Supplementary Material

Direct synthesis of [B,H]ZSM-5 by solid-phase method: Al_F siting and catalytic performance in MTP reaction

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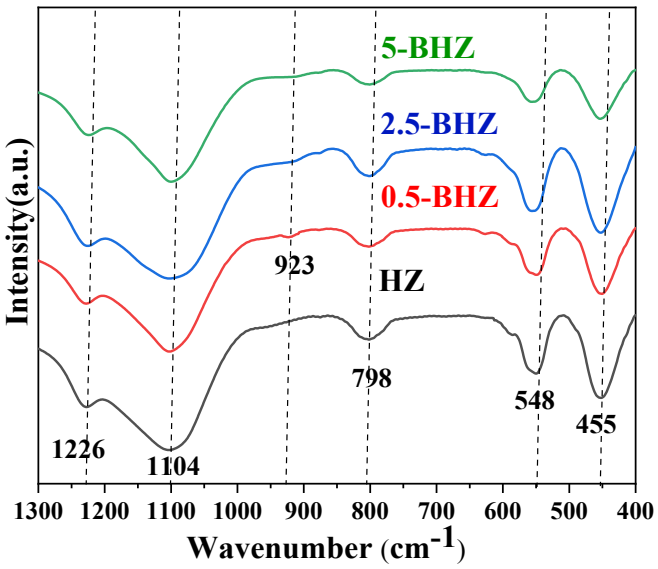

Fig. S1. FT-IR spectra of *x*-BHZ with different B/Al ratios

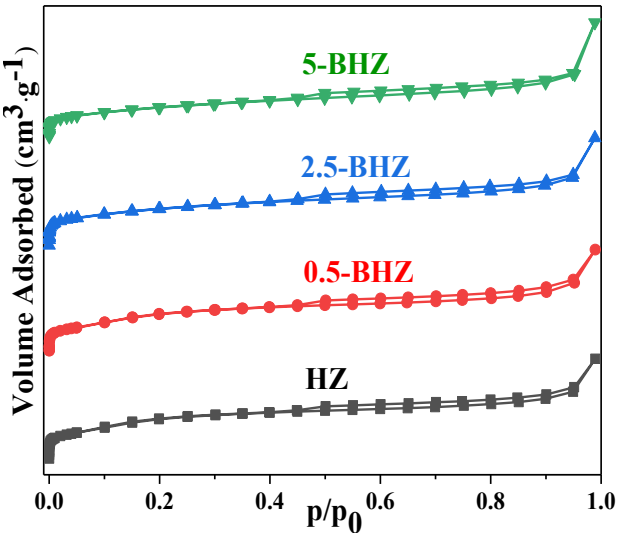

Fig. S2. N_2 adsorption/desorption isotherms of *x*-BHZ with different B/Al ratios

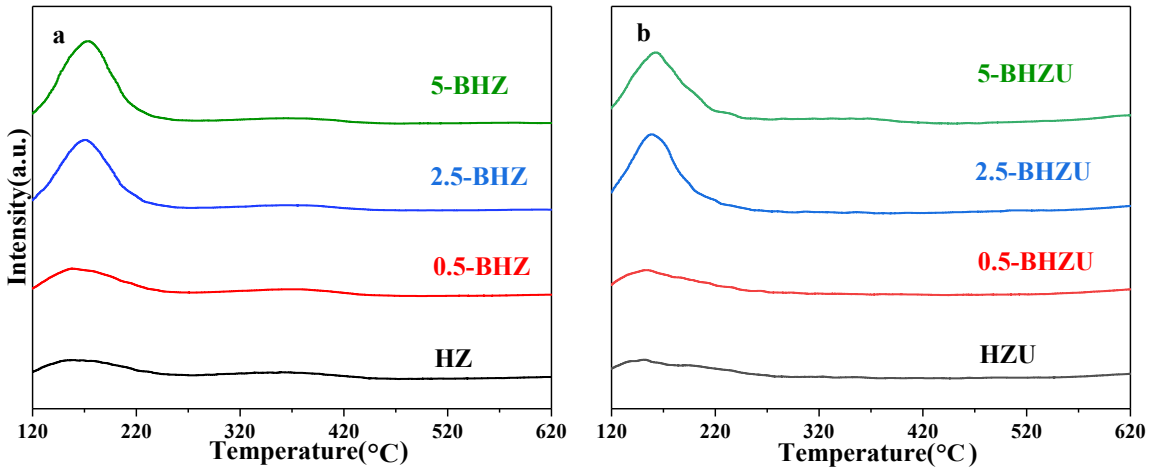

Fig. S3. NH_3-TPD profiles of different samples before (a) and after reaction (b)

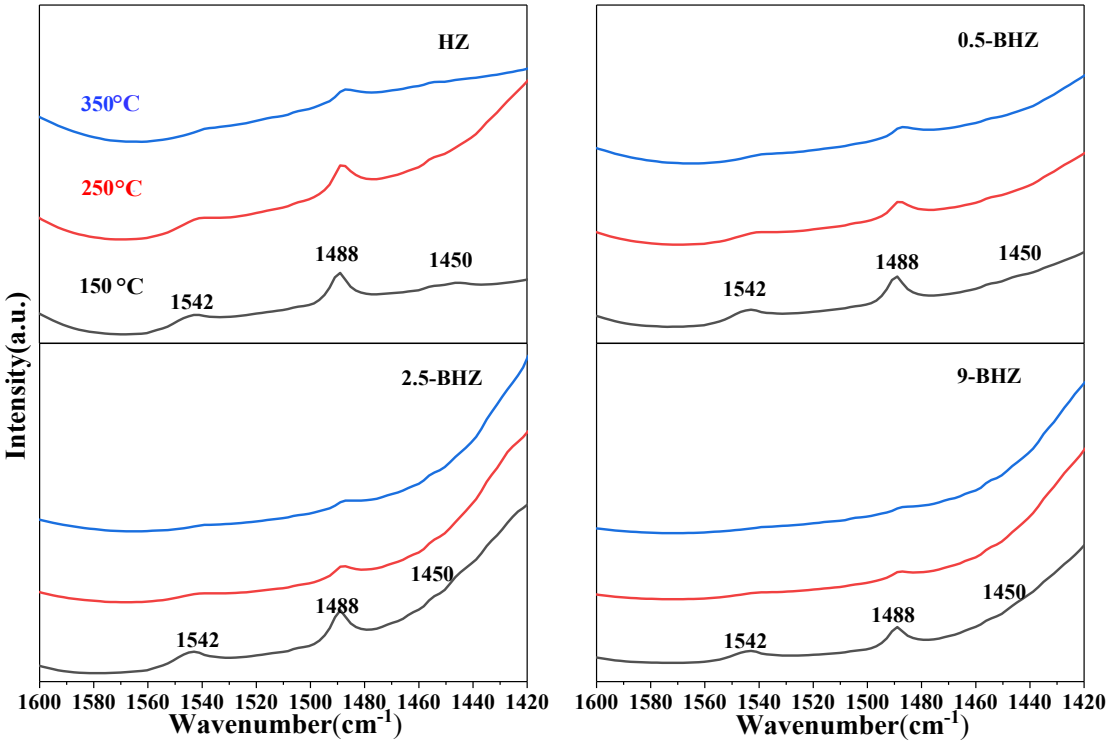

Fig. S4. py-IR spectra of *x*-BHZ with different B/Al ratios

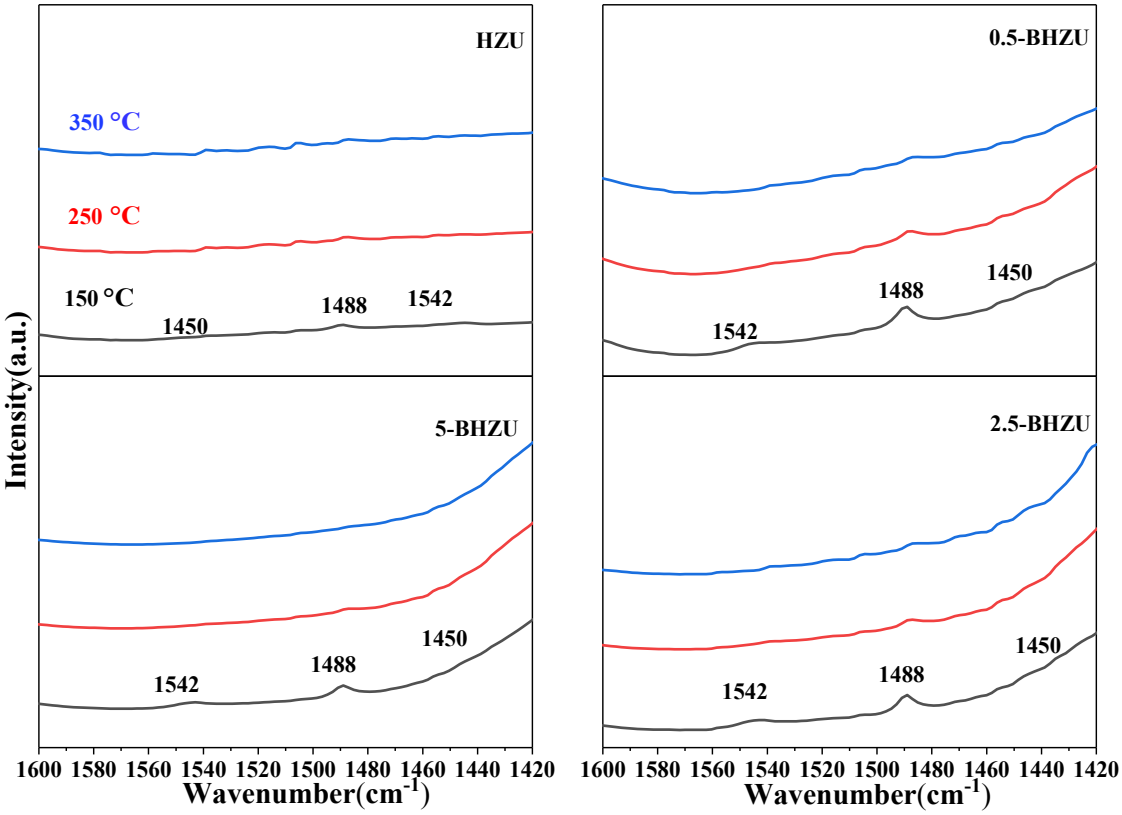

Fig. S5. py-IR spectra of *x*-BHZU with different B/Al ratios

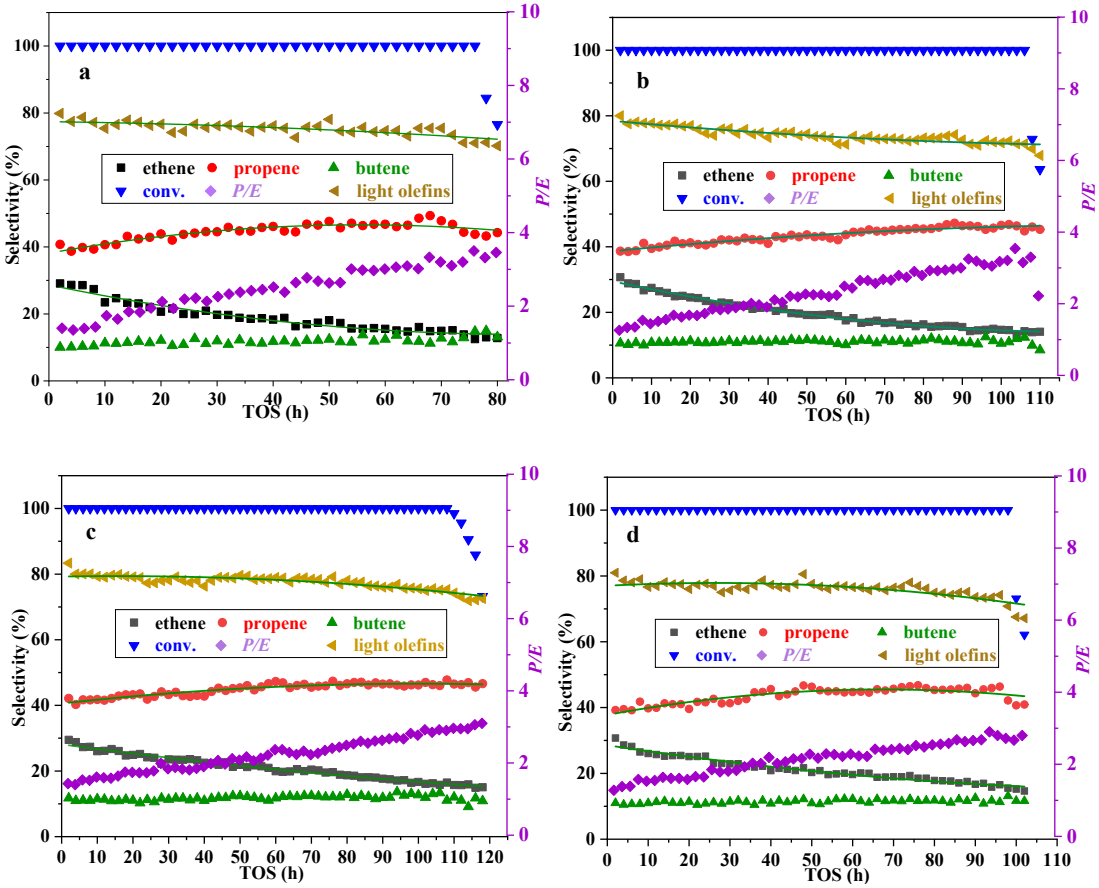

Fig. S6. Product distribution in the MTP reaction with time on stream (TOS) over catalysts (a. HZ, b. 0.5-BHZ, c. 2.5-BHZ, d. 5-BHZ)

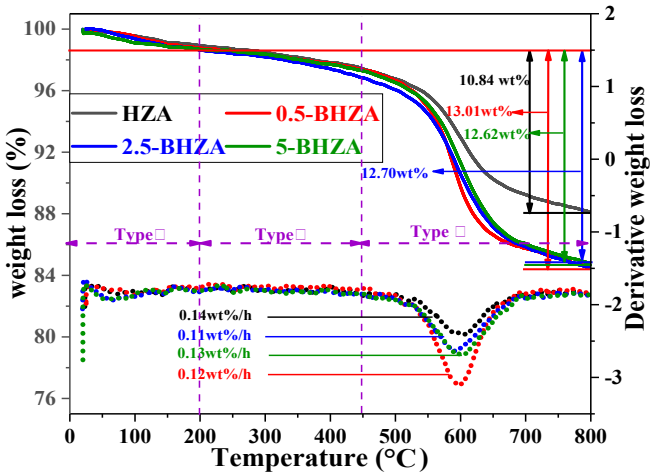

Fig. S7. TG analysis of BHZU samples toward MTP reaction

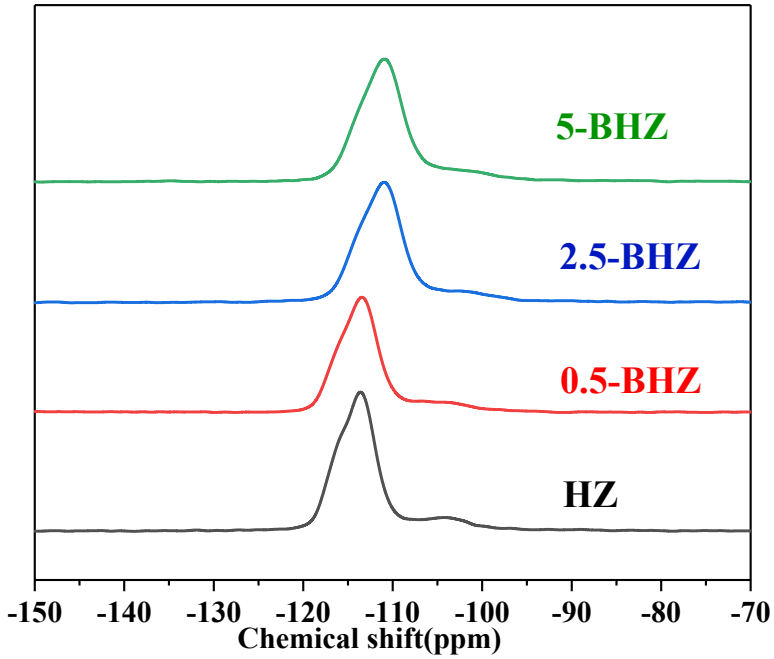

Fig. S8.The ^{29}Si MAS NMR spectra of BHZ samples with different B/Al ratios

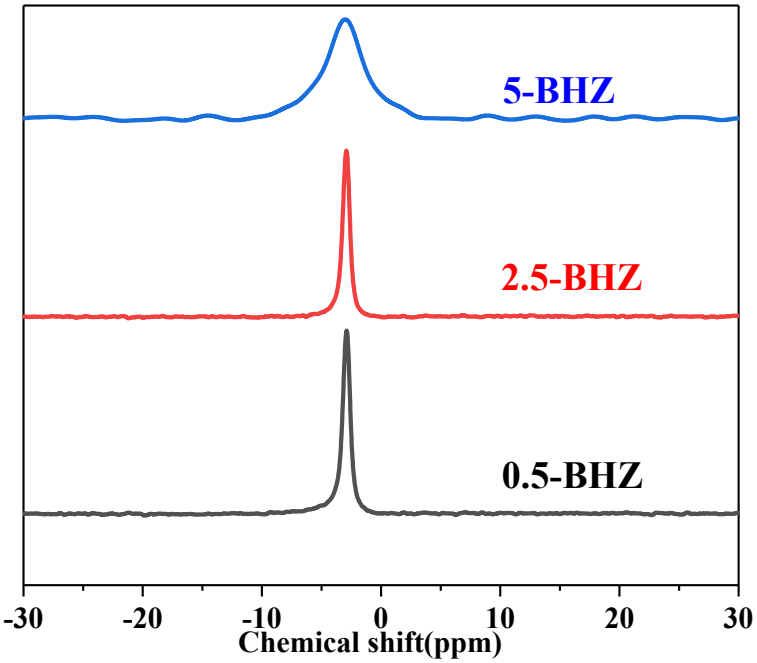

Fig. S9. ^{11}B MAS NMR spectra of *x*-BHZ with different B/Al ratios

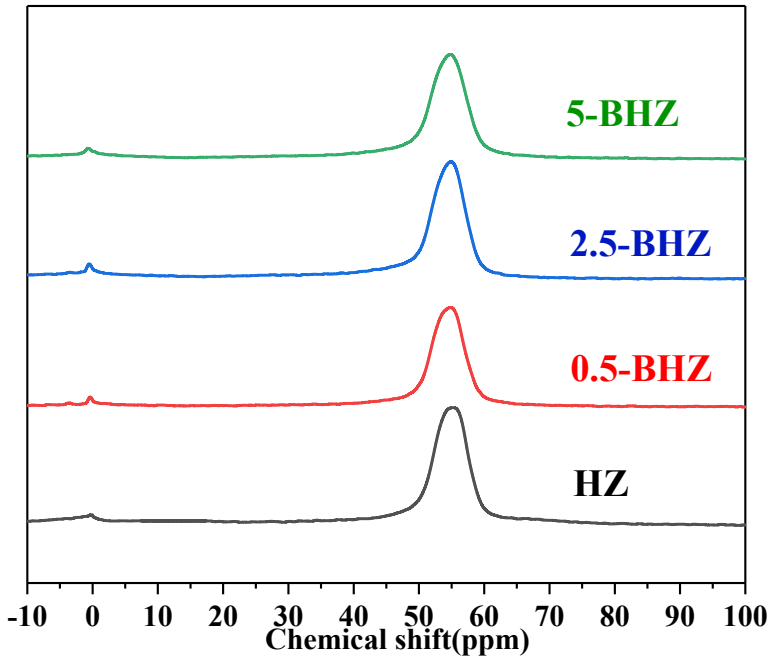

Fig. S10. ^{27}Al MAS NMR spectra of *x*-BHZ with different B/Al ratios

Table S1. Relative percentages of Si species calculated from the ^{29}Si MAS NM spectra for *x*-BHZ with different B/Al ratios

Sample	$Si[OSi]_4$ (ppm)	$Si[OSi]_4$ (%)	$Si[OSi]_4$ (ppm)	$Si[OSi]_4$ (%)	$Q^4[1Al]$ (ppm)	$Q^4[1Al]$ (%)
HZ	-116	21	-113	53	-108	26
0.5-BHZ	-116	18	-113	57	-108	25
2.5-BHZ	-114	19	-111	54	-107	27
5-BHZ	-114	17	-111	55	-107	28