Supporting Information

Nanosized Metal Organic Framework with Small Pores for Kinetic Xenon Separation

Guangli Yu,[a] Yueqiao Liu,[a] Xiaoqin Zou,*[a] Nian Zhao,[b] Huazhen Rong[a] and Guangshan Zhu*[a]

[a] Faculty of Chemistry, Northeast Normal University, Changchun 130024, P. R. China

[b] Institute for Advanced Materials, Hubei Normal University, Huangshi 435002, P. R. China

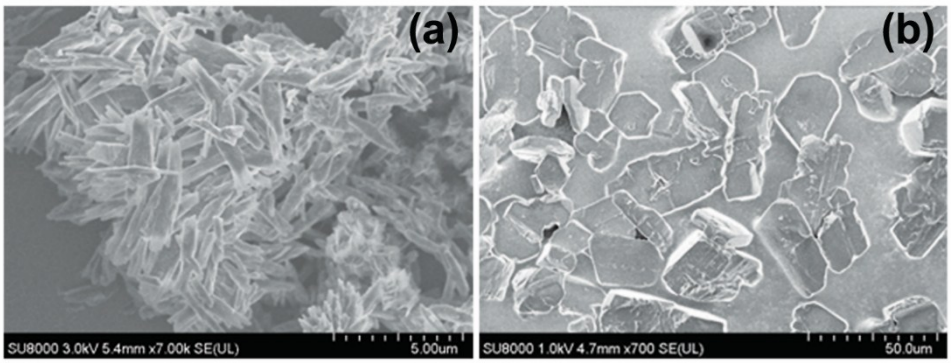

Fig. S1 SEM images of micro- (a) and macro-crystals (b) prepared by varying NH_3 contents in the synthesis solutions.

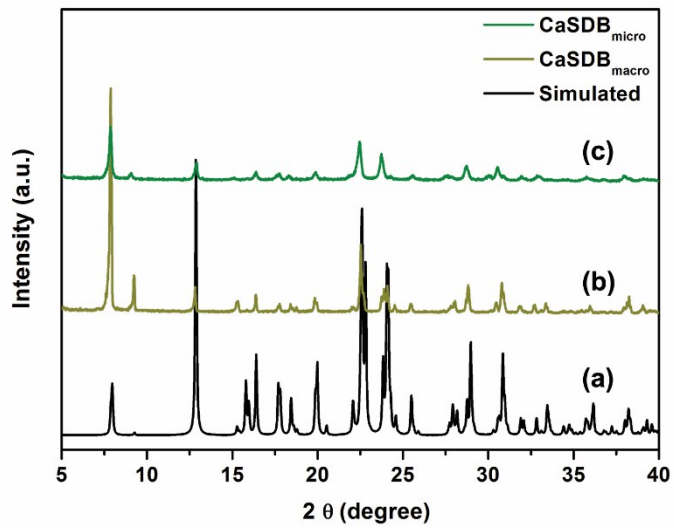

Fig. S2 XRD patterns of micro- (c) and macro-crystals (b) prepared by varying NH_3 contents in the synthesis solutions, and (a) refers to the simulated pattern from the single crystal.

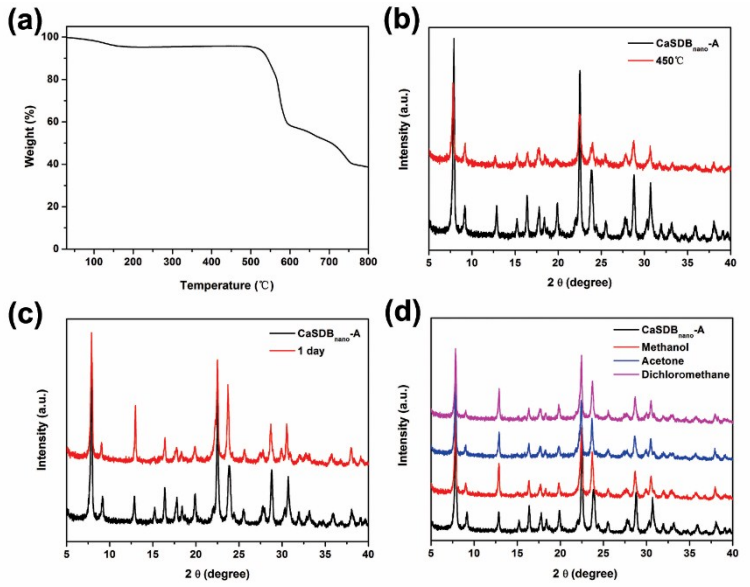

Fig. S3 TG curve of prepared $CaSDB_{nano}$ MOF material (a), and XRD patterns of the $CaSDB_{nano}$ sample calcined at 450 °C after 2 h (b), soaked in water for 1 d (c) and immersed in different organic solvents for 1 d (d).

Table S1 A summary of N_2 sorption results for CaSDB nanocrystals.

Sample	S_{BET} ($m^2\ g^{-1}$)	S_{ext} ($m^2\ g^{-1}$)	V_{total}[a] ($cm^3\ g^{-1}$)	$V_{ultramicro}$[b] ($cm^3\ g^{-1}$)	Pore size[c] (nm)
$CaSDB_{nano}$-A	157	104	0.19	0.027	0.5
$CaSDB_{nano}$-B	140	102	0.15	0.02	0.5

[a] total pore volumes at P/P_0=0.95.

[b] ultramicropore volumes calculated by t-plot method with diameter ≤0.7 nm.

[c] pore size distribution in diameter determined using the DFT method.

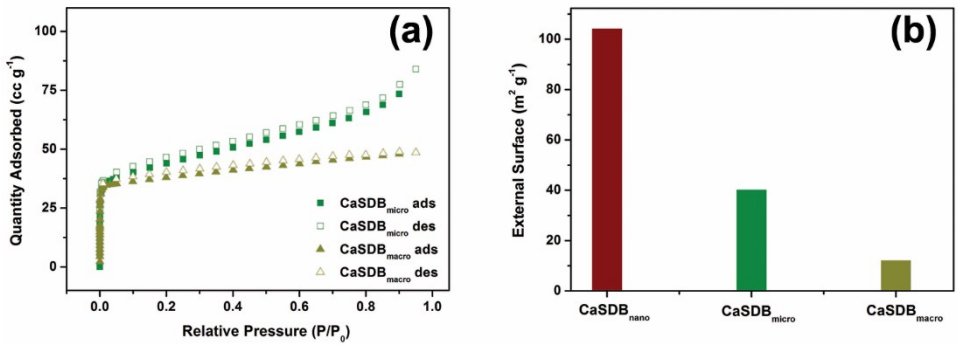

Fig. S4 (a) N_2 sorption isotherms for $CaSDB_{micro}$ and $CaSDB_{macro}$; and (b) external surface areas of $CaSDB_{nano}$ prepared by Route A, $CaSDB_{micro}$ and $CaSDB_{macro}$ samples.

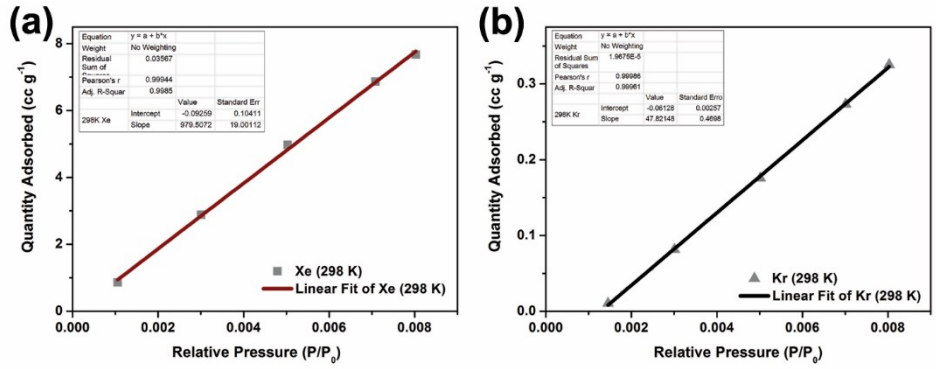

Fig. S5 Fittings of Henry's constants from Xe and Kr adsorption isotherms.

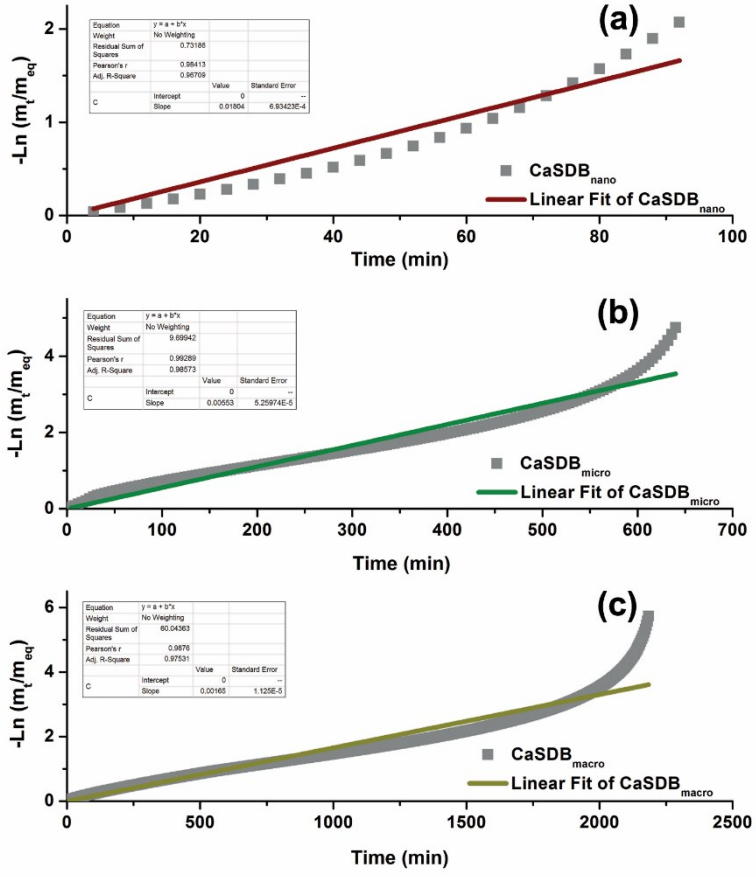

Fig. S6 Fittings of apparent rate constants using the pseudo-first order model.