

Insights into the Synthesis of Spiral Beta Zeolite with Enhanced Catalytic Performance in VOC Abatement

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Table S1 Different conditions on S-Beta crystallization.

| Run ^a | SiO ₂ /Al ₂ O ₃ | K ₂ O/SiO ₂ ^b | OSDA/ SiO ₂ ^b | H ₂ O/SiO ₂ ^b | Products ^c |
|------------------|--|--|-------------------------------------|--|-----------------------|
| 1 | 36 | 0.088 | 0.161 | 37 | Beta |
| 2 | 25 | 0.088 | 0.161 | 37 | Beta+Amor |
| 3 | 55 | 0.088 | 0.161 | 37 | Beta+ZSM-12 |
| 4 | 36 | 0.066 | 0.161 | 37 | Beta+Amor |
| 5 | 36 | 0.109 | 0.161 | 37 | ZSM-12 |
| 6 | 36 | 0.088 | 0.181 | 37 | Beta |
| 7 | 36 | 0.088 | 0.151 | 37 | Beta+ZSM-12 |

^a Crystallization at 160 °C for 10 days under static state.

^b The ratio of mixture gel before crystallization.

^c The phase appearing first is dominant.

Figure S1 The (A) XRD pattern, (B) N₂ adsorption curves and (C) SEM images of C-Beta zeolite.

Figure S2 Simulated XRD pattern of *BEA type zeolite.

Figure S3 SEM images of S-Beta zeolite.

Figure S4 TG-DTA of synthesized S-Beta samples.

Figure S5 XRD of different conditions.

Figure S6 The dependence of crystallinity on the crystallization time of the S-Beta zeolite.

Figure S7 SEM images of (a) OTF-Beta, (c) Meso-Beta catalysts.

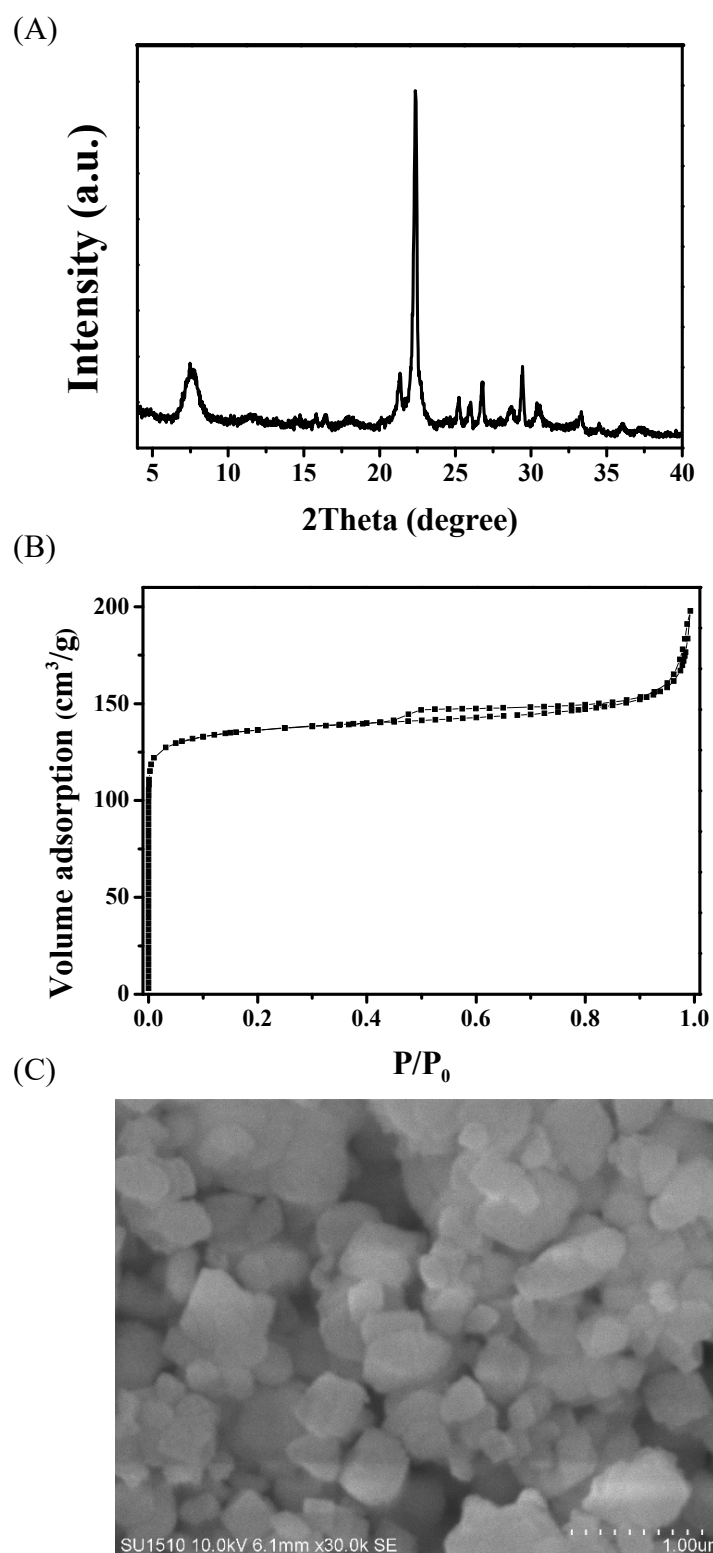


Figure S1 The (A) XRD pattern, (B) N₂ adsorption curves and (C) SEM images of C-Beta zeolite.

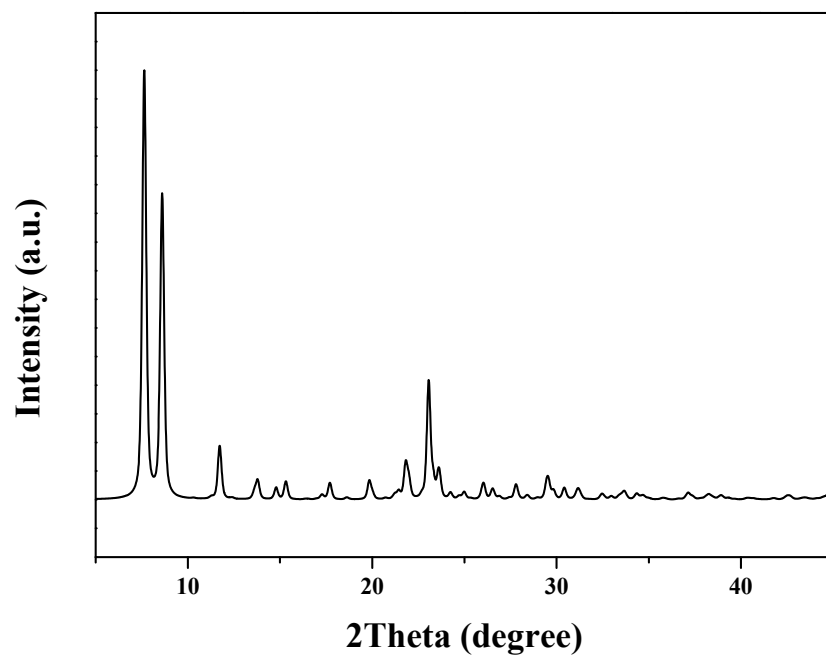


Figure S2. Simulated XRD pattern of *BEA type zeolite.

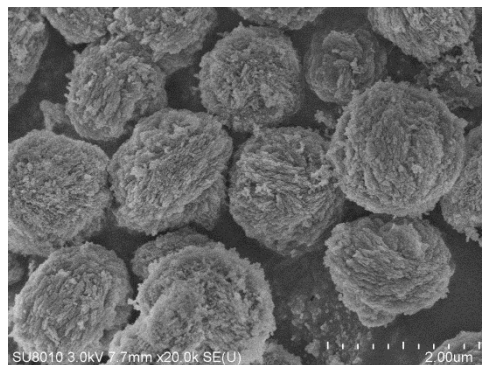
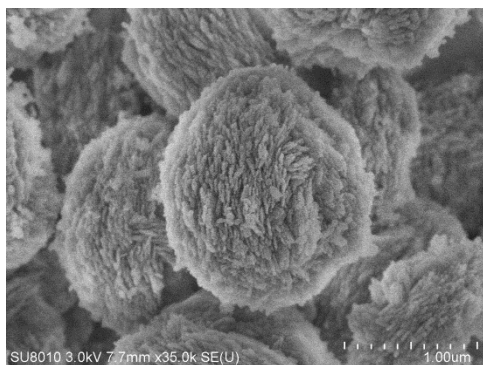
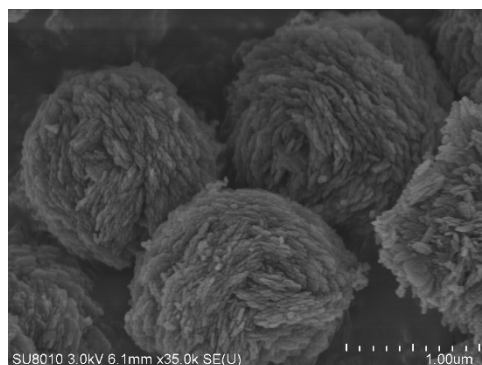
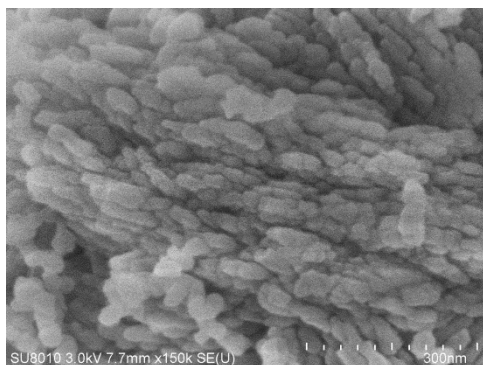


Figure S3 SEM images of S-Beta zeolite.

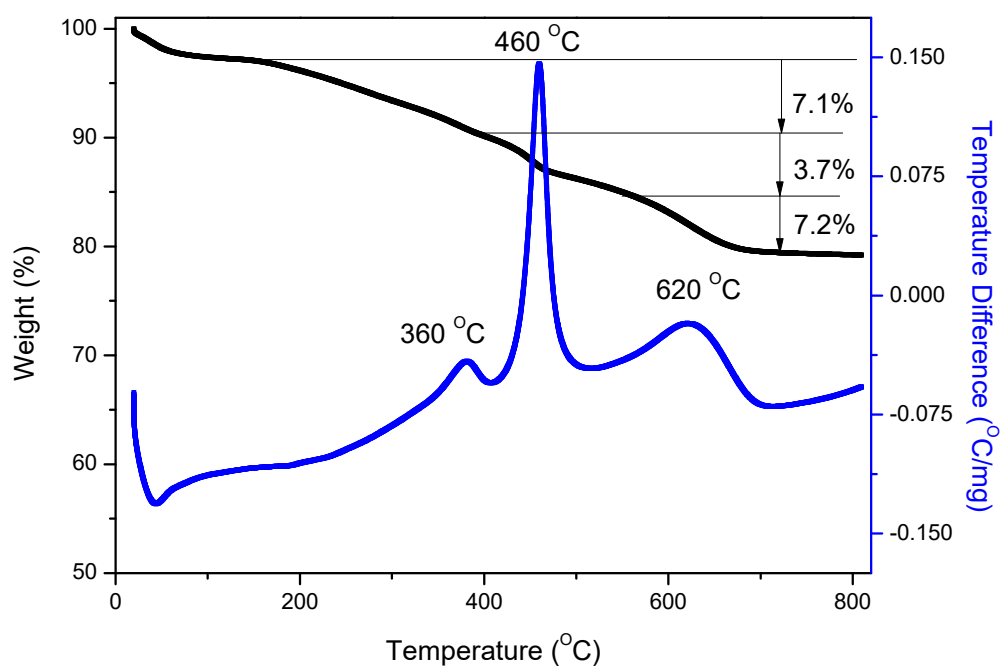


Figure S4 TG-DTA images of S-Beta.

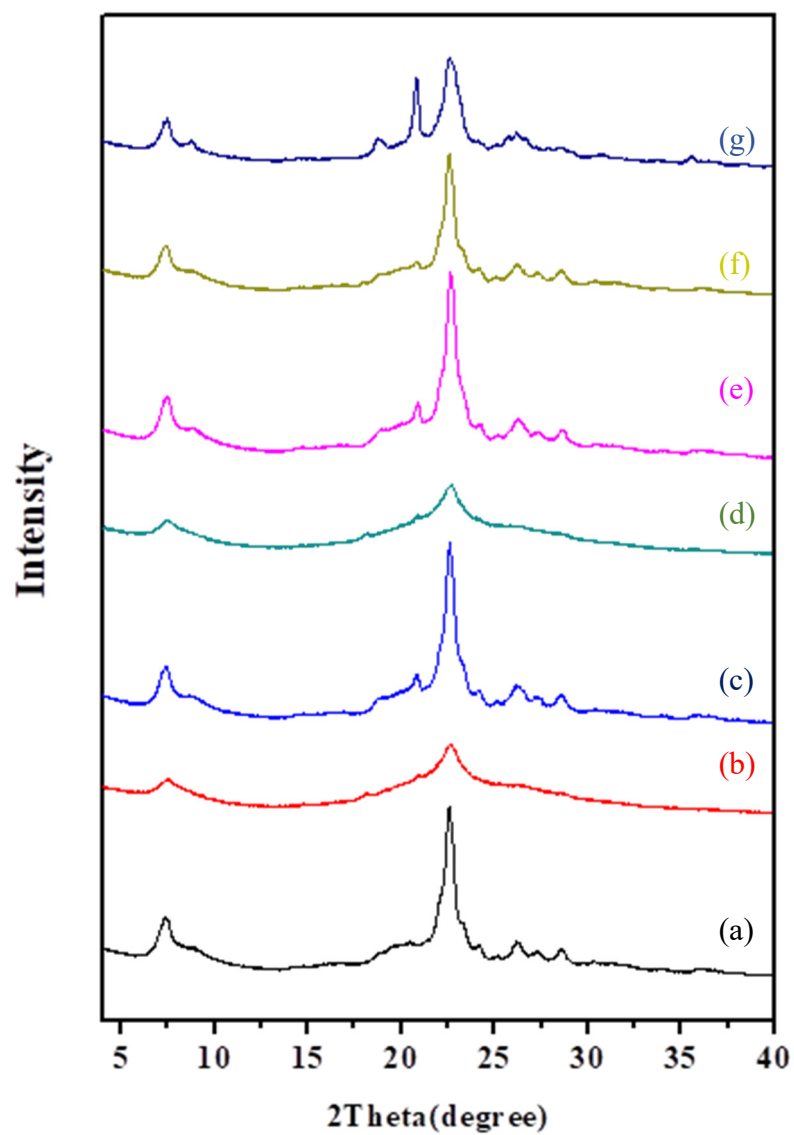


Figure S5 XRD patterns of different conditions in Table S1: (a) Run 1, (b) Run 2, (c) Run 3, (d) Run 4, (e) Run 5, (f) Run 6, (g) Run 7.

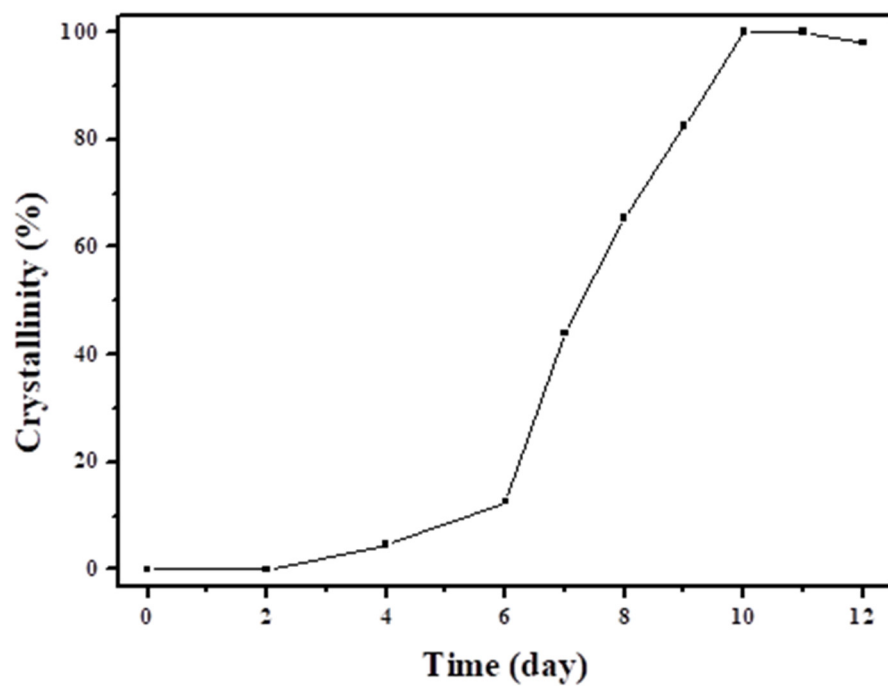
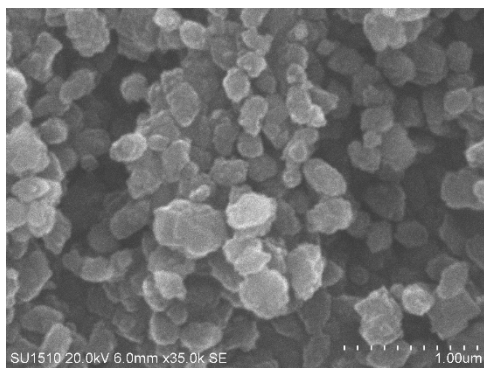


Figure S6 The dependence of crystallinity on the crystallization time of the S-Beta zeolite.

(a)



(b)

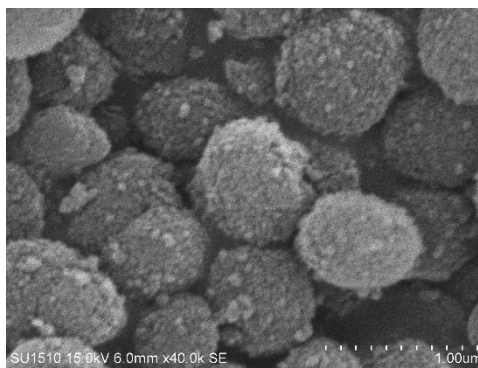


Figure S7 SEM images of (a) OTF-Beta, (b) Meso-Beta catalysts.