Supplemental material

Title: The effect of silicate ions on the separation of lithium from geothermal fluid

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Table S1. Purity and suppliers of the reagents used to synthesize geothermal water

Product	Purity	Supplier	Used amount for 1L synthesized geothermal water
LiBr	54 wt% in H_2O	Sigma Aldrich	0.34 mL
LiCl	95-100 %	Merck	0.79 g
$CaCl_2 \cdot 2H_2O$	99 %	Sigma Aldrich	25.24 g
$MgCl_2$	99 %	Yakuri Pure Chemicals	0.49 g
KCl	99.5 %	Waku Pure Chemicals	6.10 g
NaCl	99 %	Daejung	67.59 g
$NaHCO_3$	99.5 %	Sigma Aldrich	0.20 g
$FeCl_2 \cdot 4H_2O$	≥99.0 %	Kanto chemical	0.25 g
$BaCl_2 \cdot 2H_2O$	99 %	Kanto chemical	0.03 g
$SrCl_2 \cdot 6H_2O$	98 %	Duksan Pure Chemicals	1.21 g
HCl	37 %	Merck	1.76 mL
H_2SO_4	60 %	Daejung	0.21 mL
$Na_2O(SiO_2)x \cdot xH_2O$ (Sodium silicate solution)	Na_2O 10.6 % SiO_2 26.5 %	Sigma Aldrich	Sample A-0.0 mL Sample B-0.40 mL Sample C-0.95 mL

Table S2. pH change of each extraction stage

Sample No.	x 50	1-1	1-2	1-3	1-4	2-1	2-2	2-3	2-4
Sample A	5.76	1.95	1.81	1.82	1.83	1.92	1.94	1.83	1.81
Sample B	5.64	1.99	2.15	2.08	2.05	1.96	1.98	2.04	2.01
Sample C	5.71	2.01	2.07	1.97	1.96	2.00	1.96	2.08	2.12

Figure S1. Extraction efficiency (%) of various cations in not diluted geothermal water

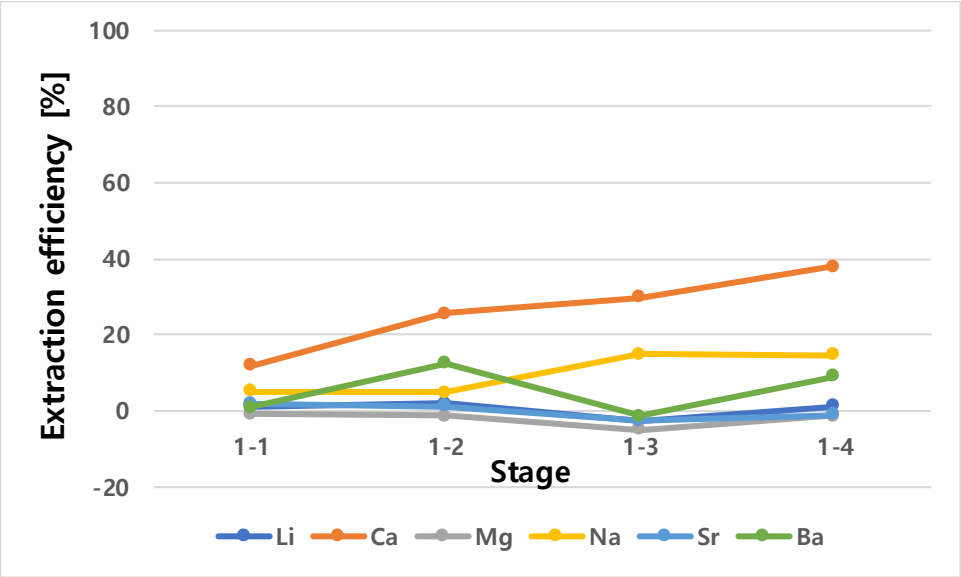

Figure S2. Extraction efficiency (%) of various cations in 25× diluted geothermal water

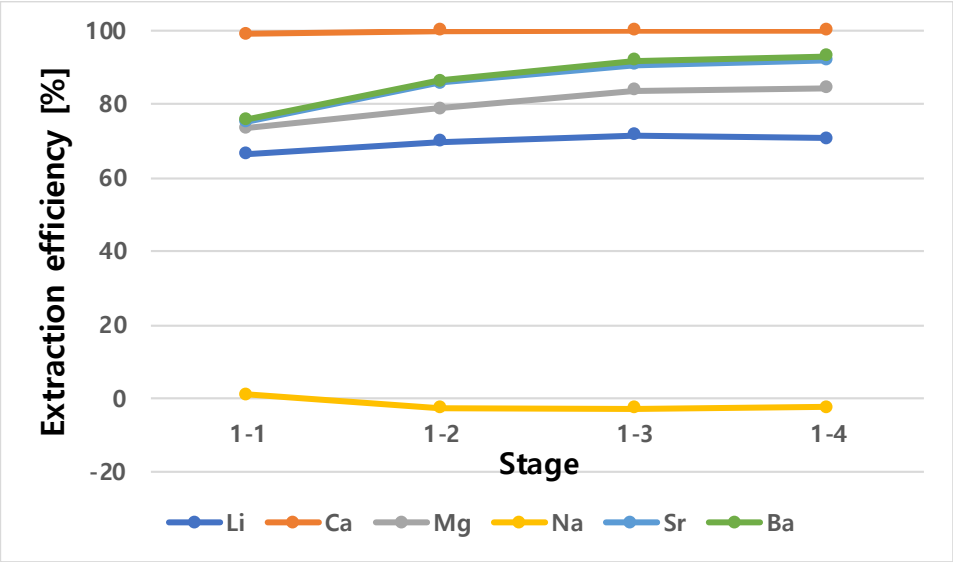

Figure S3. Extraction efficiency (%) of various cations in 50× diluted geothermal water

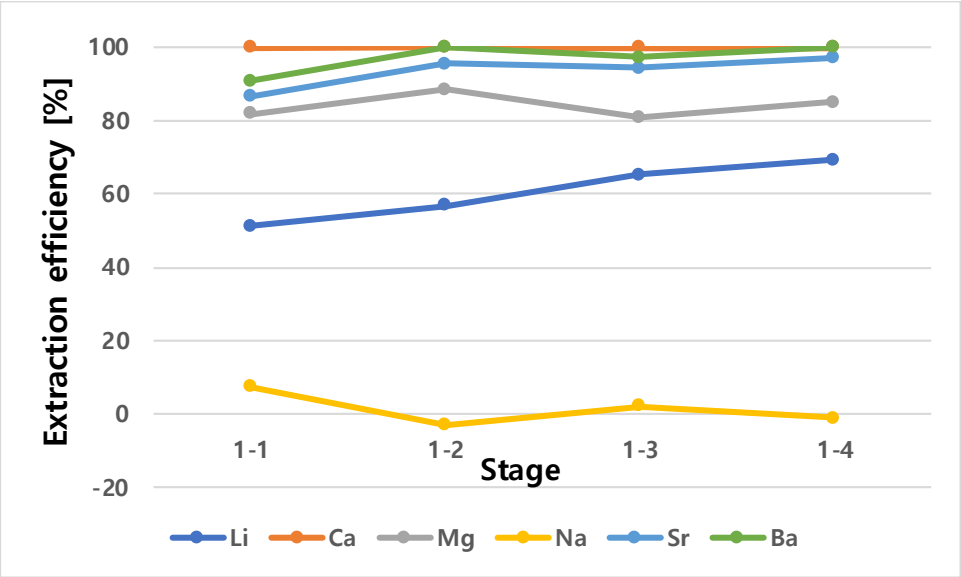

Figure S4. Dissolved silica concentrations in solution A, B, and C

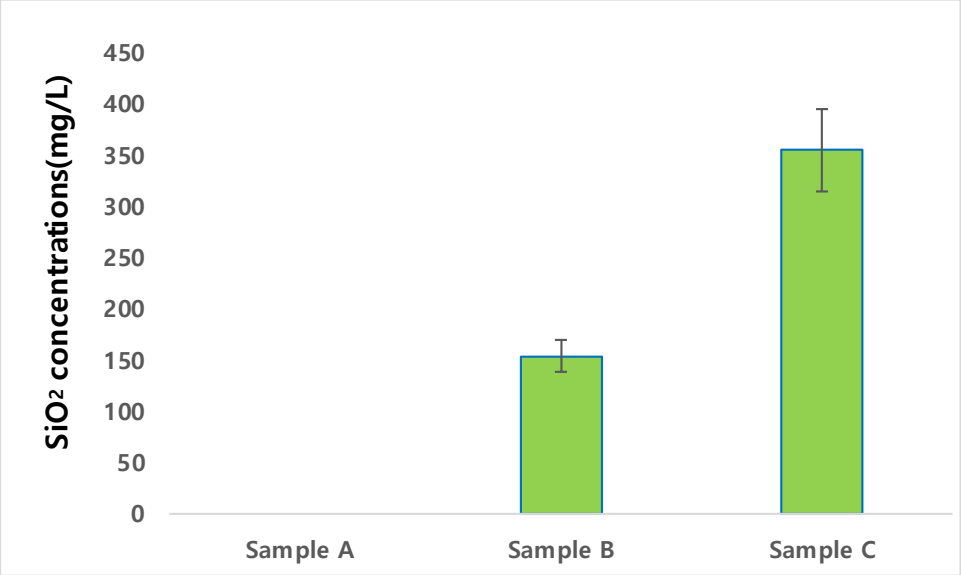

Figure S5. Repetitive extraction results of Na^+ in the geothermal water containing silicate ions 0, 150, 350 ppm with error bars.

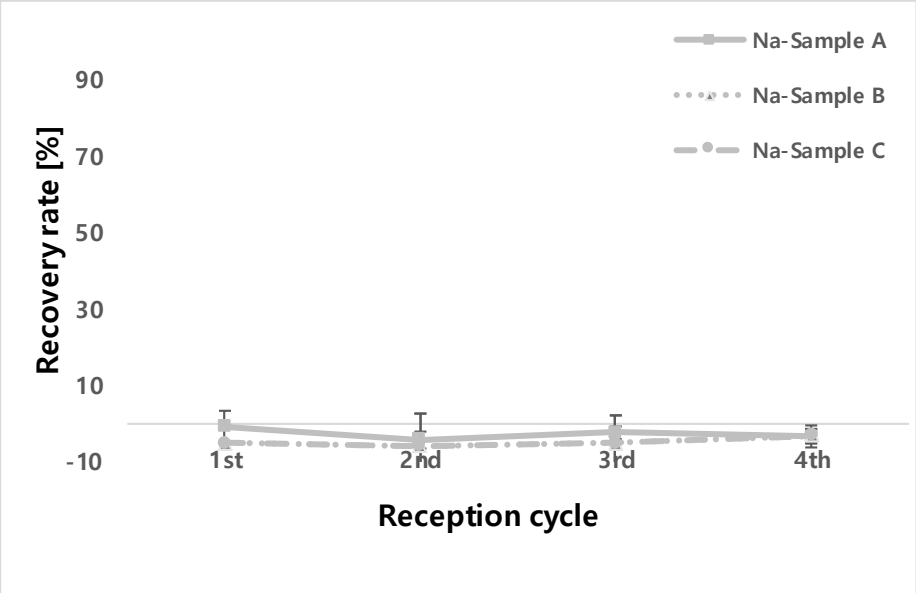

Figure S6. Repetitive extraction results of Li^+ in the geothermal water containing silicate ions 0, 150, 350 ppm with error bars.