

Supporting Information for

Synthesis and catalytic application of nanorod-like FER-type zeolite

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This PDF contains:

Figure S1-7; Table S1-3

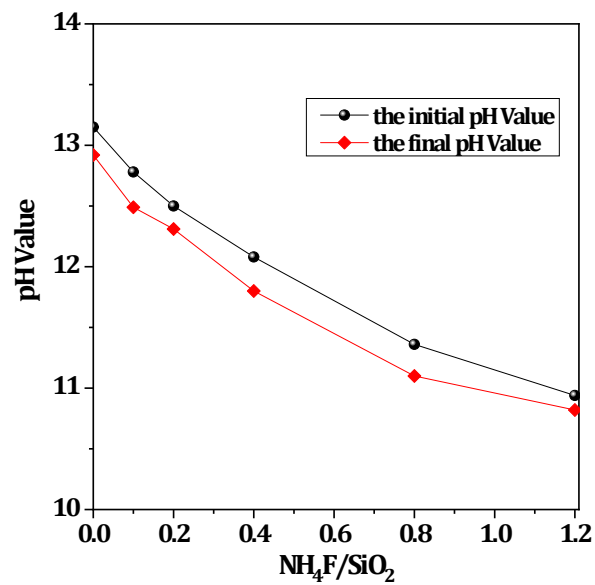


Figure S1. Variation of the pH value as a function of NH₄F concentration in the synthesis system.

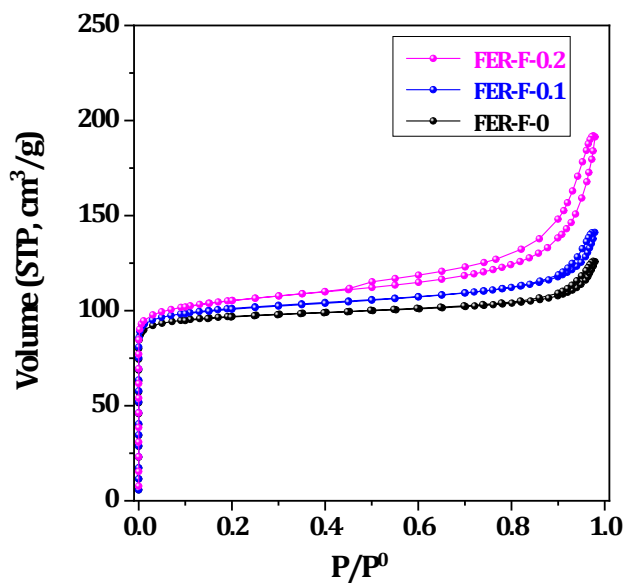


Figure S2. Nitrogen adsorption/desorption isotherms of as-synthesized FER samples.

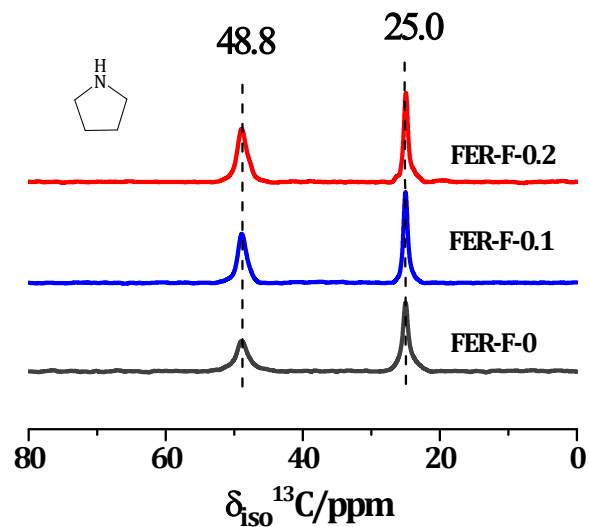


Figure S3. ^{13}C CP MAS NMR spectra of as-synthesized three different FER zeolites.

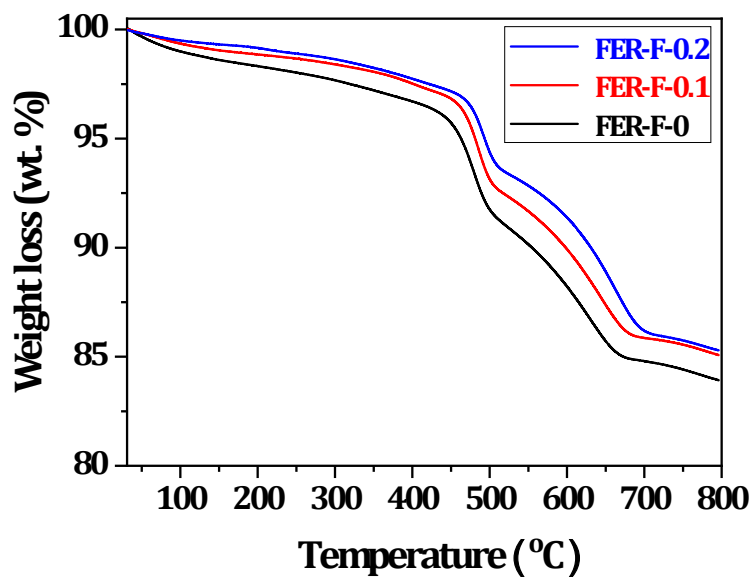


Figure S4. TG curves of as-synthesized FER zeolite samples: FER-F-0, FER-F-0.1 and FER-F-0.2.

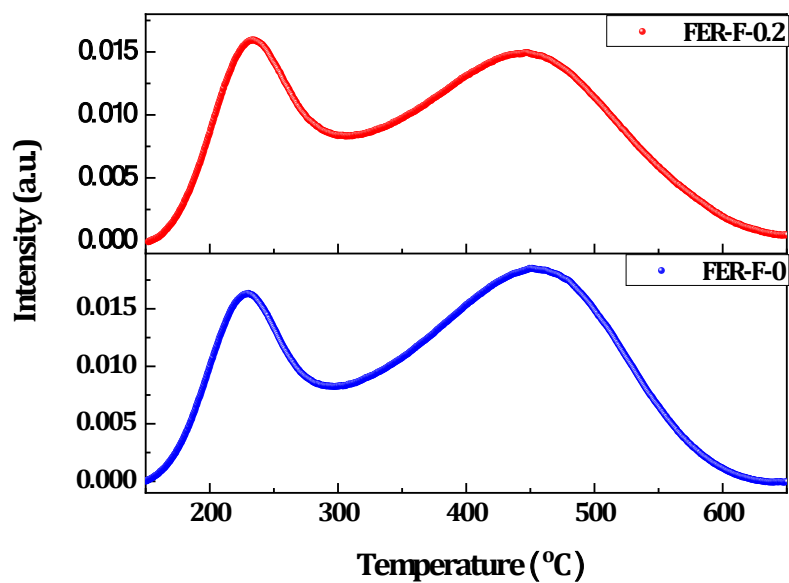


Figure S5. NH_3 -TPD profiles of as-synthesized samples FER-F-0 and FER-F-0.2.

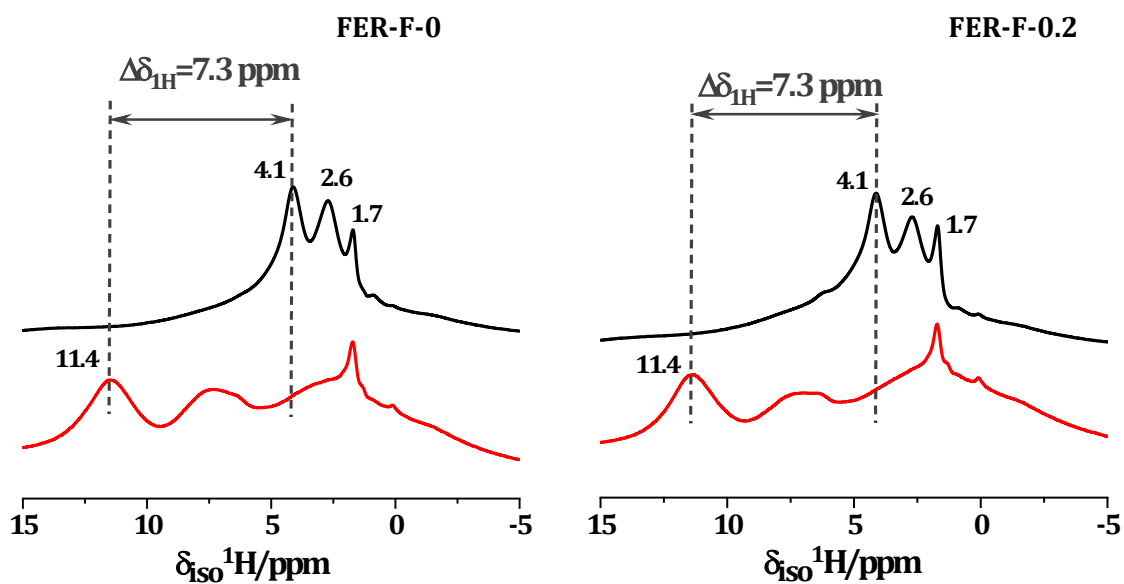


Figure S6. ^1H MAS NMR spectra of the dehydrated FER samples recorded before (black curves) and after (red curves) loading with D_3 -acetonitrile.

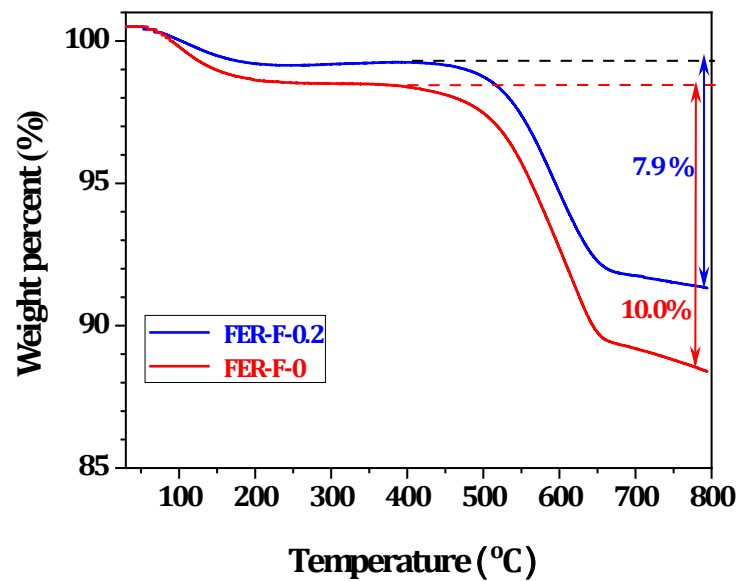


Figure S7. TGA curves of spent FER-F-0 and FER-F-0.2 catalysts used in the 1-butene skeletal isomerization.

Table S1. Molar composition of the initial mixtures and crystallization conditions of synthesized FER-type zeolites.

Sample	SiO ₂	Al ₂ O ₃	SDA	Na ₂ O	H ₂ O	NH ₄ F	T (°C)	Phase
FER-F-0	1	0.05	0.6	0.08	20	0	180	FER
FER-F-0.1	1	0.05	0.6	0.08	20	0.1	180	FER
FER-F-0.2	1	0.05	0.6	0.08	20	0.2	180	FER
FER-F-0.4	1	0.05	0.6	0.08	20	0.4	180	FER
FER-F-0.8	1	0.05	0.6	0.08	20	0.8	180	FER+ MTN
FER-F-1.2	1	0.05	0.6	0.08	20	1.2	180	FER+ MTN

Table S2. Textural properties of as-synthesized FER samples.

Samples	S _{BET} ^a (m ² /g)	S _{ext} ^b (m ² /g)	V _{micro} ^b (cm ³ /g)	V _{total} ^c (cm ³ /g)	Si/Al ^d
FER-F-0	383	56	0.13	0.19	8.7
FER-F-0.1	397	67	0.13	0.22	9.3
FER-F-0.2	409	86	0.13	0.30	9.5

^a determined by the multi-point BET method.

^b calculated by the t-plot method.

^c the volume adsorbed at $P/P^0 = 0.97$.

^d determined by the ICP.

Table S3. Coke amount, average coke accumulation rate (R_{coke}) during the the 1-butene skeletal isomerization over FER zeolite catalysts under study, determined for TOS = 1440 min.

samples	Coke(wt%)	R_{coke} (mg/h)
FER-F-0	10.0	0.463
FER-F-0.2	7.9	0.357