Supplementary Materials

CHA-type zeolite prepared by interzeolite conversion method using FAU and LTL-type zeolite: effect of the raw materials on the crystallization mechanism, and physicochemical and catalytic properties

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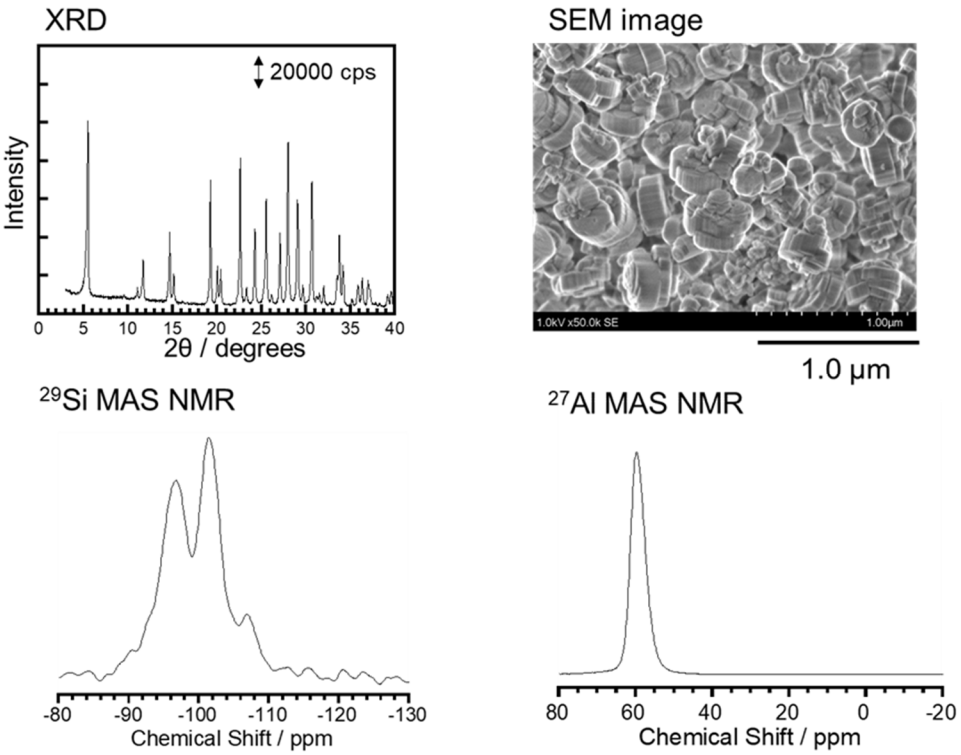
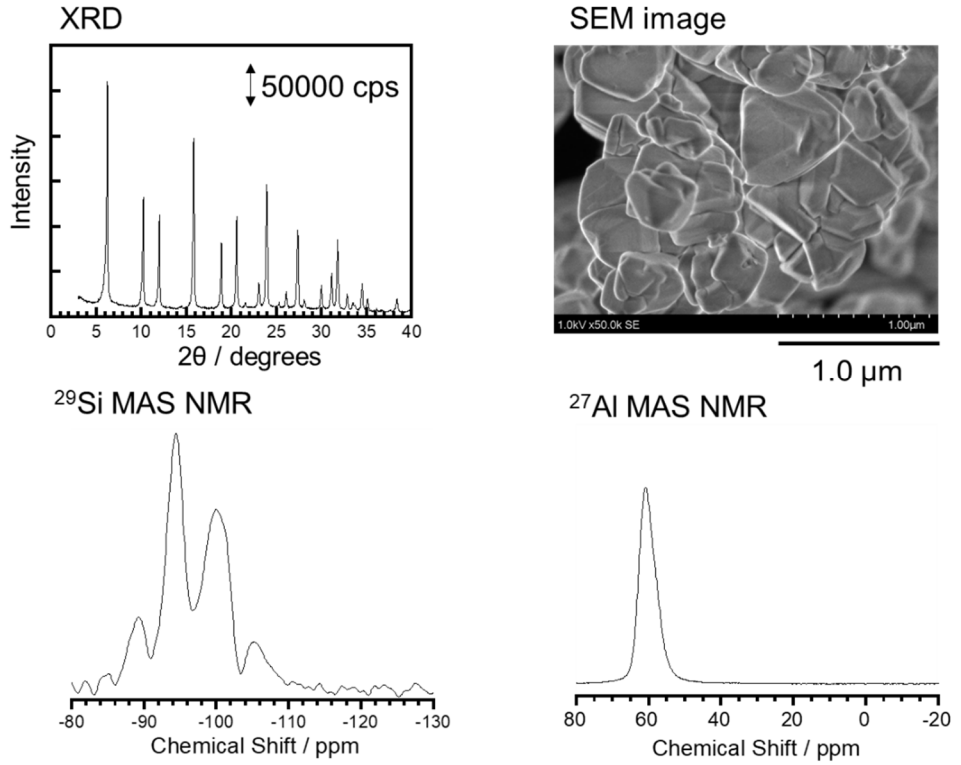
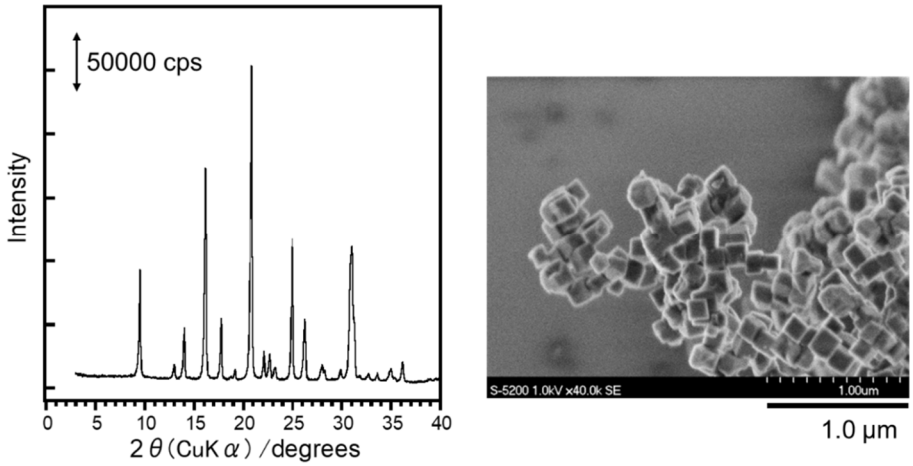


(a) LTL (HSZ-500KOA (Si/Al = 3.0))



(b) FAU (JRC-Y-4.8 (Si/Al = 2.4)



(c) Seed crystal (CHA-type zeolite)

Figure S1. Physicochemical properties of (**a**) LTL (HSZ-500KOA (Si/Al = 3.0)), (**b**) FAU (JRC-Y-4.8 (Si/Al = 2.4) and (**c**) seed crystal (CHA-type zeolite) used as parent zeolite for the synthesis of CHA.

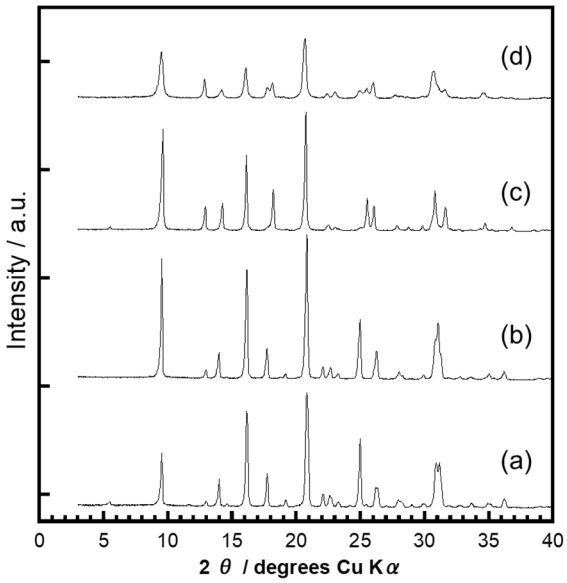


Figure S2. XRD patterns of (a) CHA-LTL-TMAda, (b) CHA-FAU-TMAda, (c) CHA-LTL-TEA, (d) CHA-FAU-TEA.

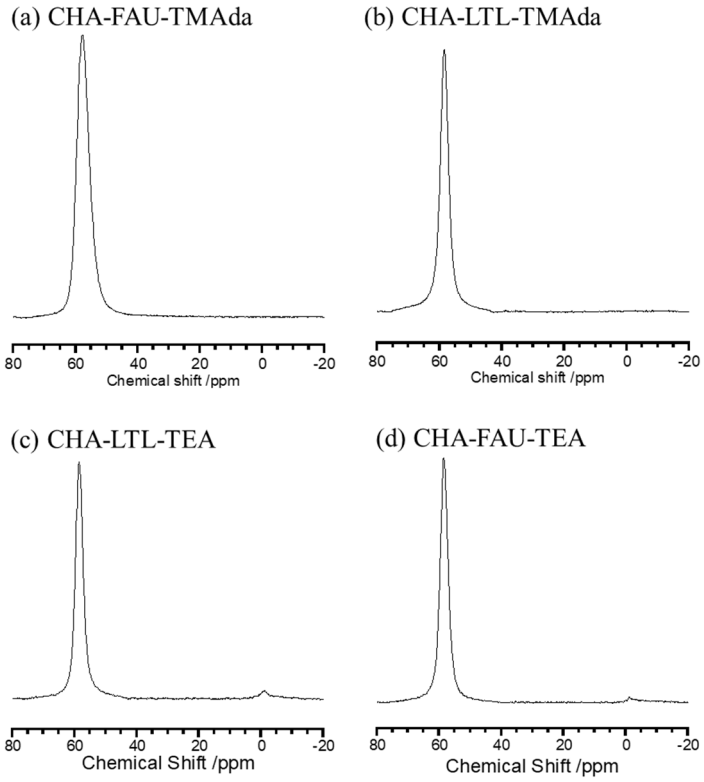


Figure S3. ^{27}Al MAS NMR spectra of the calcined Na-type products: (a) CHA-FAU-TMAda, (b) CHA-LTL-TMAda, (c) CHA-LTL-TEA, (d) CHA-FAU-TEA.

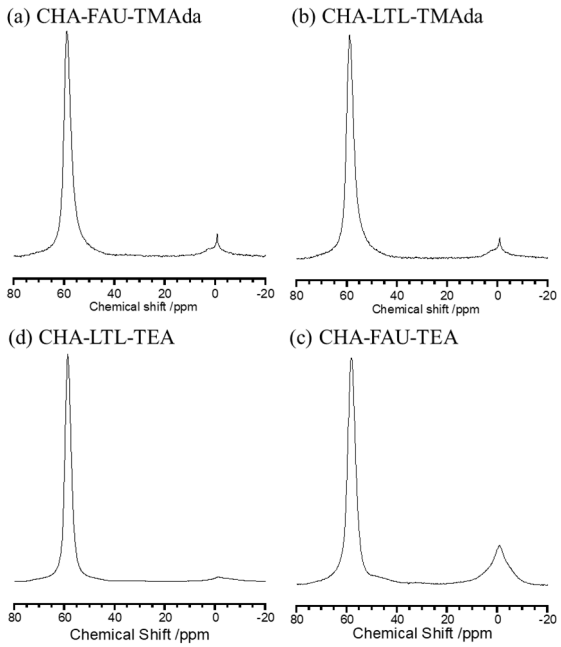


Figure S4. ^{27}Al MAS NMR spectra of the H^+- type products: (a) CHA-FAU-TMAda, (b) CHA-LTL-TMAda, (c) CHA-FAU-TEA, (d) CHA-LTL-TEA.

Table S1. The products' selectivities in the MTO reaction over CHA-LTL-TMAda, CHA-FAU-TMAda, CHA-LTL-TEA, and CHA-FAU-TEA.

Catalyst	Acid amount[a] / mmol g^{-1}	TOS_{95}[b] / min	Product selectivity (C-atom %)[b]					
			C2=	C3=	C4=	Paraffins (C1-C4)	DME	Over C5
CHA-LTL-TMAda	0.46	180	56.7	28.8	6.4	6.0	0.3	1.9
CHA-FAU-TMAda	0.47	240	55.9	28.9	7.7	4.7	2.0	0.9
CHA-LTL-TEA	0.80	180	51.6	33.4	6.3	4.6	2.8	1.3
CHA-FAU-TEA	1.17	120	48.0	30.8	5.9	5.2	8.9	1.1

a; Estimated by the NH3-TPD, b; TOS_{95} indicates TOS (time on Stream) required to achieve methanol conversion drop below 95%.