

Electronic Supplementary Information

Aminothermal Synthesis of CHA-type SAPO Molecular Sieves and their Catalytic Performance in Methanol to Olefins (MTO) Reaction†

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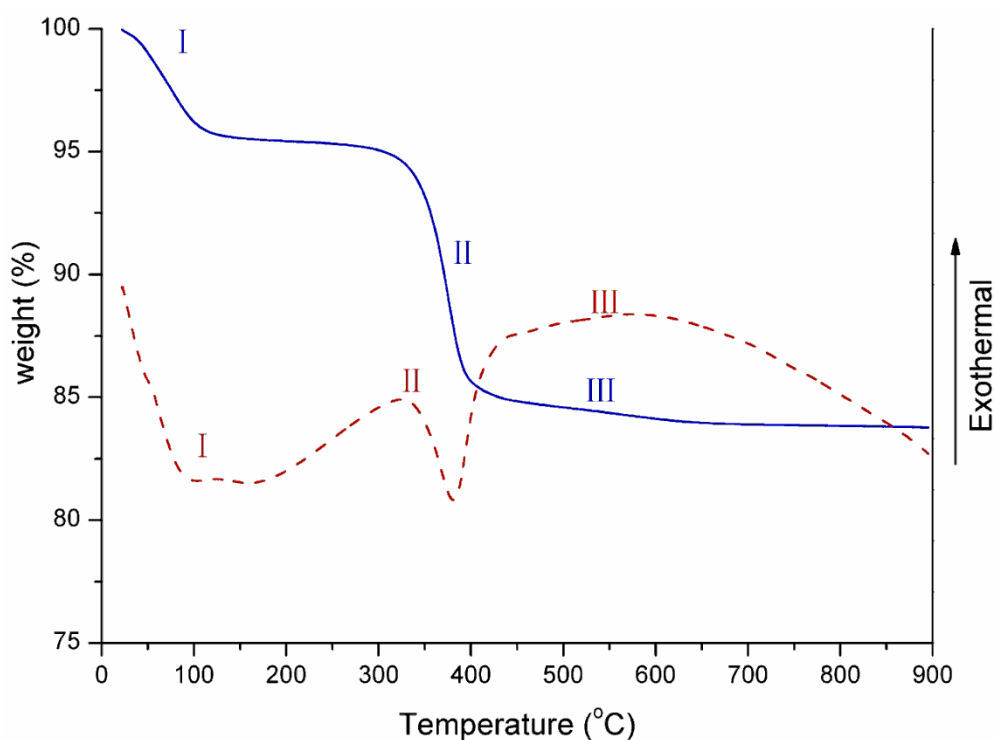


Fig. S1 TG (solid) and DSC (dotted) curves of sample 4.

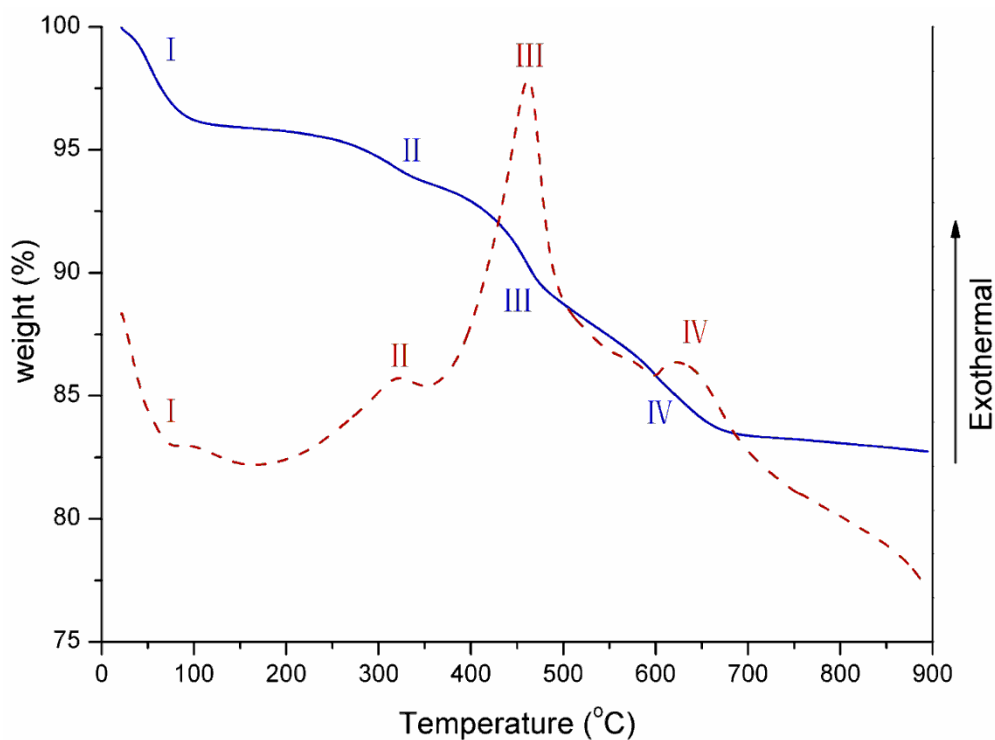


Fig. S2 TG (solid) and DSC (dotted) curves of sample 13.

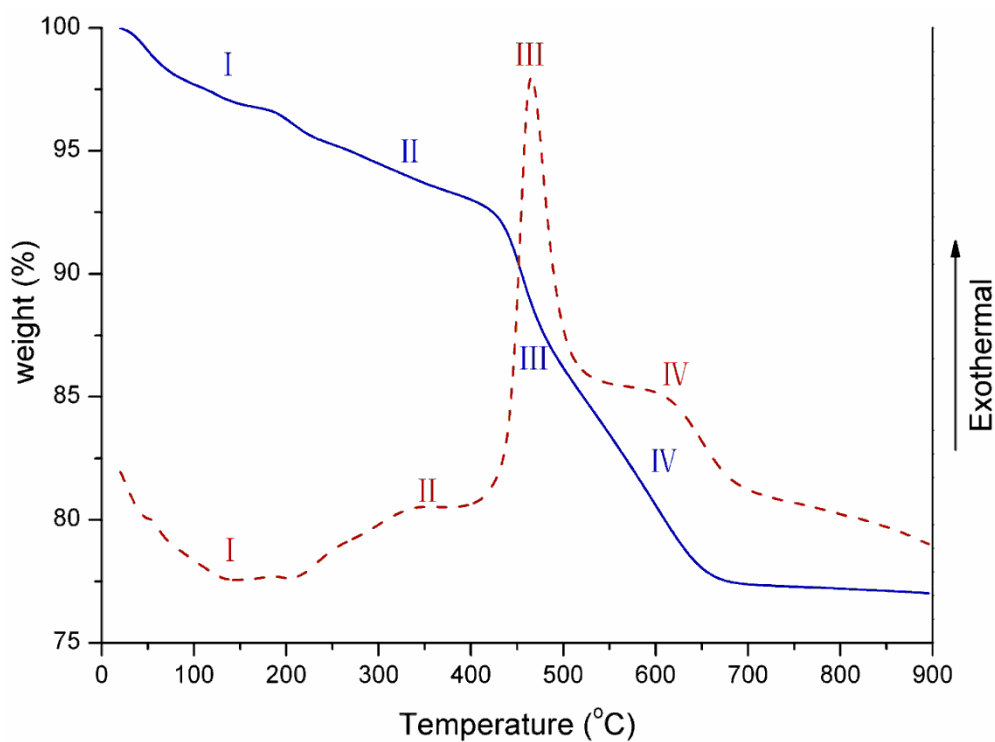


Fig. S3 TG (solid) and DSC (dotted) curves of sample 18.

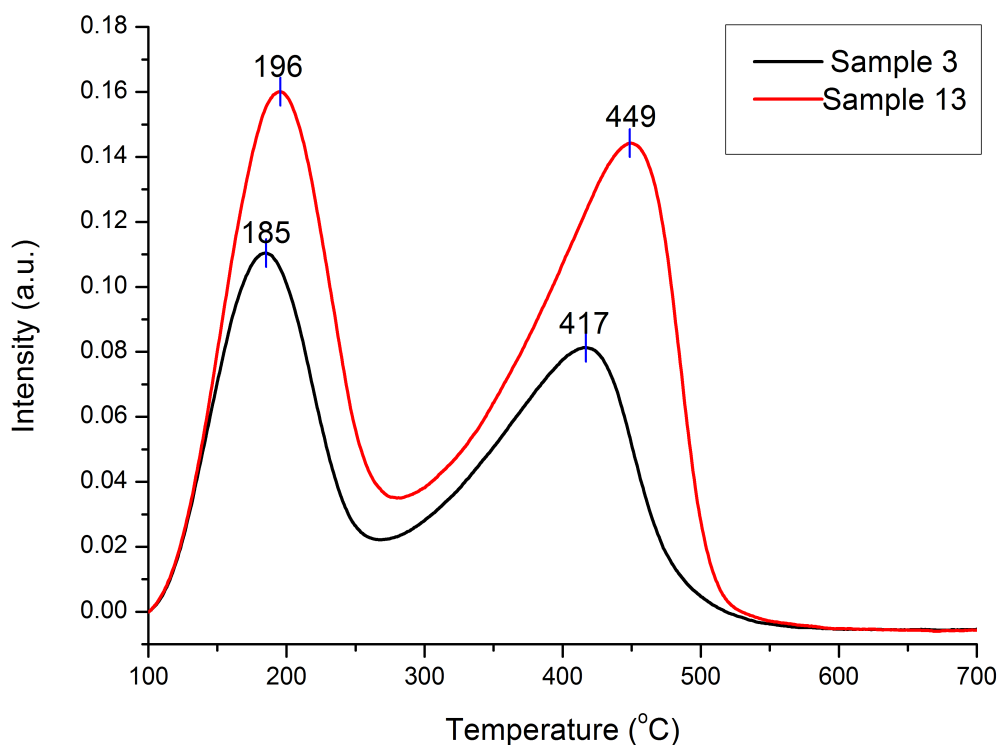


Fig. S4 NH₃-TPD profiles on samples 3 and 13.

Table S1 The deconvoluted results of Si environments in the as-synthesized samples

Sample	Si(4Al) ^a	Si(3Al)	Si(2Al)	Si(1Al)	Si island	85 ppm ^b
4	39.2	26.2	16.3	8.6	7.3	2.4
13	100	0	0	0	0	0
18	66.5	16.0	7.5	2.3	3.1	4.6

^a The Si(4Al), Si(3Al), Si(2Al), Si(1Al) and Si-island were corresponding to the peaks at -91, -96, -100, -105 and -110 ppm in the spectra, respectively. ^b The peak at -85 ppm was ascribed to the Si(OAl)₃(OH) or Si(OAl)(OSi)(OH)₂ species located in the Si-Al domains.

Table S2 The MTO reaction results on the samples

Sample	Lifetime ^a (min)	Selectivity (wt%)							
		CH ₄	C ₂ H ₄	C ₂ H ₆	C ₃ H ₆	C ₃ H ₈	C ₄	C ₅ ⁺	C ₂ H ₄ +C ₃ H ₆
3	292	1.40	50.78	0.62	35.03	0.86	8.60	2.65	85.80
13	207	1.21	46.13	1.00	36.83	2.46	9.63	2.68	82.96
17	106	1.36	40.09	1.30	37.85	4.97	10.57	3.81	77.95

^a The catalyst lifetime is defined as the reaction duration with >99% methanol conversion.

