

Electronic supplementary information for

**Understanding the superior NH₃-SCR activity on CHA zeolite
synthesized via template-free interzeolite transformation**

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Table S1 The chemical composition of the parent USY and NaY.

Component (wt%)	NaY	USY
Na ₂ O	12.66	-
SiO ₂	65.42	73.70
Al ₂ O ₃	21.30	22.50
P ₂ O ₅	-	0.30
CaO	0.07	0.17
SO ₃	0.35	0.13
K ₂ O	0.04	-
Fe ₂ O ₃	0.14	0.14
SiO ₂ /Al ₂ O ₃ molar ratio	5.22	5.57

Table S2 Distributed situation of surface element on Cu-CHA_{USY} and Cu-CHA_{NaY}.

Sample	Cu ⁺ _{sur} (wt.%)	Cu ²⁺ _{sur} (wt.%)	Cu ⁺ /Si	Cu ²⁺ /Si
Cu-CHA _{USY}	1.28	1.16	0.0230	0.0209
Cu-CHA _{NaY}	1.55	0.48	0.0288	0.0088
Cu-CHA _{TEPA}	1.70	0.89	0.0236	0.0130
Cu-CHA _{TMA}	1.96	0.28	0.0277	0.0040

Table S3 Physicochemical properties of the different samples.

Sample	Cu (wt%)	S _{BET} (m ² /g)	S _{mic} (m ² /g)
Cu-CHA _{USY}	4.40	295	265
Cu-CHA _{TEPA}	4.62	488	453
Cu-CHA _{TMA}	4.46	434	427

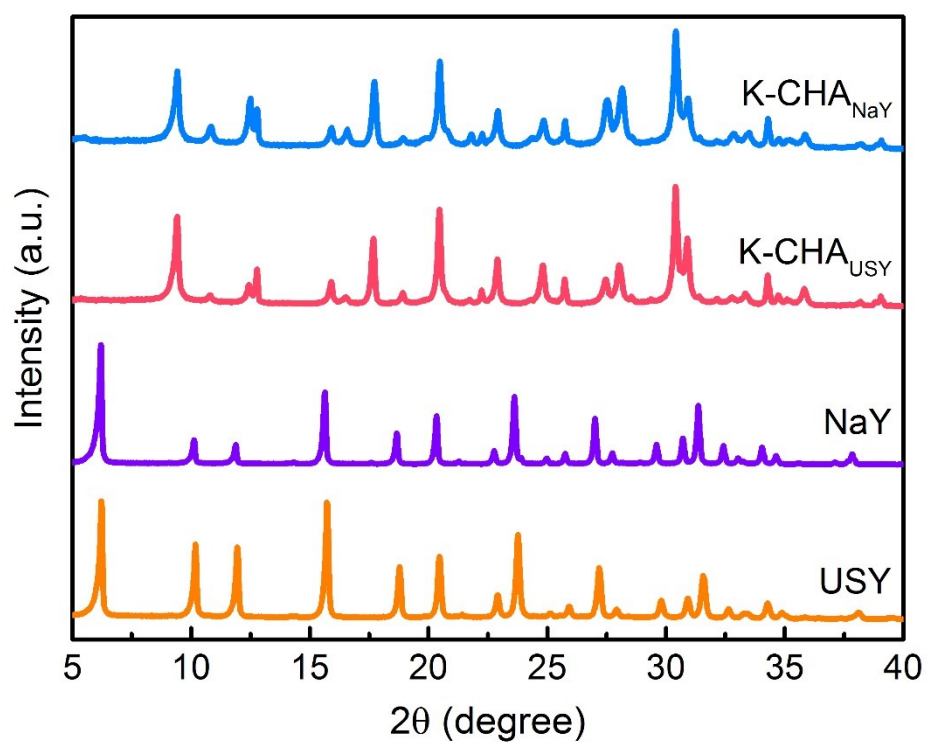


Fig. S1 XRD patterns of USY, NaY, K-CHA_{USY}, and K-CHA_{NaY}.

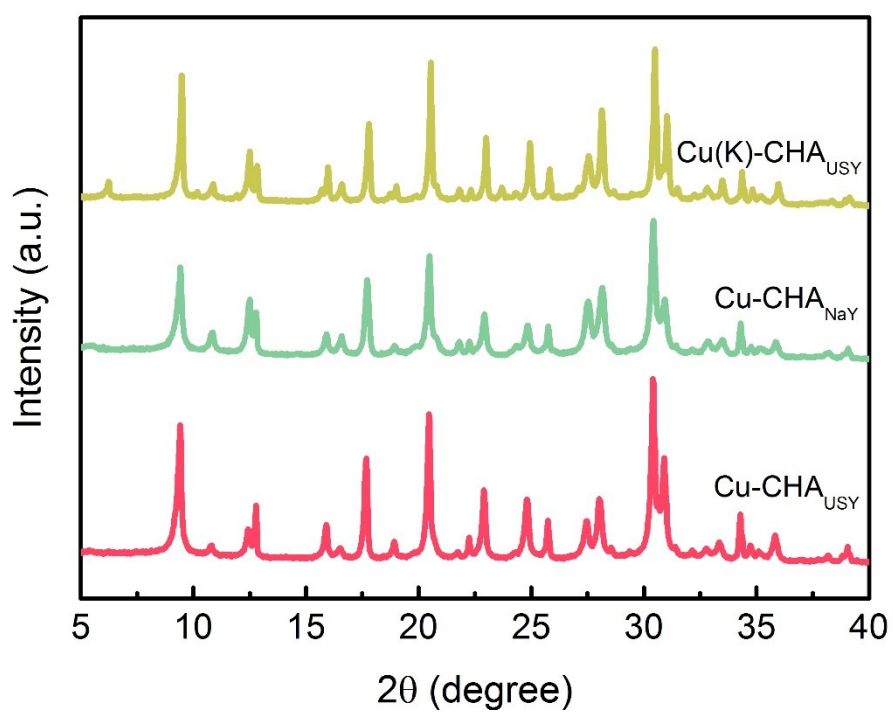


Fig. S2 XRD patterns of Cu-CHA_{USY}, Cu-CHA_{NaY}, and Cu(K)-CHA_{USY}.

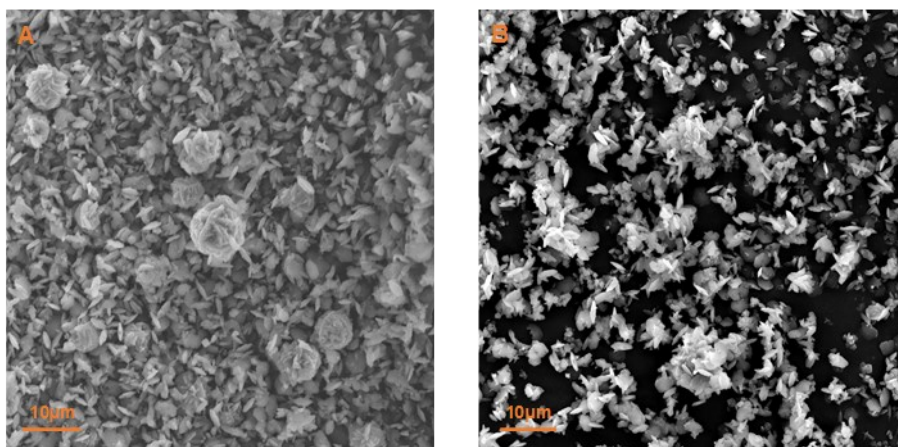


Fig. S3 SEM images of K-CHA_{USY} and K-CHA_{NaY}.

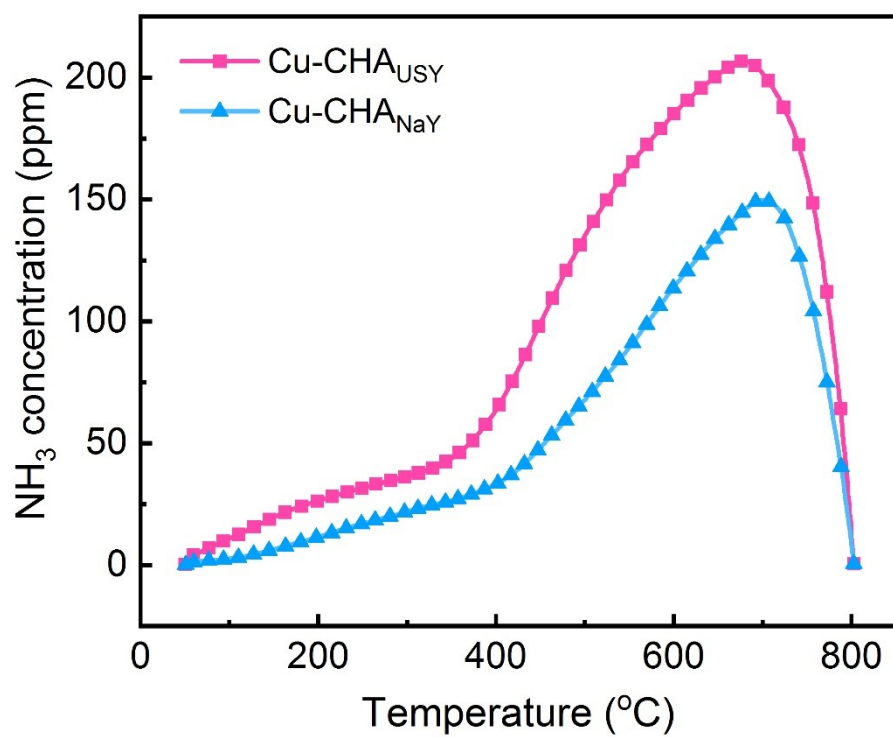


Fig. S4 NH₃-TPD profiles of Cu-CHA_{USY} and Cu-CHA_{NaY}.

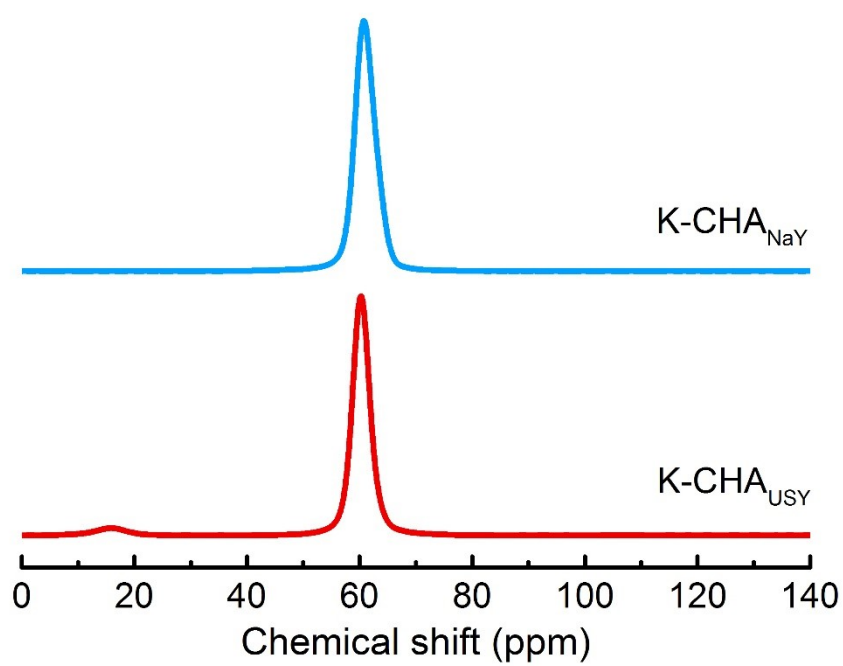


Fig. S5 ^{27}Al MAS NMR spectra of K-CHA_{NaY} and K-CHA_{USY}.

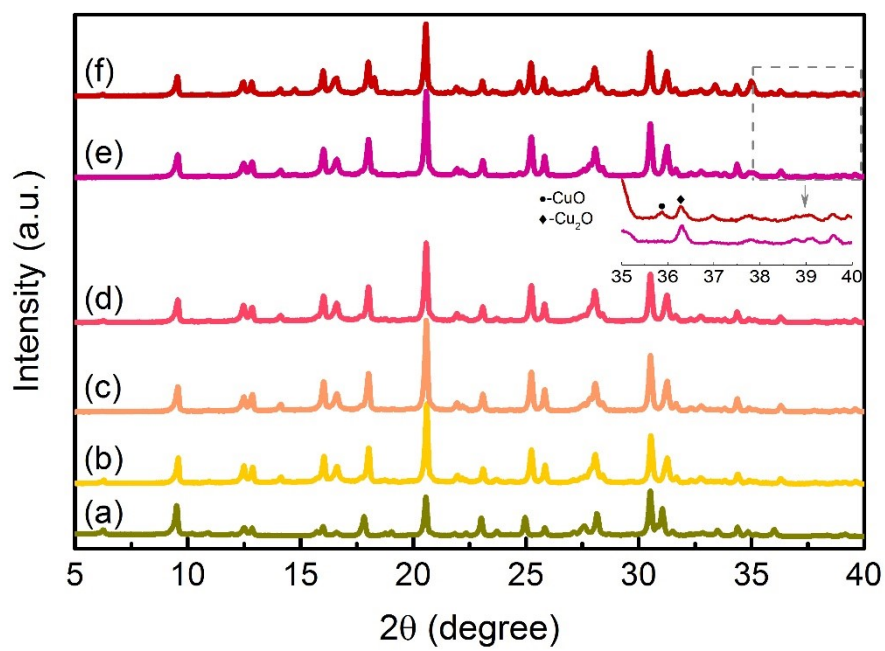


Fig. S6 XRD patterns of (a) K-CHA_{USY}, (b) Cu-CHA_{USY}-0.25, (c) Cu-CHA_{USY}-0.35, (d) Cu-CHA_{USY}-0.40, (e) Cu-CHA_{USY}-0.43, and (f) Cu-CHA_{USY}-0.47.

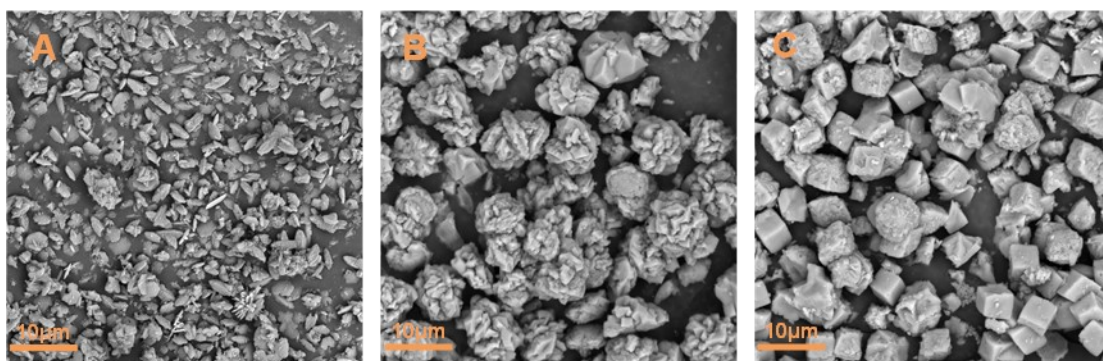


Fig. S7 SEM images of Cu-CHA_{USY}, Cu-CHA_{TEPA} and Cu-CHA_{TMA}.

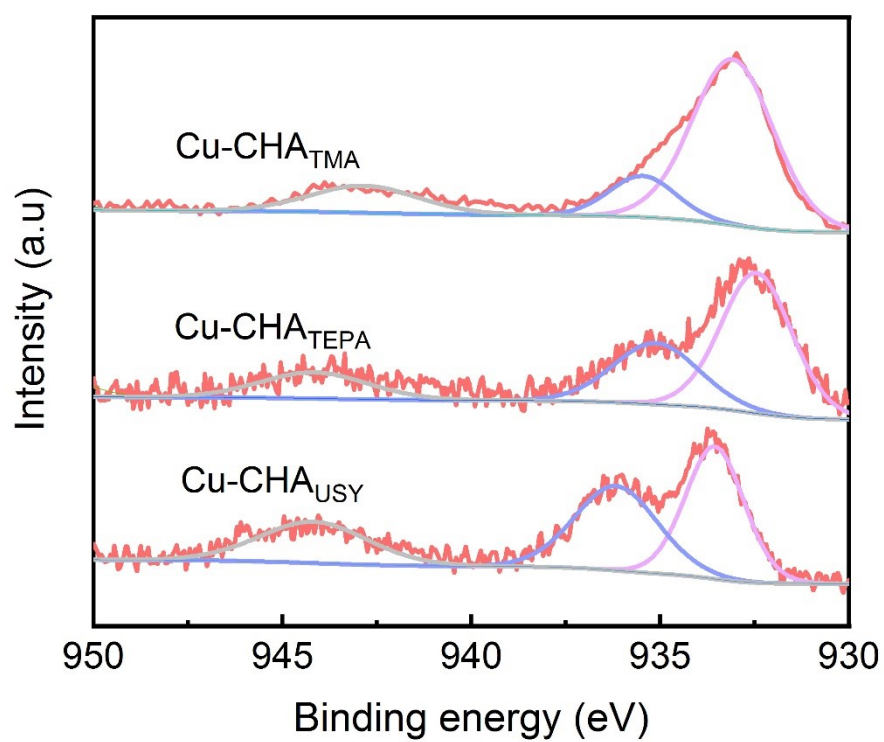


Fig. S8 XPS spectra of Cu-CHA_{USY}, Cu-CHA_{TEPA} and Cu-CHA_{TMA}.

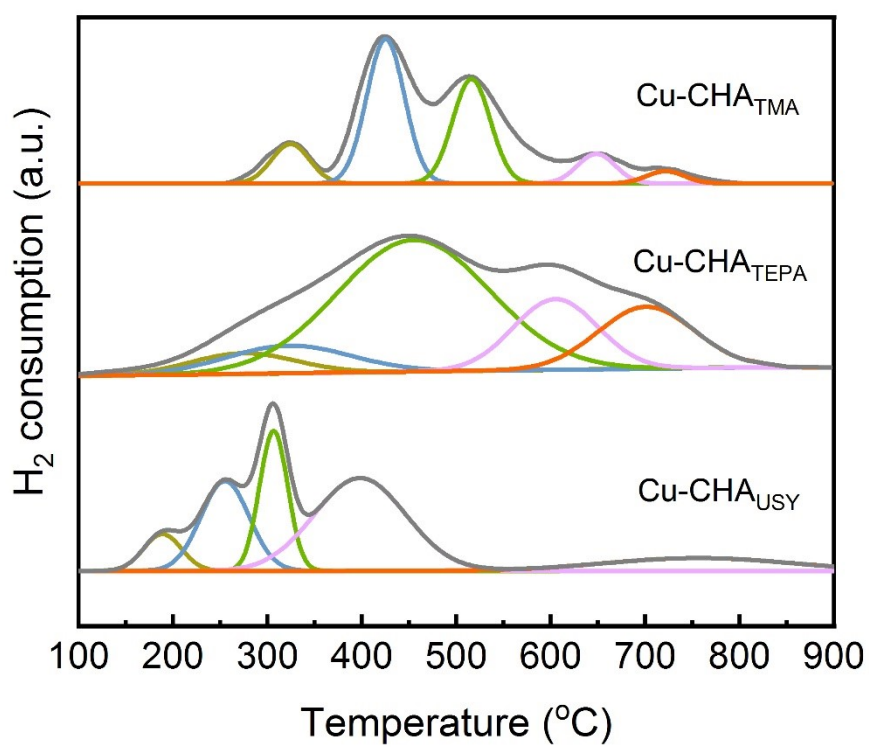


Fig. S9 H₂-TPR profiles of Cu-CHA_{USY}, CHA_{TEPA} and CHA_{TMA}.

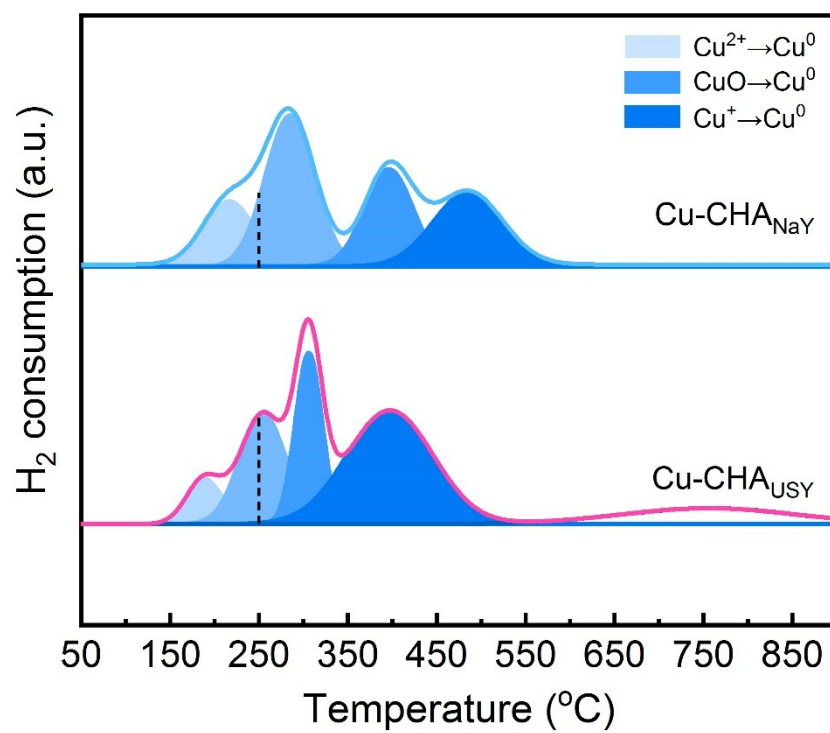


Fig. S10 H₂-TPR profiles of Cu-CHA_{USY} and Cu-CHA_{NaY}.