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Electronic Supplementary Information (ESI)

Synthesis of MnNi-SAPO-34 by One-pot Hydrothermal Method and its Excellent Performance for Selective Catalytic Reduction of NO by NH_3

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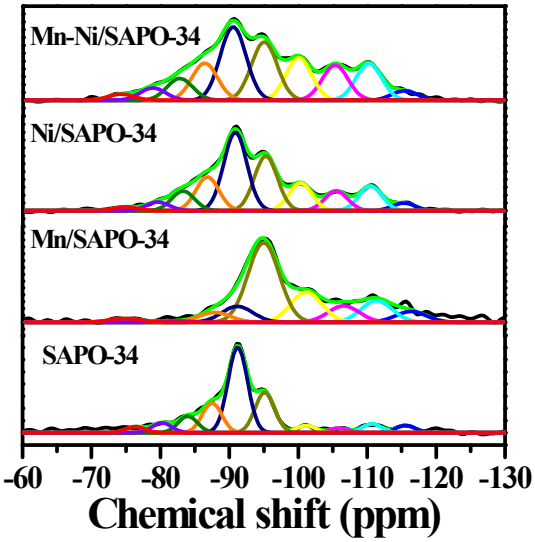

Fig. S1 ^{29}Si MAS NMR spectra of SAPO-34, Mn-SAPO-34, Ni-SAPO-34 and MnNi-SAPO-34 zeolites: original and fitted spectra

Table S1 Percentage composition of silicon species from ^{29}Si MAS NMR deconvolution

Silicon species	Chemical shift /ppm	Percentage composition of silicon species /%			
		SAPO-34	Mn-SAPO-34	Ni-SAPO-34	MnNi-SAPO-34
Defects	-80, -88	22.5	7.4	20.6	18.7
Si4Al	-91	46.5	14.5	31.1	25.1
Si3Al1Si	-95	21.5	39.8	21.2	19.3
Si2Al2Si	-100	3.1	16.4	10.4	13.6
Si1Al3Si	-105	1.9	9.4	7.3	11.3
Si4Si	-110	4.5	12.5	9.4	12.0
Si in silicon island	-100 to -110	9.5	38.3	27.1	36.9

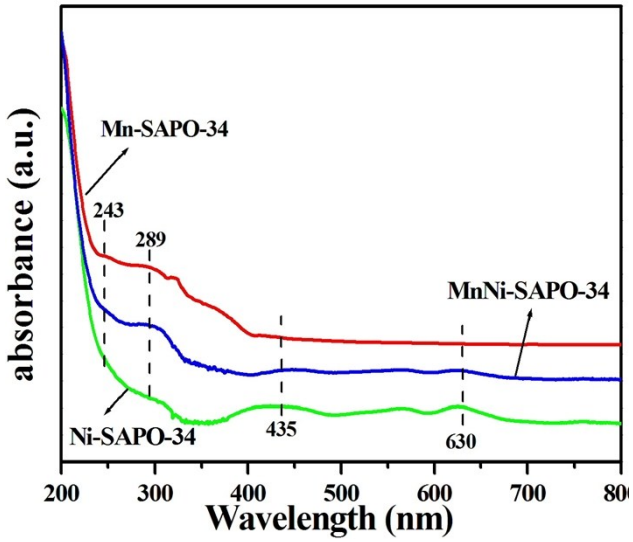

Fig. S2 UV-vis-DRS of as-prepared Mn-SAPO-34, Ni-SAPO-34 and MnNi-SAPO-34

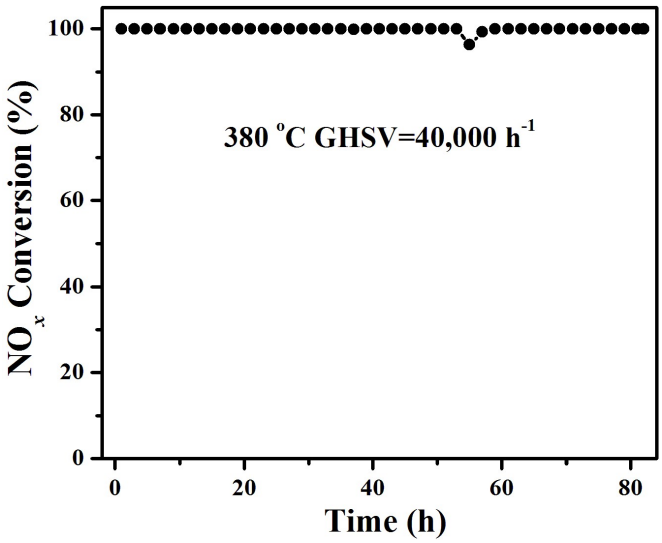

Fig. S3 activity stability with time of MnNi-SAPO-34 catalyst (reaction conditions: 1000 ppm of NO, 1000 ppm of NH_3, 3% O_2, balance N_2, GHSV=40,000 h^{-1})

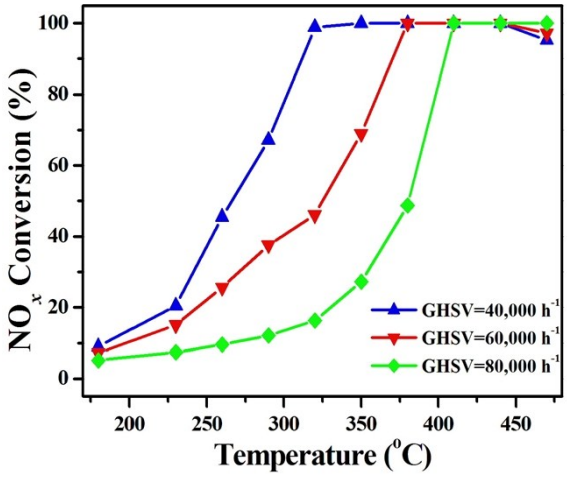

Fig. S4 NH_3-SCR performance of MnNi-SAPO-34 catalyst under different gas hourly space velocities (A) NO_x conversion and (B) N_2 selectivity. Reaction conditions: 1000 ppm of NO, 1000 ppm of NH_3, 3% O_2, balance N_2.

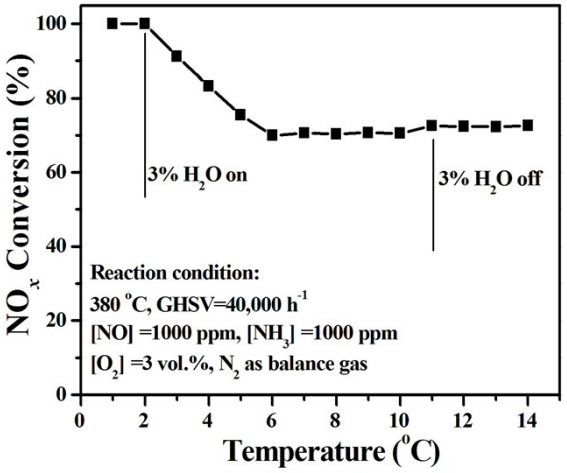

Fig. S5 Effects of H_2O on conversion over the MnNi-SAPO-34.

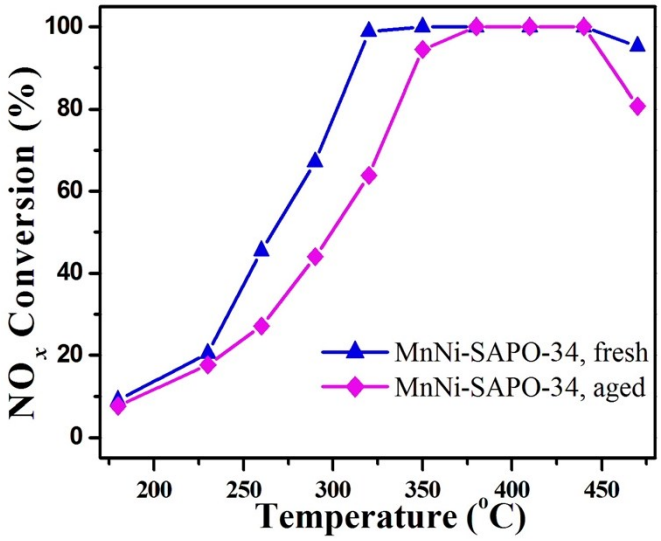

Fig. S6 SCR performance for MnNi-SAPO-34 before and after 600 ^{o}C hydrothermal aging for 5 h (aging conditions: 3% H_2O, balance N_2, GHSV = 40,000 h^{-1}).