Supporting Information

Preparation of Zeolite NaA Membranes on Macroporous Alumina Supports by Secondary Growth of Gel Layers

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Table S1. Effects of pretreatment temperature of the hydrogel on properties of the membranes synthesized on Al_2O_3 supports at 100 ^oC for 4 h.

Membrane	Pretreatment temperature (^oC)	Pretreatment time (h)	Gel loading (mg/cm^2)	Membrane weight (mg/cm^2)	α	Flux ($kg/m^2 \cdot h$)
M2.2-30-144	30	144	0.66	2.23	>10000	3.04
M2.2-80-4.25	80	4.25	0.79	2.03	1972	3.26

*Hydrogel composition: $2.2Na_2O:2SiO_2:Al_2O_3:150H_2O$

Table S2. Effects of pretreatment temperature of the hydrogel on properties of the membranes synthesized on Al_2O_3 supports at 100 ^oC for 3 h.

Membrane	Pretreatment temperature (^oC)	Pretreat. time (h)	Gel loading (mg/cm^2)	Membrane Weight (mg/cm^2)	α	Flux ($kg/m^2 \cdot h$)
M2.2-30-144a	30	144	0.84	1.67	8769	3.35
M2.2-50-18a	50	18	0.93	1.52	2368	3.54

*Hydrogel composition: $2.2Na_2O:2SiO_2:Al_2O_3:150H_2O$

Table S3. Effects of gel layer loading on properties of the membranes synthesized on Al_2O_3 supports at 100 ^oC for 4 h.

Membrane	Gel loading (mg/cm^2)	Membrane weight (mg/cm^2)	α	Flux ($kg/m^2 \cdot h$)
M2.2-50-24a	0.34	2.02	1667	3.31
M2.2-50-24b	0.52	2.21	4880	3.10
M2.2-50-24c	0.78	1.86	>10000	3.26
M2.2-50-24d	0.99	2.02	5392	3.30
M2.2-50-24e	1.15	2.49	1440	3.57

*Hydrogel composition: $2.2Na_2O:2SiO_2:Al_2O_3:150H_2O$, pretreatment temperature: 50 ^oC, pretreatment time: 24 h.

Table S4. Effects of Na_2O/Al_2O_3 ratio on properties of the membranes synthesized on Al_2O_3 supports at 100 ^oC for 4 h.

Membrane	x	Pretreatment time (h)	Gel loading (mg/cm^2)	Membrane weight (mg/cm^2)	α	Flux ($kg/m^2 \cdot h$)
M2.2-50-18	2.2	18	0.91	1.89	>10000	3.17
M3.4-50-12	3.4	12	1.10	2.70	380	2.90
M7.5-50-5	7.5	5	2.26	5.50	—	—

*Hydrogel composition: $xNa_2O:2SiO_2:Al_2O_3:150H_2O$, hydrogel pretreatment temperature: 50 ^oC.