

Electronic Supplementary Material

Synthesis and catalytic properties of ZSM-5 zeolite with hierarchical pores prepared in the presence of *n*-hexyltrimethylammonium bromide

Peng Bai,^{a,*} Pingping Wu,^a Wei Xing,^b Daolan Liu,^a Lianming Zhao,^b Youhe Wang,^b Benjing Xu,^a Zifeng Yan,^a and Xiu Song Zhao^{c,d*}

^a Key Laboratory of Heavy Oil Processing, CNPC Key laboratory of Catalysis, College of Chemical Engineering, China University of Petroleum, Qingdao 266580, China.

^b College of Science, China University of Petroleum, Qingdao 266580, China.

^c Collaborative Innovation Center for Marine Biomass Fibers, Materials and Textiles of Shandong Province, Laboratory of New Fiber Materials and Modern Textile, Growing Base for State Key Laboratory, College of Chemical Science and Engineering, Qingdao University, No. 308 Ningxia Road, Qingdao 266071, China.

^d School of Chemical Engineering, The University of Queensland, St Lucia, Brisbane, QLD 4072, Australia

* To whom correspondence should be addressed.

Tel: +86 86981856. Fax: +86 86981. E-mail: baipeng@upc.edu.cn (Bai P); george.zhao@uq.edu.au (Zhao X S, George);

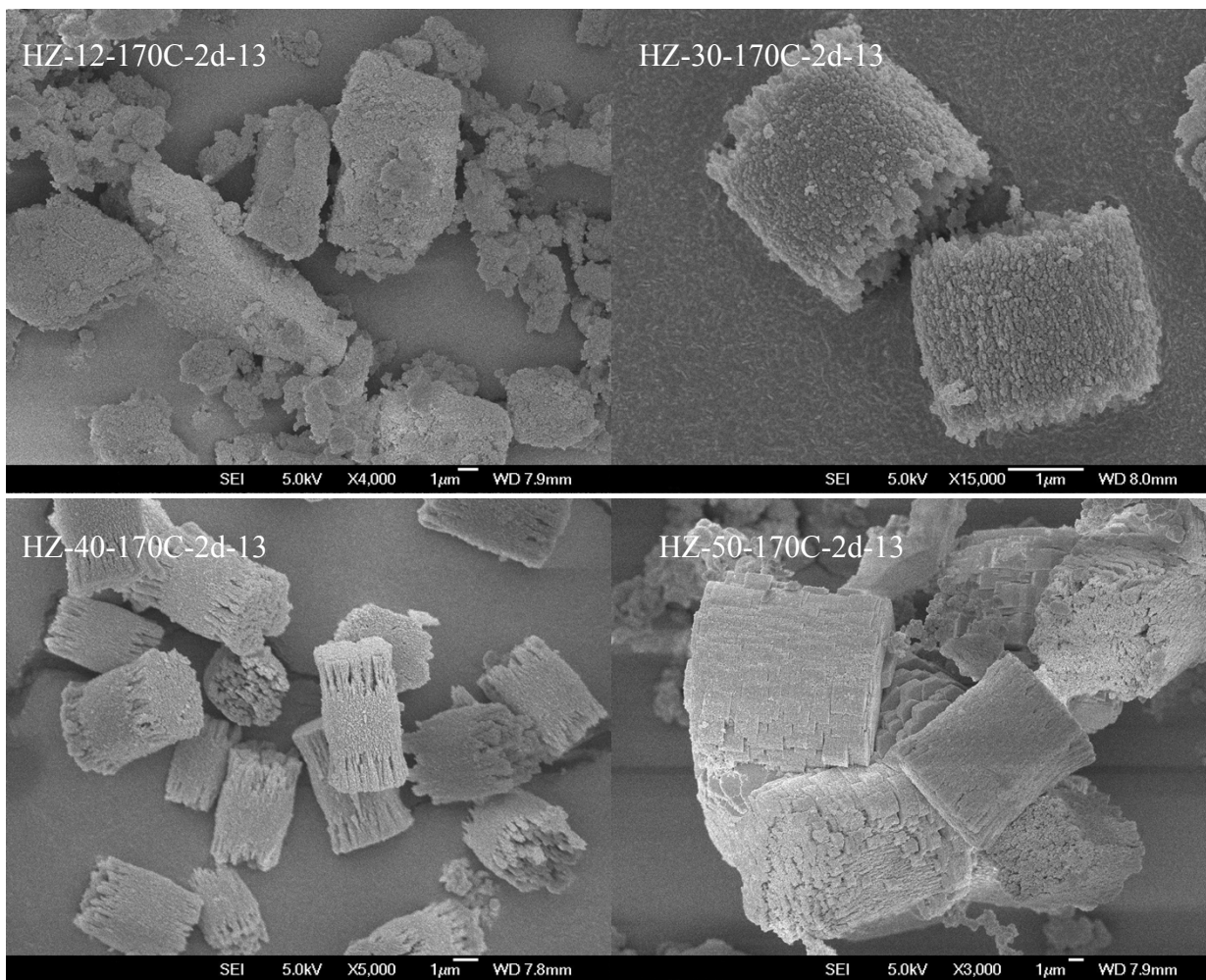


Fig. S1 SEM images of the hierarchical zeolites with different Si/Al ratio

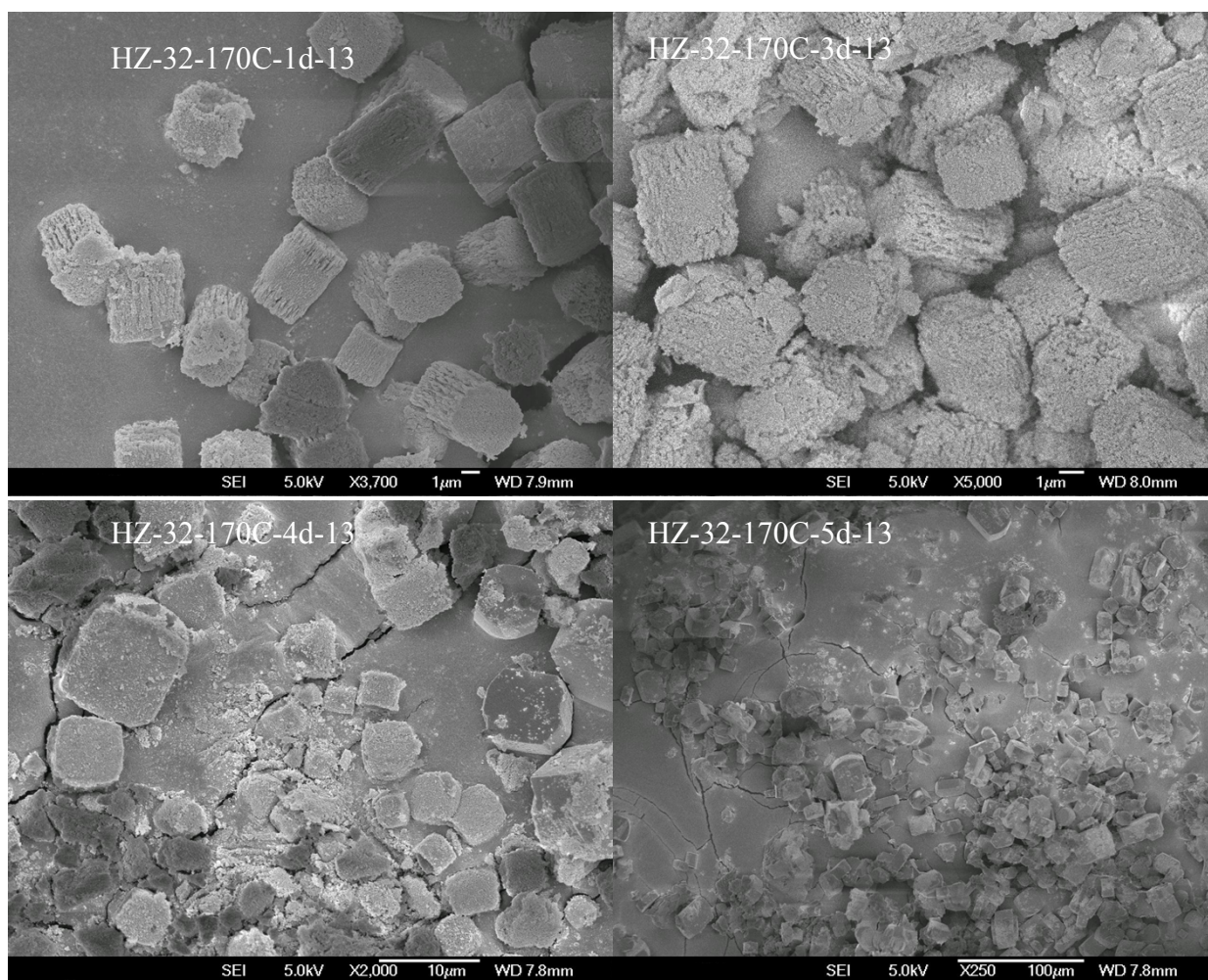


Fig. S2 SEM images of the hierarchical zeolites prepared after crystallization at 170°C for different times

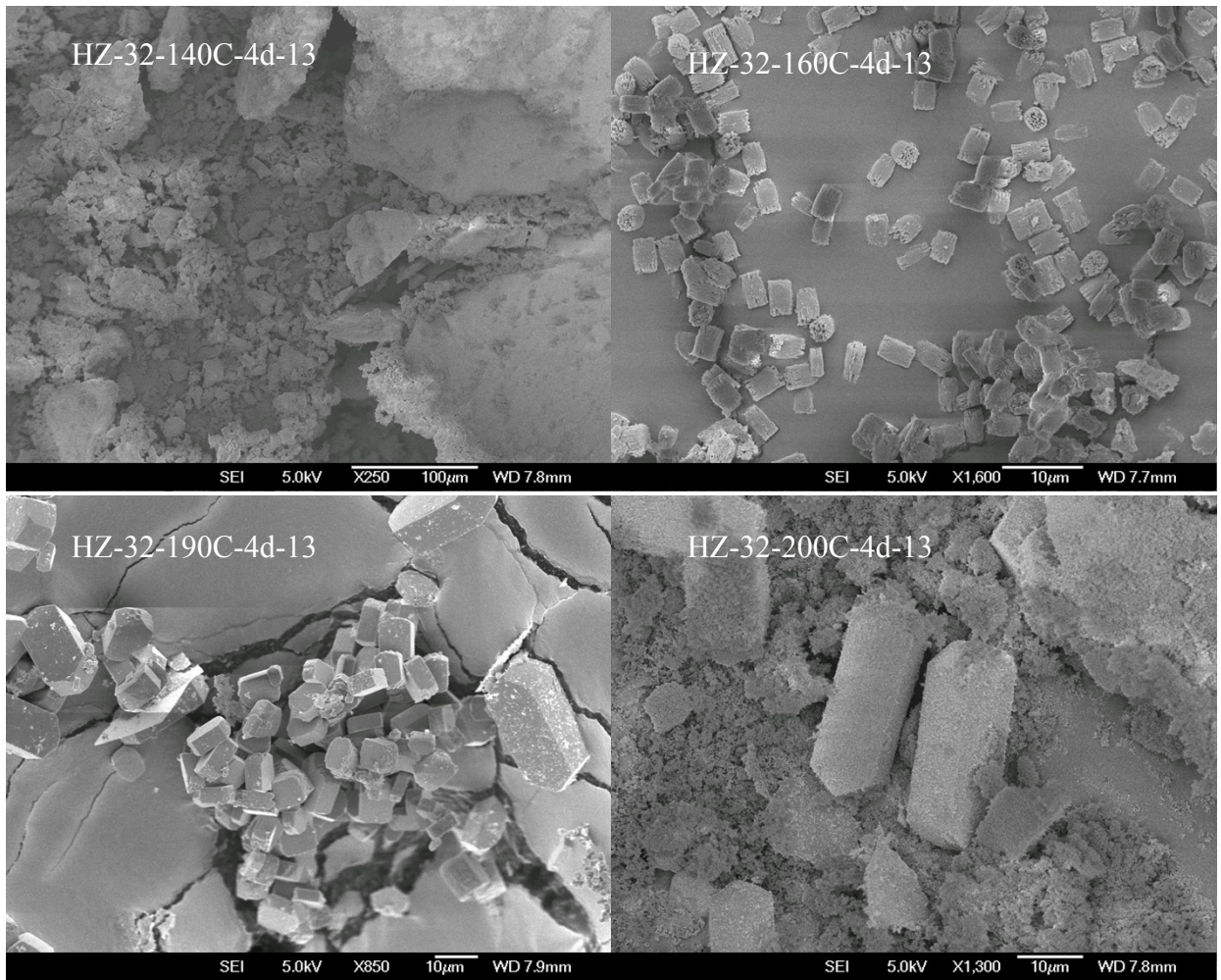


Fig. S3 SEM images of the hierarchical zeolites prepared at different crystallization temperatures

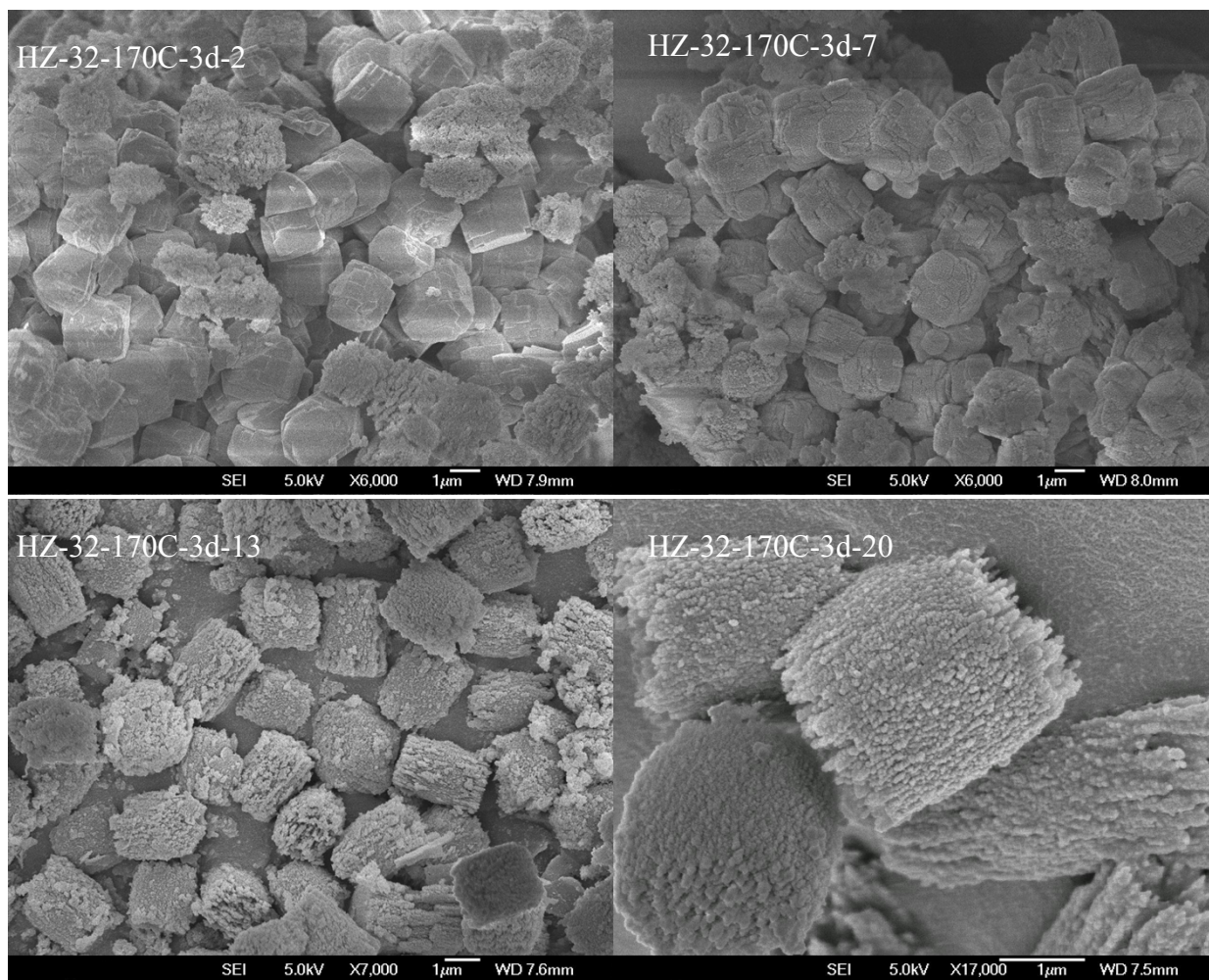


Fig. S4 SEM images of the hierarchical zeolites prepared with different HTAB amounts

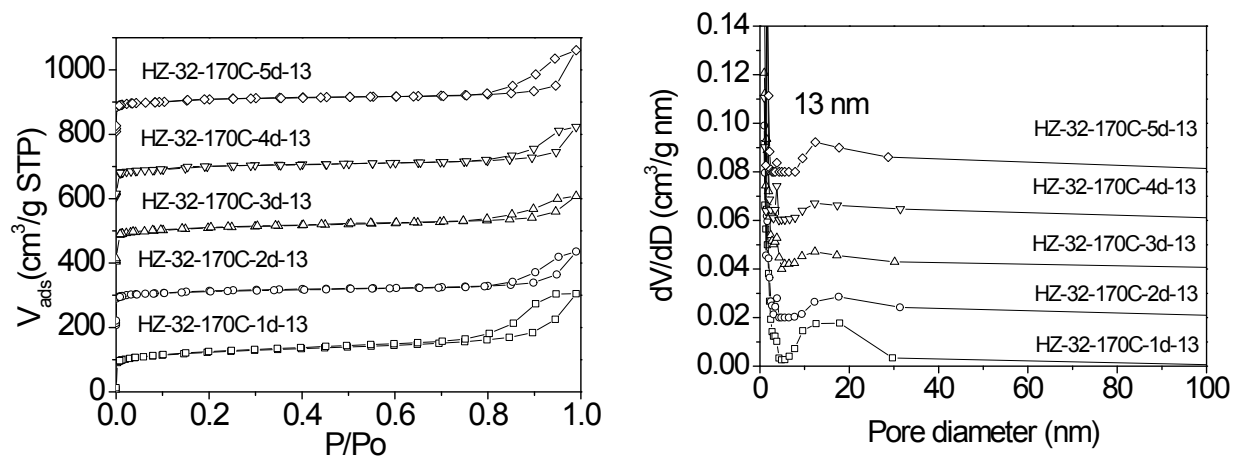


Fig. S5 N_2 adsorption isotherms and PSD curves of the hierarchical zeolites prepared at different crystallization times. For clarity, the isotherms and PSD curves are vertically offset by $200cm^3/g$ and $0.01cm^3/g$ nm respectively.

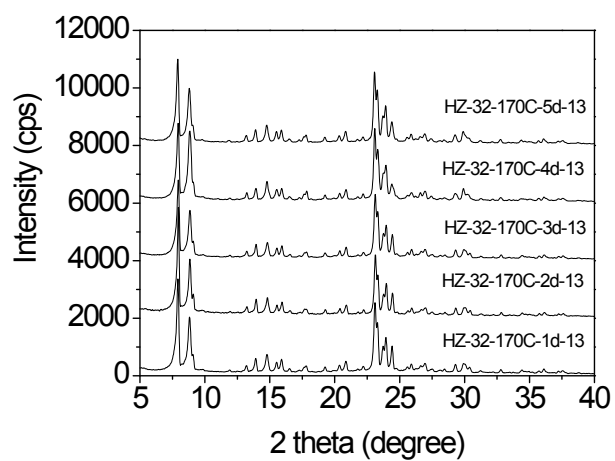


Fig. S6 XRD patterns of the hierarchical zeolites prepared after hydrothermal treatment at 170°C for different times

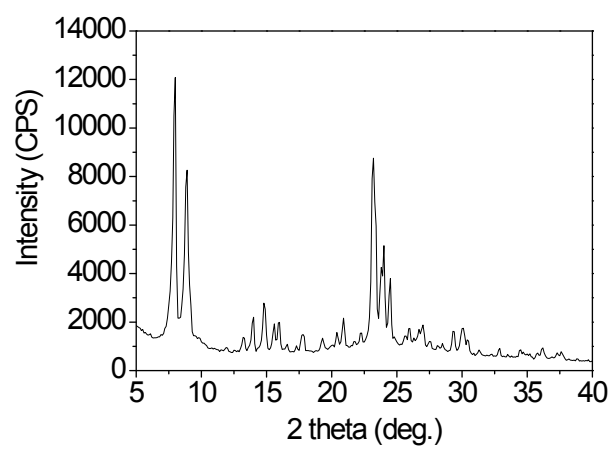


Fig. S7 XRD pattern of the as-synthesized sample HZ-32-140C-6d-13

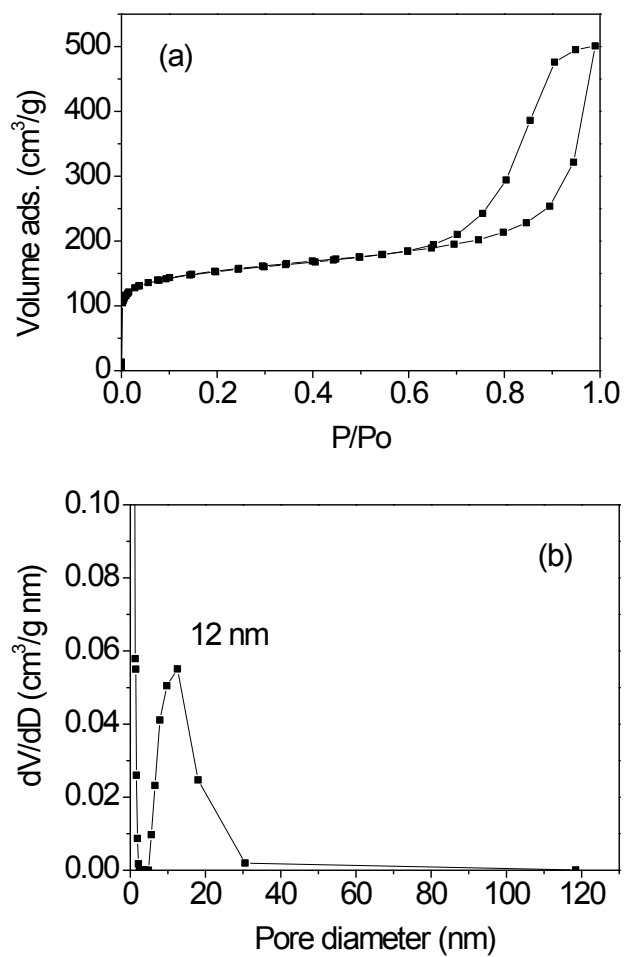


Fig. S8 N_2 adsorption isotherm (a) and pore size distribution (b) of the calcined sample HZ-32-140C-6d-13

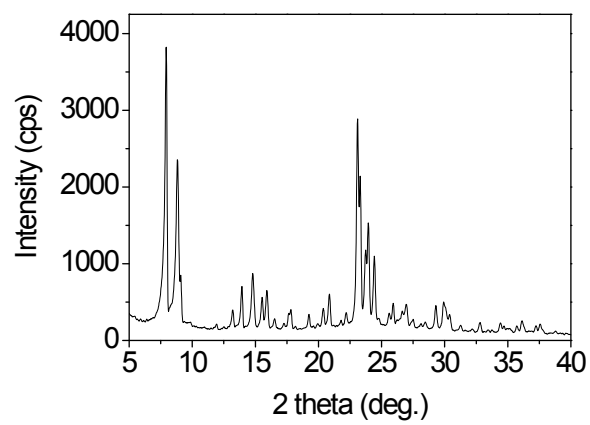


Fig. S9 XRD pattern of sample HZ-50-140C-2d-13

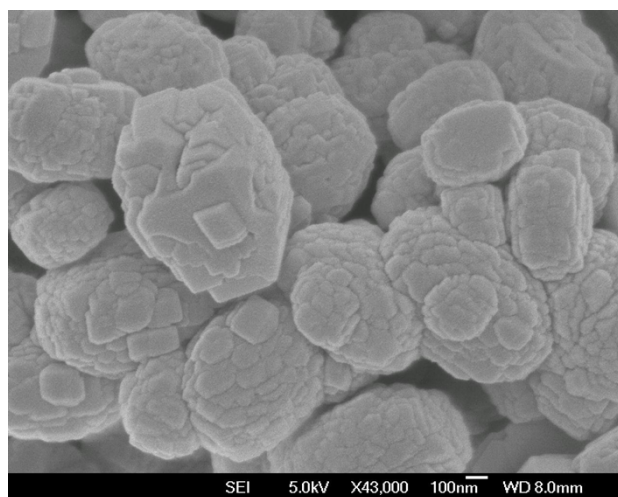


Fig. S10 SEM image of a conventional microporous ZSM-5 zeolite prepared without addition of HTAB

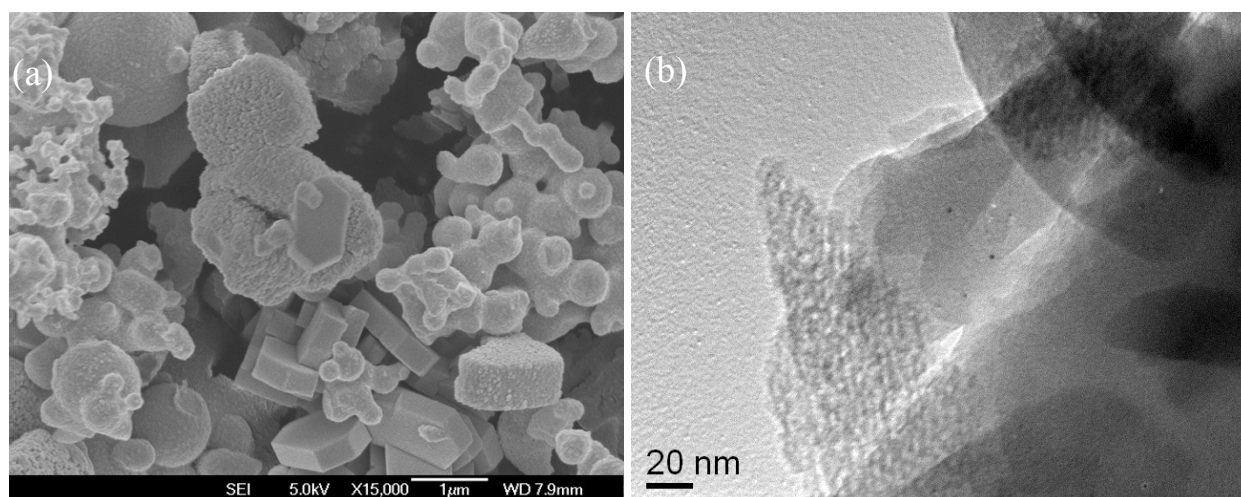


Fig. S11 SEM (a) and TEM (b) images of sample prepared using DTAB