Supplementary Materials

K^+ promoted fabrication of nanoneedle low-silicon ZSM-48 mesocrystal

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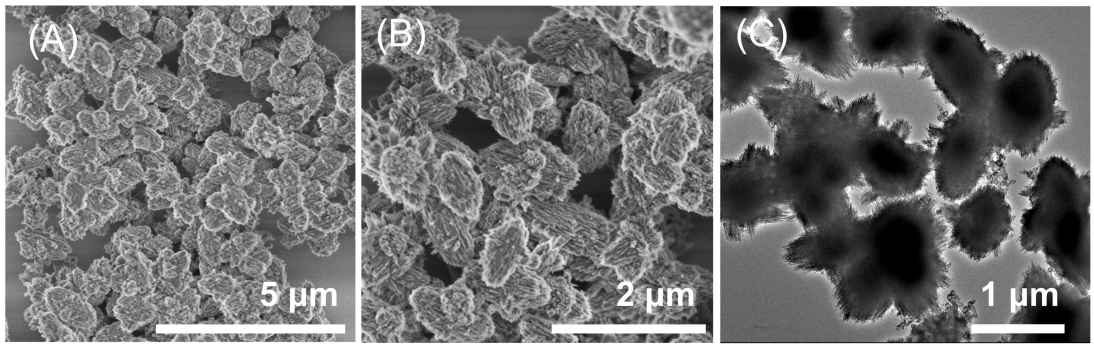
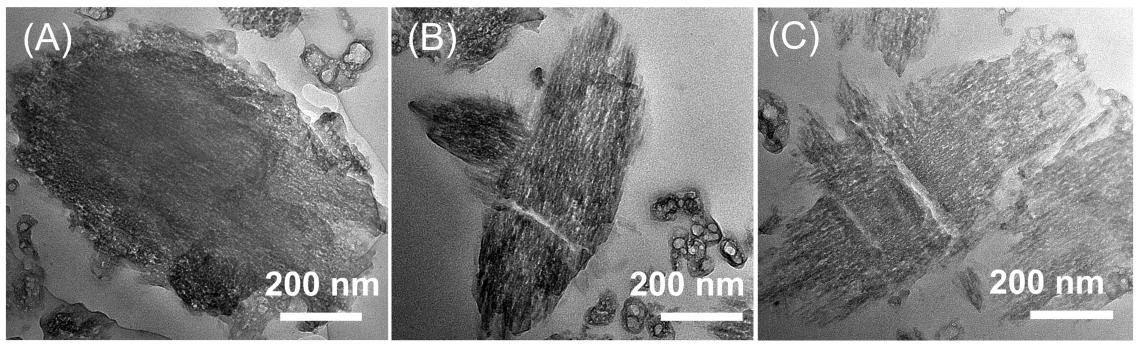
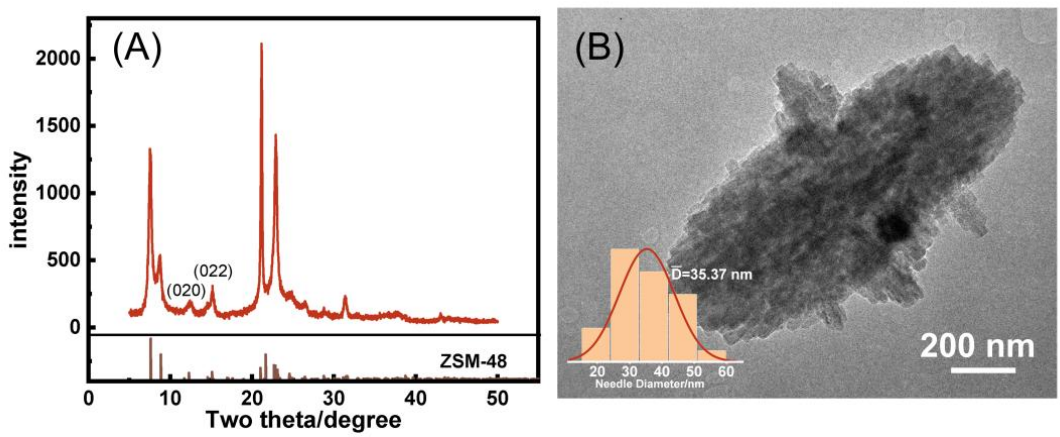


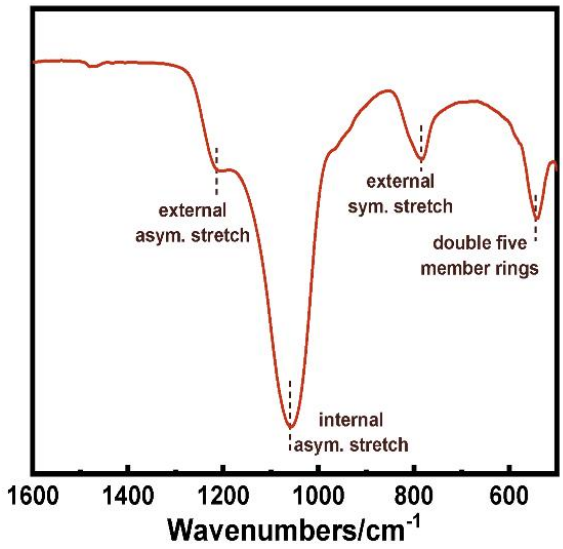
Supplementary Figure 1. (A and B) SEM and (C) TEM images of ultrathin nanoneedle KCl/0/2/48.



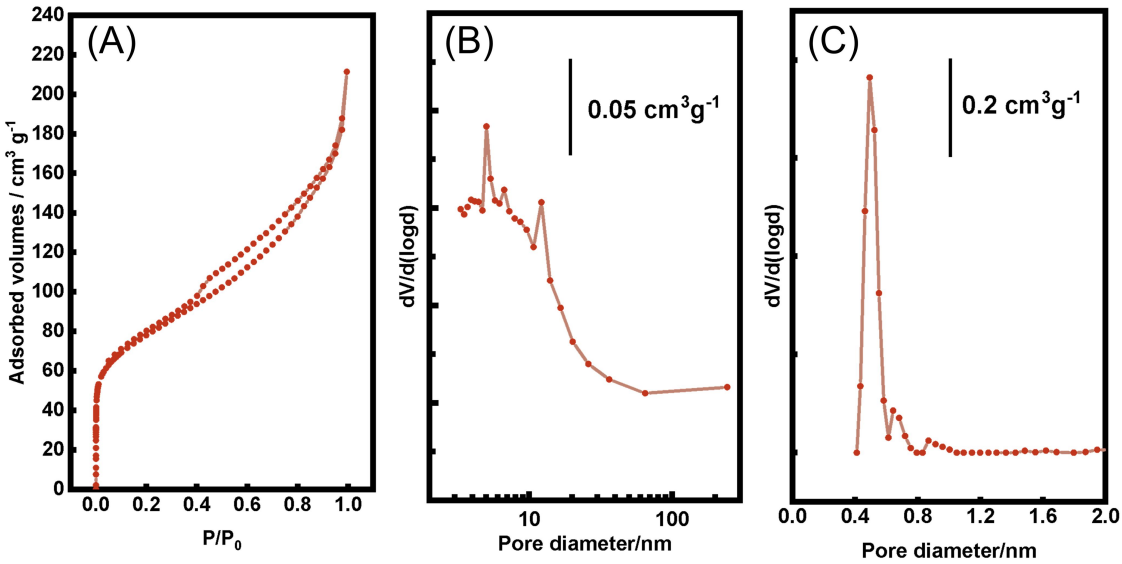
Supplementary Figure 2. TEM images of KCl/0/2/48 after being sliced.



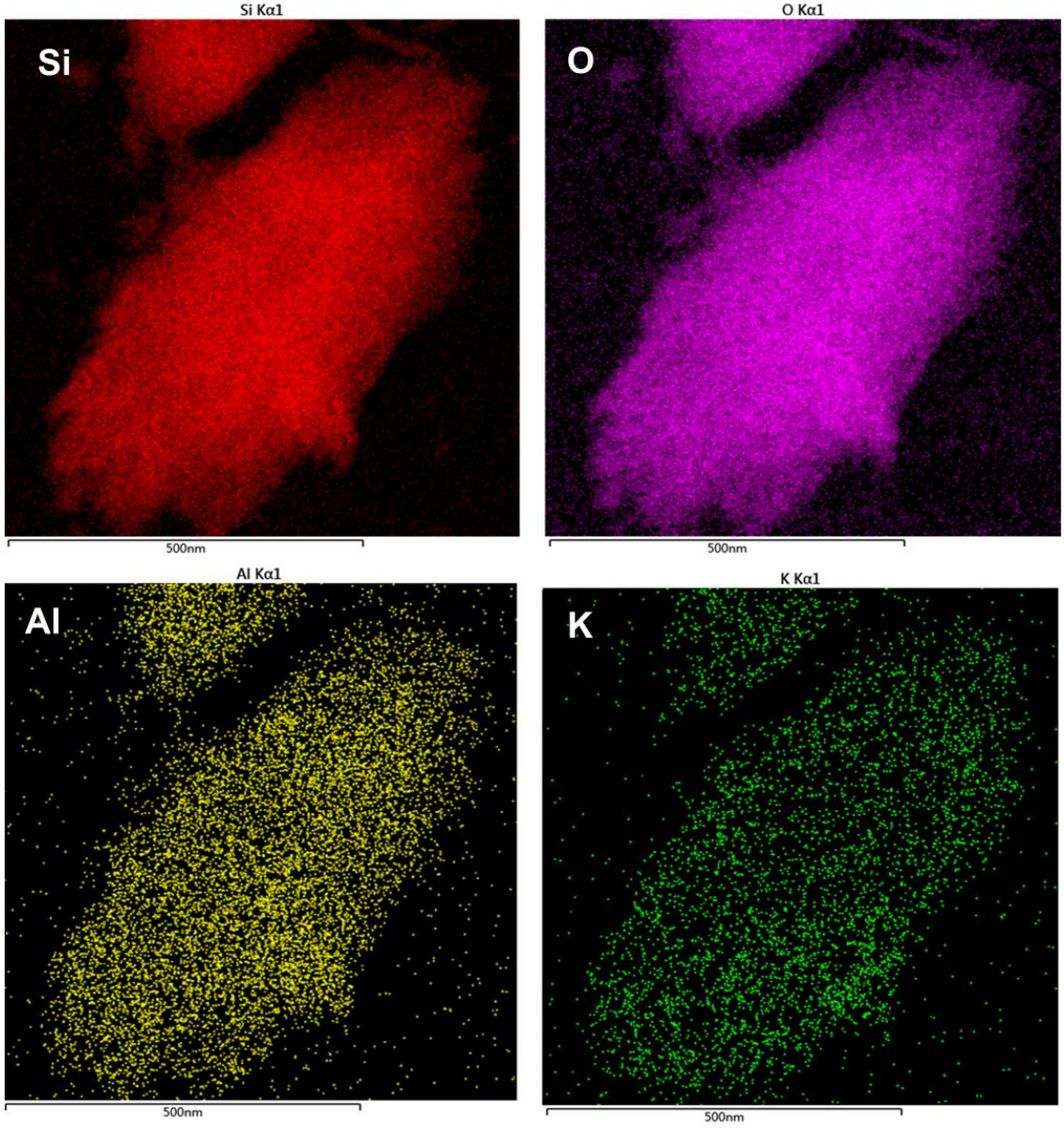
Supplementary Figure 3. (A)XRD pattern and (B) TEM image of commercial ZSM-48, inset: the rod diameter distribution.



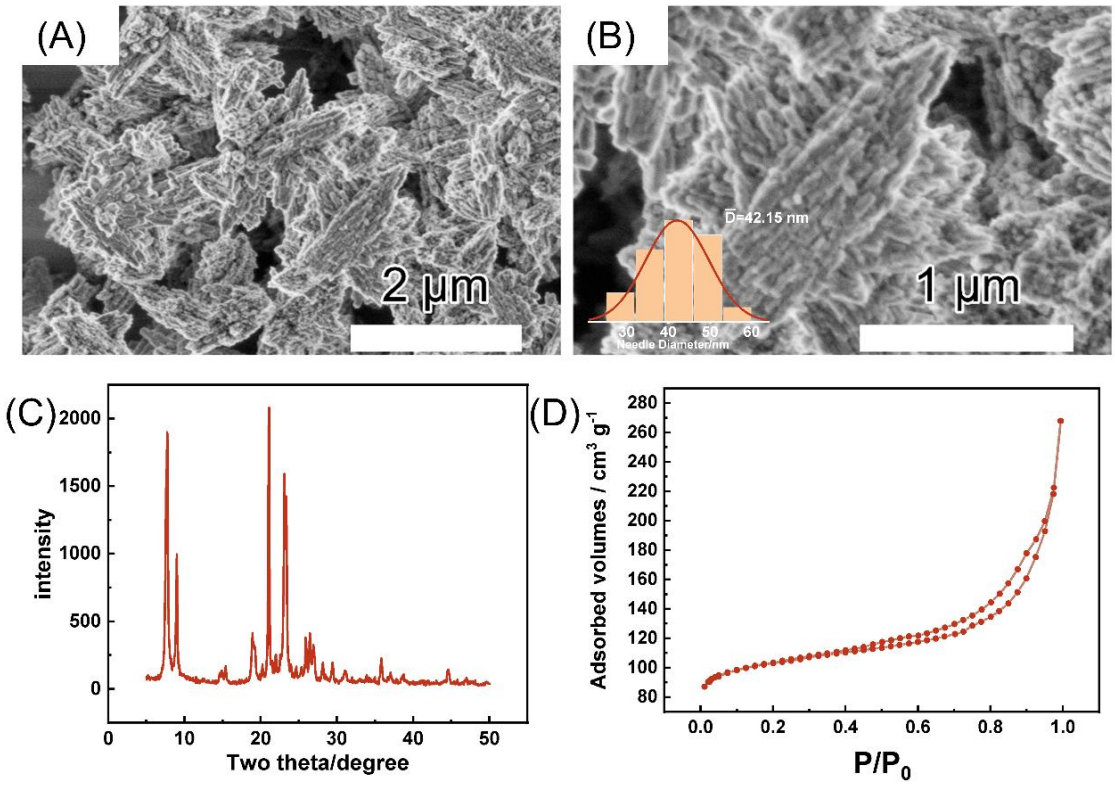
Supplementary Figure 4. FT-IR spectrum of KCl/0/2/48.



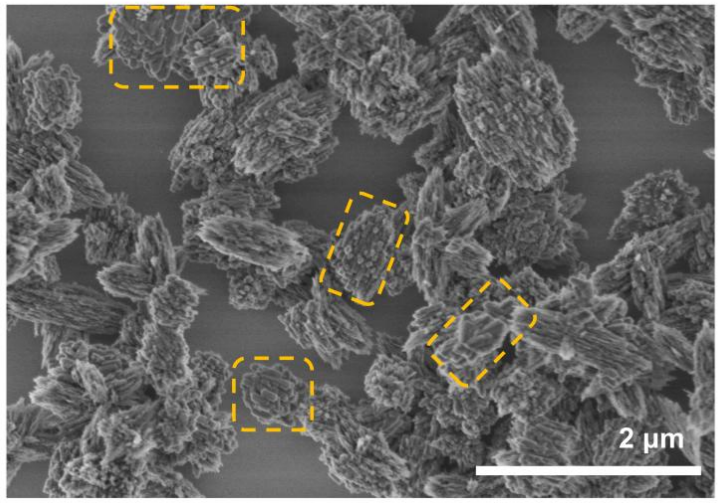
Supplementary Figure 5. (A) Ar adsorption isotherm of KCl/0.2/48 sample, pore size distribution in (B) mesoporous segment and (C) micropore segment.



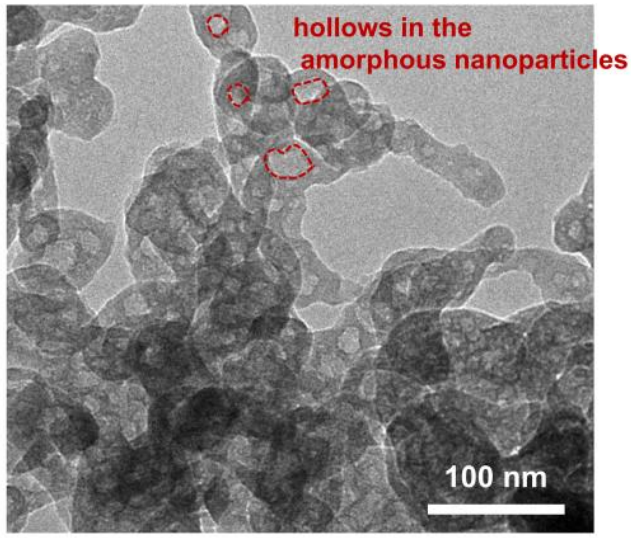
Supplementary Figure 6. Mapping images of KCl/0.2/48. The scale bar for all of the images is 500 nm.



Supplementary Figure 7. (A and B) SEM images of KCl/0/48 synthesized without KCl, inset: the rod diameter distribution. And (C) XRD pattern, (D) N_2 adsorption isotherm of KCl/0/48.



Supplementary Figure 8. SEM image of zeolite KCl/0.1/48. The yellow rectangle indicates the aggregated ZSM-12.



Supplementary Figure 9. The hollows in the amorphous nanoparticles.

Supplementary Table 1. Texture information at different crystallization times

Sample	S_{BET} ($m^2 \cdot g^{-1}$)	V_{micro}[a] ($cm^3 \cdot g^{-1}$)	S_{micro}[a] ($m^2 \cdot g^{-1}$)	S_{ext}[a] ($m^2 \cdot g^{-1}$)	V_{meso}[b] ($cm^3 \cdot g^{-1}$)
KCl/0.2/36	50	0.006	14	36	0.395
KCl/0.2/40	42	0.004	7	35	0.384
KCl/0.2/44	78	0.025	47	31	0.286
KCl/0.2/46	105	0.037	71	34	0.353

[a]by t-plot method. [b]using BJH method by the desorption data.

Supplementary Table 2. Texture information of different catalysts

Sample	S_{BET} ($m^2 \cdot g^{-1}$)	V_{micro}[a] ($cm^3 \cdot g^{-1}$)	S_{ext}[a] ($m^2 \cdot g^{-1}$)	V_{meso}[b] ($cm^3 \cdot g^{-1}$)
Commercial ZSM-48	239	0.052	117	0.188
KCl/0.2/48	270	0.064	130	0.155
KCl/0/48	369	0.123	57	0.131

[a]by t-plot method. [b]using BJH method by the desorption data.