Supporting Information

Tailored activity of Cu-Fe Bimetallic Beta zeolite with promising C_3H_6 resistance for NH_3-SCR

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Table S1 The amount of NH_3 in TPD experiments at different temperature region

Reaction process	Species	The amount of species (mmol/g_{cat})		
		< 200 °C	200-400 °C	> 400 °C
NH_3-adsorption	NH_3	1.31	1.21	0.15
NH_3+C_3H_6-adsorption	NH_3	1.46	0.97	0.40

Table S2 The amount of NO in TPD experiments at different temperature region

Reaction process	Species	The amount of species (mmol/g_{cat})		
		< 100 °C	100-200 °C	> 200 °C
$NO+O_2$-adsorption	NO	0.037	0.10	0.12
$NO+O_2+C_3H_6$-adsorption	NO	0.015	0.22	0.015

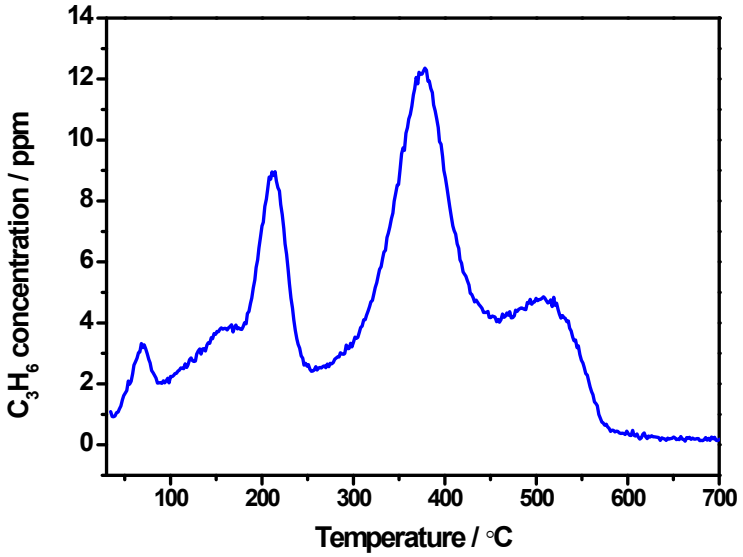

Fig. S1 TPD profiles for $Cu_{6.8}$-Fe-Beta exposure to 500 ppm NH_3/500 ppm C_3H_6/Ar at RT followed by heating in a flow of Ar at 10 °C/min.

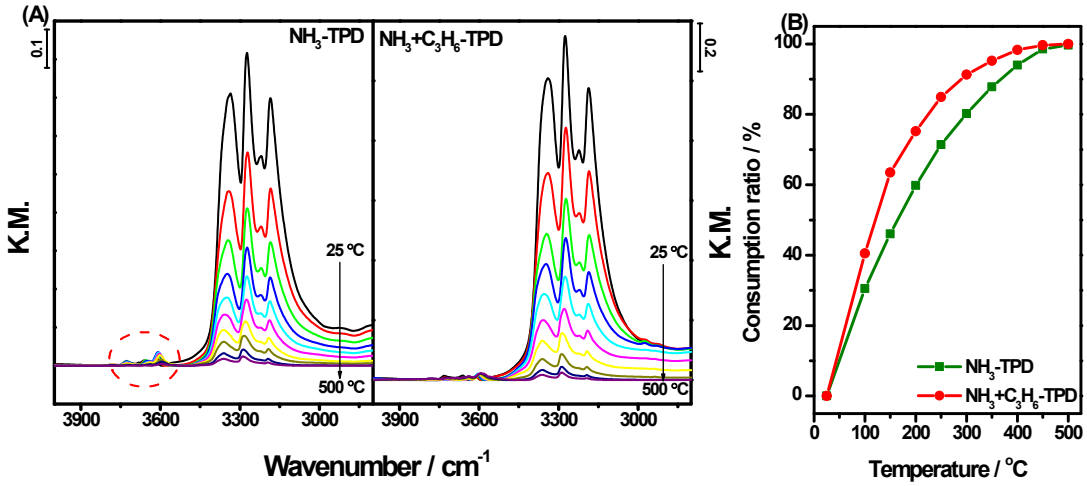

Fig. S2 IR spectra at high wavenumber of $Cu_{6.8}$-Fe-Beta (A) and the consumption rate of peak at 1630 cm^{-1} (B) after exposure to 500 ppm NH_3/He or 500 ppm NH_3/500 ppm C_3H_6/He at 25 ºC followed by temperature raising to 500 ºC in He.

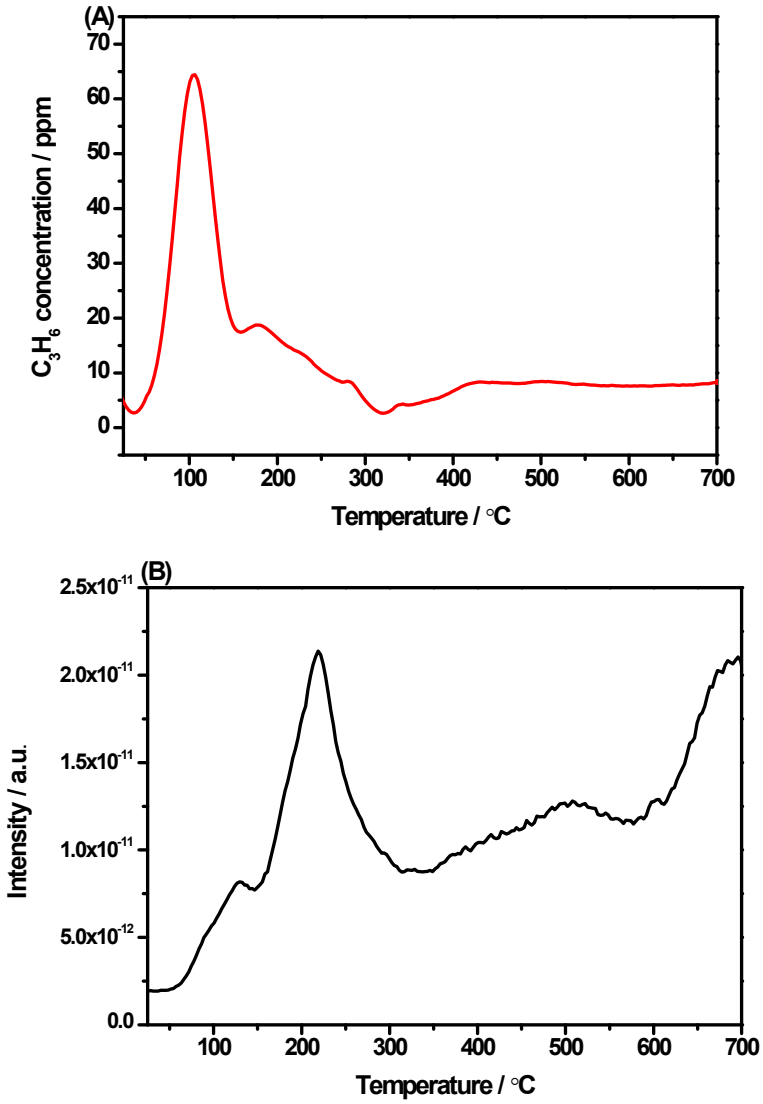

Fig. S3 C_3H_6 (A) and CO_2 (B) signal in TPD profiles for $Cu_{6.8}$-Fe-Beta exposure to 500 ppm NO/10 % O_2/500 ppm C_3H_6/Ar at RT followed by heating in a flow of Ar at 10 °C/min.

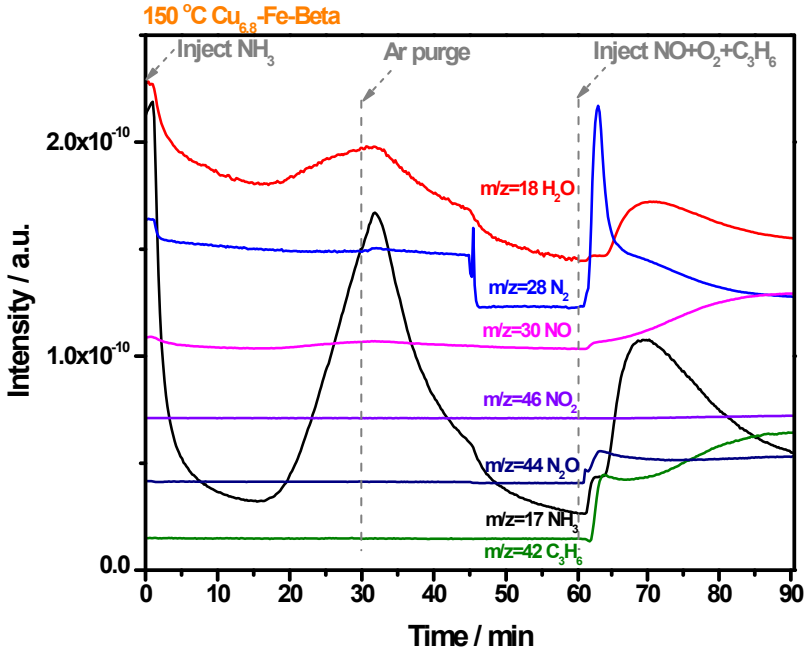

Fig. S4 MS data for $Cu_{6.8}$-Fe-Beta treated by 500 ppm NH_3/Ar followed by exposure to 500 ppm C_3H_6/500 ppm NO/10% O_2/Ar at 150 °C for various times.

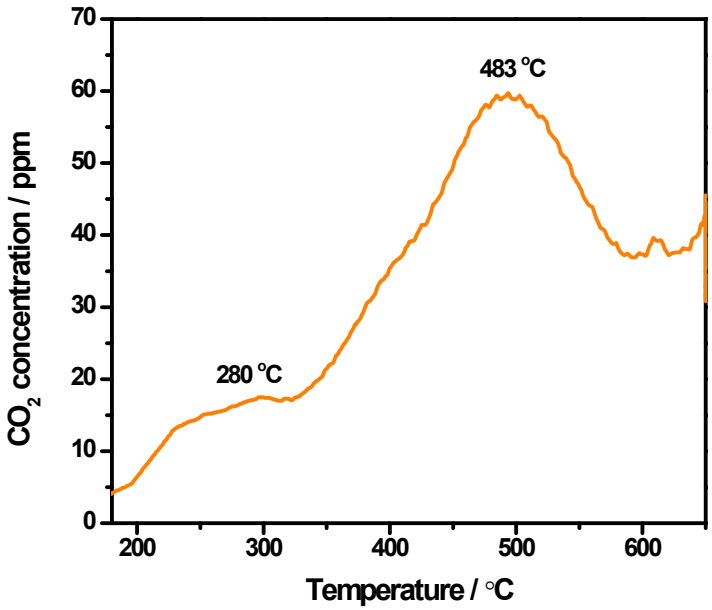

Fig. S5 CO_2 concentration during temperature raising from 150 to 650 °C in Ar for $Cu_{6.8}$-Fe-Beta pretreated by exposure to 500 ppm NH_3/Ar followed by exposure to 500 ppm C_3H_6/500 ppm NO/10% O_2/Ar at 150 °C.

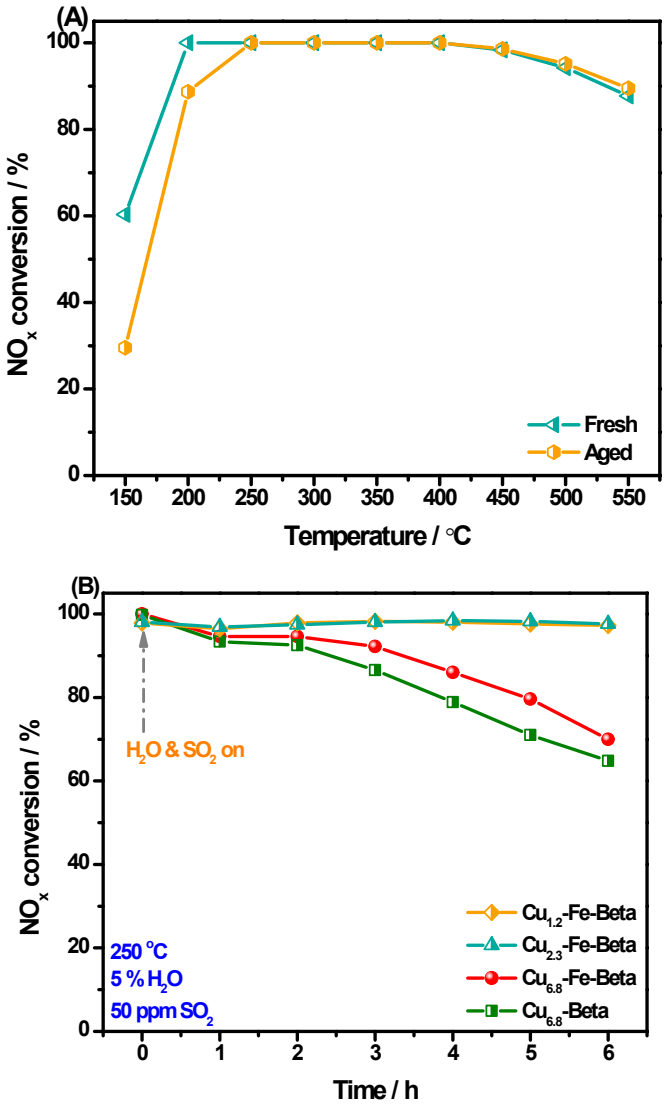

Fig. S6 NO conversion for $Cu_{6.8}$-Fe-Beta after hydrothermal treatment as a function of temperature (A) and the influences of H_2O and SO_2 on SCR activity at 250 °C (B). Conditions: (A) 500 ppm NO, 500 ppm NH_3, 10% O_2, 10% CO_2, 5% H_2O and N_2 balance, GHSV = 80,000 h^{-1}; (B) 500 ppm NO, 500 ppm NH_3, 10% O_2, 5% H_2O, 50 ppm SO_2 and N_2 balance, GHSV = 80,000 h^{-1}.