Supporting information

In Situ fabrication of core-shell-structured Beta@Silicalite-1 catalysts by a novel steam-assisted crystallization strategy

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Table S1 The SiO_2/Al_2O_3 molar ratio of the pure Beta(800) zeolite (A), the solid obtained (B) treated by only TPAOH via SAC method, core-shell sample of 4 h (C) and 24 h (D) measured by ICP

Sample	SiO_2/Al_2O_3
A	727
B	717
C	772
D	701

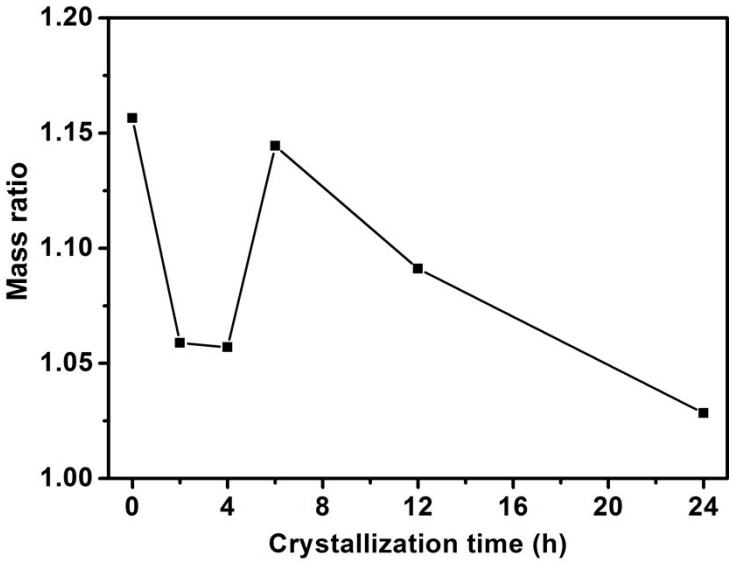

Fig. S1 The mass change curve of obtained solid for different crystallization time.

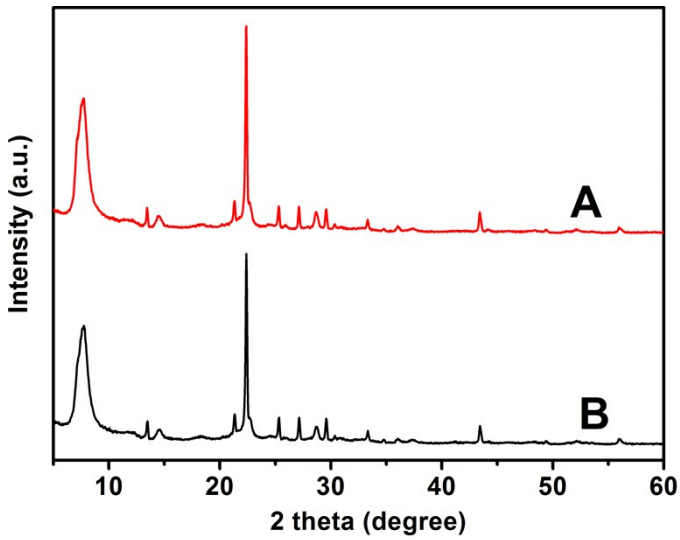

Fig. S2 The XRD pattern of the core Beta zeolites (A) and the solid obtained (B) treated by only TPAOH via SAC method.

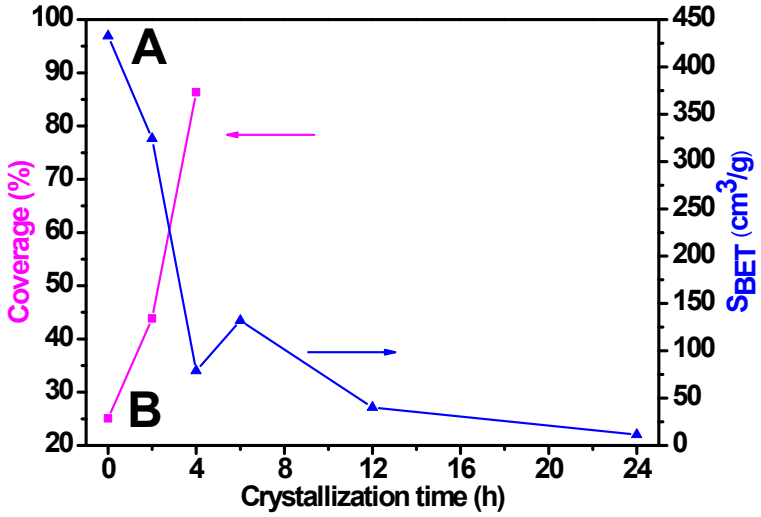

Fig. S3 The S_{EBT} (A) and Coverage (B) of core-shell zeolite for different crystallization time.

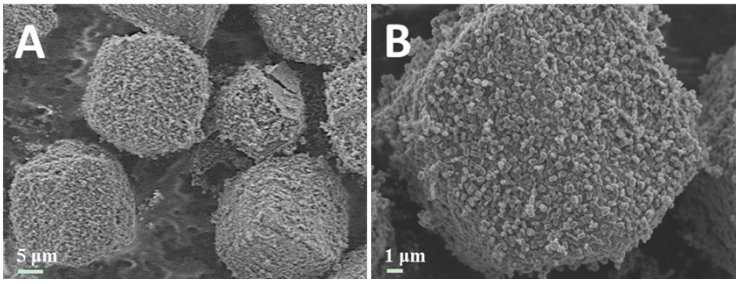

Fig. S4 SEM images of core-shell zeolite Beta(600)@Silicalite-1.

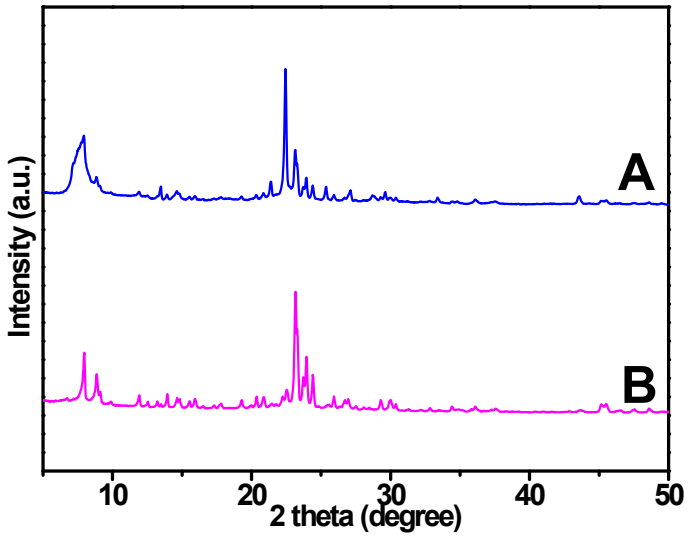

Fig. S5 The XRD patterns of Beta(800)@Silcalite-1 synthesized by TEOS (A) and CS (B).

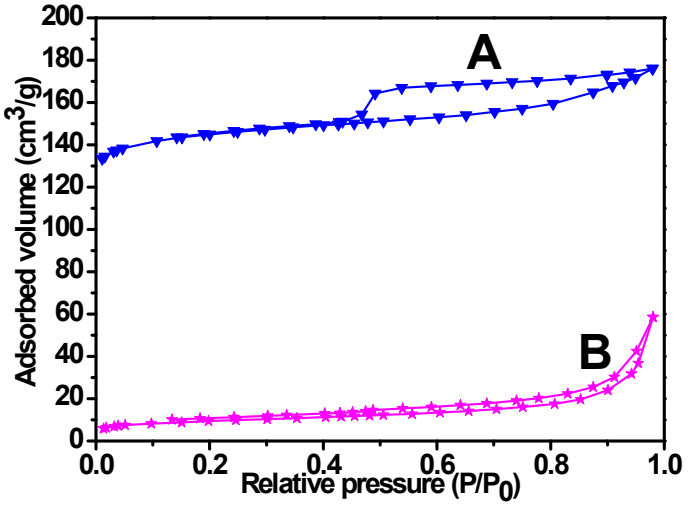

Fig. S6 The N_2 adsorption isothermals Beta(800)@Silcalite-1 synthesized by TEOS (A) and CS (B).

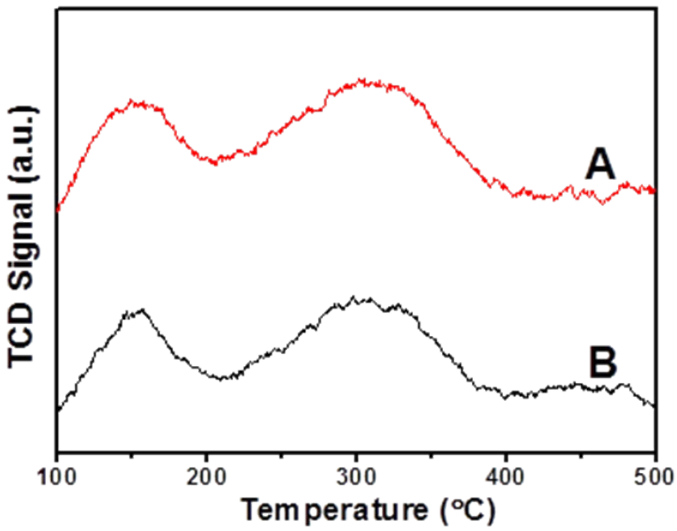

Fig. S7 NH_3-TPD profiles of core Beta(800) (A) and core-shell zeolite Beta(800)@Silicalite-1 (B).

Table S2. Acidity characteristic of core Beta(800) (A) and core-shell zeolite Beta(800)@Silicalite-1 (B)

Sample	Tpeak (°C)		Acid amount [b] (μmol·g^{-1})		
	LT peak [a]	HT peak [a]	Total acidity	Weak acidity	Strong acidity
A	148.5	308.9	47.8	14.9	32.9
B	151.0	308.4	35.7	10.8	24.9

[a] The LT peak represents a low temperature desorption peak. The HT peak represents a high temperature desorption peak.

[b] Calculated with Gaussian function fit.

Table S3. Catalytic performance of Beta(800)@Silicalite-1 (A) and Beta(800) (B) in conversion 1, 3, 5-trimethylbenzene (TMB) and benzyl alcohol (BA)

Sample	Time (h)	α ($2C_{DE}/C_{TMBB}$)	Conversion (%)
A	2	90.25	4.0
	4	89.71	5.3
	6	87.80	6.5
	8	85.17	7.1
B	2	23.40	3.5
	4	22.89	7.3
	6	21.12	8.3
	8	20.47	9.8