Supporting Information

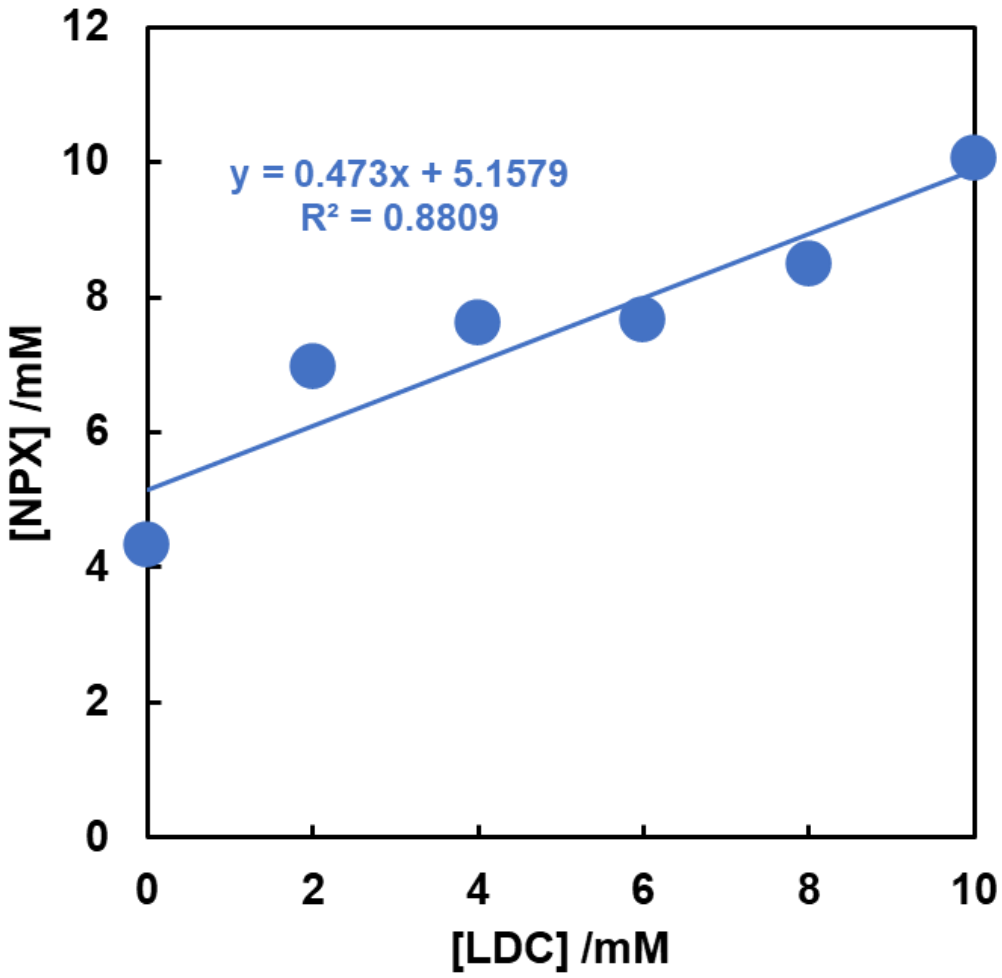


Figure S1. Phase solubility diagram of NPX in the presence of LDC.

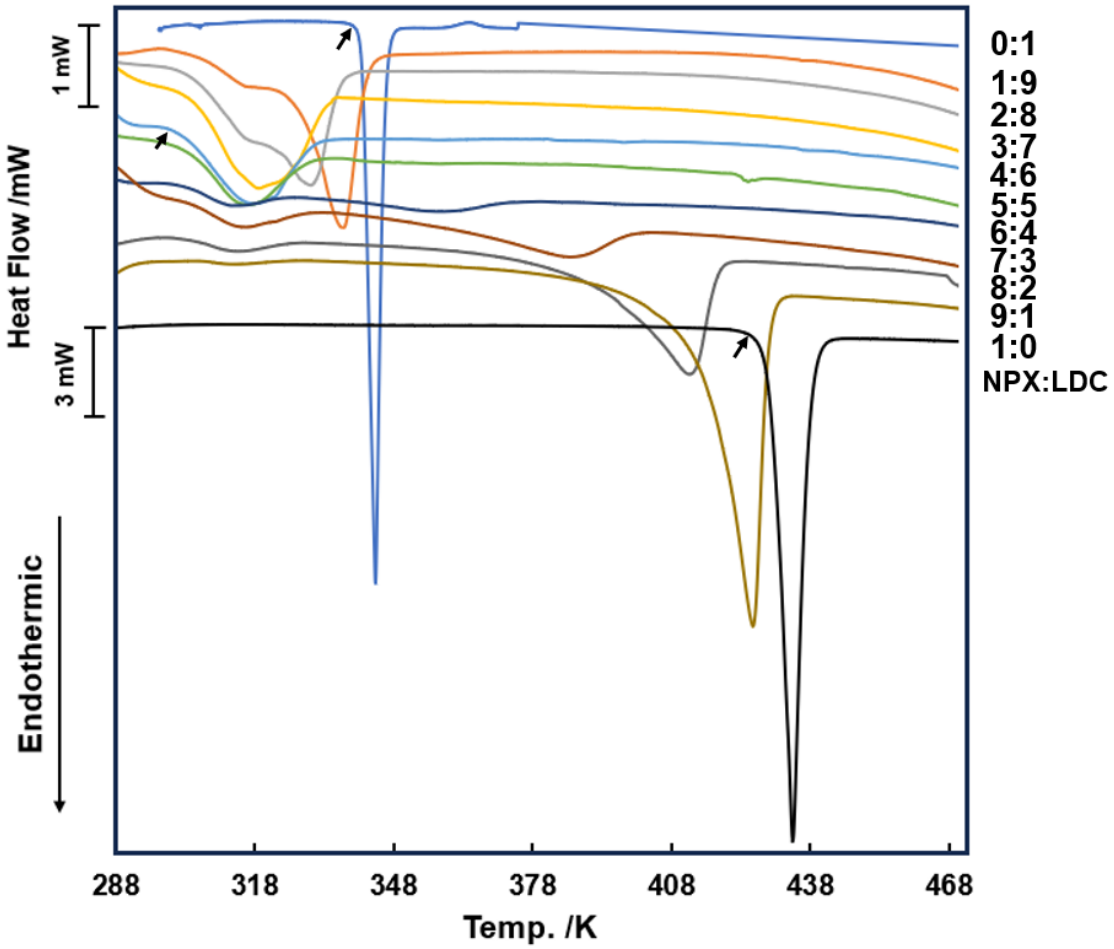


Figure. S2(a) DSC thermograms of NPX/LDC mixtures with various ratios at a heating rate of 10.0 K min^{-1}.

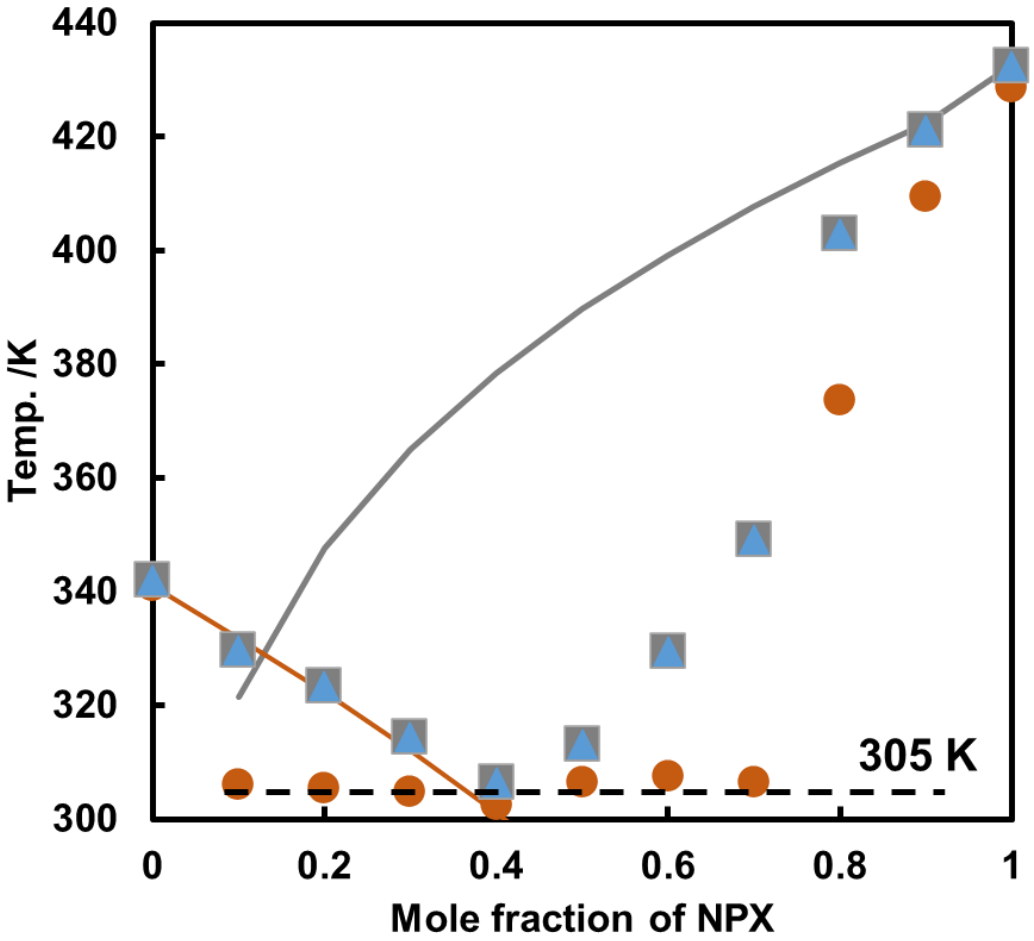


Figure S2 (b) Binary solid-liquid phase diagram of melting points of NPX/LDC system. The phase transition temperatures were calculated from the obtained Gaussians. The liquidus line was drawn based on the Schröder-Van Laar equation. The intersection of the liquidus lines determined by the SVL model for the NPX/LDC mixture was 304 K, and the NPX mole fraction was 0.13. The eutectic point (305 K) obtained from peak separation in the DSC thermogram did not match the eutectic point (329 K) of the SVL model.

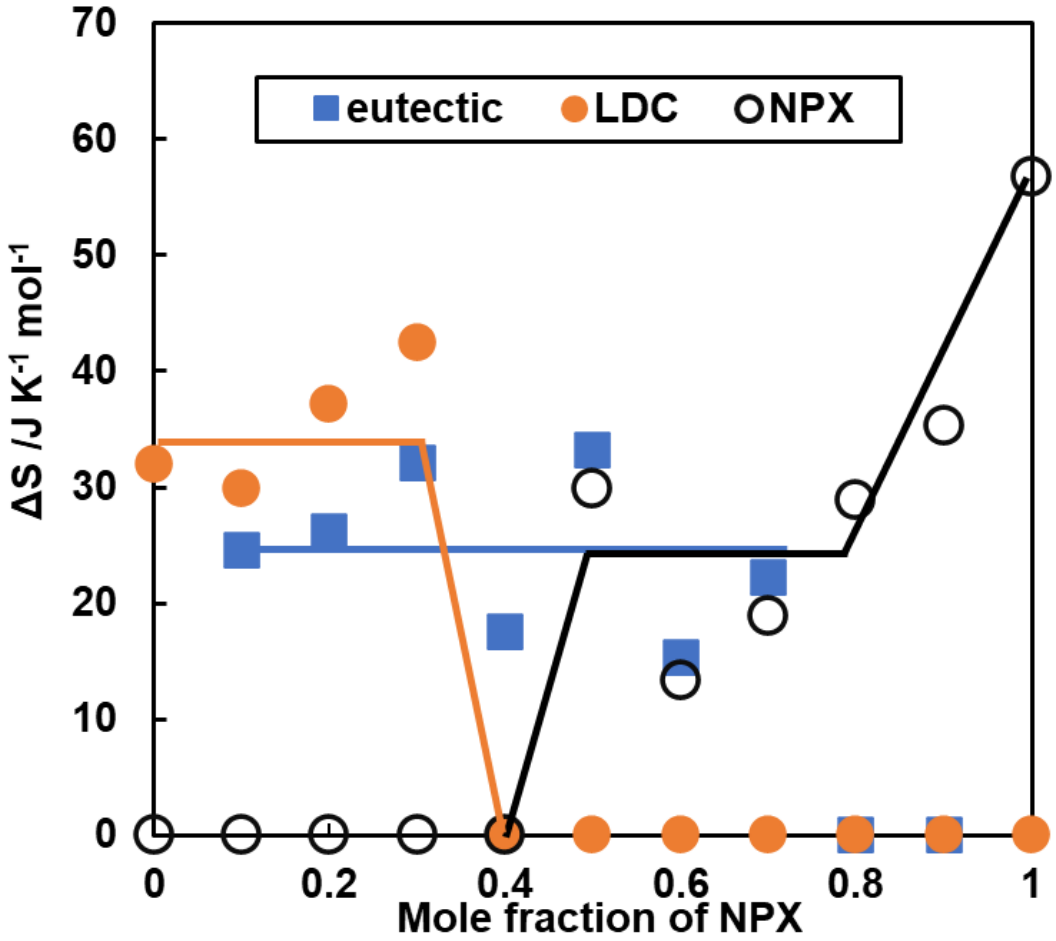


Figure S3. Entropy of fusion in NPX and LDC upon heating of the NPX/LDC mixtures. $\Delta_{fus}S^{LDC}$, $\Delta_{fus}S^{NPX}$, and $\Delta_{fus}S^{eutec}$ are shown by orange closed circles, black open circles, and blue closed squares. These values were determined based on the assumption that the eutectic mixture consisted of NPX and LDC at a molar ratio of 4:6.

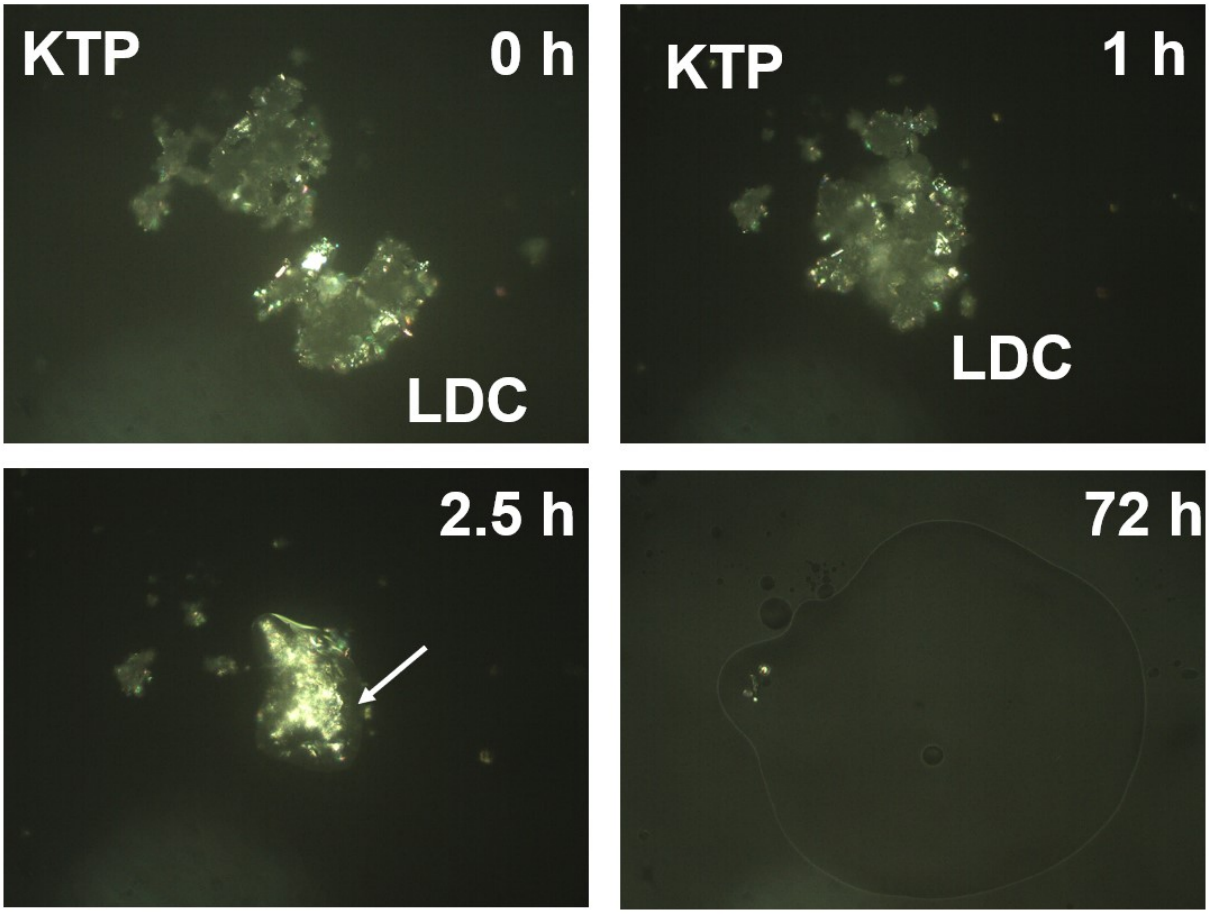


Figure S4. Images of KTP and LDC crystals obtained using a polarizing microscope at room temperature. At 2.5 h, molten LDC was observed surrounding the KTP crystal.

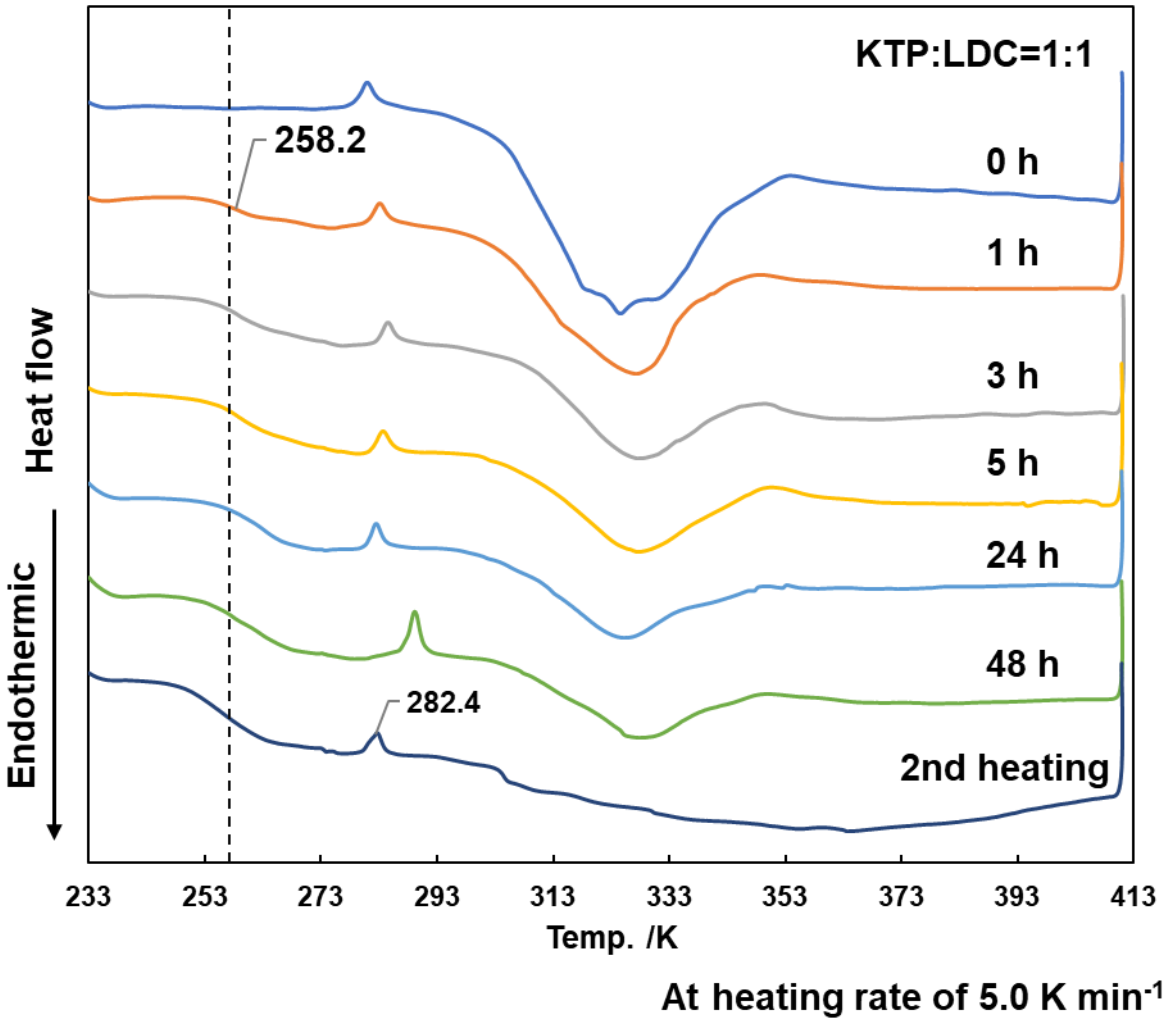


Figure S5. Thermograms of KTP:LDC=1:1 after mixing and annealing at room temperature for a certain period of time.

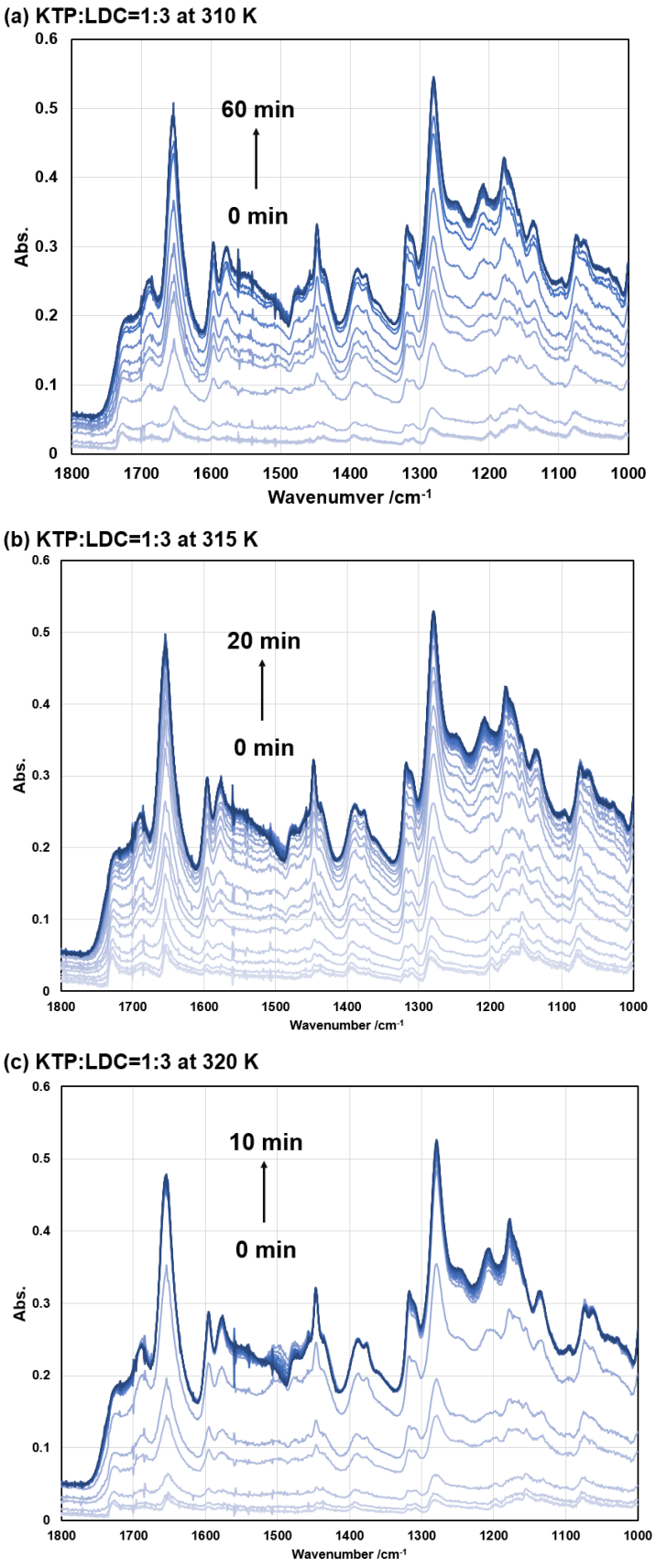
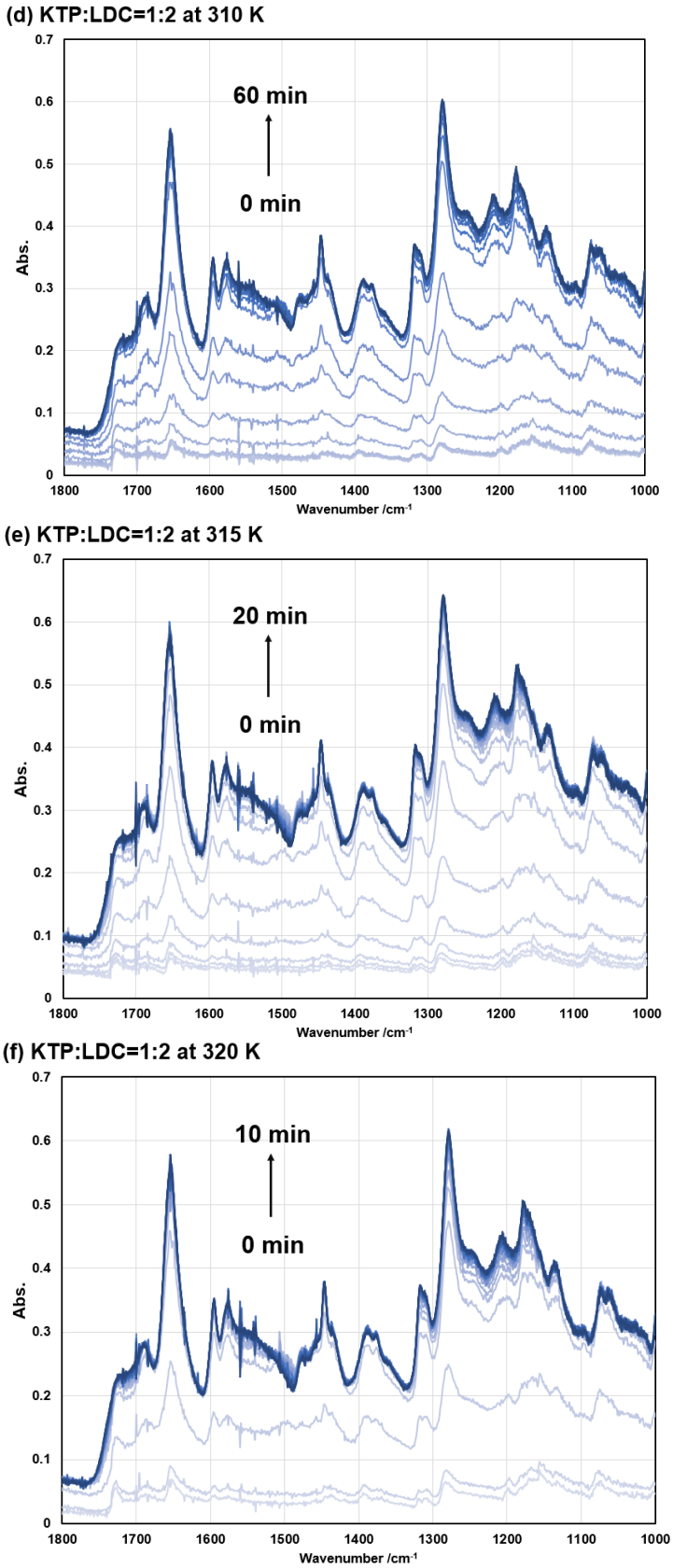
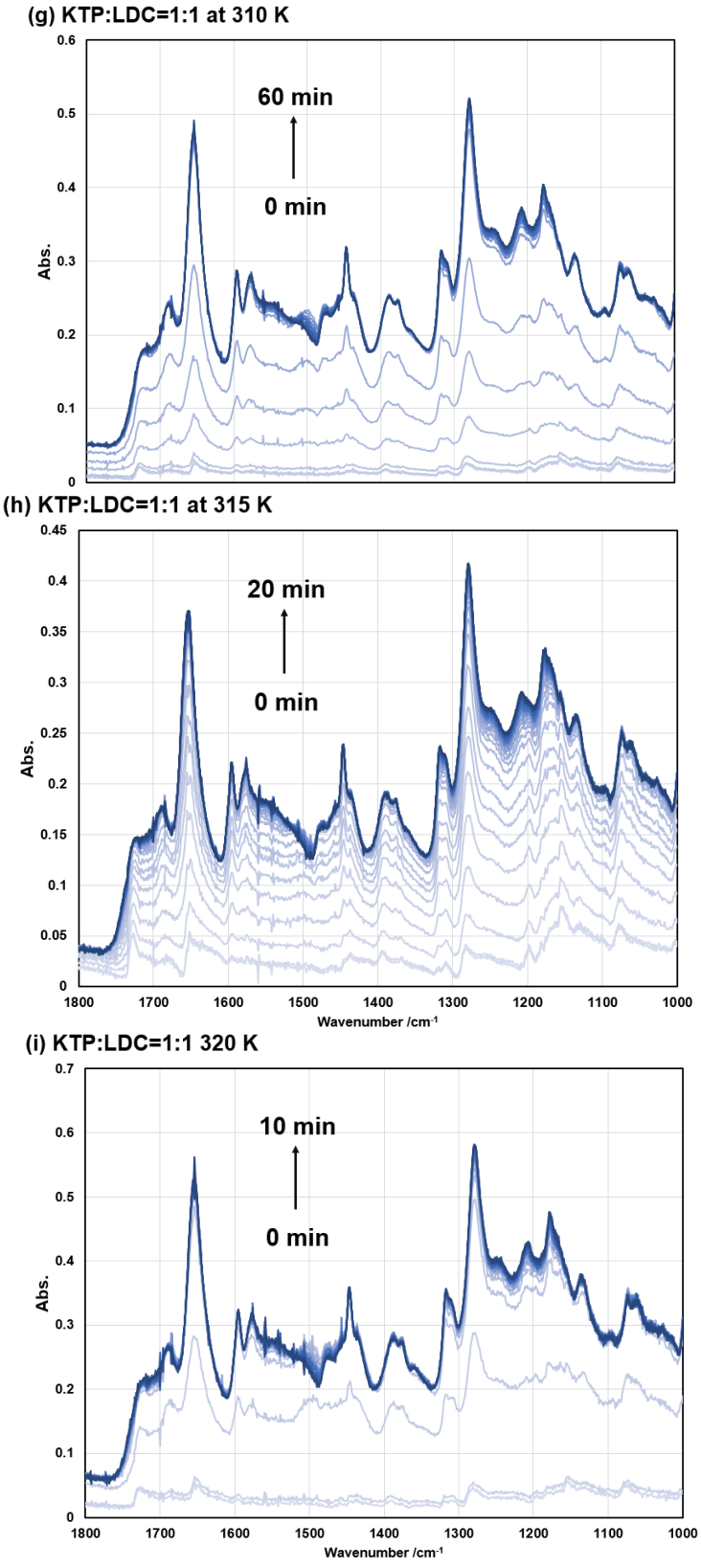


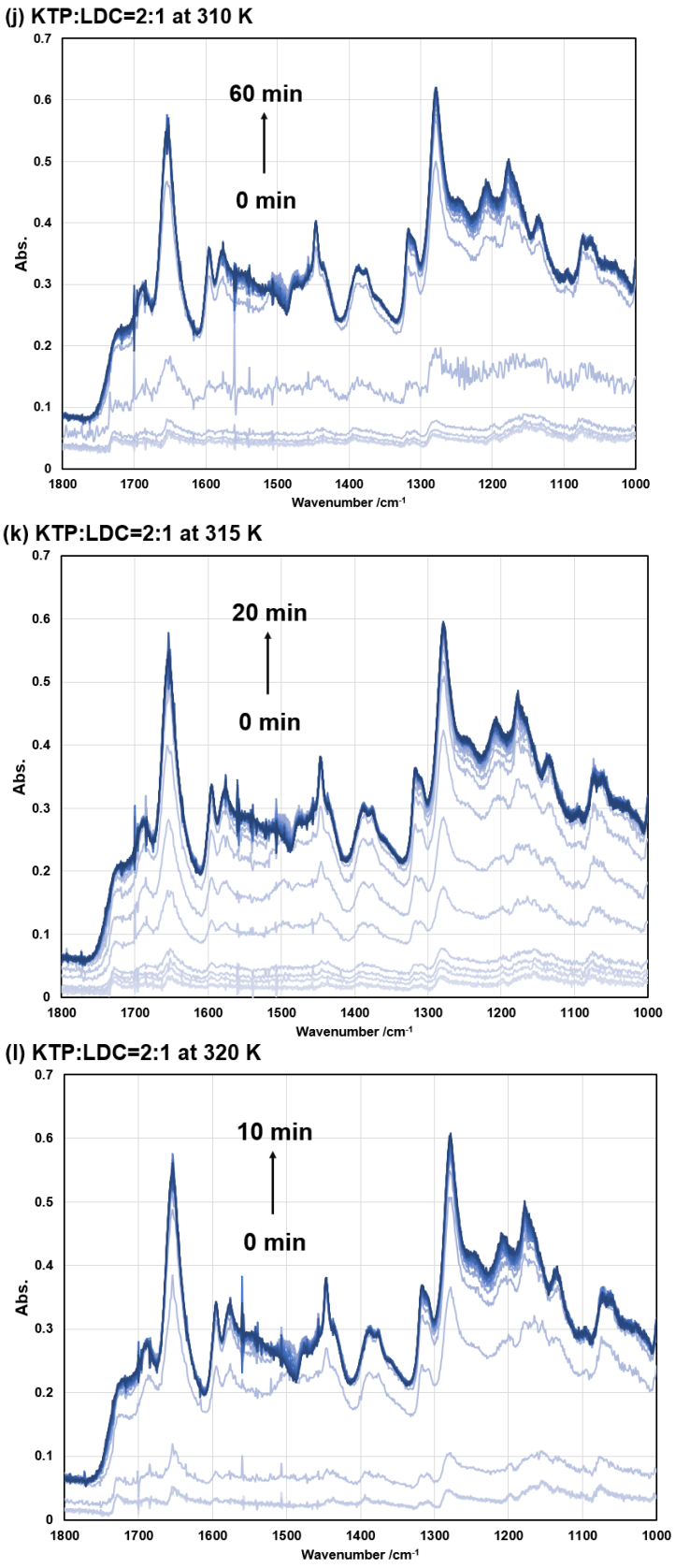
Figure S6 Time evolution of FTIR spectra of KTP:LDC=1:3 at 310 K (a), 315 K (b), and 320 K (c), (continued).



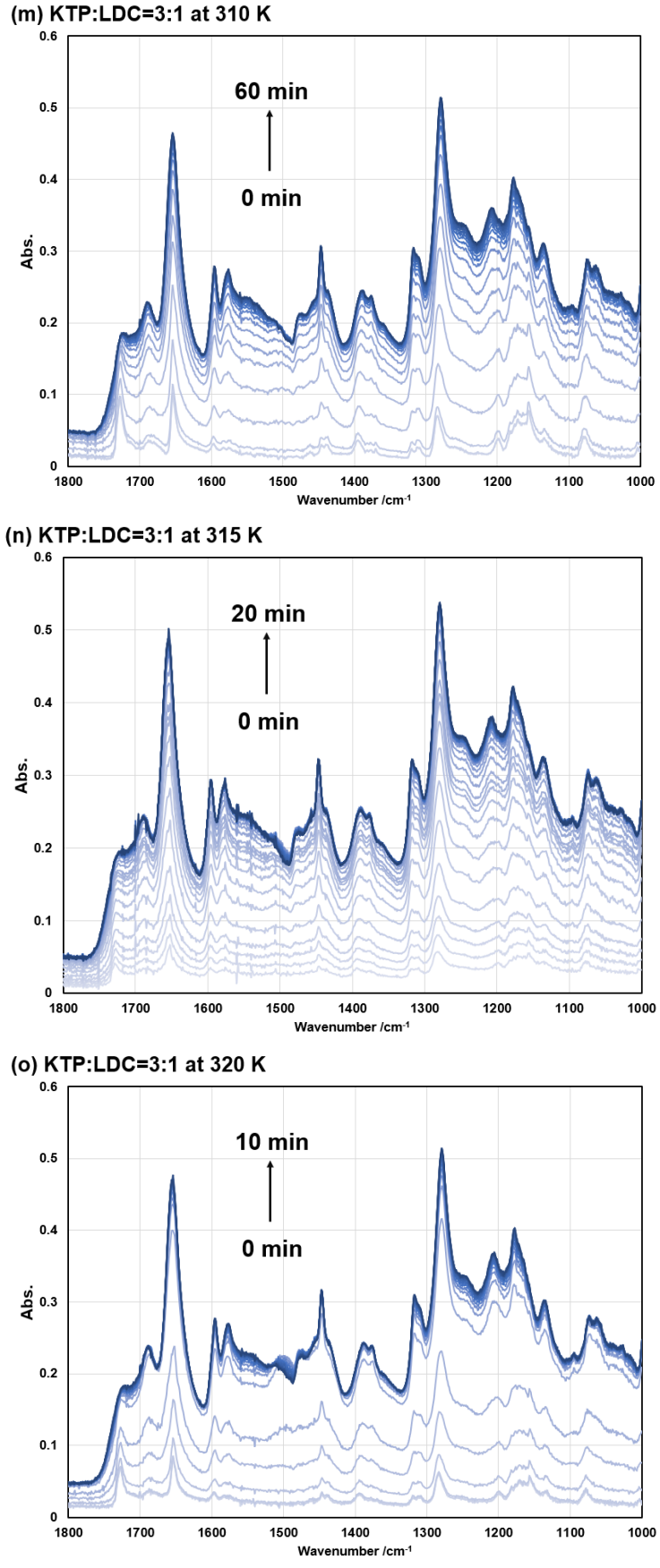
(continuous) Figure S6 Time evolution of FTIR spectra of KTP:LDC=1:2 at 310 K (d), 315 K (e), and 320 K (f), (continued).



(continuous) Figure S6 Time evolution of FTIR spectra of KTP:LDC=1:1 at 310 K (g), 315 K (h), and 320 K (i), (continued).



(continuous) Figure S6 Time evolution of FTIR spectra of KTP:LDC=2:1 at 310 K (j), 315 K (k), and 320 K (l), (continued).



(continuous) Figure S6 Time evolution of FTIR spectra of KTP:LDC=3:1 at 310 K (m), 315 K (n), and 320 K (o).

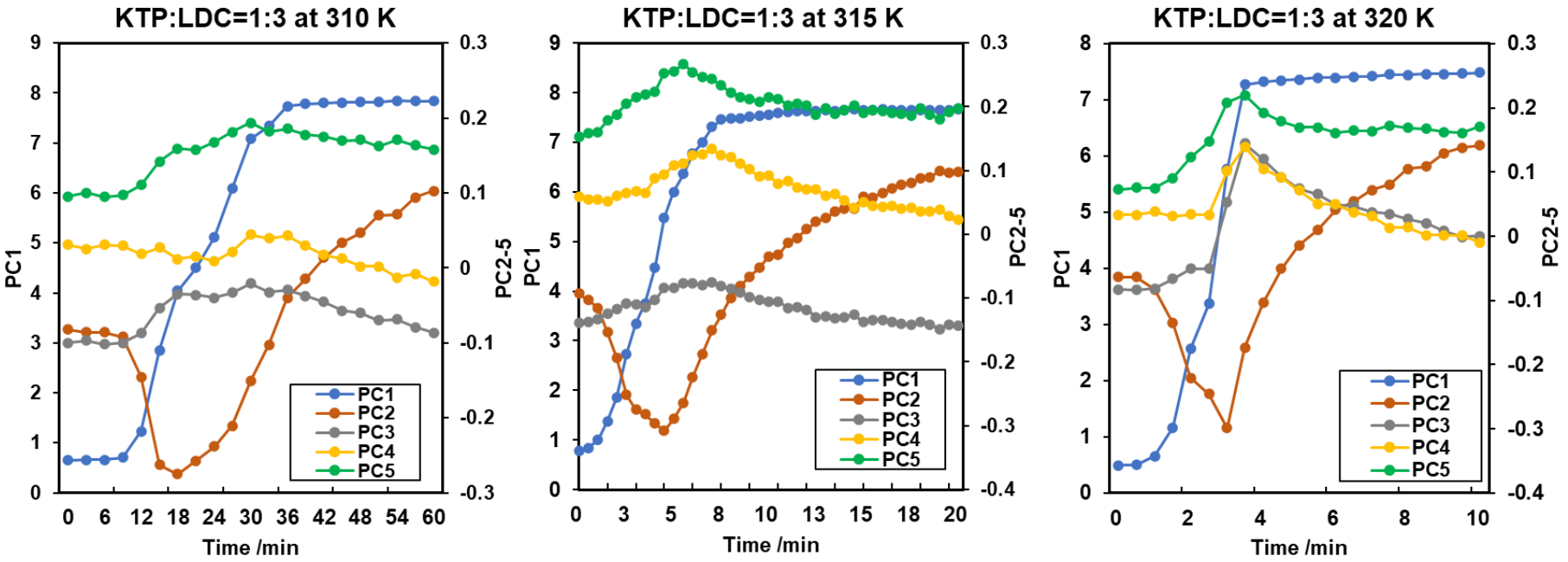
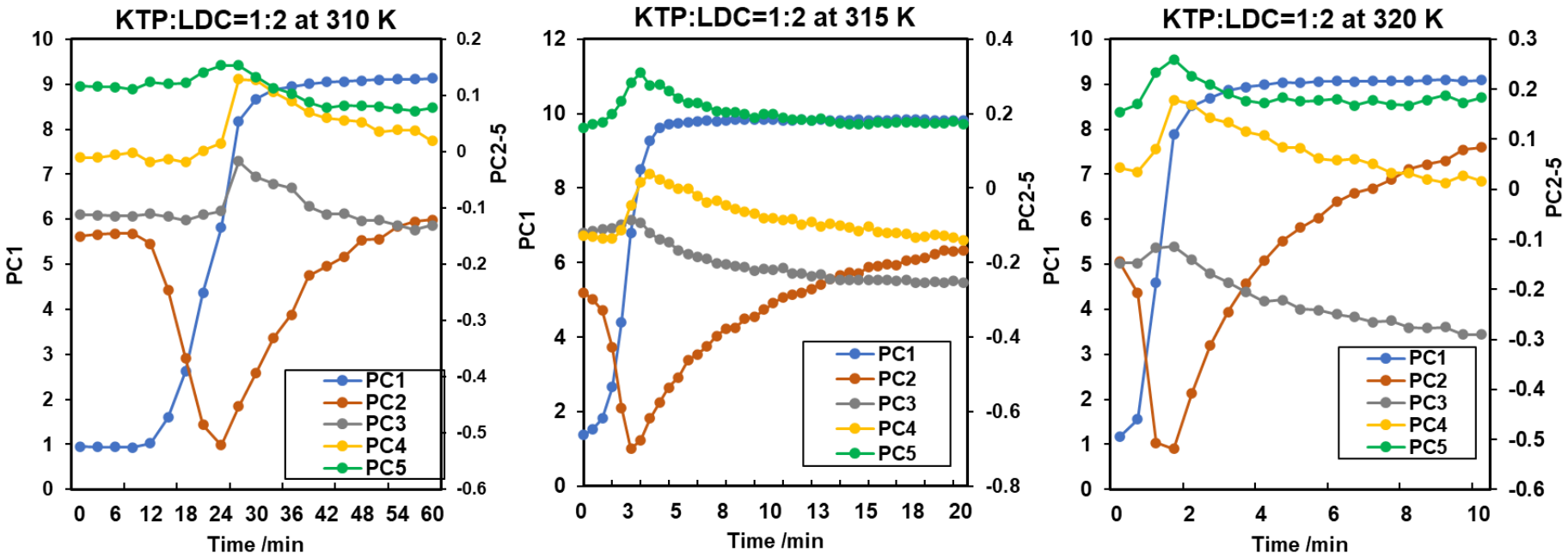
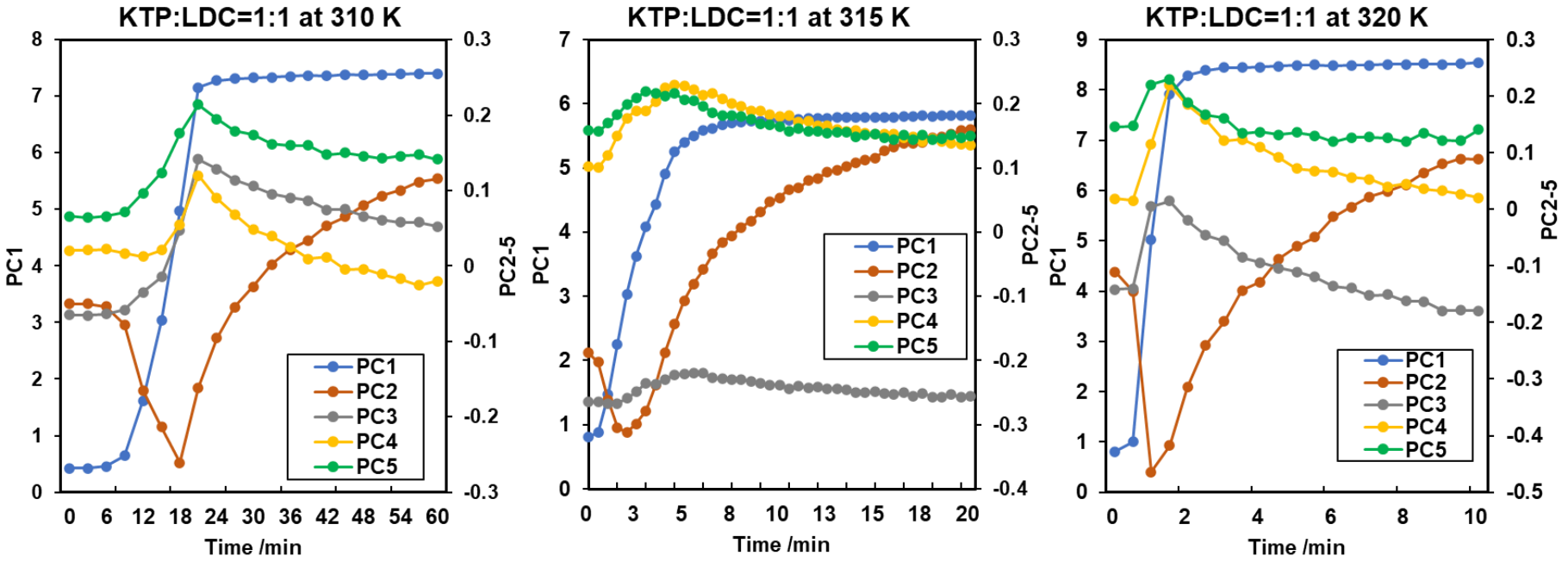


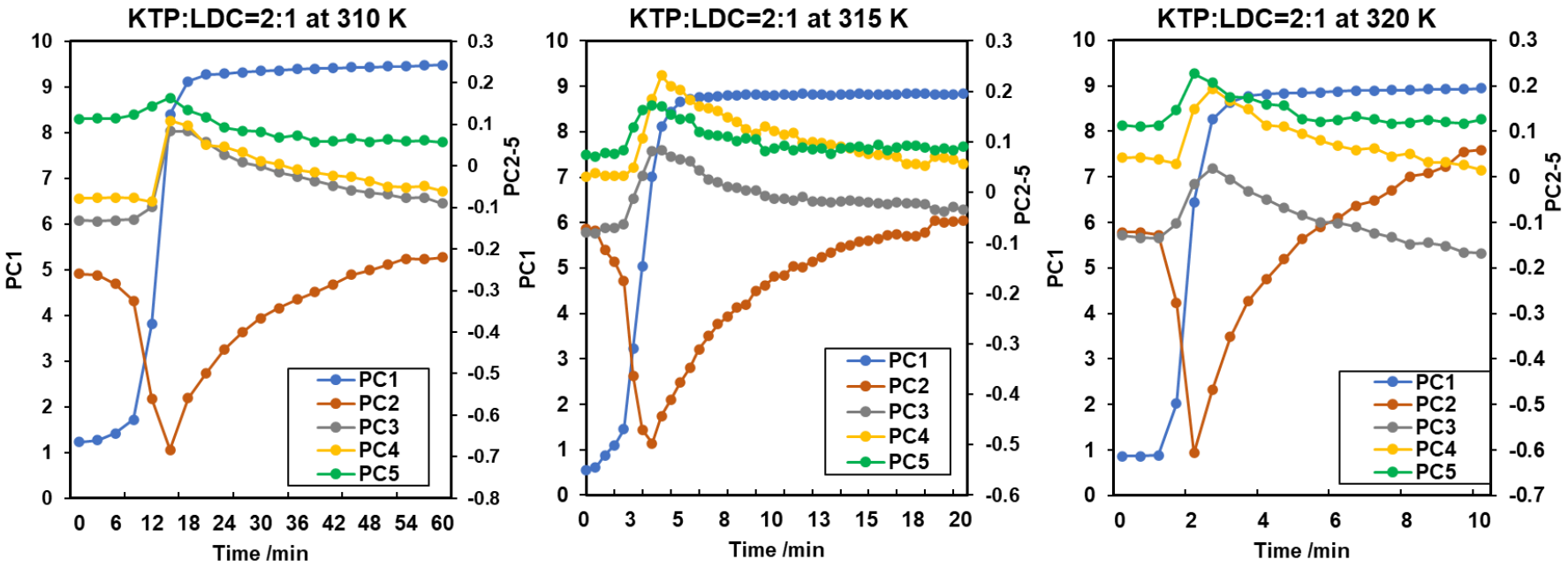
Figure S7. Principal component vector (PC_i, i=1-5) of KTP:LDC=1:3 showing the magnitude of spectral change at various temperatures; 310 K (left side), 315 K (center) and 320 K (right side). (continued)



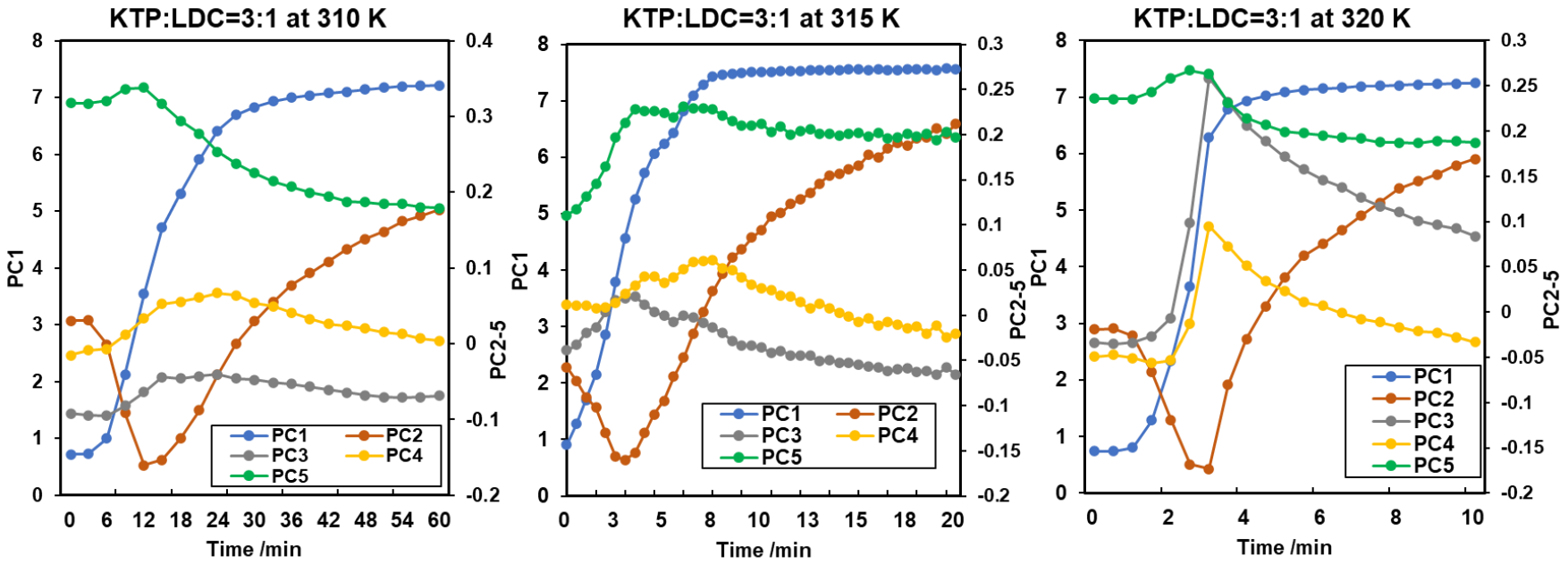
(continuous) Figure S7. Principal component vector (PC_i, i=1-5) of KTP:LDC=1:2 showing the magnitude of spectral change at various temperatures; 310 K (left side), 315 K (center) and 320 K (right s ide). (continued)



(continuous) Figure S7. Principal component vector (PC_i, i=1-5) of KTP:LDC=1:1 showing the magnitude of spectral change at various temperatures; 310 K (left side), 315 K (center) and 320 K (right side). (continued)



(continuous) Figure S7. Principal component vector (PC_i, i=1-5) of KTP:LDC=2:1 showing the magnitude of spectral change at various temperatures; 310 K (left side), 315 K (center) and 320 K (right side). (continued)



(continuous) Figure S7. Principal component vector (PC_i, i=1-5) of KTP:LDC=3:1 showing the magnitude of spectral change at various temperatures; 310 K (left side), 315 K (center) and 320 K (right side).

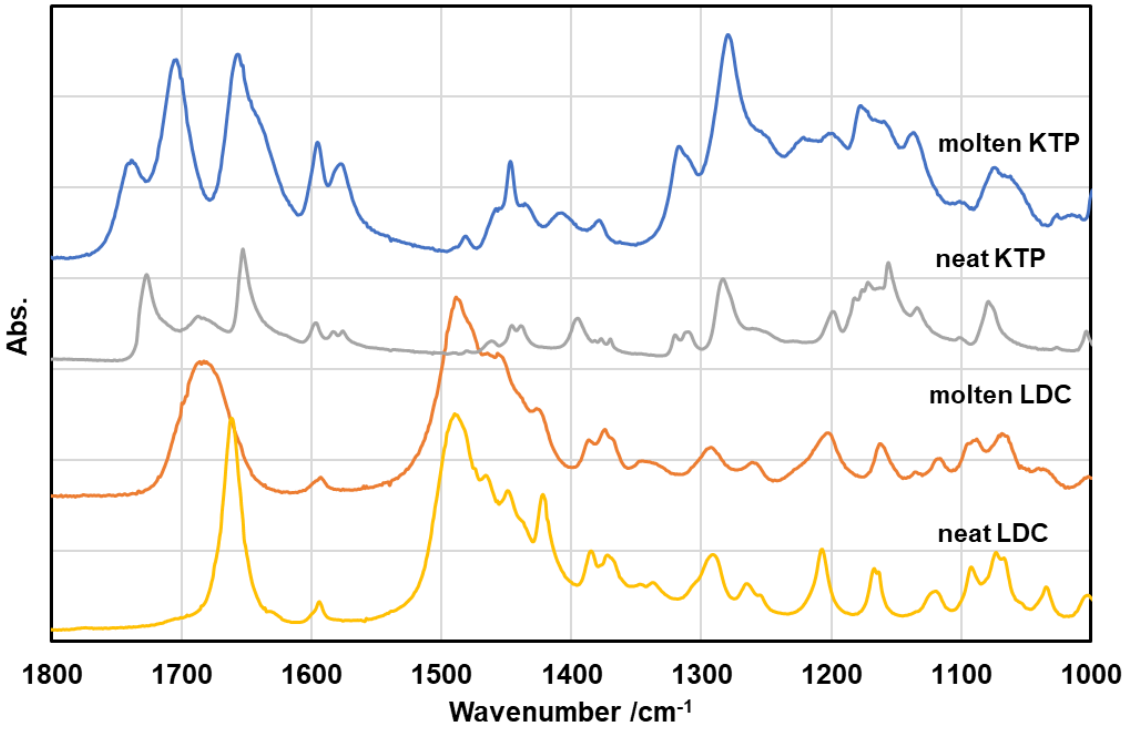


Figure S8. FTIR spectra of molten KTP or LDC at 353 K, and neat KTP or LDC at 298 K.

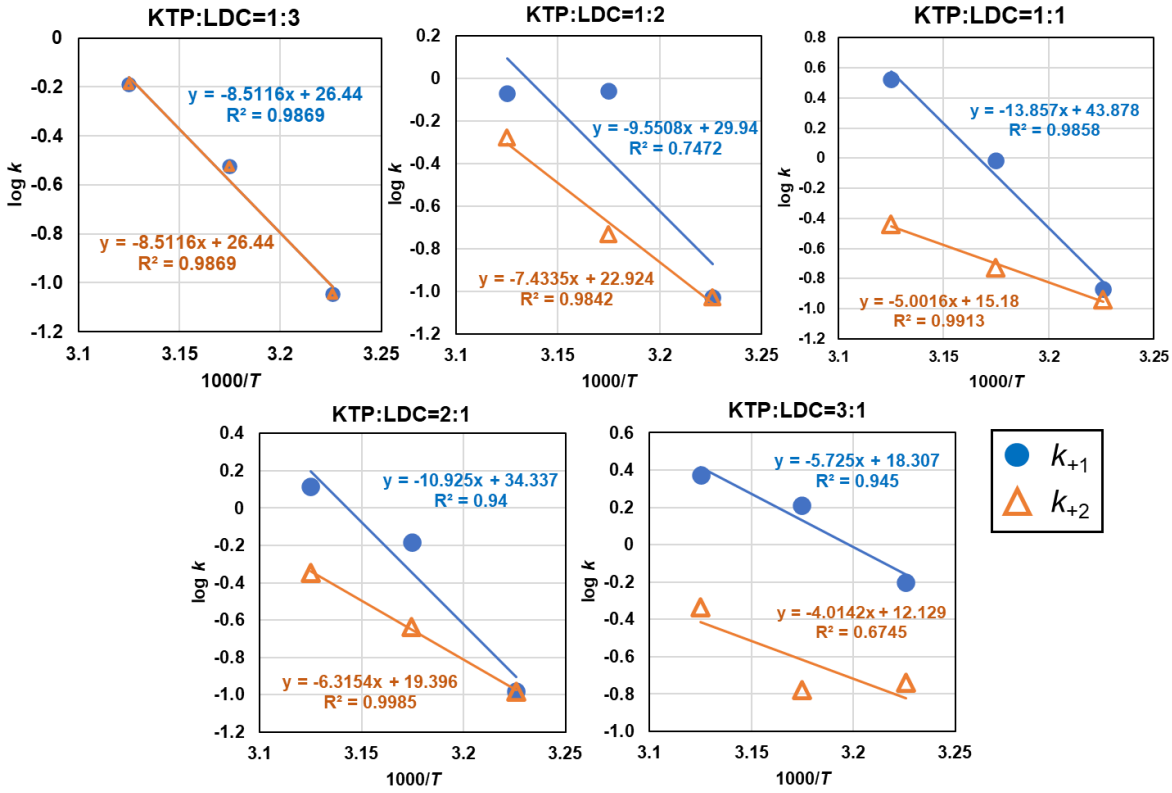


Figure S9. Temperature dependence of reaction rate constants; k_1 (bule close circles), k_2 (yellow open triangles).

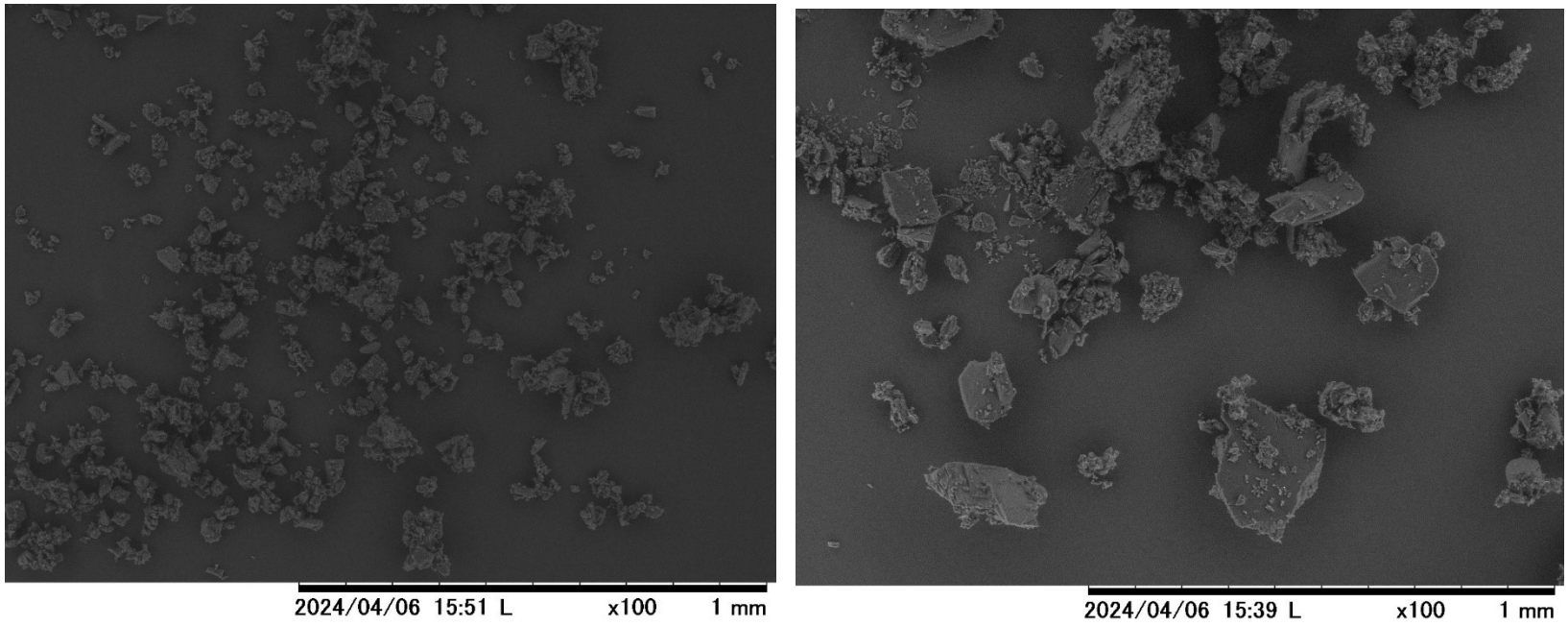


Figure S10. SEM images of KTP (left), LDC (right). The grains were measured using a scanning electron microscope (SEM) (TM-1000 miniscope; Hitachi High-Technologies Co., Tokyo, Japan). The ground KTP was maximum or minimum size approximated by projected area diameter: 0.151 and 0.586 mm, respectively. The ground LDC was maximum or minimum size; 2.28 and 0.397 mm, respectively.

Table S1. k_1, k_2 , X_0, and RMS values obtained by curve fitting using equation (8).

KTP:LDC		k[+1]	k[+2]	X0	RMS
1:3	310 K	0.090	0.090	2.721	0.066
	315 K	0.299	0.299	2.643	0.042
	320 K	0.649	0.649	2.389	0.053
1:2	310 K	0.094	0.094	2.186	0.133
	315 K	0.877	0.186	1.512	0.019
	320 K	0.850	0.527	1.878	0.058
1:1	310 K	0.135	0.115	2.378	0.038
	315 K	0.964	0.188	1.497	0.013
	320 K	3.352	0.366	1.289	0.025
2:1	310 K	0.233	0.087	1.467	0.111
	315 K	0.655	0.230	1.523	0.061
	320 K	1.305	0.450	1.462	0.069
3:1	310 K	0.630	0.182	1.722	0.024
	315 K	1.630	0.167	1.413	0.048
	320 K	2.372	0.465	1.340	0.038