materials

MDPI

Supporting Information

Nano-sized polycrystalline ZSM-5 aggregates induced by seeds in an organic-free synthesis system

Xuchang Wang, Zhuo Ji, Qirui Jiao, Chuyu Jiao, Xiaosen Ma, Quanhua Wang, Jiajun Zheng*, Lichen Zhang, Yanchao Liu, Wenlin Li and Ruifeng Li*

College of Chemical Engineering and Technology, State Key Laboratory of Clean and Efficient Coal Utilization, Taiyuan University of Technology, Taiyuan 030024, China

* zhengjiajun@tyut.edu.cn (J.J.Z.); rfli@tyut.edu.cn (R.F.L.). TEL:+86 03516018384

Table. S1 Pore structure parameter and relative crystallinity of the as-synthesized samples

Sample	S_{BET} (m^2/g)	S_{mic} (m^2/g)	S_{ext} (m^2/g)	V_{total} (cm^3/g)	V_{mic} (cm^3/g)	RC (%)
Z518-5.6-48	392	351	41	0.213	0.132	100
Z518-11.2-48	388	346	42	0.199	0.128	99

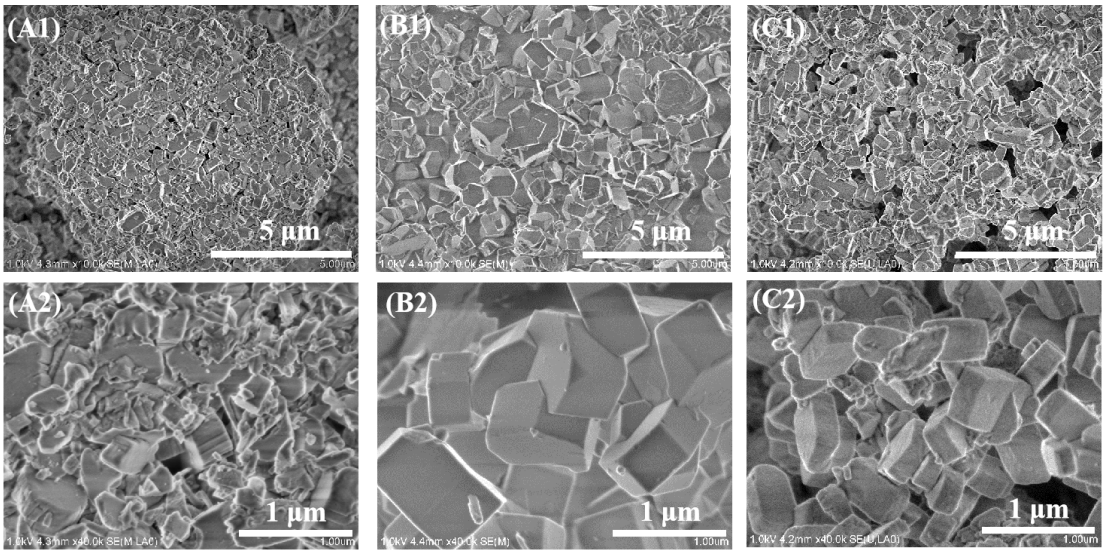

Figure. S1 SEM images of the crystals seeds. (A1) and (A2): NK-18; (B1) and (B2): NK-27; (C1) and (C2): NK-200.

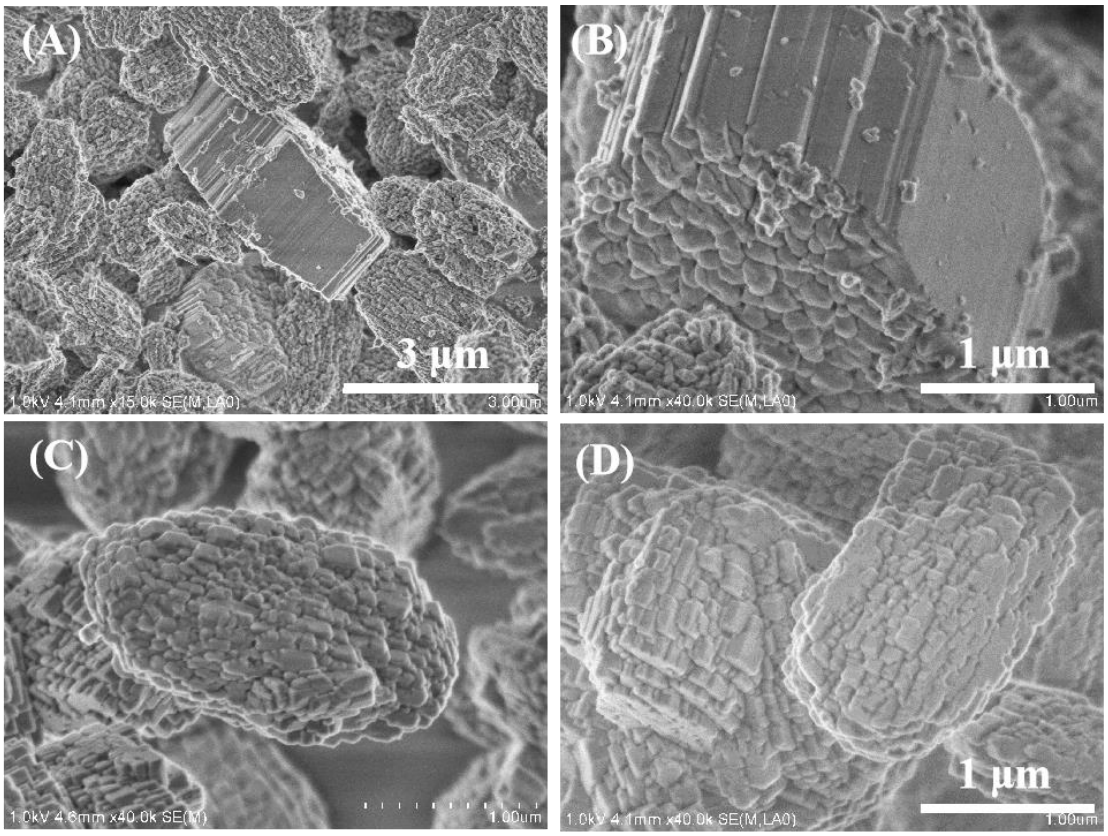

Figure. S2 SEM images of (A) and (B): Z518-2.8-48; (C): Z518-5.6-48; (D): Z518-11.2-48.

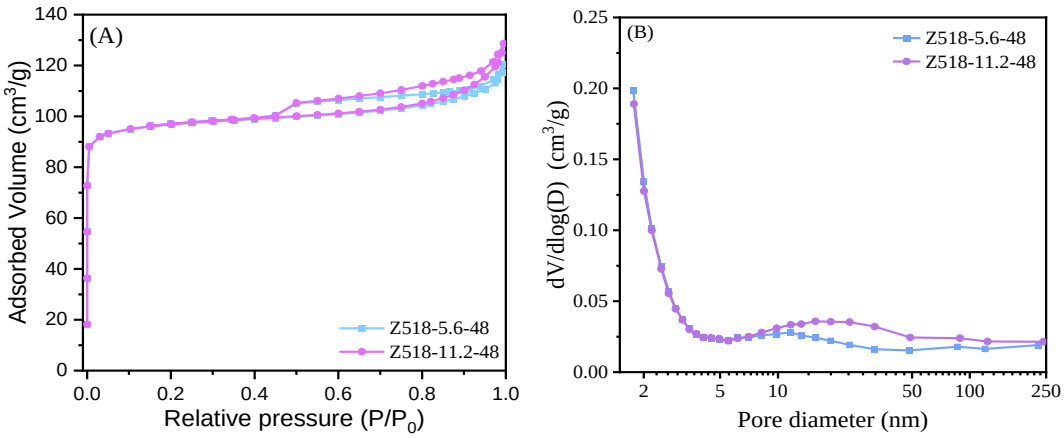

Figure. S3 N_2 adsorption-desorption isotherm (A) and the corresponding BJH pore size distribution curves (B) of the as-synthesized samples.

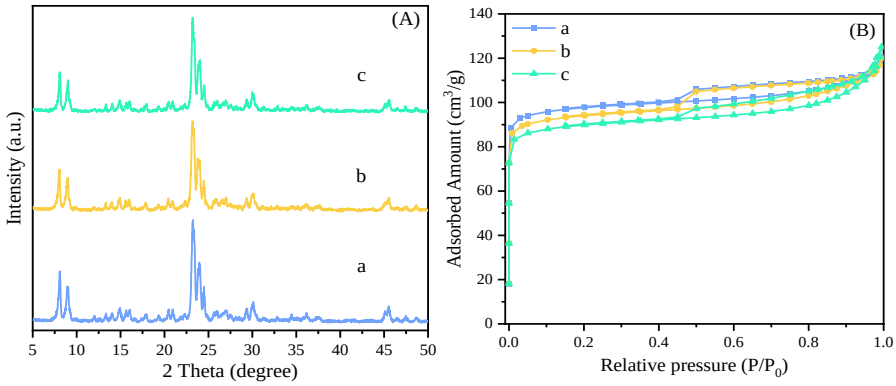

Figure. S4 XRD pattern (A) and N_2 adsorption-desorption isotherm (B) of the samples prepared in a OSDA-free system induced by seeds with different Si/Al ratios. a: Z518-5.6-48; b: Z527-5.6-48; c: Z5200-5.6-48

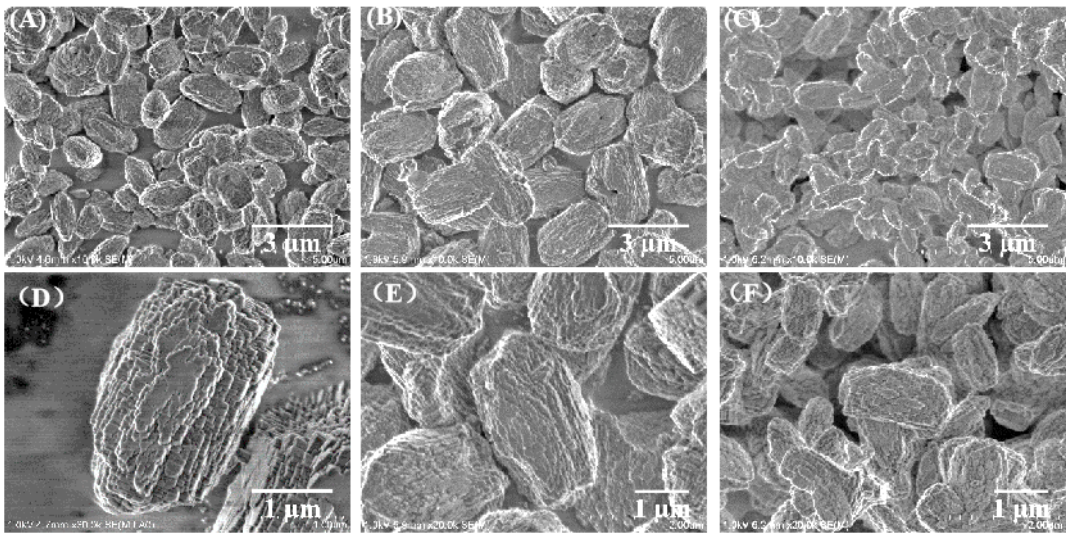

Figure. S5 SEM images of the samples yielded from the similar gel precursors induced by seeds with different Si/Al ratios . (A) and (D): Z518-5.6-48; (B) and (E): Z527-5.6-48; (C) and (F): Z5200-5.6-48

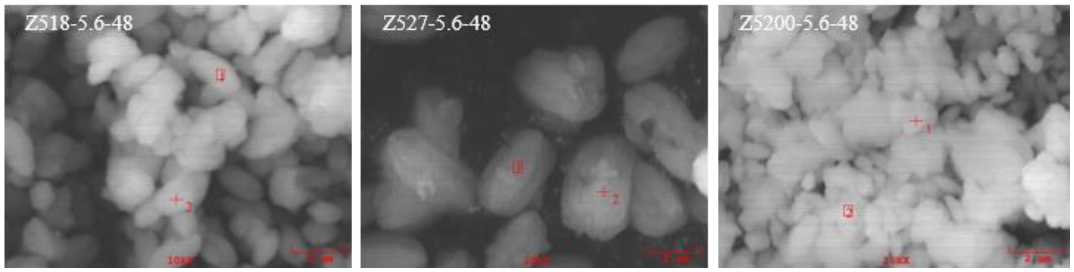

Figure. S6 EDS analysis of the as-synthesized samples induced by the seeds with different Si/Al ratios.

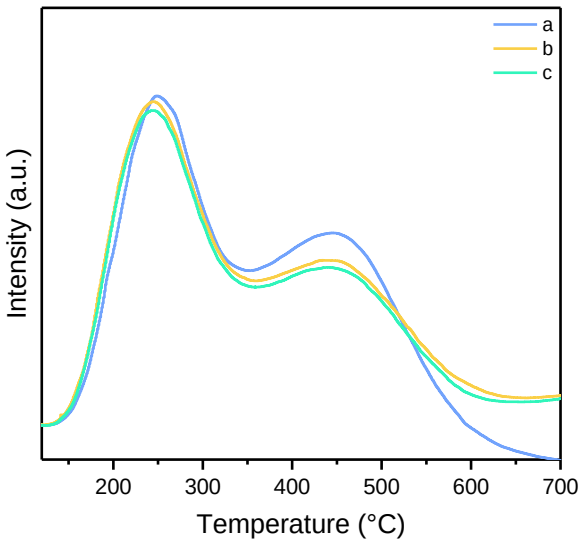

Figure. S7 NH_3-TPD profiles of samples induced by seeds with different Si/Al ratios. a: Z518-5.6-48; b: Z527-5.6-48; c: Z5200-5.6-48

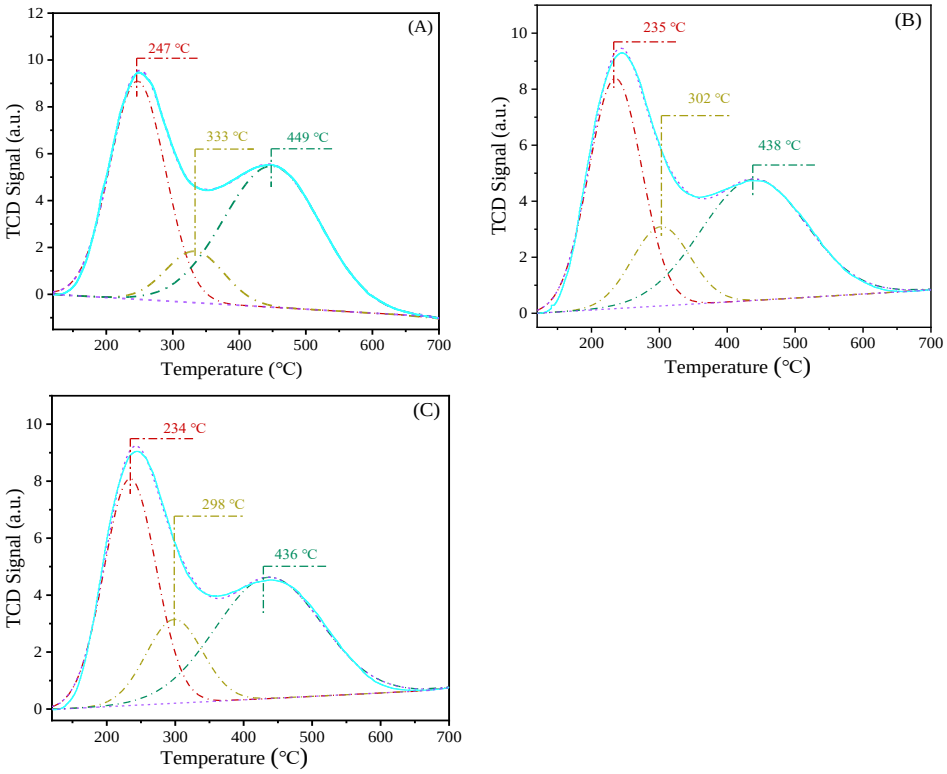

Figure.S8 Peak-differentiating and fitting of the NH_3-TPD curves. (A): Z518-5.6-48; (B): Z527-5.6-48; (C): Z5200-5.6-48.