Supporting Information for

Influence of alkali metal cations on the local structure of amorphous precursors during zeolite crystallization

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Supporting fig

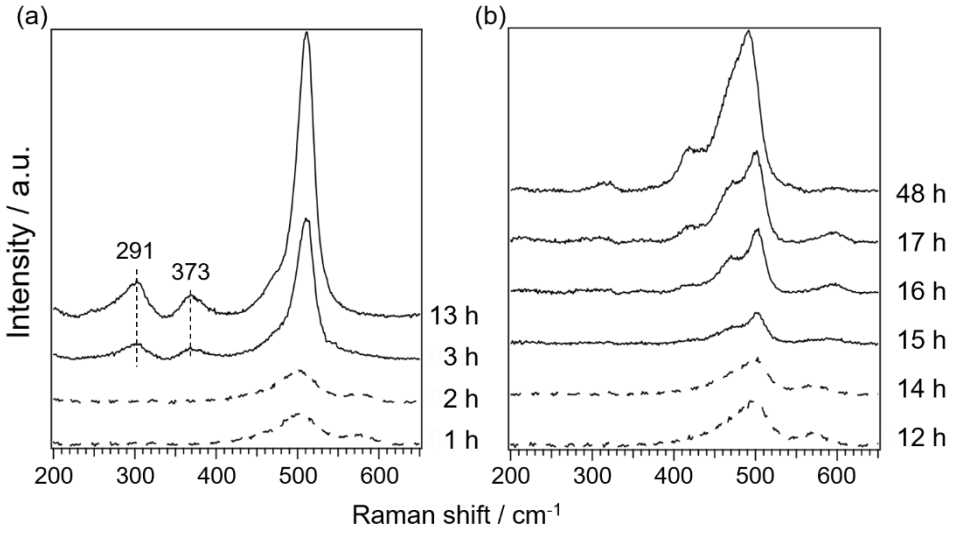


Fig. S1 Raman spectra of samples synthesized using (a): Na^+, (b): K^+. Dash and solid lines represent amorphous and crystalline species, respectively.

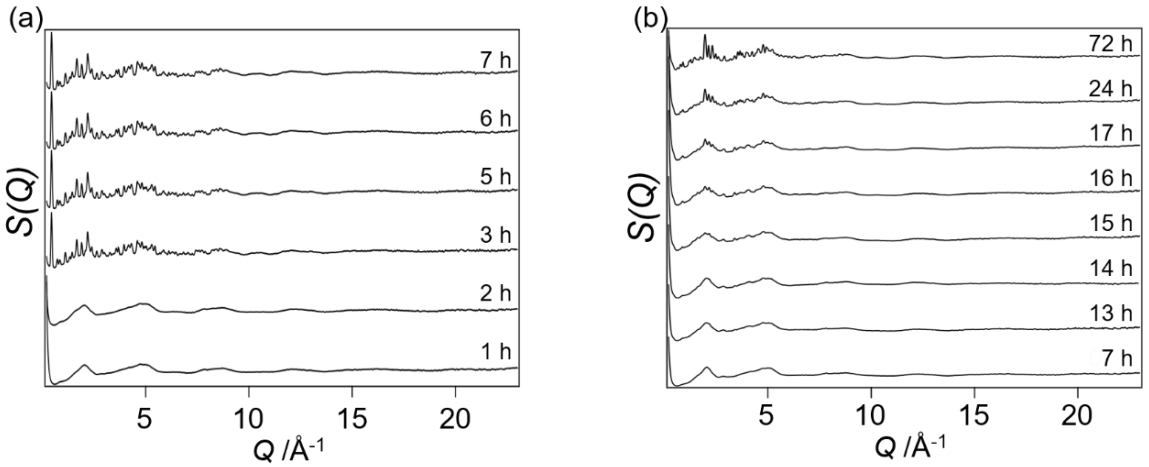


Fig. S2 Structure factor $S(Q)$ of solid samples obtained with (a) Na^+ and (b) K^+.

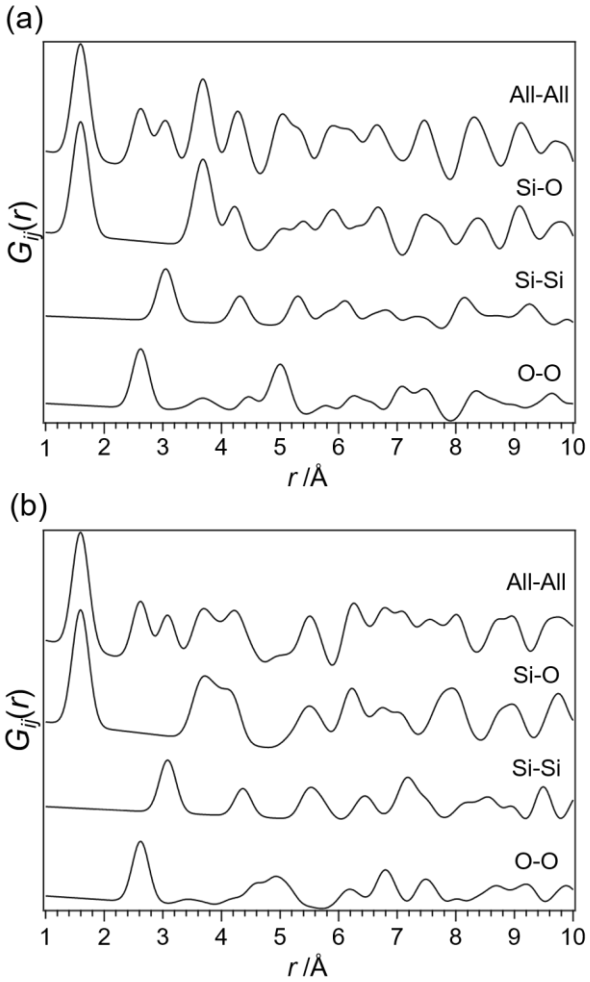


Fig. S3 Partial reduced PDFs. $G_{ij}(r)$, of (a) FAU- and (b) MER-type zeolite calculated by *PDFgui*[1].

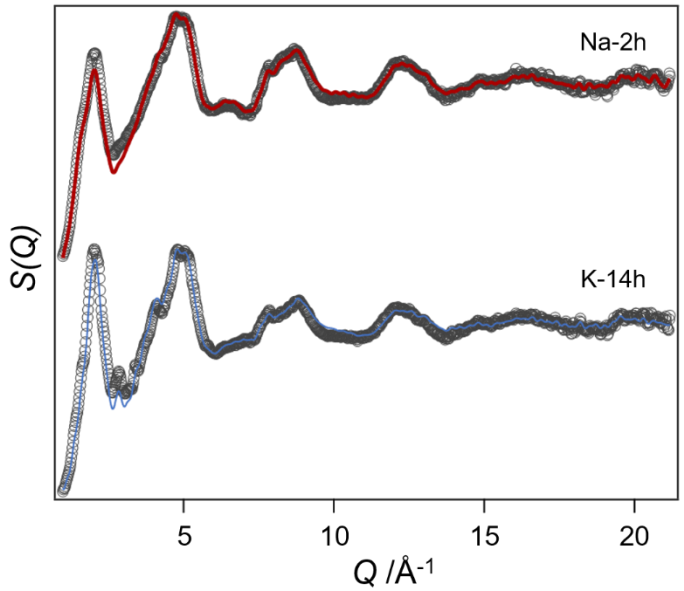


Fig. S4 Comparison between the experimental *S*(*Q*) (○) and the results of RMC modeling (–).

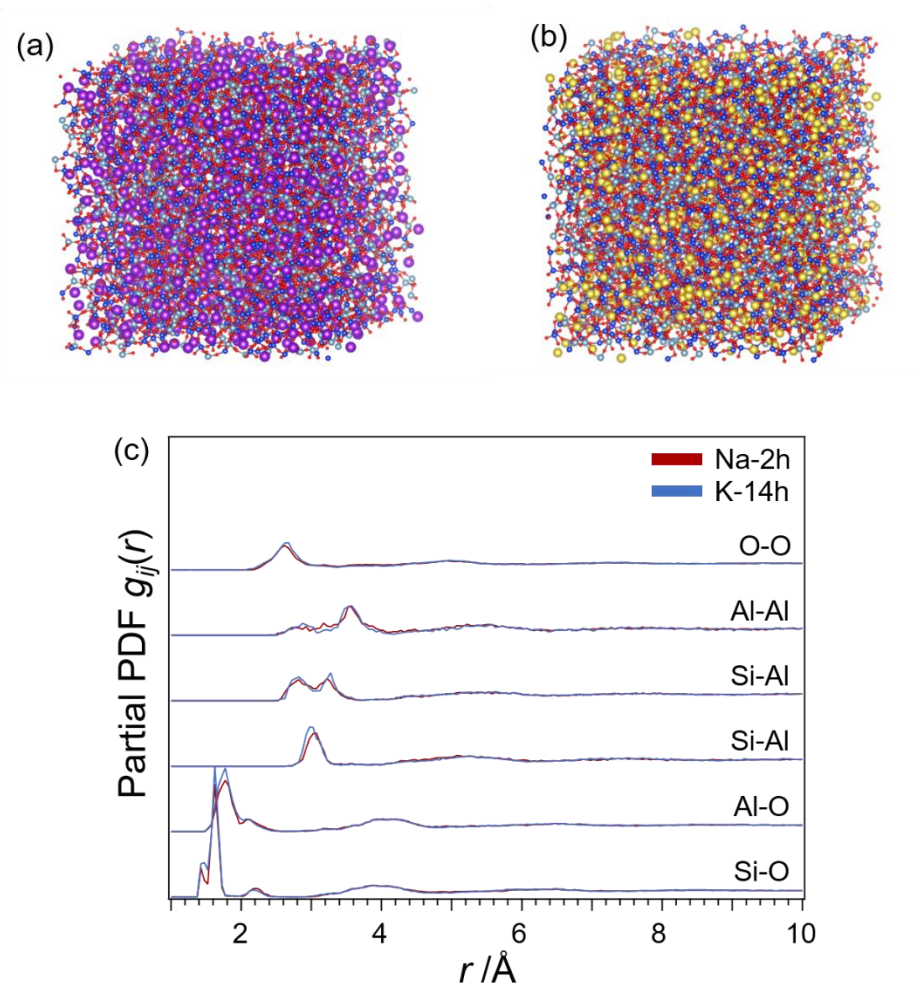


Fig. S5 Structures of (a) K-14h and (b) K-14h obtained by RMC modelling. (c)Comparison of partial PDF, $g_{ij}(r)$, of Na-2h and K-14h.

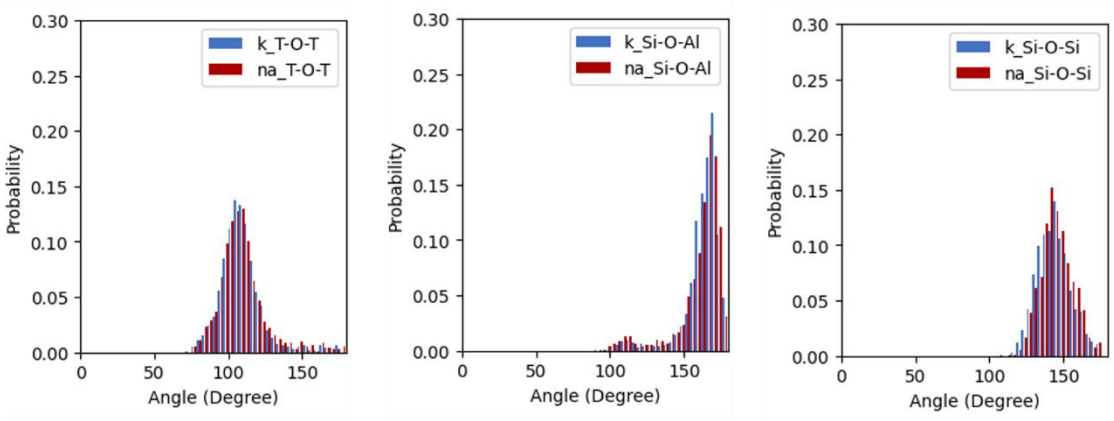


Fig. S6 Distributions of T–O–T and O–T–O angle.

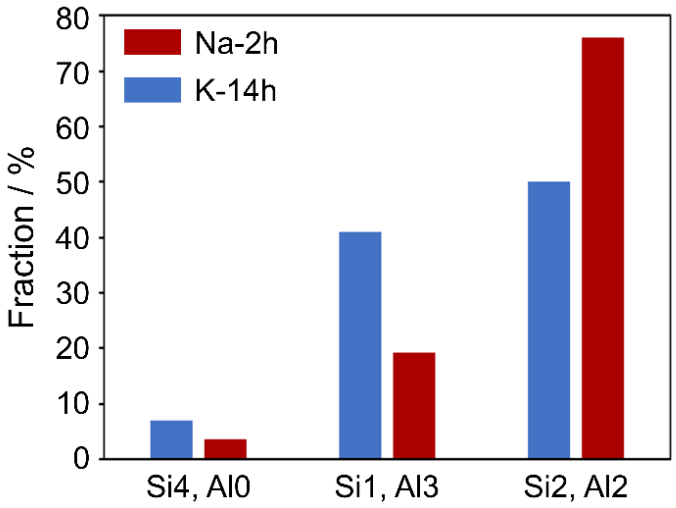


Fig. S7 Distributions of Al atoms in the 4Rs of Na-2h and K-14h.

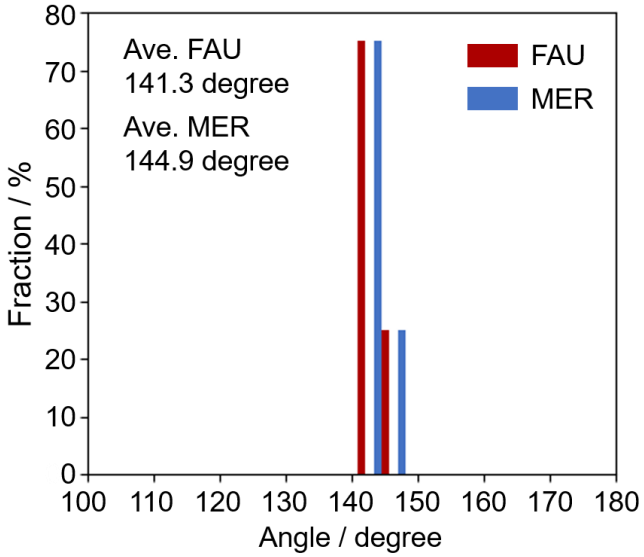


Fig. S8 Distributions of T–O–T angles in FAU- and MER- type zeolites.

Table S1 Molar compositions and solid yields of samples synthesized at 100 °C using Na^+ and K^+.

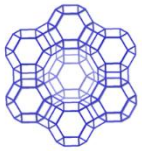
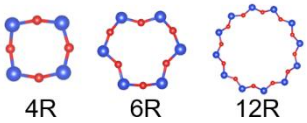
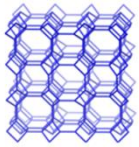
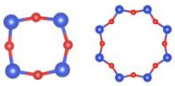
(a) Samples synthesized using Na^+

Synthesis period [h]	Si/Al [-]	Na/Al [-]	Yield [%]
0	1.6	1.20	35
1	1.7	0.93	32
2	1.7	0.90	35
3	1.7	0.84	35
5	1.7	0.94	38
6	1.7	0.92	37
7	1.7	0.87	37
13	1.7	0.88	40
14	1.7	0.90	41

(b) Samples synthesized using K^+

Synthesis period [h]	Si/Al [-]	K/Al [-]	Yield [%]
0	1.8	1.10	27
12	1.8	0.89	32
13	1.8	0.89	32
14	1.8	0.88	34
15	1.8	0.91	37
16	1.8	0.90	41
17	1.8	0.90	42
24	1.8	0.92	45
48	1.8	0.90	44
72	1.9	0.93	45

Table S2 Ring structures and composite building units of MER- and FAU- type zeolites.

Zeolite	Framework	Ring	Composite Building Unit (CBU)
FAU		 4R 6R 12R	 d8r pau
MER		 4R 8R : T (Si or Al) : O	 d6r sod

Reference

1 C. L. Farrow, P. Juhas, J. W. Liu, D. Bryndin, E. S. Boin, J. Bloch, T. Proffen and S. J. L. Billinge, PDFfit2 and PDFgui: Computer programs for studying nanostructure in crystals, *J. Phys. Condens. Matter*