

Supplementary Information

Mesoporous HBeta Zeolite via Zeolitic Dissolution-Recrystallization Successive Treatment for Vapor-Phase Doebner-Von Miller Reaction to Quinolines

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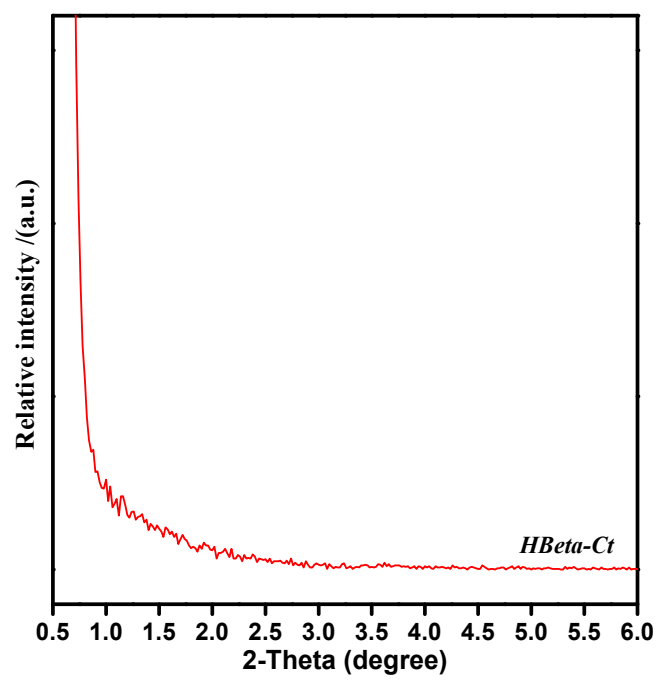


Figure 1S. the low-angle XRD patterns of HBeta-Ct.

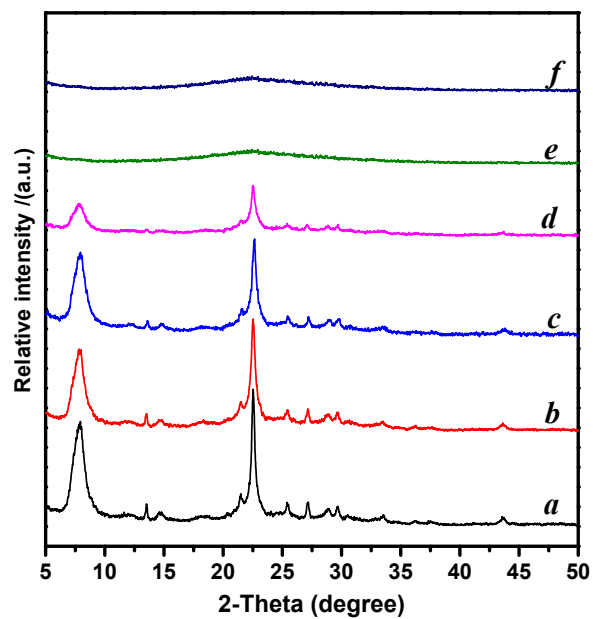


Figure 2S. the XRD patterns of parent HBeta(*a*) and alkali-treated HBeta with NaOH concentrations of 0.2(*b*) 0.4(*c*) 0.6(*d*) 1.0(*e*) and 1.85(*f*) mol/L at 40 °C for 70 min.

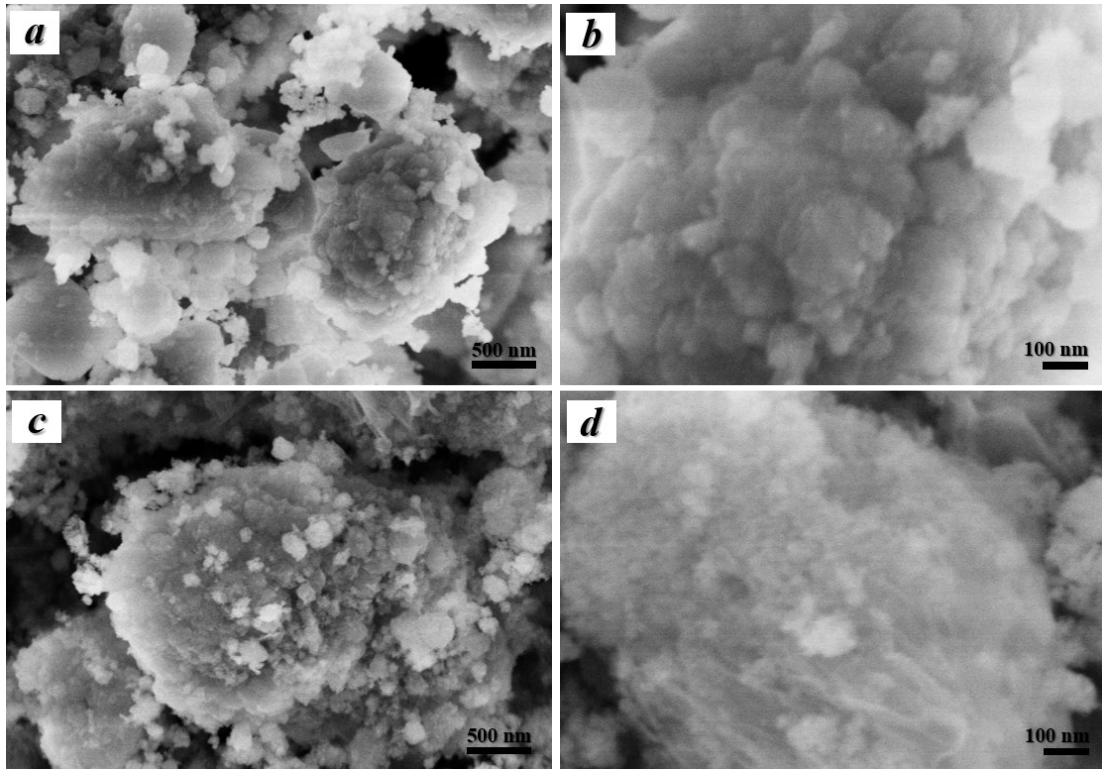


Figure 3S. The SEM images of HBeta(*a, b*) and HBeta-Ct(*c, d*)

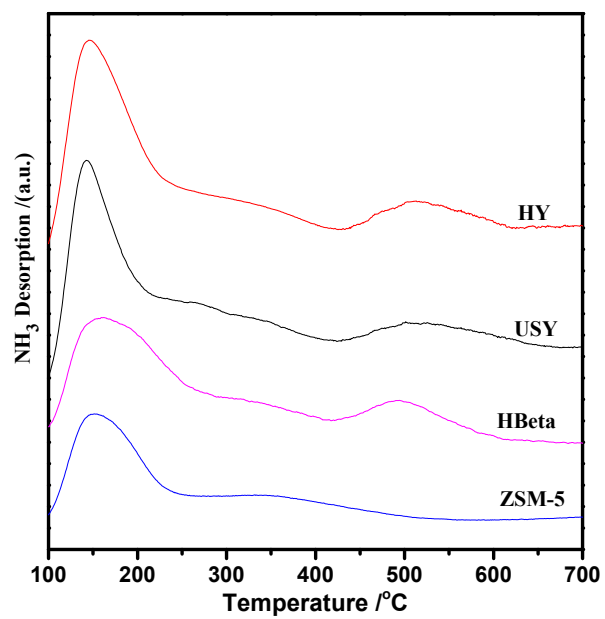


Figure 4S. the NH₃-TPD for various zeolite catalysts

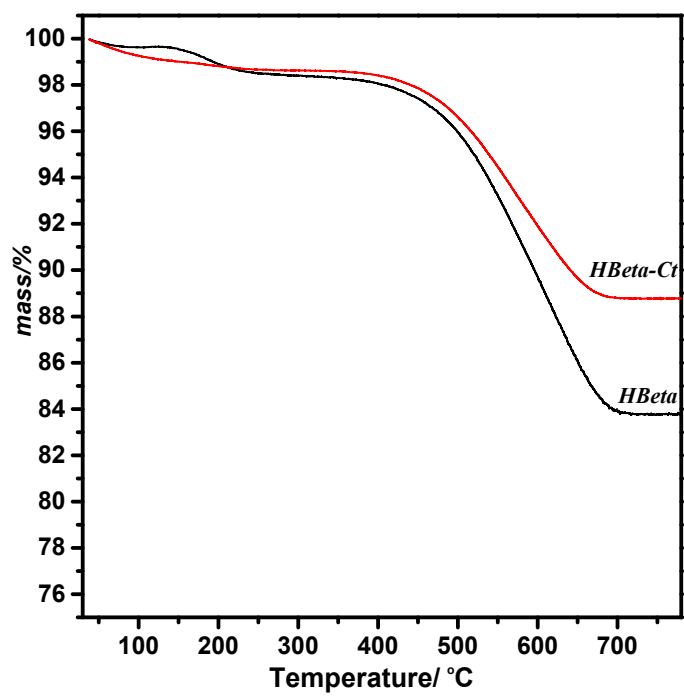


Figure 5S. the TG profiles of deactivated catalysts

Table 1S. the textural properties of catalysts.

Catalyst	Si/Al ratio ^a	Relative crystallinity	Yield of product
HBeta	25	100	--
HBeta-Ct	22	94.3	93.4

^a The Si/Al ratio of the parent and treated Beta zeolite was determined via ICP-OES.

Table 2S. the NH₃-TPD results for various zeolite catalysts.

Catalyst	T _i ^a (°C) and A _i ^b (mmol/g) for various desorption peaks				
	T ₁	A ₁	T ₂	A ₂	A _{total}
ZSM-5	154.8	1.08	363.9	0.10	1.18
HBeta	159.6	1.23	494.5	0.35	1.58
HUSY	143.3	1.25	509.3	0.36	1.61
HY	145.7	1.29	512.6	0.41	1.70

^a T_i refers to the temperature at the maximum of desorption peak i.

^b A_i refers to the integral area of desorption peak i, and it means also the concentration of acid site corresponding to the desorption peak i; A_{total} stands for the sum of the concentration of various acid site, i.e., A_{total} = ΣA_i.