

## **Supporting Information**

### **New Insight into Inductive Effect of Various Seeds on Template-free**

#### **Synthesis of ZSM-5 Zeolite**

Qiang Li, Wenwen Cong, Changyou Xu, Shuaiguo Zhang, Fang Wang, Dezhi Han, Guangjian Wang, Liancheng Bing\*

(Chemical Engineering College, Qingdao University of Science and Technology, Qingdao,

Shandong 266042, China.)

Email: blc0633@126.com

## Experimental Section

### Synthesis of Seeds

Analcite and SSZ-24 zeolites were synthesized by the following procedures. Analcite ( $\text{SiO}_2/\text{Al}_2\text{O}_3 = 25$ ) was synthesized by interzeolite conversion of ZSM-35. Typically, ZSM-35 zeolite was mixed completely with the aqueous solution of NaOH and stirred for 4 h. Then, the resulting mixture was transferred into a Teflon-lined autoclave and kept at 160 °C for 6 days. The product was finally obtained by washed, dried, calcination, and ion exchange with  $\text{NH}_4\text{Cl}$  solution. SSZ-24 was synthesized by hydrothermal synthesis method using SSZ-13 as seed.<sup>[1]</sup> Typically, TMAOH was added dropwise to the aqueous solution of NaOH, and then further stirred for 0.5 h. After that, AS-40 was added sequentially. After addition of 6wt% SSZ-13 seed (calculated on the basis of  $\text{SiO}_2$ ), the mixture was vigorously stirred for an additional 4 h. The obtained gel was transferred into a Teflon lined autoclave and crystallized at 100 °C for 1 h and then at 180 °C for 22 h. The product was finally obtained by washed, dried, calcination, and ion exchange with  $\text{NH}_4\text{Cl}$  solution.

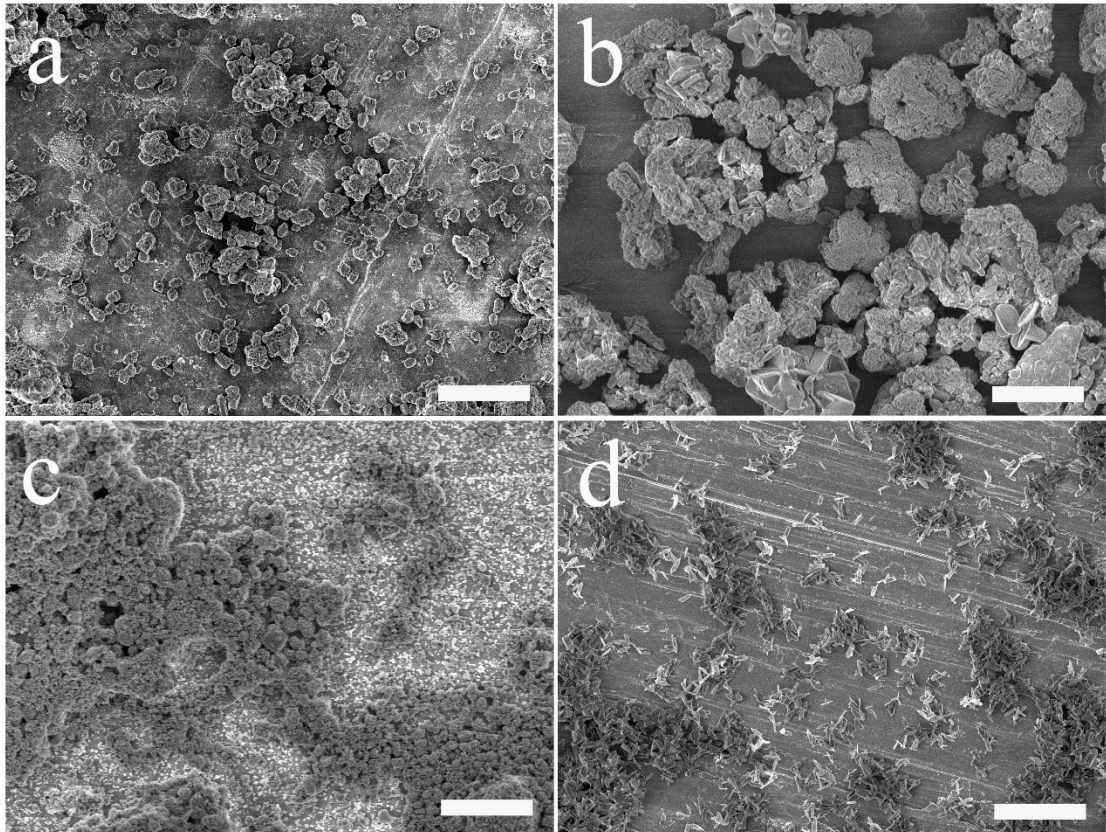


Fig. S1 SEM images of the diverse seeds (a, ZSM-5; b, mordenite; c,  $\beta$ ; d, ZSM-35; scale bar = 10  $\mu\text{m}$ ).

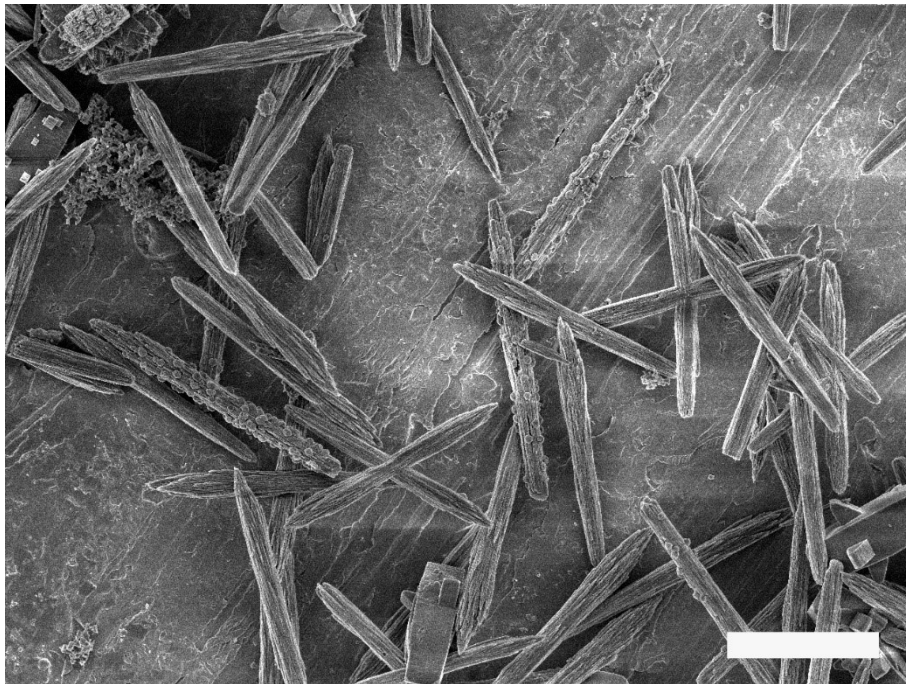


Fig. S2 SEM images of ZSM-22 seeds (scale bar = 10  $\mu\text{m}$ ).



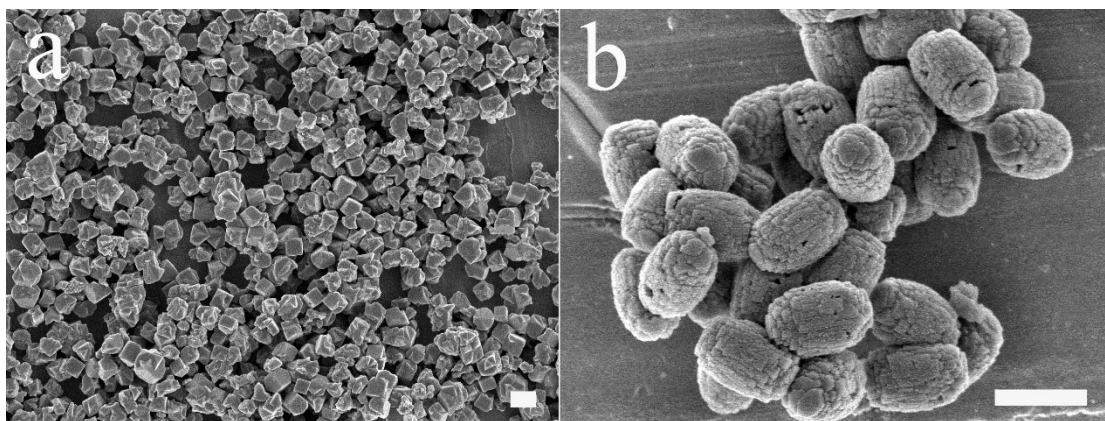


Fig. S3 SEM images of SSZ-13 and SSZ-24 seeds (scale bar = 1  $\mu\text{m}$ ).

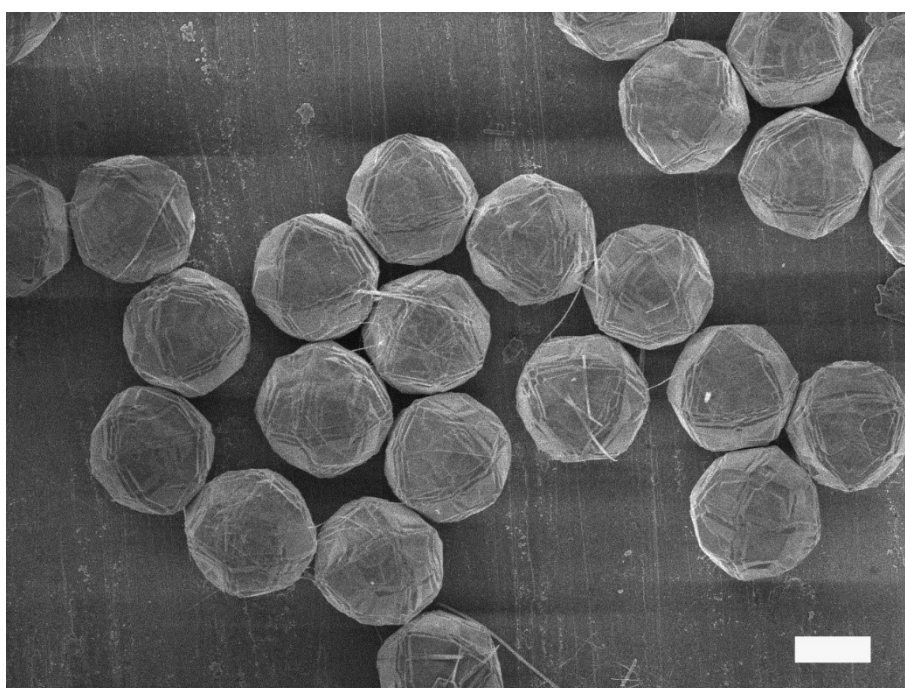


Fig. S4 SEM images of ANA seeds (scale bar = 1  $\mu\text{m}$ ).

## References

- [1] L.X. Tang, K.G. Haw, P. He, Q.R. Fang, S.L. Qiu, V. Valtchev, Synthesis of zeolite SSZ-24 using a catalytic amount of SSZ-13 seeds, *Inorg. Chem. Front.*, 2019, **6**, 3097-3103.