

## Electronic Supplementary Information

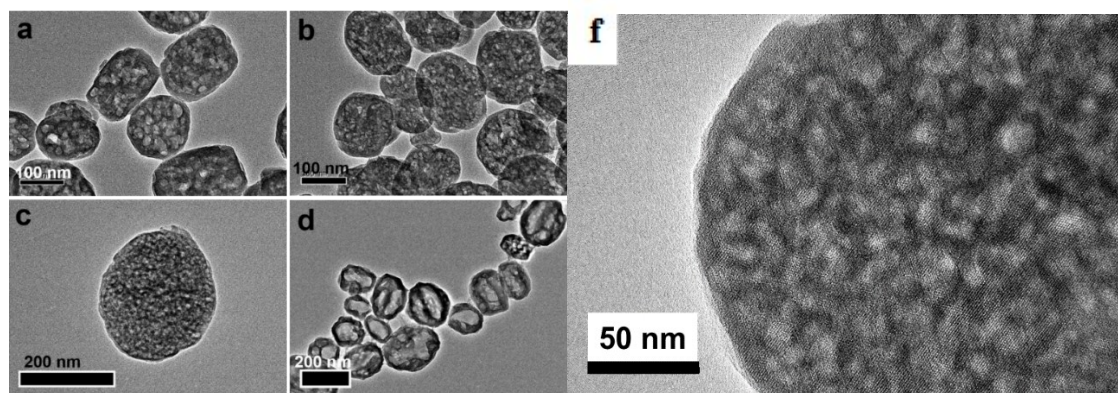
### One Methyl Group Makes Major Difference: Shape-Selective Catalysis by Zeolite Nanoreactor in Liquid-Phase Condensation Reactions

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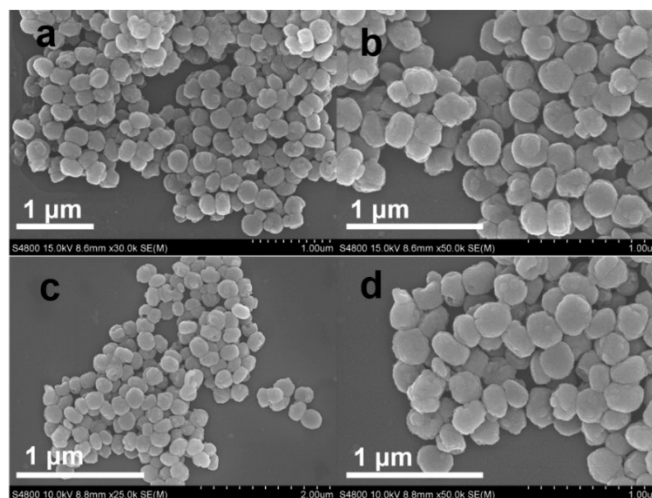
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**Fig. S1** TEM images of HS-1 treated with different concentration of APTMS solution: (a) 0.164 M; (b) 0.205 M; (c) 0.246 M; (d) 0 M; (f) High-magnification of PHS-1



**Fig. S2** SEM images (a), (b) of PHS-1; SEM images (c), (d) of S-1

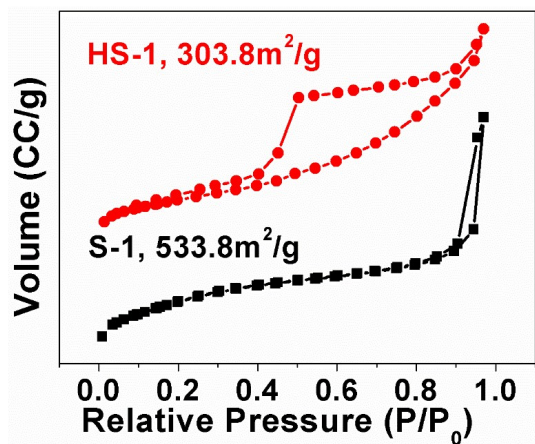


Fig. S3 Nitrogen adsorption-desorption isotherms of S-1 and HS-1

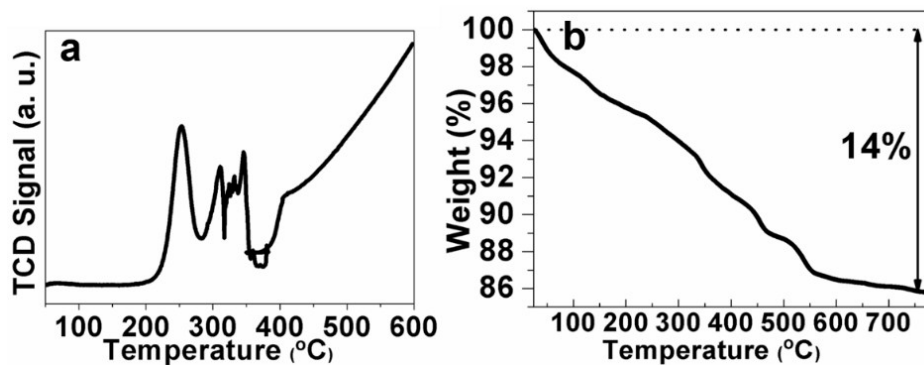


Fig. S4 (a) Carbon dioxide TPD spectra of the polymer; (b) TG curves of PHS-1

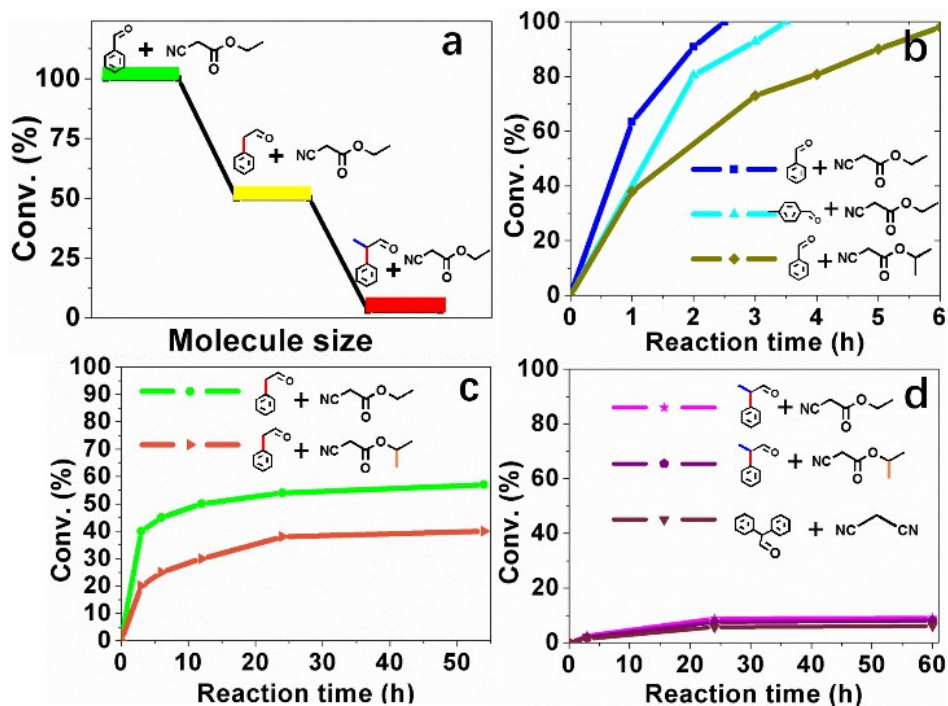
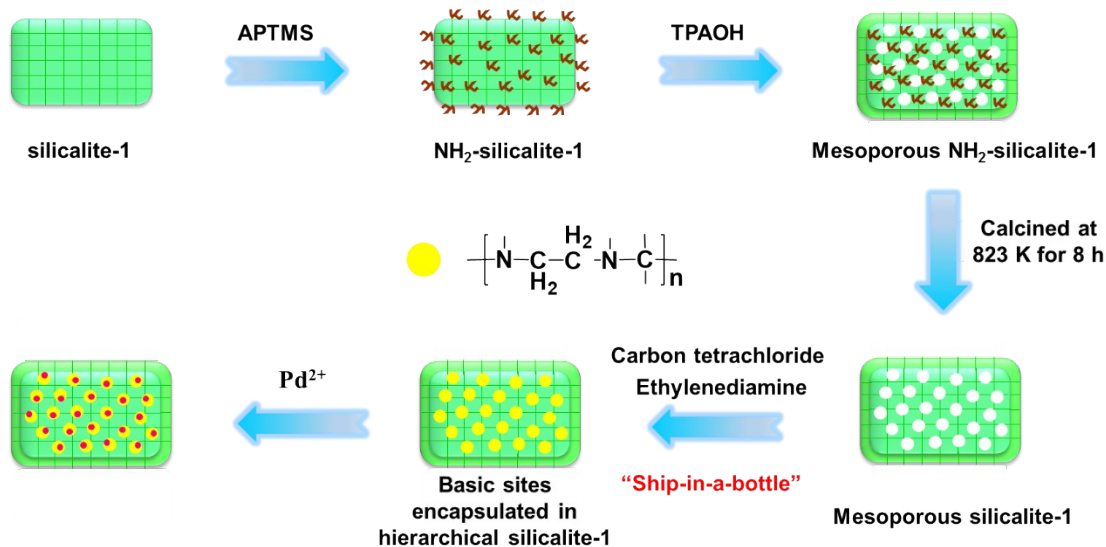
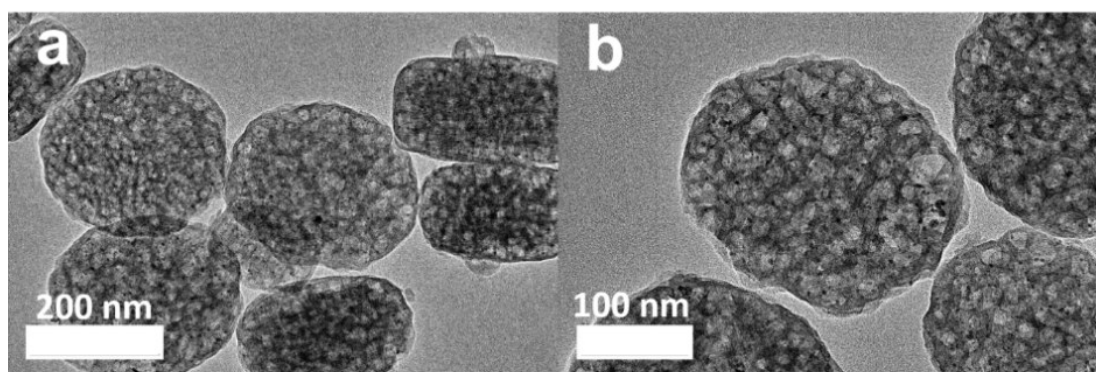


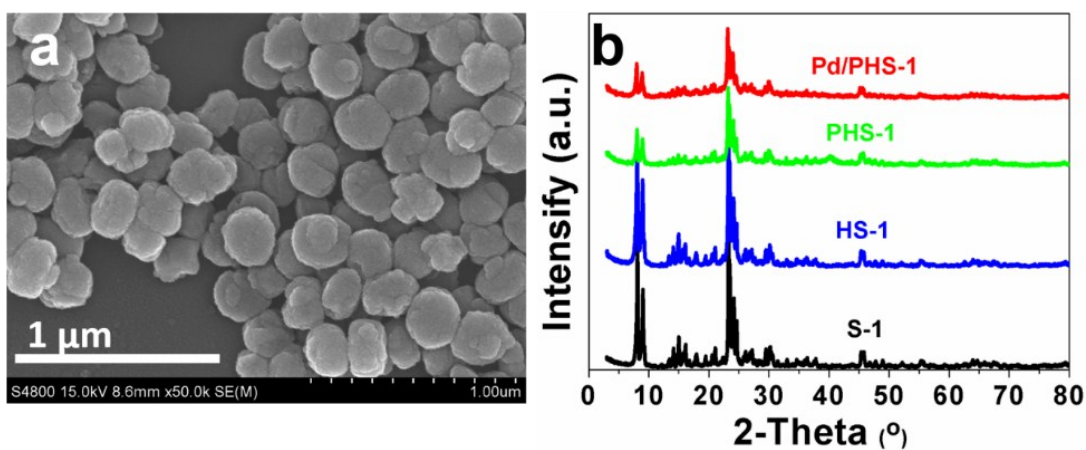
Fig. S5 (a) Three-groups of reactions; Curves of conversion vs time of (b) First group reaction; (c) Second group reaction and (d) Third group reaction.



**Scheme S1** Synthesis route of Pd nanoparticles loaded on polymers inside silicalite-1 zeolite shell (Pd/PHS-1).



**Fig. S6** (a-b) TEM images of Pd/PHS-1



**Fig. S7** (a) SEM image of Pd/PHS-1; (b) XRD patterns of S-1, HS-1, PHS-1 and Pd/PHS-1