Supporting Information

Preparation and Application of Citric Acid/Porous Starch Composite Adsorbents

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1. Figures

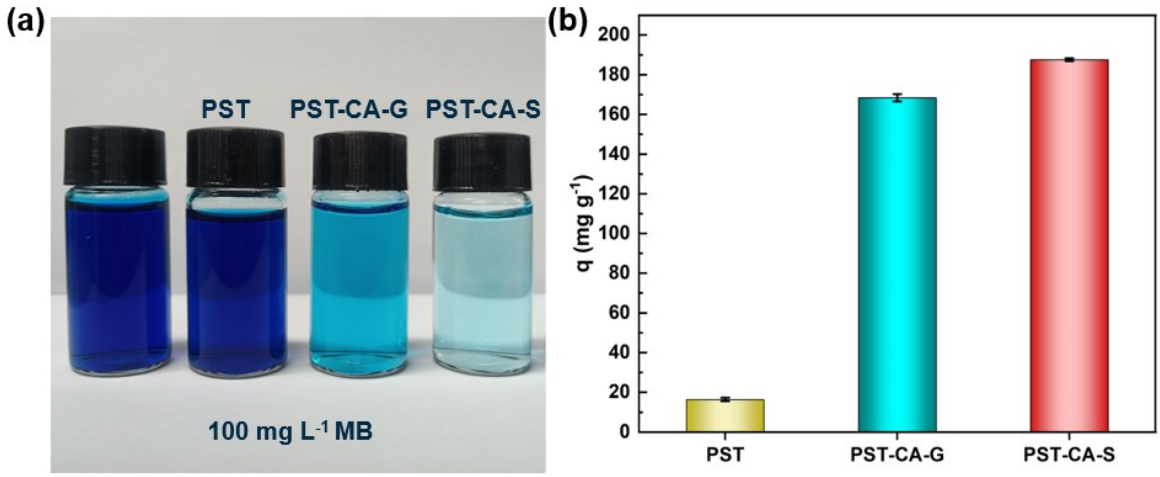

Fig. S1 Comparison of the adsorption effect of PST-CA obtained by different preparation methods: (a) optical photos before and after adsorption; (b) adsorption capacity.

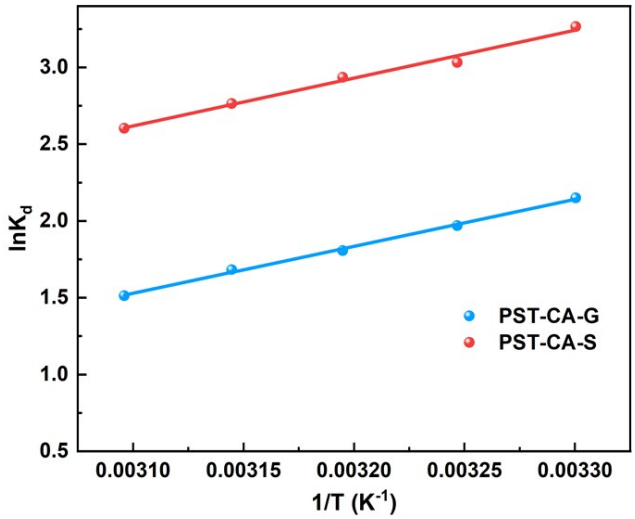

Fig. S2 Adsorption thermodynamic curves: $\ln K_d$ versus 1/T

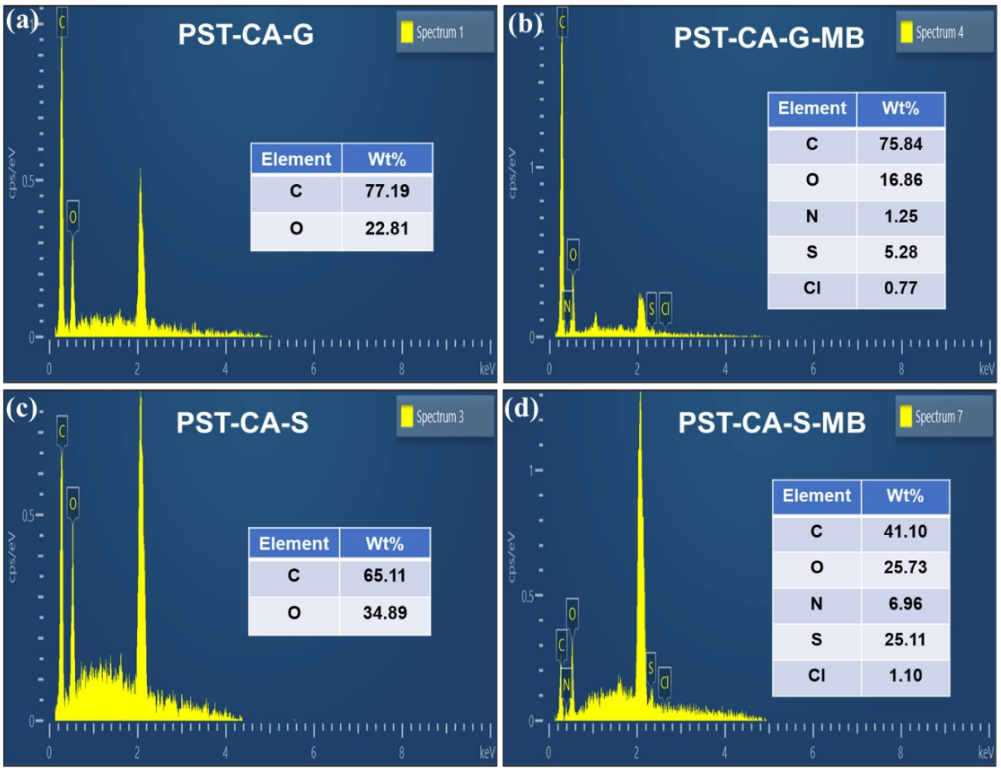

Fig. S3 EDS plots and corresponding elemental weight percentages of PST-CA-G and PST-CA-S before and after adsorption of MB.

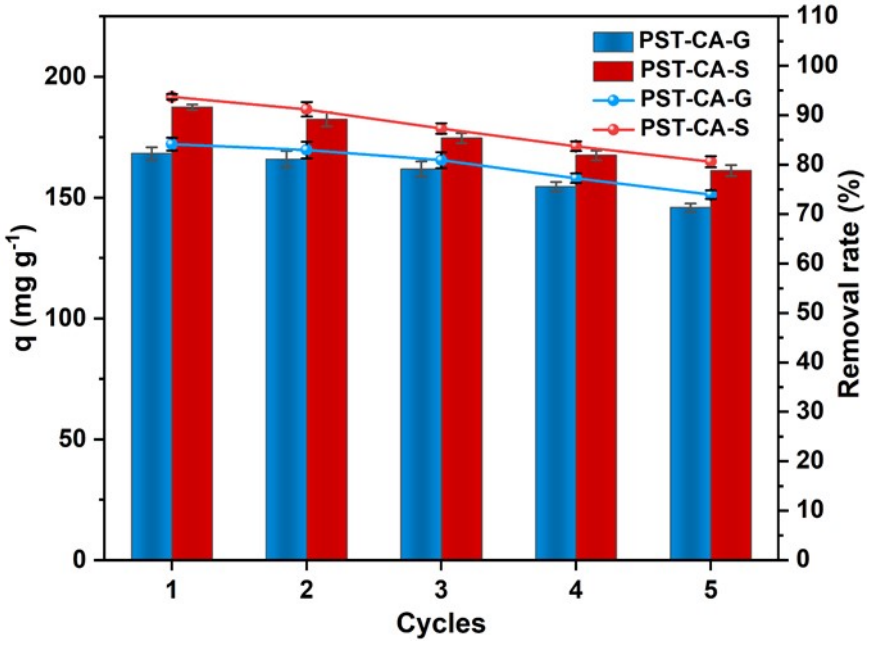

Fig. S4 Performance of cyclic regeneration

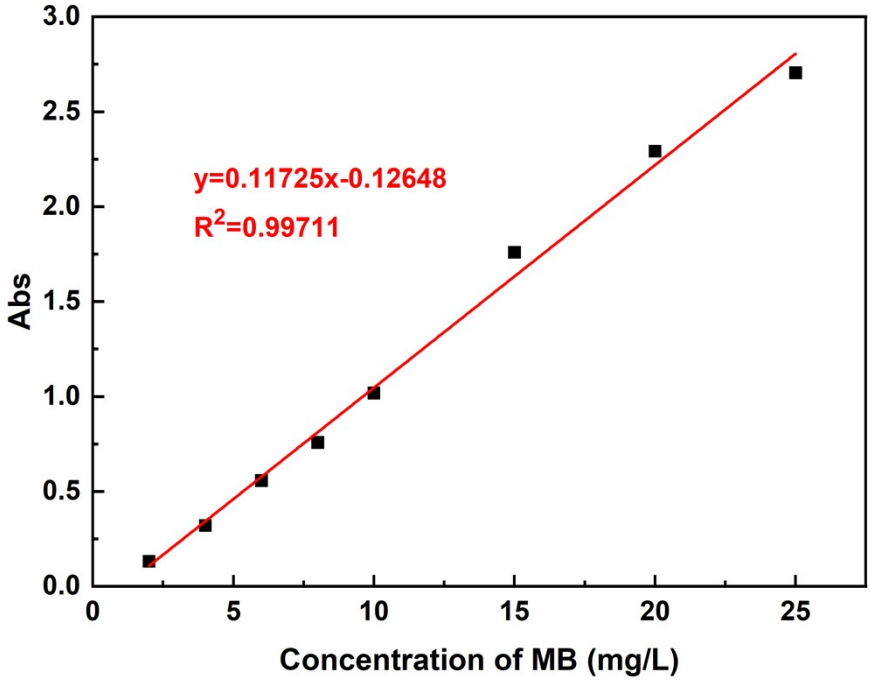

Fig. S5 The standard curve of the MB solute

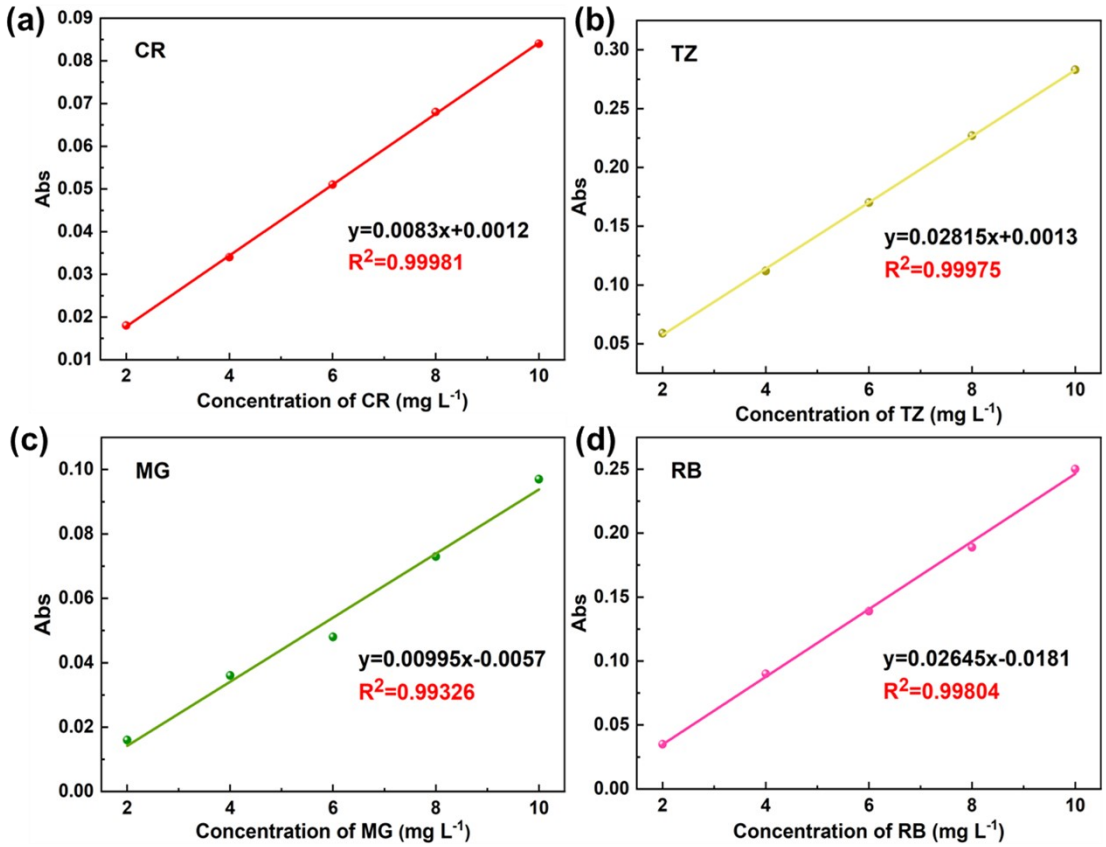

Fig. S5 Standard curve of each dye solution. A series of MB solutions were prepared with a concentration range of 0 to 25.0 mg L^{-1} (0, 2.0, 4.0, 6.0, 8.0, 10.0, 15, 20, 25 mg L^{-1}). The absorbance at the maximum absorption wavelength (664 nm) was measured,

and the standard curve for the MB was obtained using the MB concentration (C, mg L^{-1}) as the x-coordinate and the absorbance (A) as the y-coordinate (Fig. S5). The experimental results showed a good linear relationship between absorbance and MB concentration with a linear equation of A = -0.12648+0.11725 C (R^2 = 0.99711).

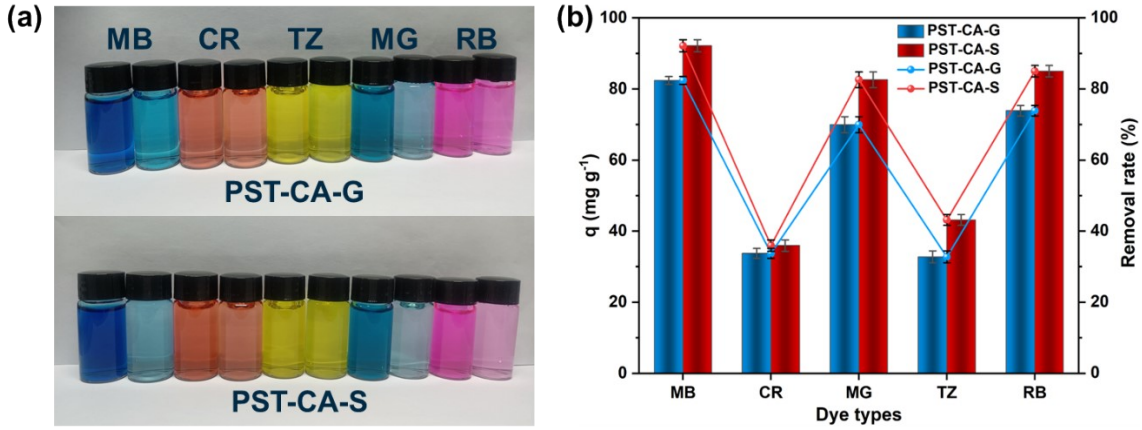

Fig. S6 PST-CA-G and PST-CA-S versatility test: (a) Experimental effect graph; (b) Comparison of adsorption capacity.

2. Tables

Table S1 Thermodynamically relevant parameters of PST-CA-G and PST-CA-S adsorbed MB.

Adsorbent	Temperature（K）	ΔG^0 (kJ mol^{-1})	ΔH^0 (kJ mol^{-1})	ΔS^0 (J mol^{-1} K^{-1})
PST-CA-G	303	-5.3967	-25.4462	-66.1701
	313	-4.7350		
	323	-4.0733		
PST-CA-S	303	-8.1726	-25.9051	-58.5321
	313	-7.5874		
	323	-7.0021		