

Electronic Supplementary Material

Hierarchical ZSM-5 zeolite with radial mesopores: Preparation, formation mechanism and application for benzene alkylation

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Table S1 The physical properties of the PZ before/after treatment in piperidine solution

Samples	$S_{\text{BET}}^{\text{a)}}$ / $\text{m}^2 \cdot \text{g}^{-1}$	$S_{\text{meso}}^{\text{b)}}$ / $\text{m}^2 \cdot \text{g}^{-1}$	$V_{\text{micro}}^{\text{b)}}$ / $\text{cm}^3 \cdot \text{g}^{-1}$	$V_{\text{meso}}^{\text{c)}}$ / $\text{cm}^3 \cdot \text{g}^{-1}$
PZ	323	26	0.16	0.06
PZ-PI	270	20	0.13	0.05

^{a)} Obtained by BET method.

^{b)} Obtained by *t*-plot method.

^{c)} $V_{\text{meso}} = V_{\text{total}} - V_{\text{micro}}$.

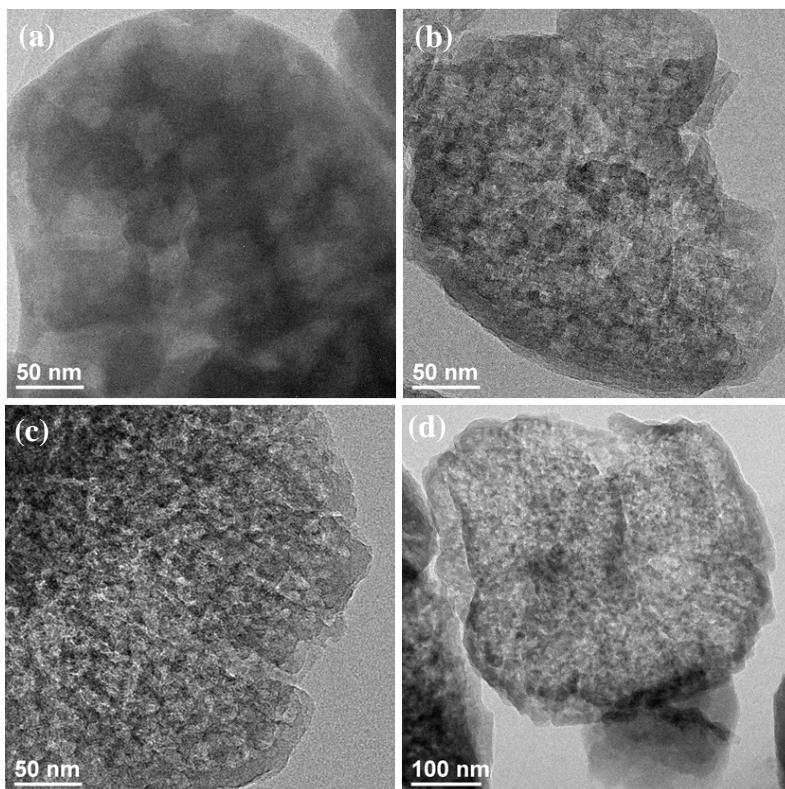


Fig. S1 TEM images of AT desiccated at different times: 10 min (a), 20 min (b), 30 min (c) and 40 min (d).

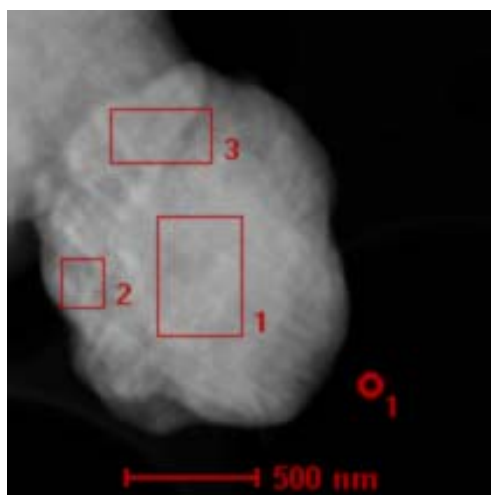


Fig. S2 Scanning transmission electron microscopy image of the PZ. The $\text{SiO}_2/\text{Al}_2\text{O}_3$ molar ratios for regions 1, 2 and 3 are 242, 190 and 202, respectively.

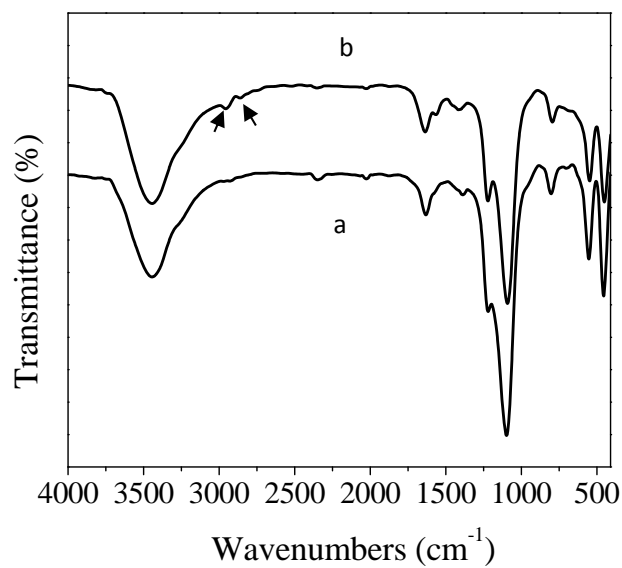
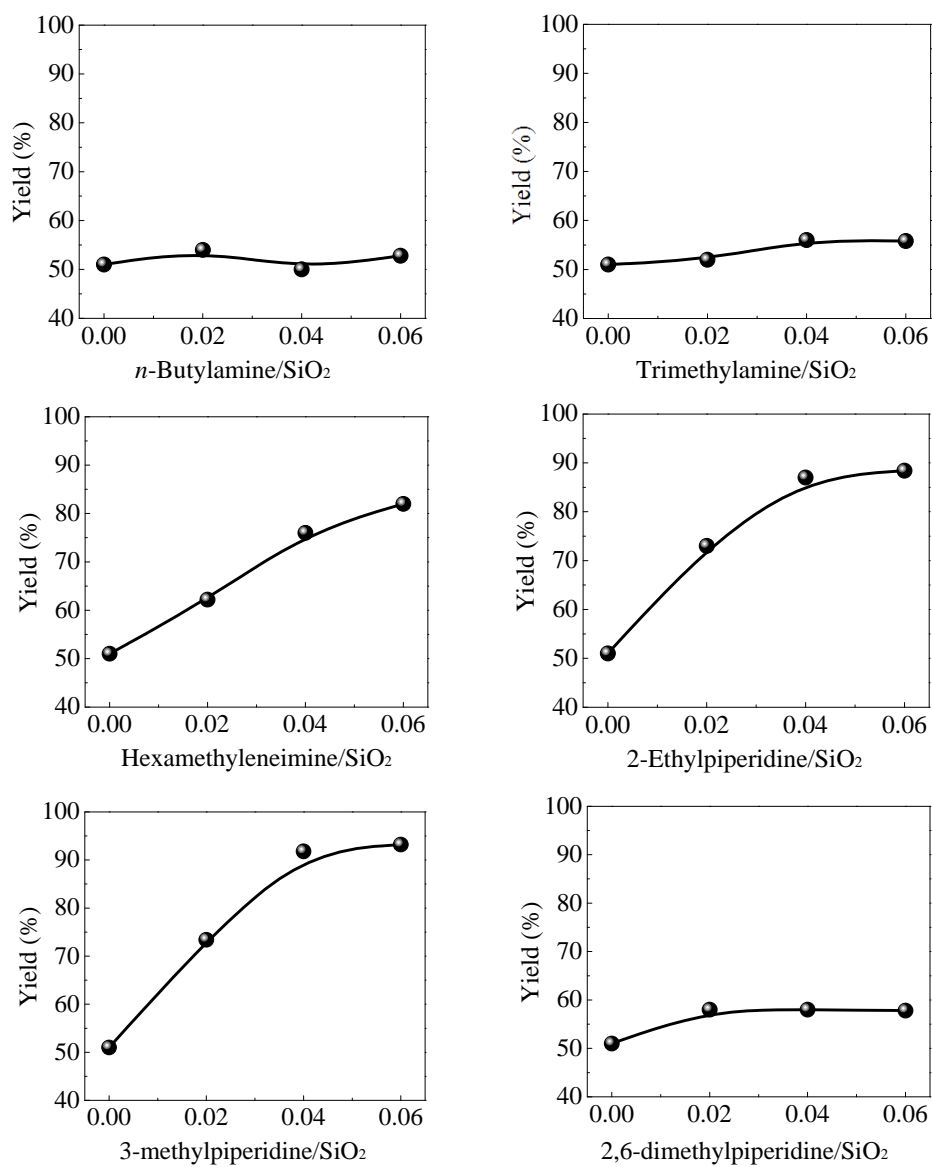


Fig. S3 FT-IR spectra of PZ (a) and PZ-PI (b).



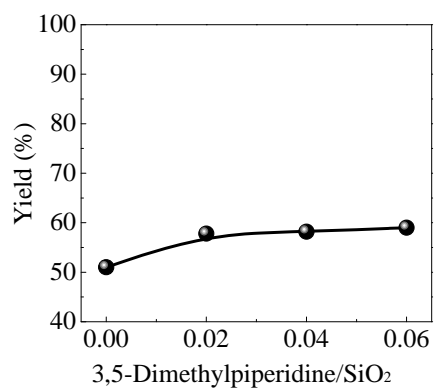


Fig. S4 Solid yields of the desilicated of PZ in NaOH with the addition of different amine agents.

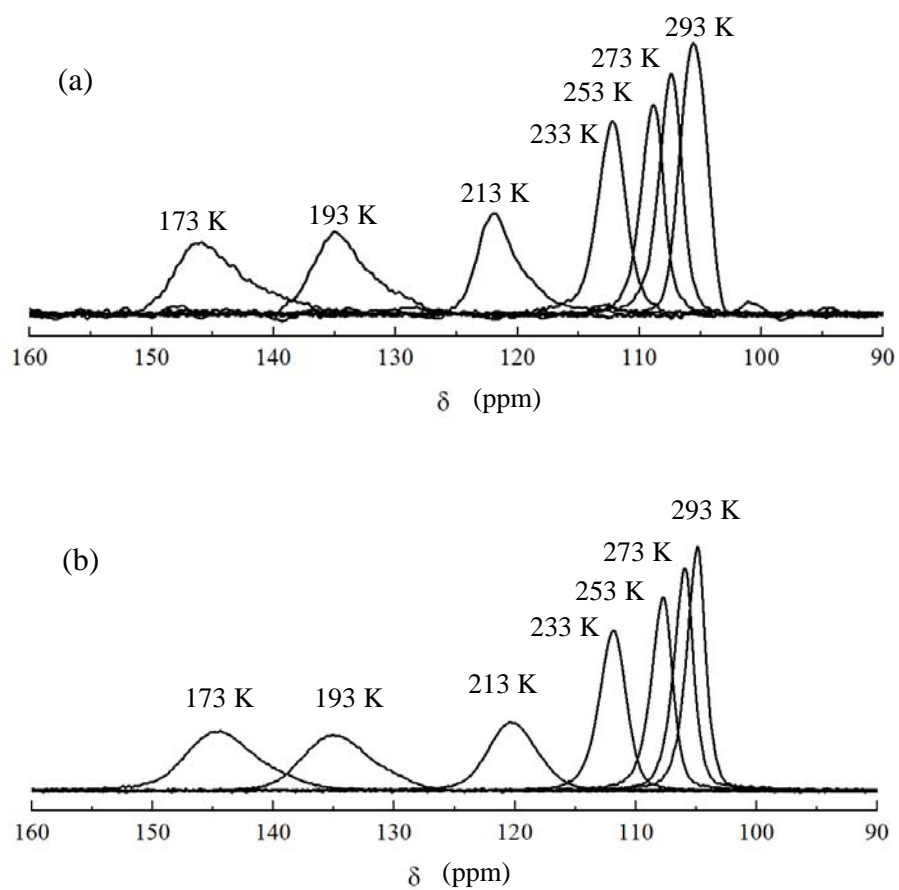


Fig. S5 ¹²⁹Xe MAS NMR spectra of PZ (a) and PI 0.03 (b).

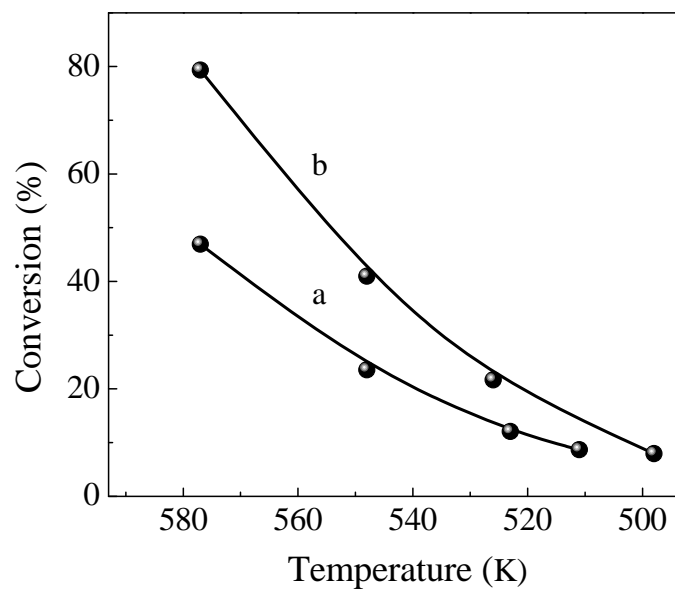


Fig. S6 The conversion of ethylene by PZ (a) and PI 0.03 (b) at different temperatures.

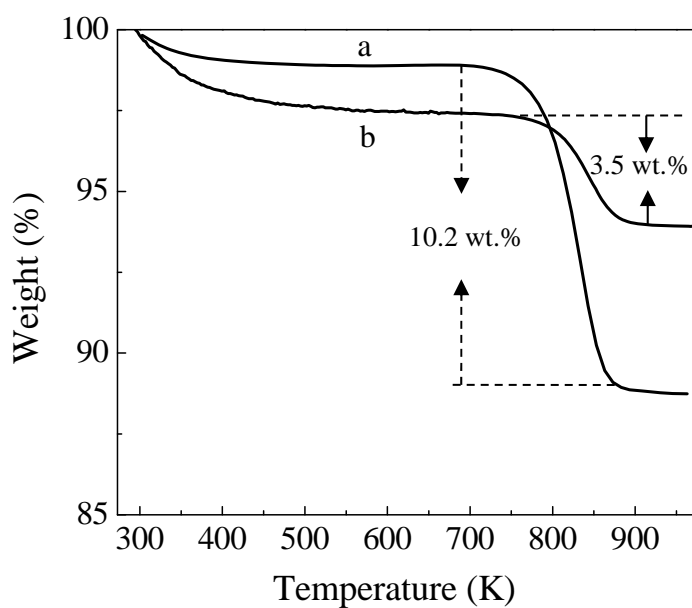


Fig. S7 TGA curves of PZ (a) and PI 0.03 (b) after reaction.

The amount of weight lost between 673 and 923 K is considered to be the amount of coke.