework-8 on electrospun polyacrylonitrile fibers as efficient adsorbent for improved removal of Cr(VI)

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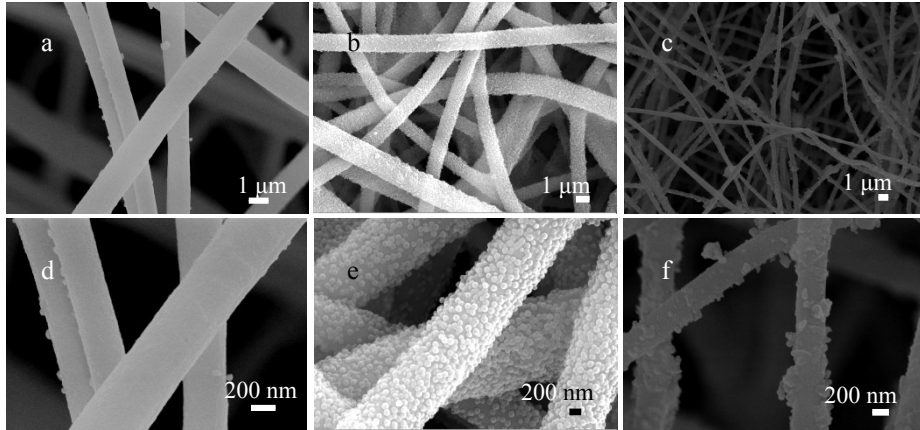


Fig. S1 SEM images showing the morphologies of (a and d) PAN/PDA fibers, (b and e) ZIF-8@PDA/PAN fibers, (e and f) PAN@ZIF-8 fibers. Images were taken at relatively lower (a-c) and higher (d-f) magnifications.

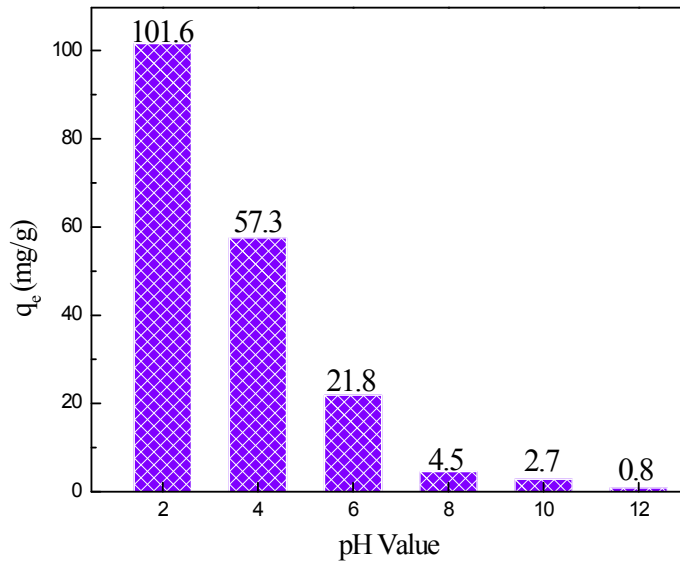


Fig. S2 The effects of pH values on the Cr(VI) adsorption capacity of ZIF-8@PDA/PAN fibers.

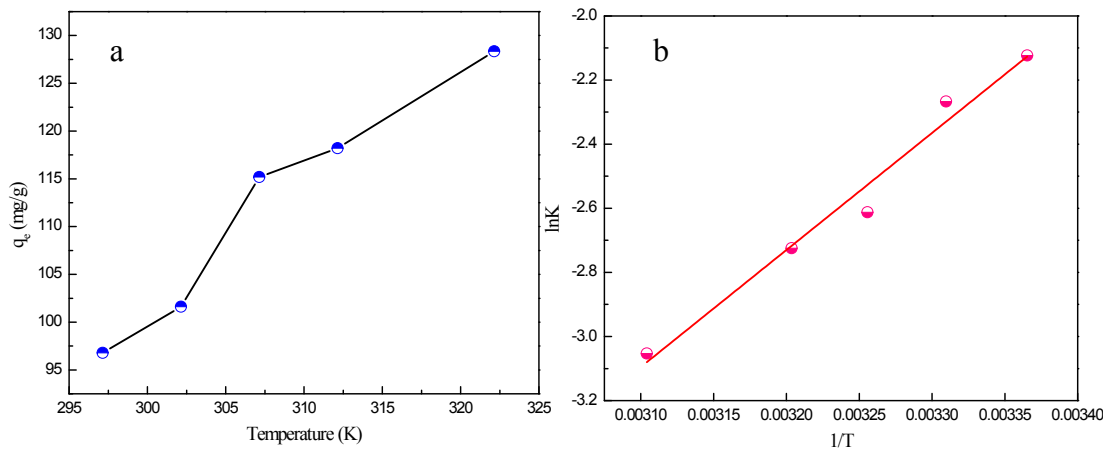


Fig.S3 (a) The variation of adsorption amounts of Cr (VI) onto ZIF-8@PDA/PAN fibers with the increased temperatures; (b) the plot of $\ln K$ versus $1/T$ to determine the thermodynamic parameters

Table S1 The calculated thermodynamic parameters of ZIF-8@PDA/PAN fibers with the adsorption to Cr(VI)

		ΔG^0 (kJ·mol ⁻¹)					ΔH^0	ΔS^0
297.15 K	302.15 K	307.15 K	312.15 K	322.15 K		(kJ·mol ⁻¹ ·K ⁻¹)	(J·mol ⁻¹ ·K ⁻¹)	
-2.12	-2.26	-2.61	-2.72	-3.05		119.72	30.35	

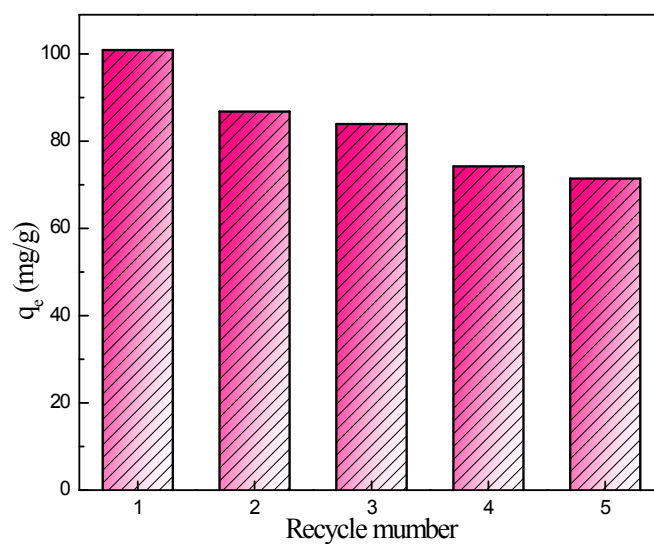


Fig. S4 The adsorption amount of ZIF-8@PDA/PAN fibers toward Cr(VI) for different recycle numbers.

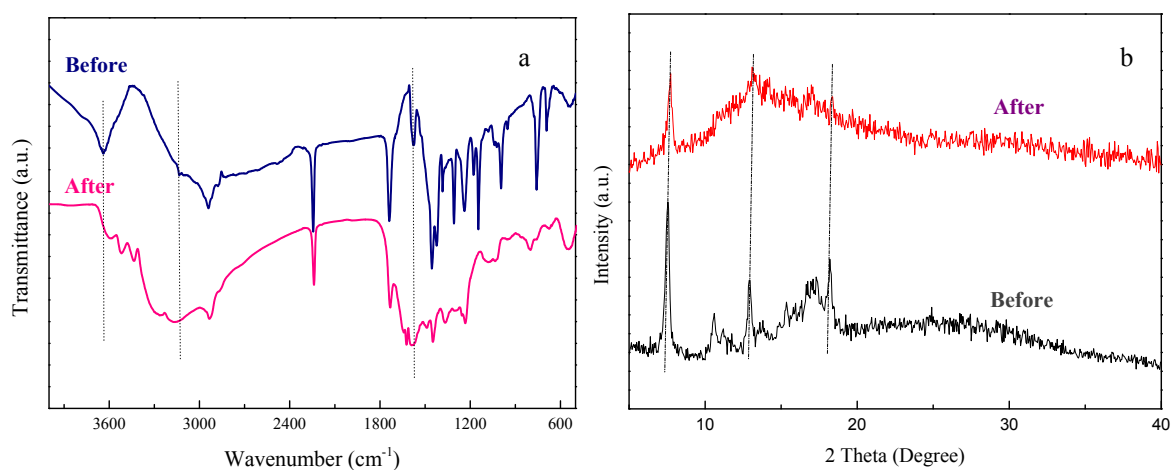


Fig. S5 (a) FT-IR spectra and (b) XRD patterns of the fresh and reused ZIF-8@PDA/PAN fibers

The thermodynamic parameters of Gibbs free energy of the adsorption (ΔG^0), the enthalpy of the adsorption (ΔH^0), and the entropy of the adsorption (ΔS^0) were calculated by the following equations:

$$\Delta G^0 = -RT \ln K \quad (1)$$

$$\ln K = -\frac{\Delta H^0}{RT} + \frac{\Delta S^0}{R} \quad (2)$$

where K was the equilibrium constant; R ($8.314 \text{ J}\cdot\text{mol}^{-1}\cdot\text{K}^{-1}$) and T (K) were the ideal gas constant and the absolute temperature, respectively.