Supporting Information

Binder-free preparation of ZSM-5@silica beads and their use for organic pollutants removal

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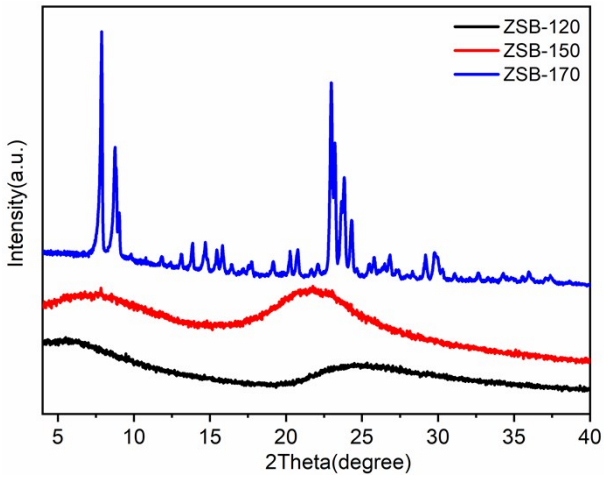

Figure S1. The XRD patterns of the zeolite crystals collected from the bulk solution. The synthesis is performed from a template-free system at temperature with 120, 150 and 170 ℃.

Figure S2. Optical photographs of SiO_2 beads, ZSB-120, ZSB-150, and ZSB-170.

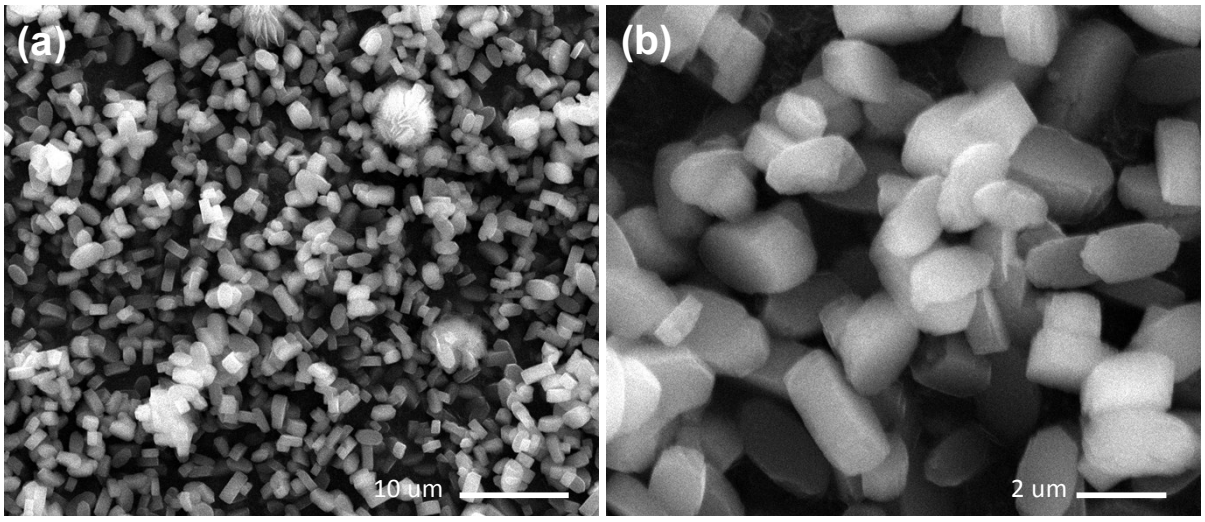

Figure S3. Low (a) and high (b) magnification SEM micrographs of zeolite crystals (BS-170) collected from the system yielding ZSB-170.

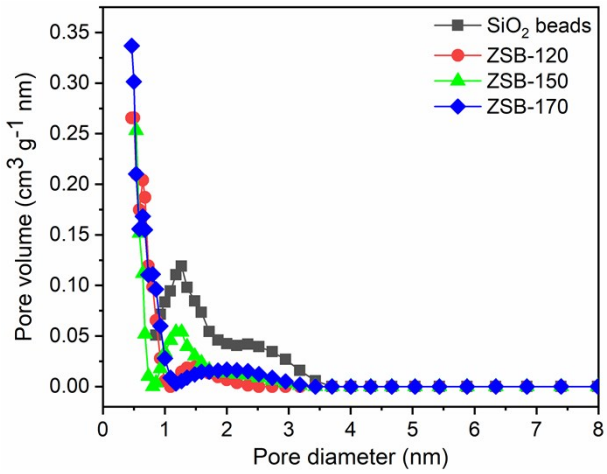

Figure S4. DFT pore size distributions of SiO_2, ZSB-120, ZSB-150 and ZSB-170 beads.

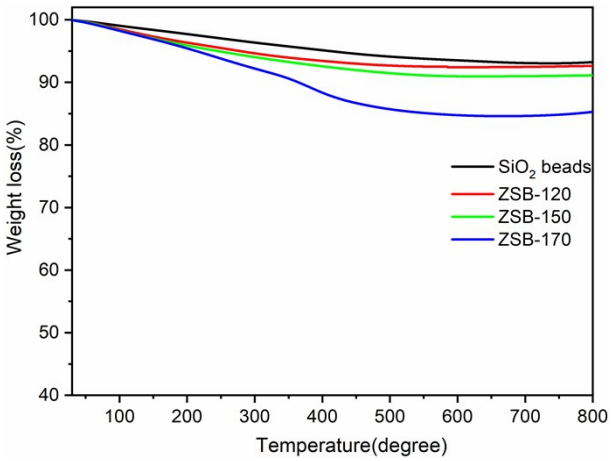

Figure S5. Thermal analysis of SiO_2, ZSB-120, ZSB-150, and ZSB-170 beads.

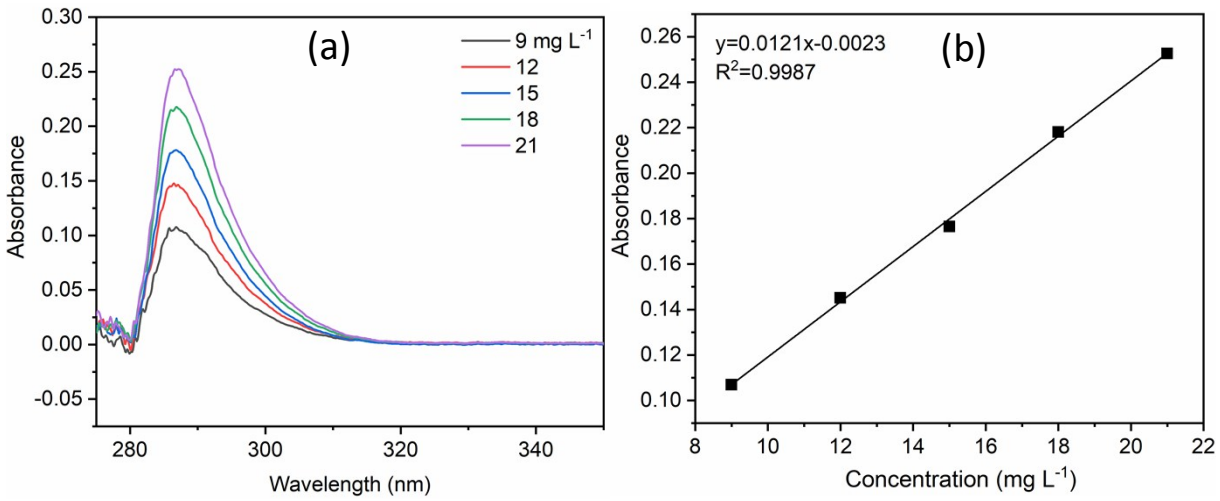

Figure S6. UV-vis absorption spectra of aniline solutions at various concentrations (a) and standard curve of the plots of concentration versus absorbance (b).

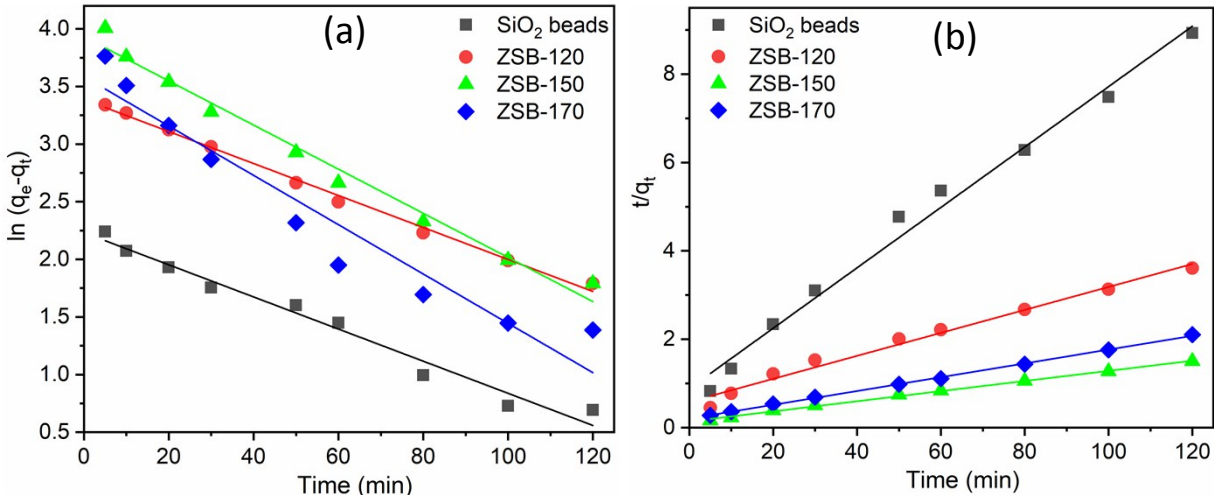

Figure S7. Pseudo-first-order (a) and pseudo-second-order (b) kinetics for the adsorption of aniline molecule.

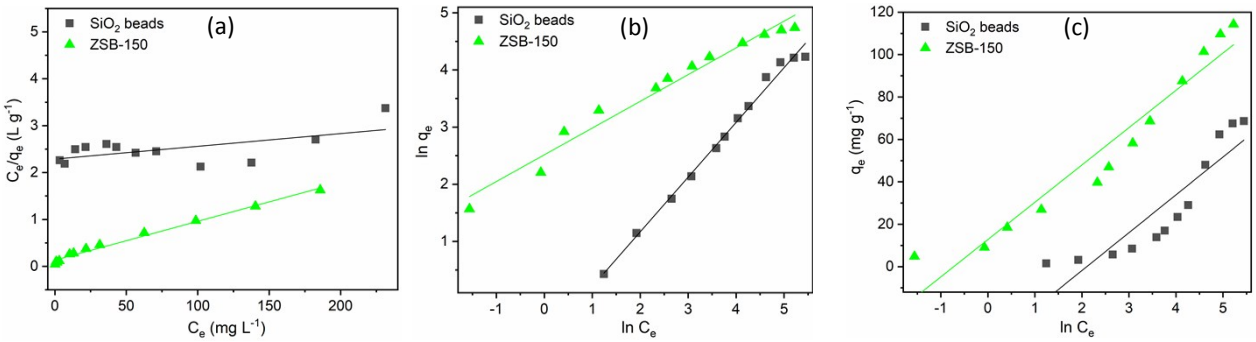

Figure S8. Analyses on the aniline adsorption isotherms by Langmuir (a), Freundlich (b) and Temkin (c) models (adsorption time: 12 h, adsorption temperature: 25 °C, adsorbents dose:1 g L^{-1}).

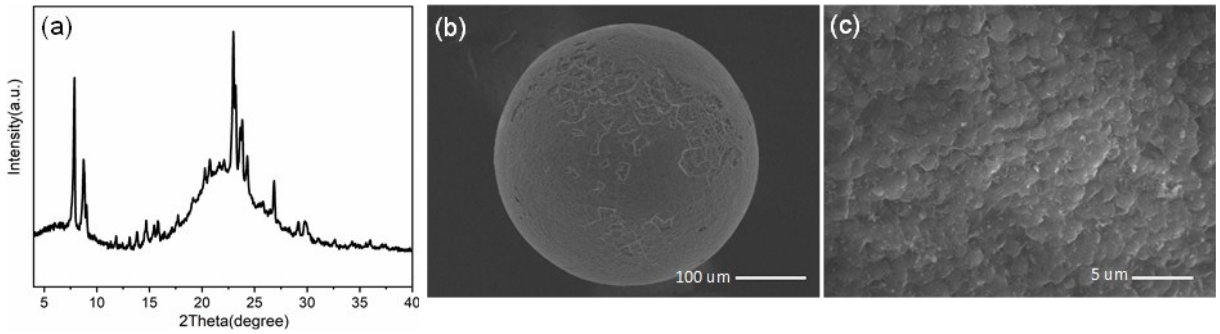

Figure S9. Powder XRD pattern (a), low (b) and high (c) magnification SEM micrograpgs of used ZSB-150 adsorbents.

Table S1. The elementary composition of the obtained beads.

Sample	Chemical element (mass %)					
	C	O	Si	Al	Na	Si/Al
SiO_2 beads	2.7	49.64	46.61	/	1.05	/
ZSB-120	0.63	48.03	47.29	2.29	1.76	20.65
ZSB-150	2.72	50.94	41.01	2.92	2.41	14.04
ZSB-170	1.5	49.67	43.78	2.68	2.37	16.34