Supporting information for

Mild dealumination of template-stabilized zeolites by NH_4F

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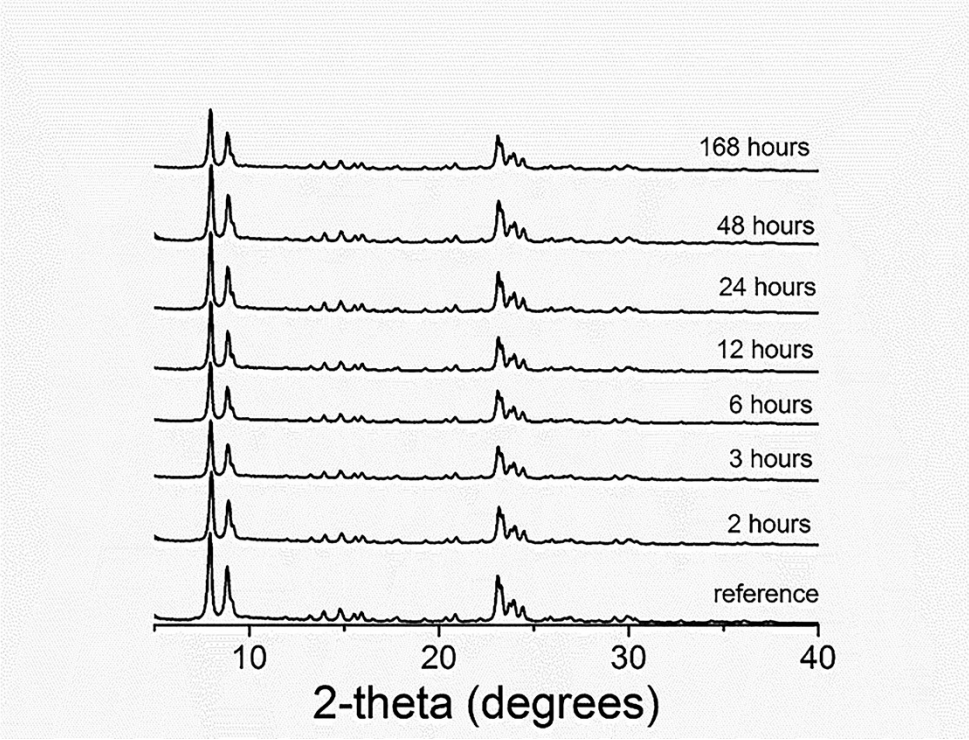

Figure S1. XRD patterns of reference ZSM-5 and ZSM-5 treated by NH_4F for different periods of time. Treatment conditions: 175 °C, 1 M NH_4F.

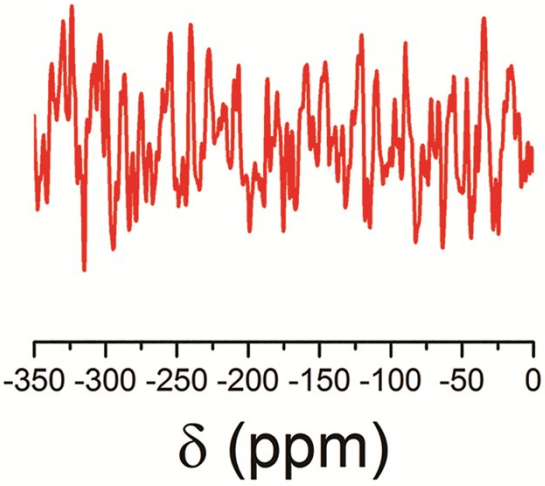

Figure S2. ^{19}F NMR spectrum of NH_4F treated and calcined ZSM-5 crystals. Treatment conditions: 175 °C, 6 h, 1 M NH_4F.

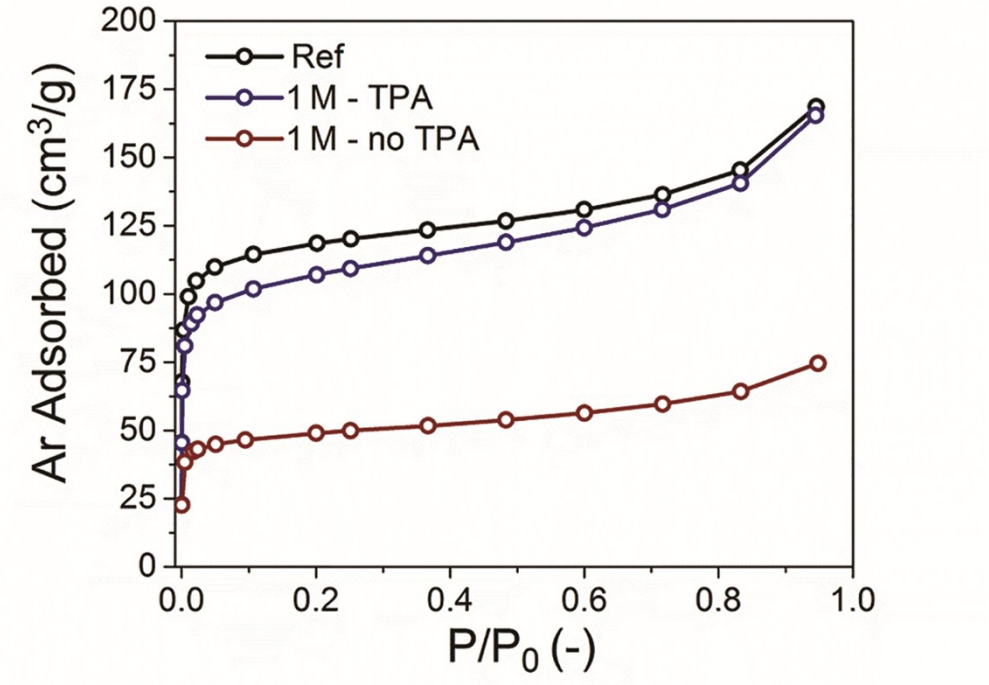

Figure S3. Ar adsorption isotherms of parent MFI-TPA sample (black), MFI-TPA (blue) and calcined MFI (red) samples after NH_4F treatment. Treatment conditions: 1 M NH_4F, 175 °C, 6 h.

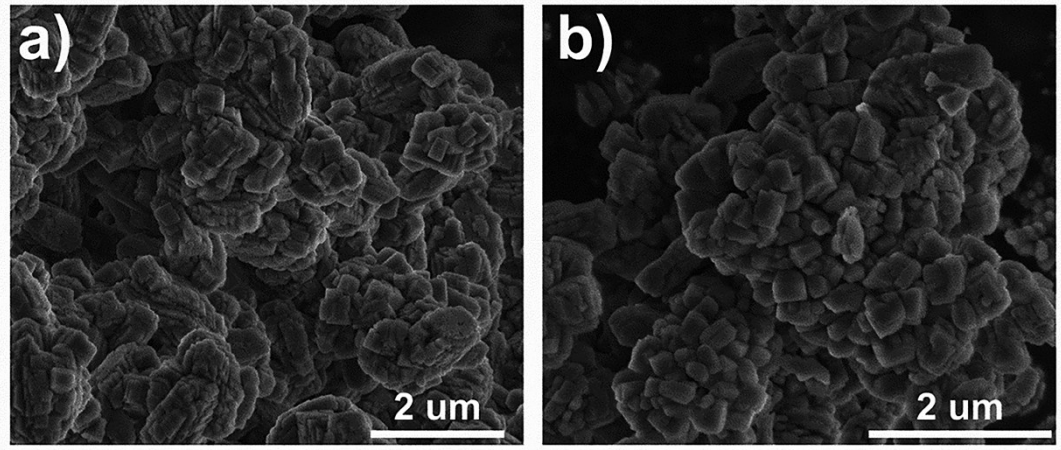

Figure S4. SEM images of MFI-PET samples before (a) and after (b) NH_4F treatment. Treatment conditions: 175 °C, 6 h, 1 M NH_4F.

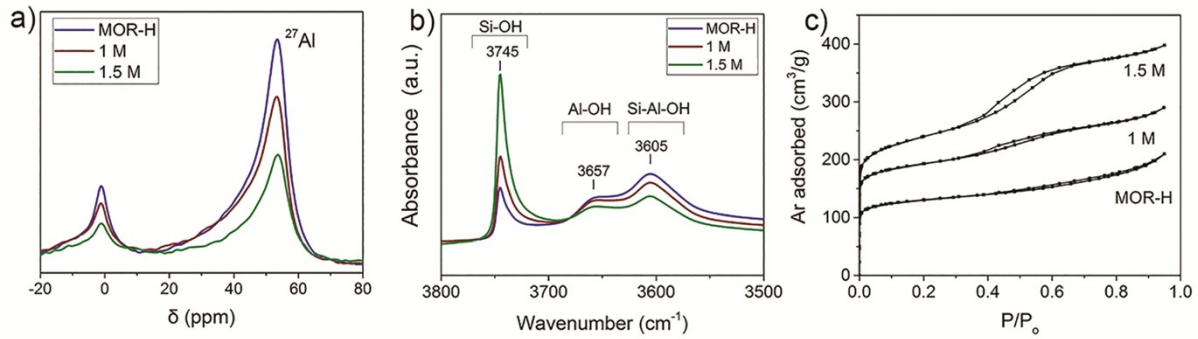

Figure S5. ^{27}Al NMR spectra (a), weight normalized transmission FTIR spectra (b) and Ar adsorption analysis of the MOR samples treated in NH_4F solution with varying concentrations (c). The isotherms are offset for clarity by 50 cm^3/g. Treatment conditions: 175 °C, 2 h

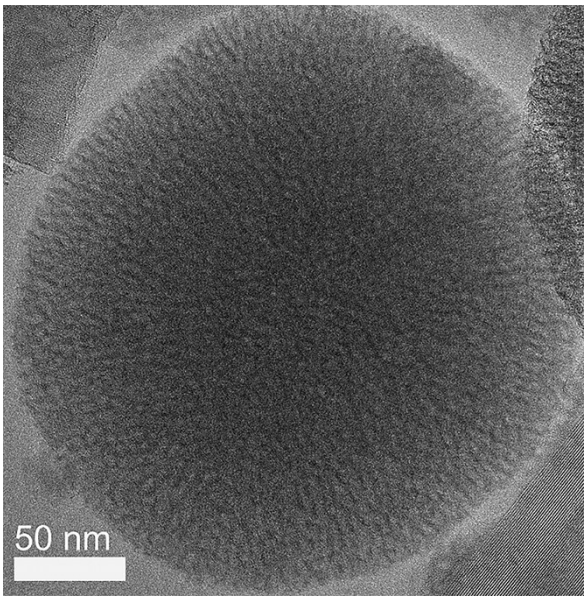

Figure S6. TEM image of the second phase of MOR-H sample detected after NH_4F treatment. Treatment conditions: 175 °C, 2 h, 1.5 M NH_4F.

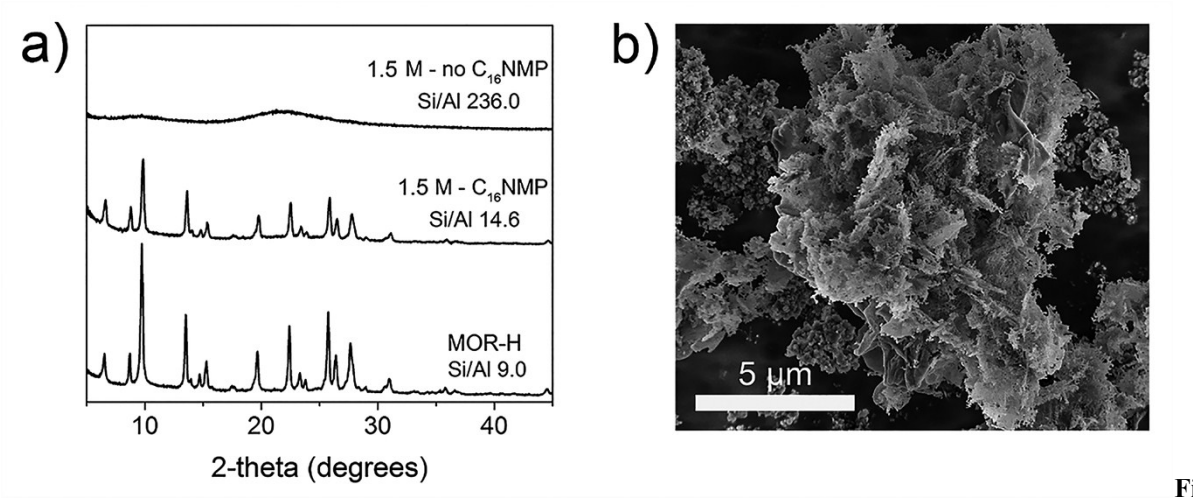

Figure S7. XRD patterns and Si/Al ratios of the MOR zeolites before and after NH_4F treatment (a), SEM image of MOR crystals after calcination on air and NH_4F treatment (b). Treatment conditions: 175 °C, 2 h, 1.5 M NH_4F.

Table S1. Results of hydrothermal treatment with varying concentration of NH_4F at 175 °C and 2 h reaction time.

NH_4F Treatment	Si/Al, ICP	FAl removed NMR, %	EFAl NMR, %	BET surface area, m^2/g	External surface area, m^2/g	V_{micro}, cm^3/g (*NLDFT*)	V_{meso}, cm^3/g (*BJH*)
MOR-H	9.0 ± 2	0	23.8	408	99	0.17	0.14
1 M	10.7 ± 2	24	24.8	413	240	0.16	0.20
1.5 M $C_{16}NMP$	14.6 ± 2	50	26.9	426	505	0.13	0.35
1.5 M no $C_{16}NMP$	236.0 ± 2	-	-	26	29	-	0.05

Table S2. Acidic properties of the MOR-H before and after the treatment with 1 M and 1.5 M of NH_4F solution determined by IR spectroscopy of adsorbed pyridine and H_2 chemisorption. Treatment conditions: 175 °C, 2 h.

Zeolite	BAS, (mmol g^{-1})			LAS, (mmol g^{-1})			nPd/nH^+ [a,b]
	150 °C	300 °C	500 °C	150 °C	300 °C	500 °C	
MOR-H	0.67	0.57	0.31	0.15	0.13	0.15	0.19
1 M	0.58	0.50	0.28	0.20	0.16	0.14	0.16
1.5 M	0.41	0.35	0.18	0.20	0.16	0.16	0.25

[a] Pd active sites determined by H_2 chemisorption

[b] H^+ determined from the concentration of BAS at 500 °C