Electronic Supplementary Information

Facile activation of lithium slag for the hydrothermal synthesis of zeolite A with commercial quality and high removal efficiency for the isotope of radioactive 90Sr

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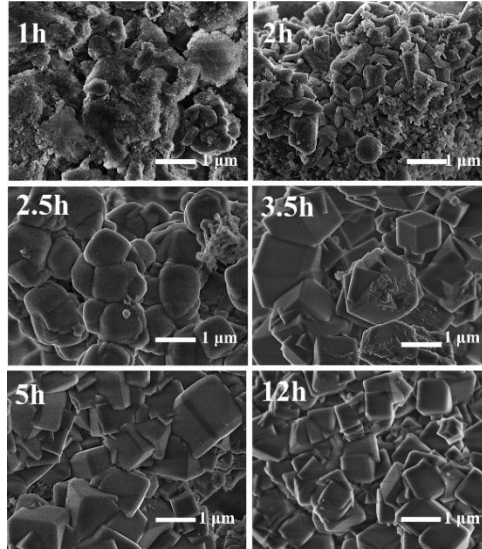
[#] B. W. and L. J. contributed equally to this work.

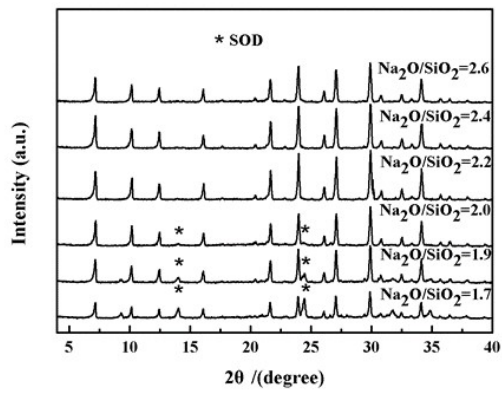**Fig. S1** SEM images of zeolite A with various crystallization times

Fig. S2 XRD patterns of zeolite A synthesized with various Na_2O/SiO_2 ratios

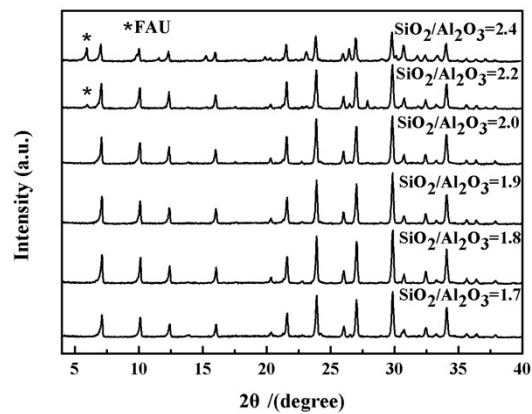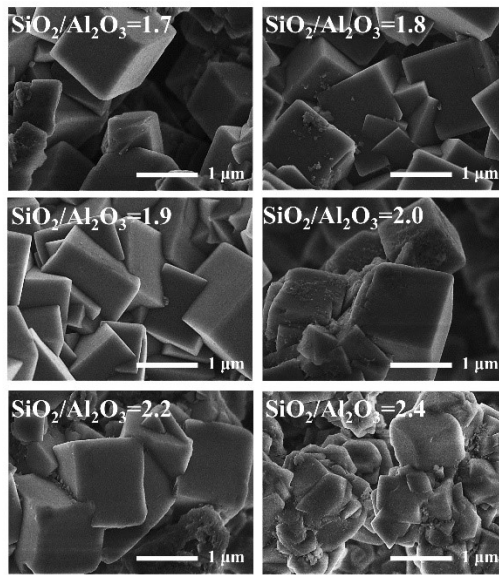**Fig. S3** XRD patterns of zeolite A synthesized with various SiO_2/Al_2O_3 ratios

Fig. S4 SEM images of zeolite A synthesized with various SiO_2/Al_2O_3 ratios

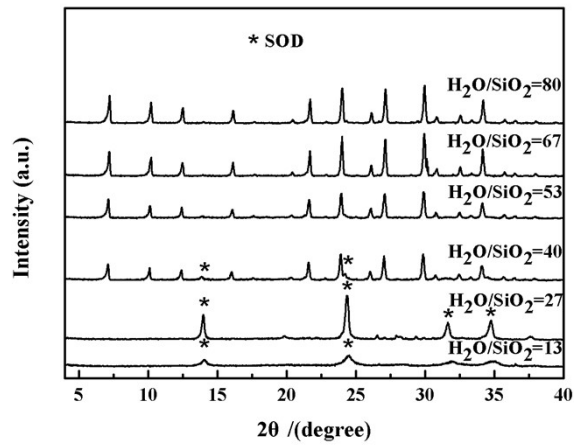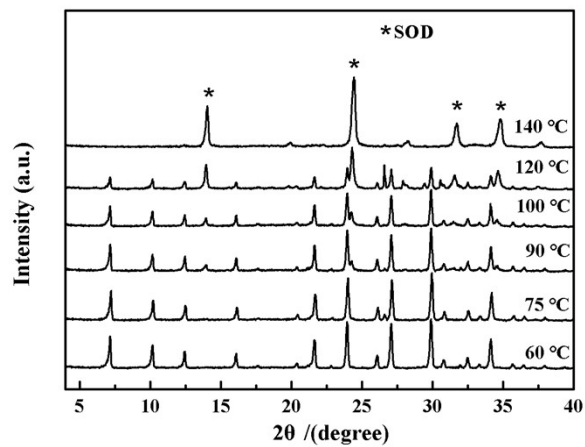**Fig. S5** XRD patterns of zeolite A synthesized with various H_2O/SiO_2 ratios

Fig. S6 XRD patterns of zeolite A synthesized with temperatures

Table S1 Lithium slag composition determined by XRF

Component	wt. %
SiO_2	69.42
Al_2O_3	24.99
Fe_2O_3	1.37
K_2O	0.92
CaO	0.89
Na_2O	0.84
MgO	0.58
MnO_2	0.15

Table S2 Kinetic parameters of Sr^{2+} sorption on Zeolite A

Pseudo-first-order model			Pseudo-second-order model		
R^2	$Q_e (mg \cdot g^{-1})$	$k_1 (min^{-1})$	R^2	$Q_e (mg \cdot g^{-1})$	$k_2 (g \cdot mg^{-1} \cdot min^{-1})$
0.902	19.29	0.42	1	115.47	0.034

Table S3 Langmuir and Freundlich isotherm parameters of Sr^{2+} sorption on zeolite A synthesized from lithium slag

Temp. (°C)	Langmuir			Freundlich		
	R^2	$Q_{max} (mg \cdot g^{-1})$	$b (L \cdot mg^{-1})$	R^2	n	$k_F (L \cdot mg^{-1})$
25	0.989	246.9	0.395	0.528	2.72	64.69