Supplementary Information :

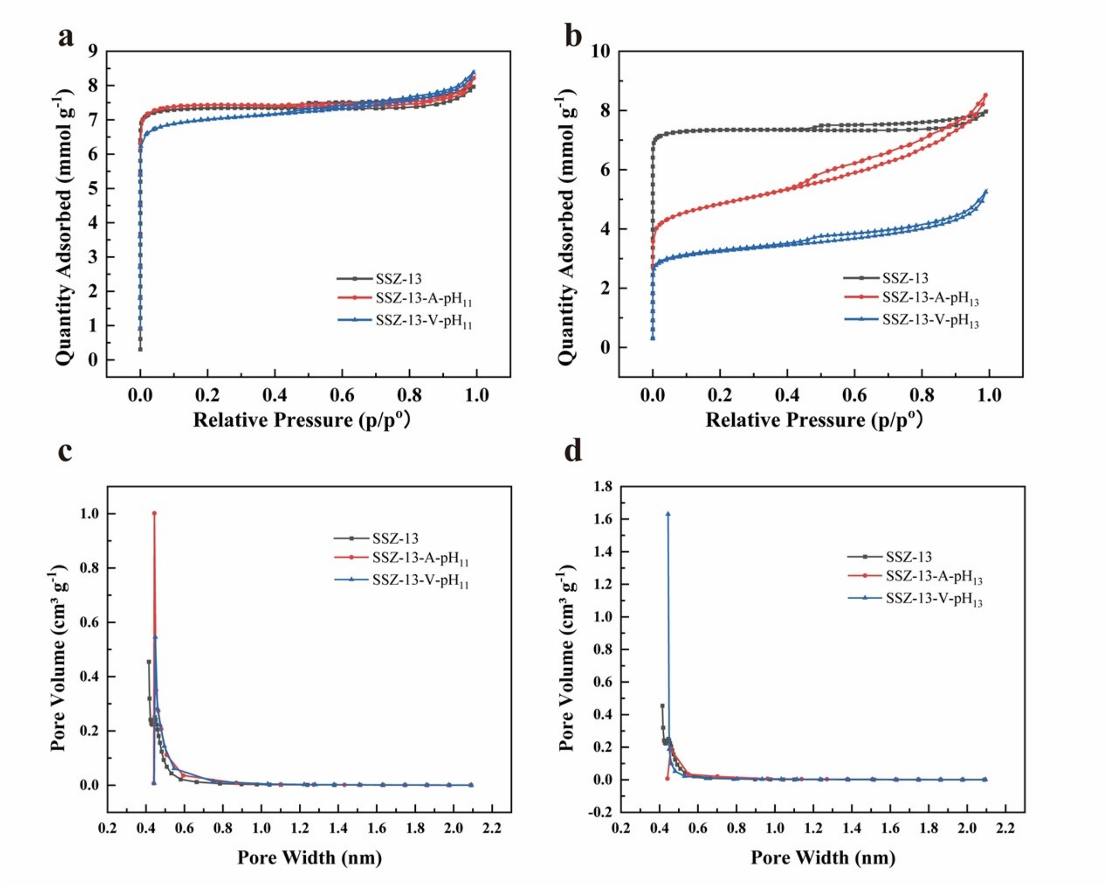

Fig. S1. 77 K Nitrogen adsorption/desorption curves and H-K pore size distribution profiles of SSZ-13 treated at different pH. (a, c) pH=11; (b, d) pH=13.

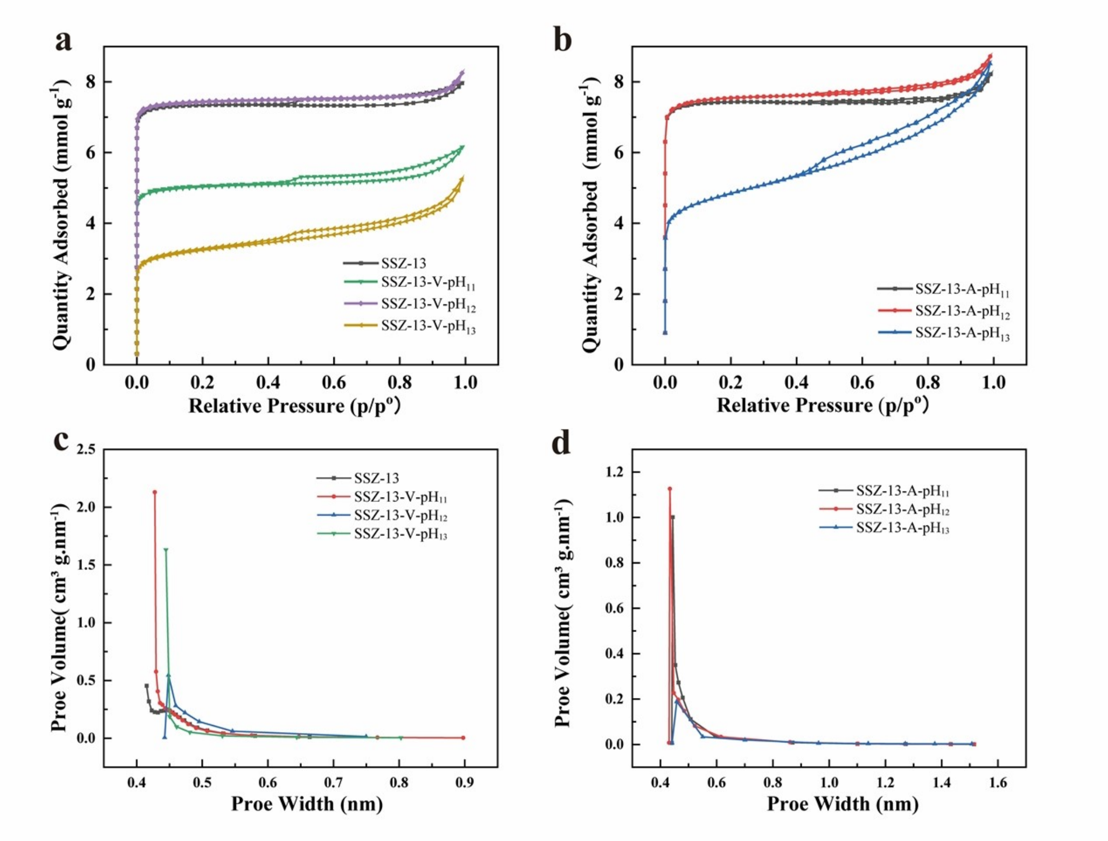

Fig. S2. 77 K N_2 adsorption/desorption isotherms of SSZ-13 and the corresponding pore size distribution curves. (a) 77 K N_2 adsorption/desorption isotherms for SSZ-13, SSZ-13-V-pH_{11}, SSZ-13-V-pH_{12} and SSZ-13-V-pH_{13}; (b) 77 K N_2 adsorption/desorption isotherms for SSZ-13-A-pH_{11}, SSZ-13-A-pH_{12} and SSZ-13-A-pH_{13}; (c) H-K pore size distribution curves of SSZ-13, SSZ-13-V-pH_{11}, SSZ-13-V-pH_{12} and SSZ-13-V-pH_{13}; (d) H-K pore size distribution curves of SSZ-13-A-pH_{11}, SSZ-13-A-pH_{12} and SSZ-13-A-pH_{13}.

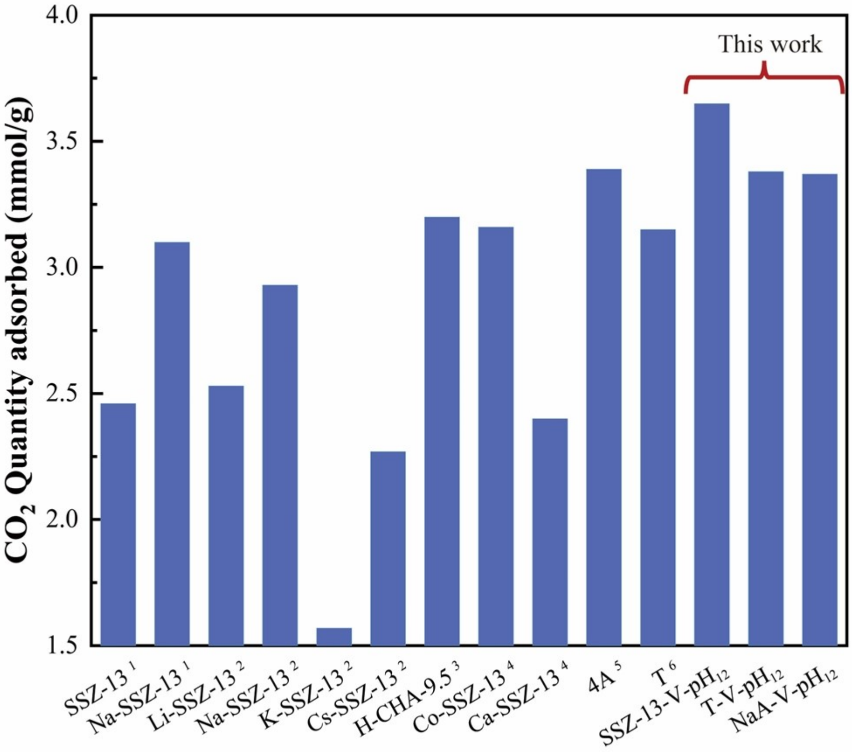

Fig. S3. Comparison of CO_2 adsorption properties between the zeolites synthesized in this study and other reported zeolites with the same crystal structures.[2-7]

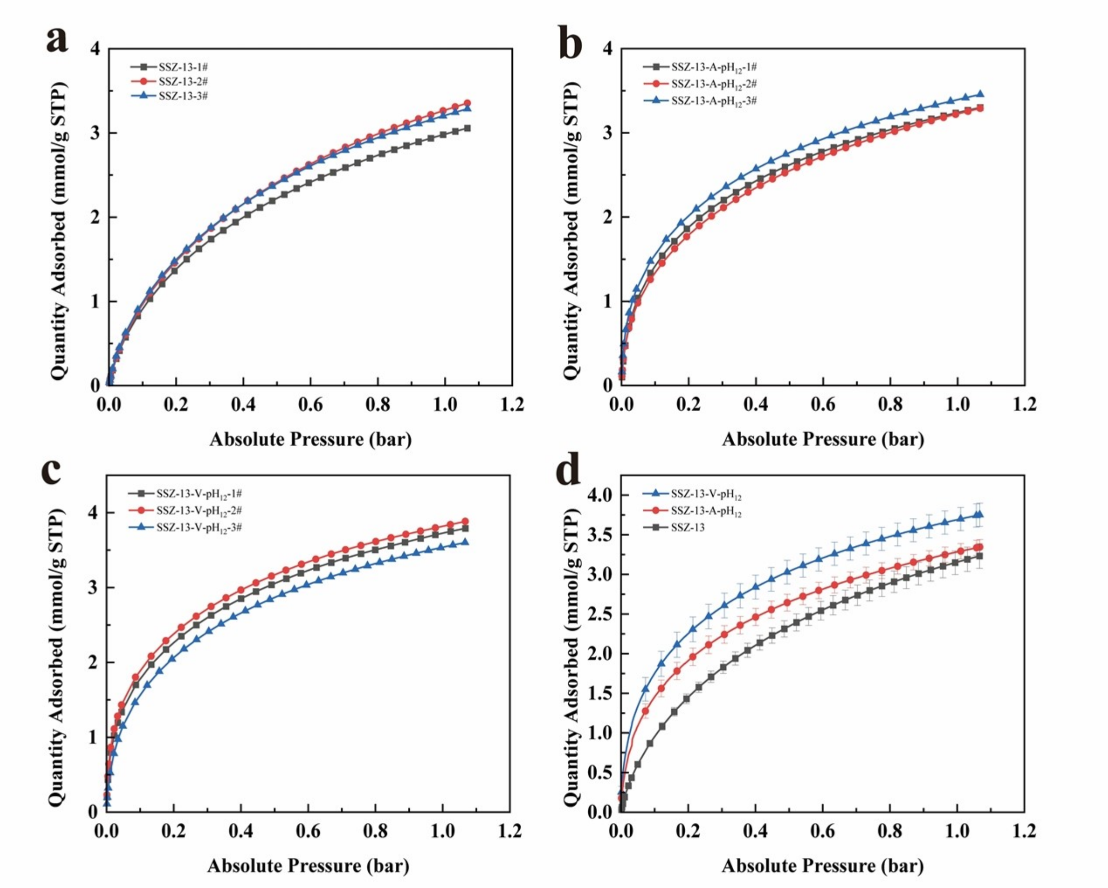

Fig. S4. Independent samples of SSZ-13 before and after (vacuum-assisted) alkaline treatments. (a) SSZ-13; (b) SSZ-13-A-pH$_{12}$; (c) SSZ-13-V-pH$_{12}$; (d) The average data with error bars.

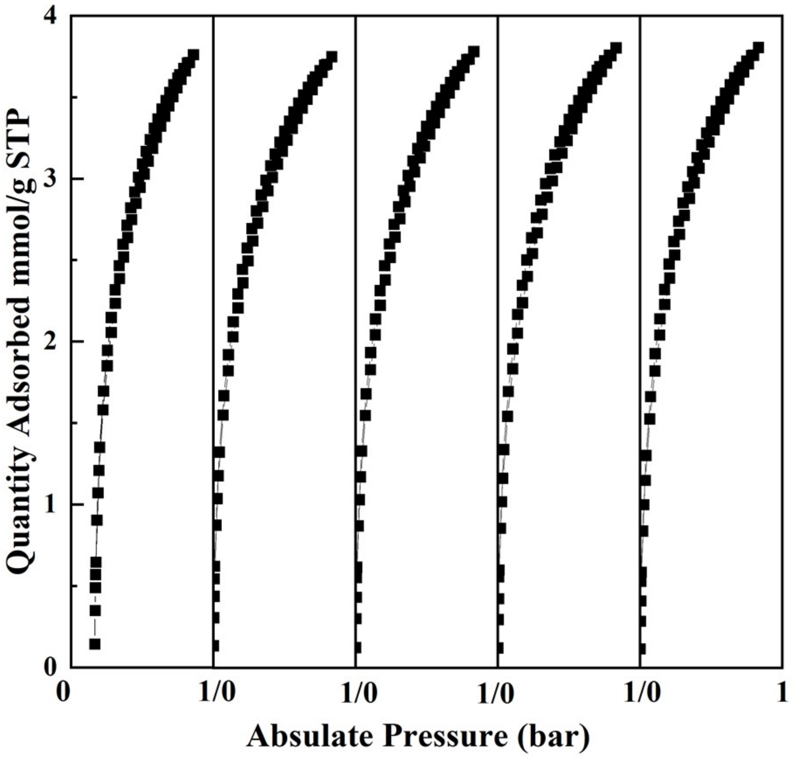

Fig. S5. Cyclic CO_2 adsorption isotherms of SSZ-13-V-pH$_{12}$ at 25°C.

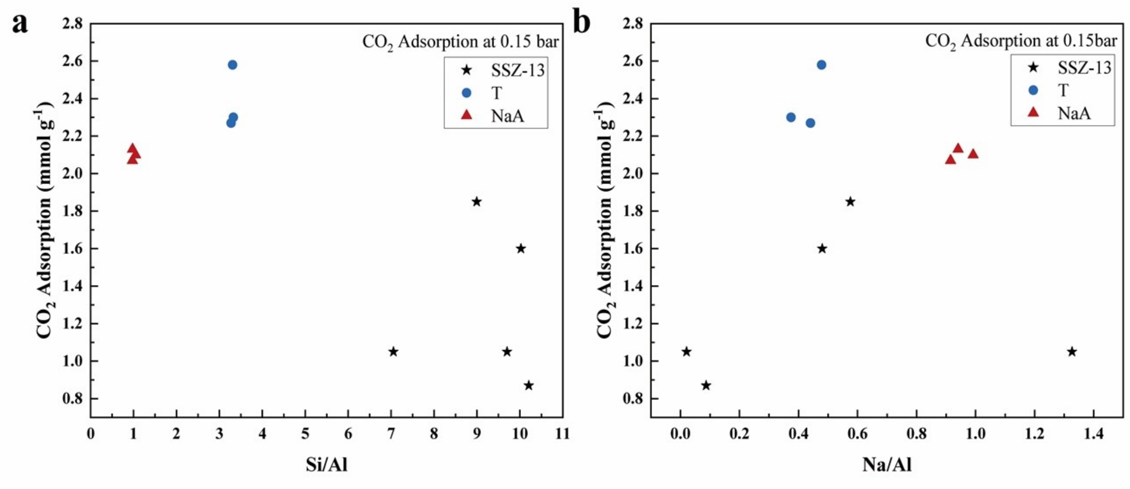

Fig. S6. CO$_2$ adsorption capacity of zeolites against the Si/Al ratio (a) and the Na/Al ratio (b).

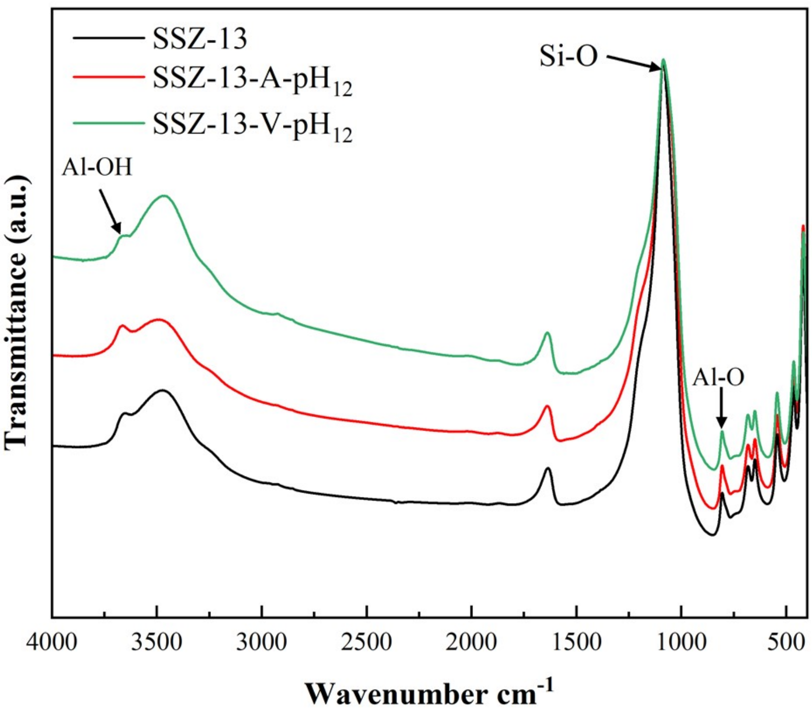

Fig. S7. FTIR curves of SSZ-13, SSZ-13-A-pH$_{12}$ and SSZ-13-A-pH$_{12}$.

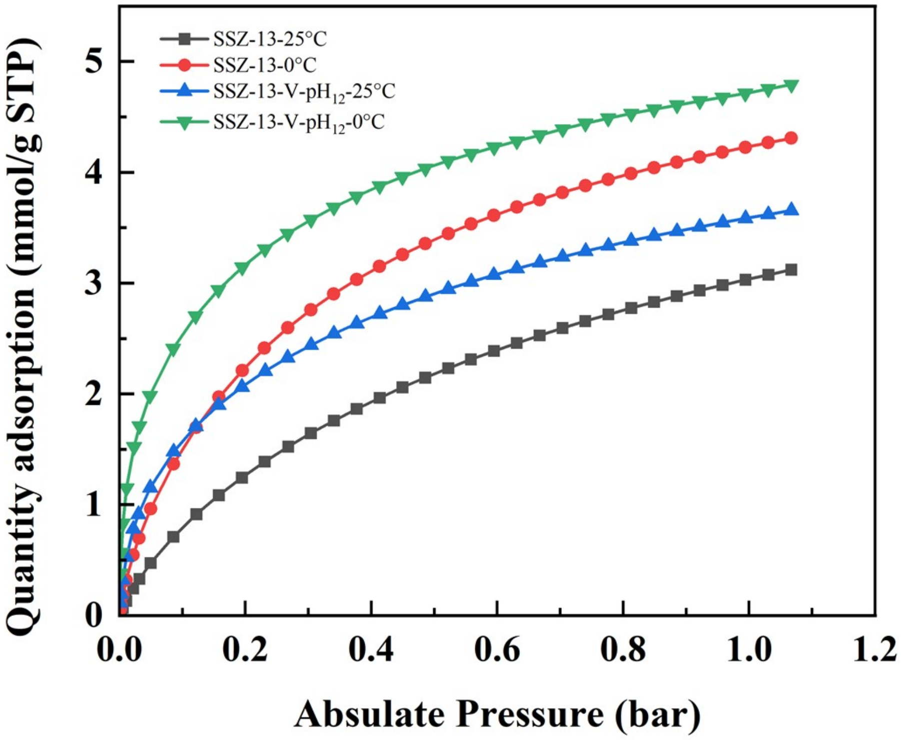

Fig. S8. CO_2 adsorption isotherms of SSZ-13 before and after vacuum-assisted alkaline treatment at 0°C and 25°C.

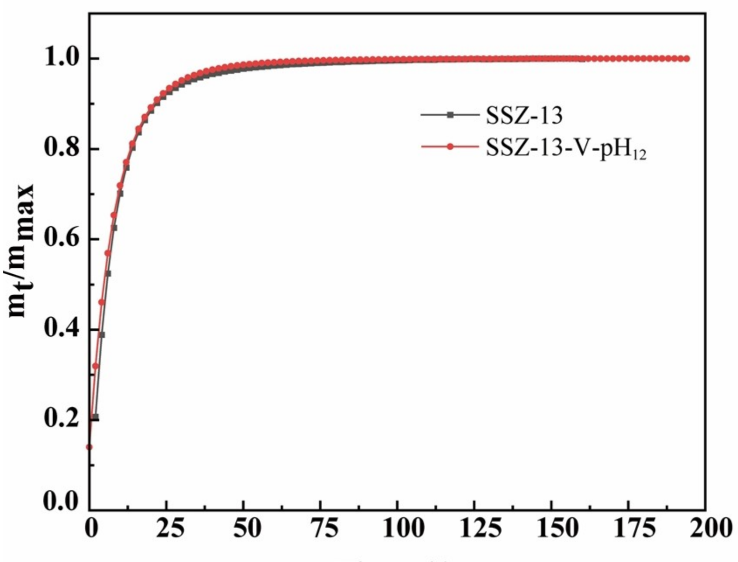

Fig. S9. Kinetic CO_2 adsorption curves of SSZ-13 before and after vacuum-assisted alkaline treatment.

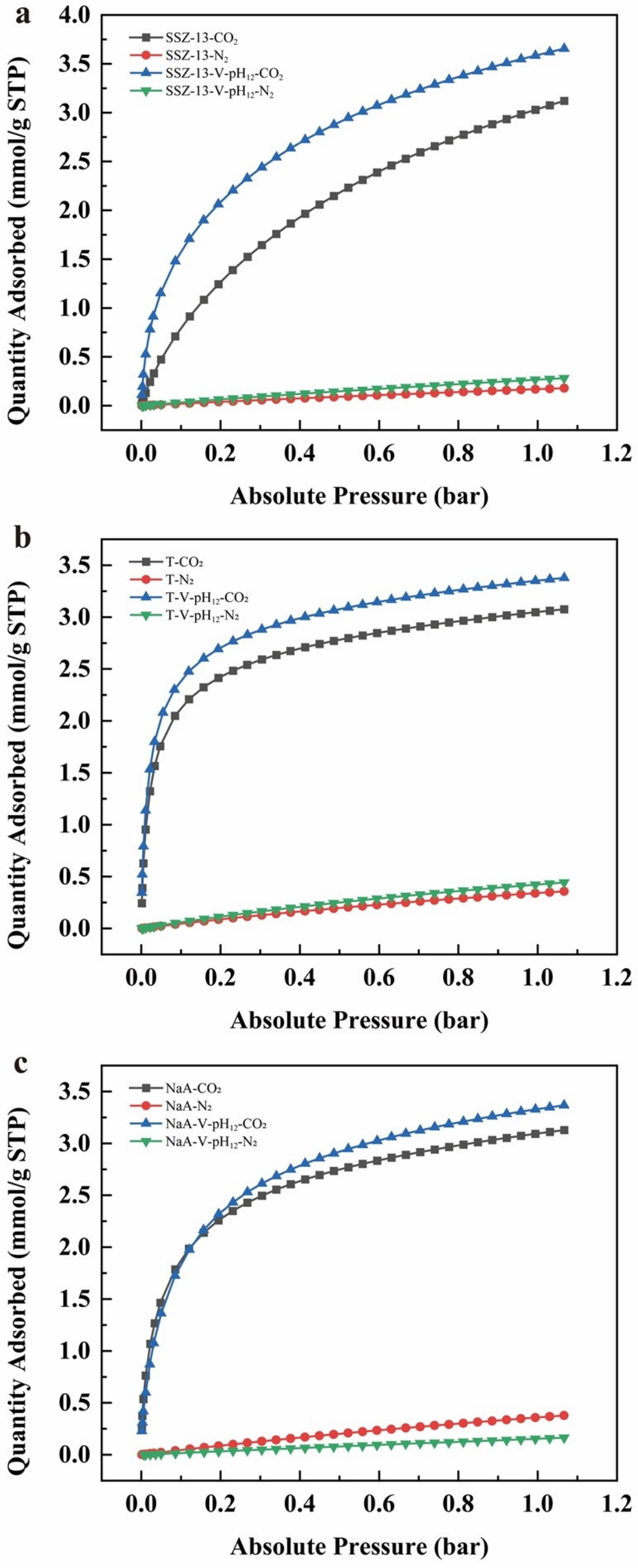

Fig. S10. CO_2 and N_2 adsorption isotherms of molecular sieve before and after vacuum-assisted alkaline treatment at 25°C. (a) SSZ-13; (b) T zeolites; (c) NaA molecular sieve.

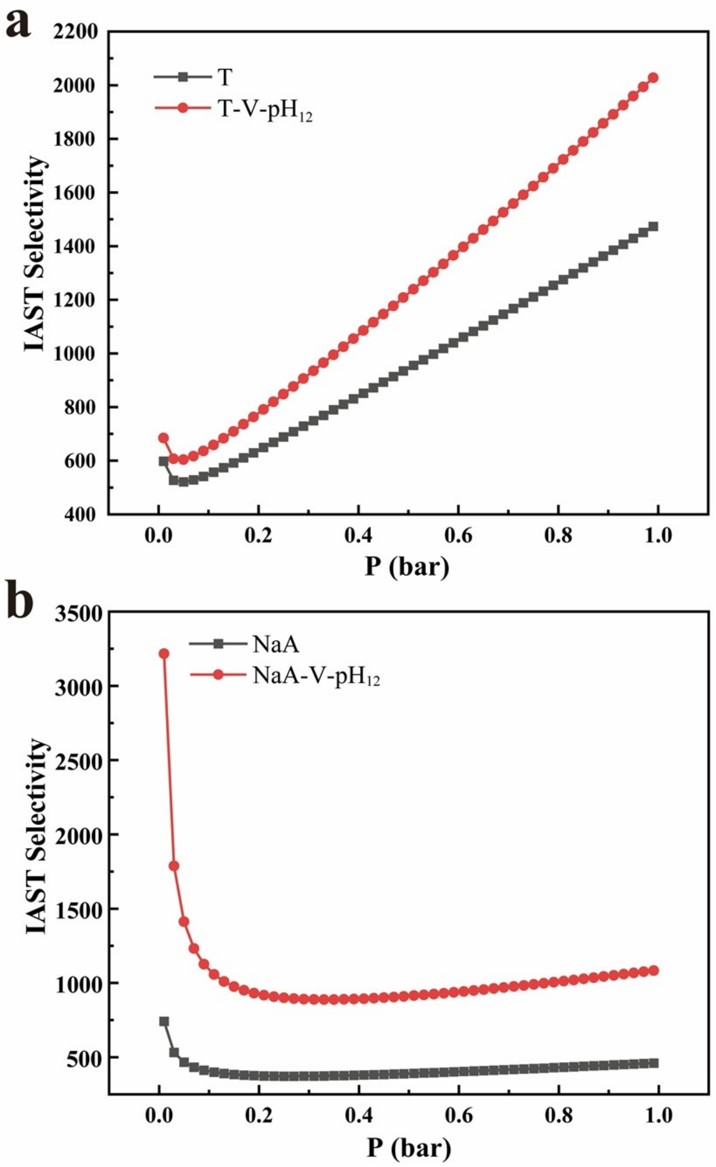

Fig. S11. IAST-predicted CO_2/N_2 selectivity with at 25 °C. (a) T zeolites; (b) NaA molecular sieve.

Table S1. Summary of data from X-Ray Fluorescence (XRF) analysis.

Sample	**Si [%]**	**Al [%]**	**Na [%]**	**K [%]**	**Si/Al**
SSZ-13	42.98	4.21	-	-	9.81
T	32.33	9.43	3.21	7.17	3.29
4A	19.33	19.08	16.60	-	0.97

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