

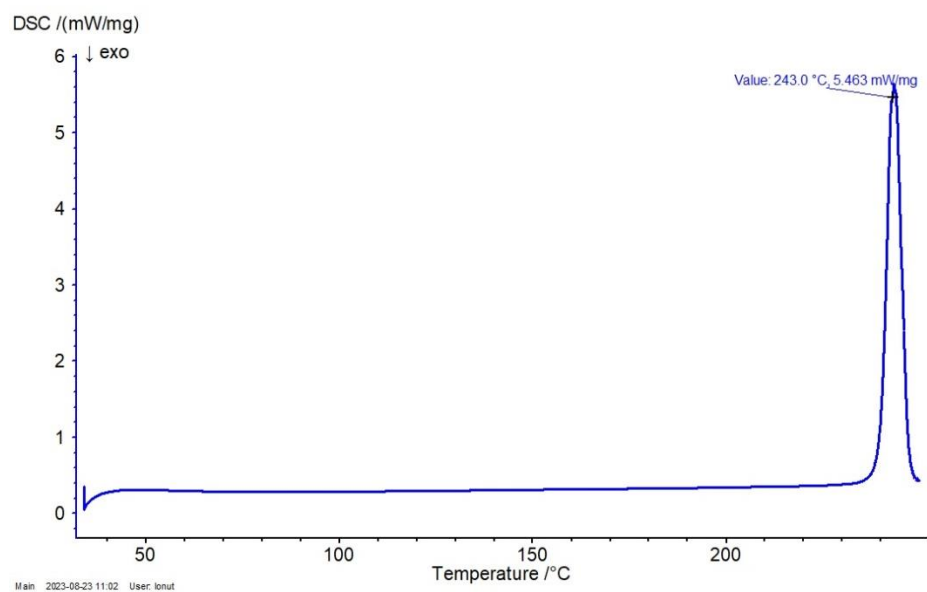


Figure S1. The DSC curve recorded for LNG at $\beta = 10\text{ }^{\circ}\text{C}\cdot\text{min}^{-1}$ on 40-250 $^{\circ}\text{C}$ temperature range

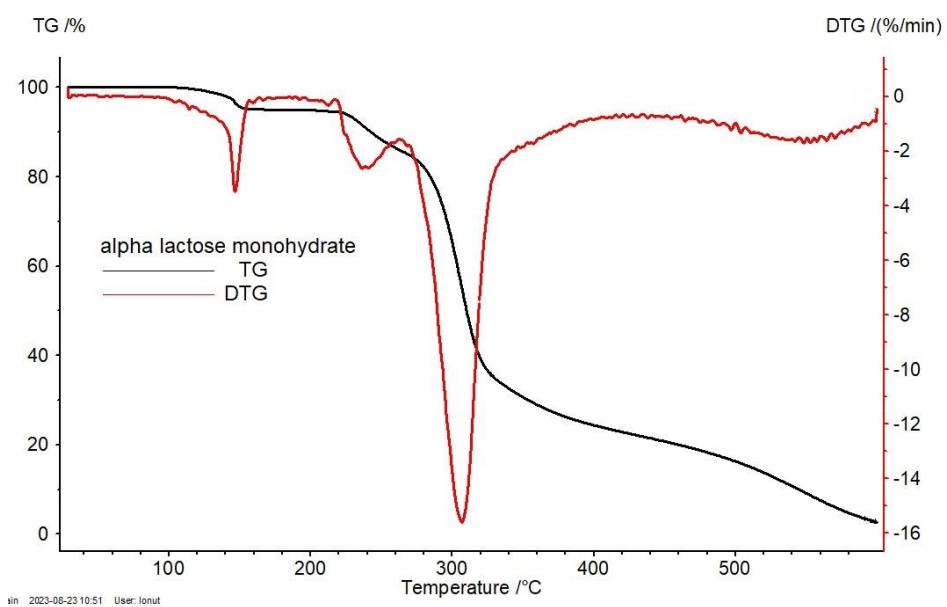
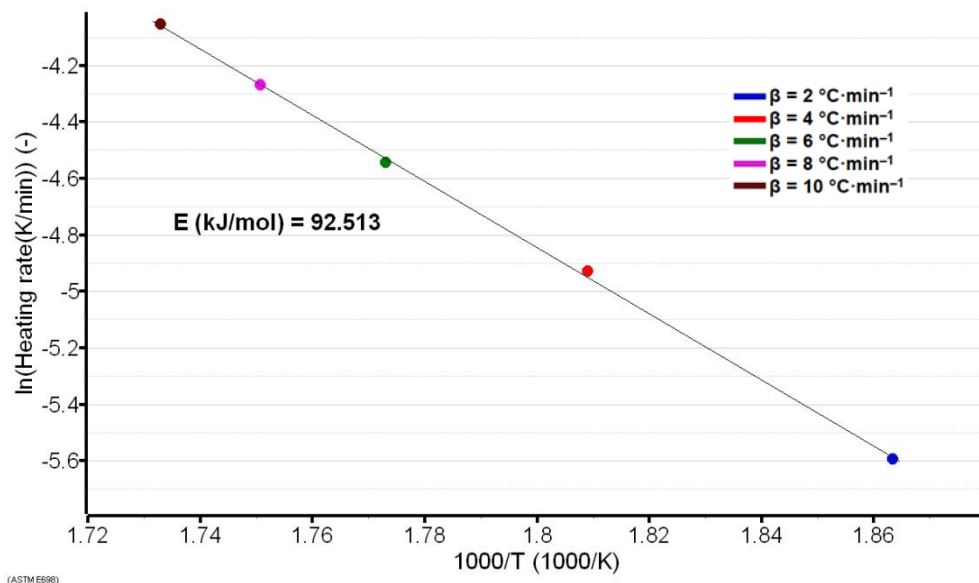
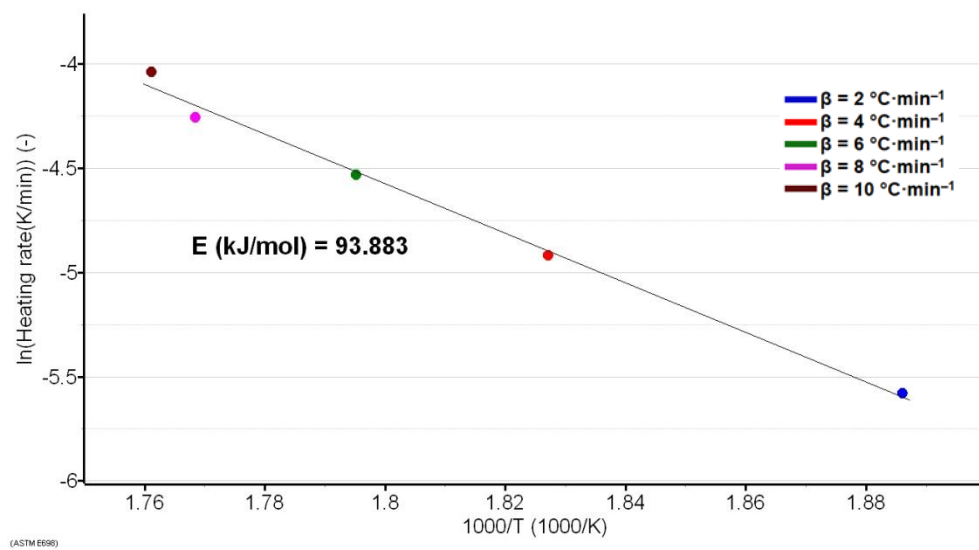


Figure S2. Thermoanalytical data (TG/DTG) recorded for Lactose monohydrate in dynamic air atmosphere at $\beta = 10\text{ }^{\circ}\text{C}\cdot\text{min}^{-1}$.

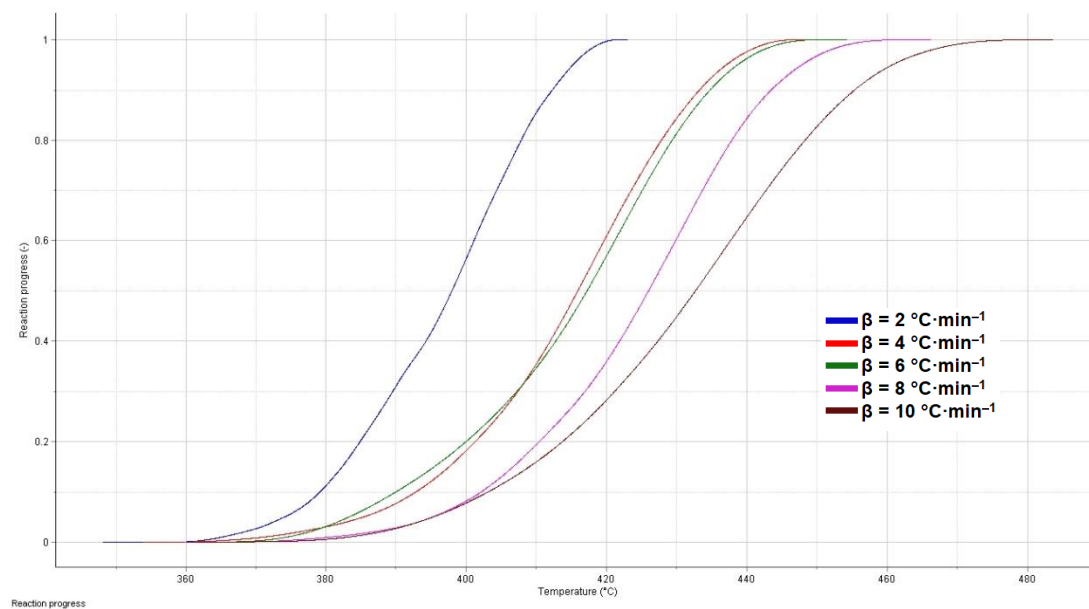


(a)

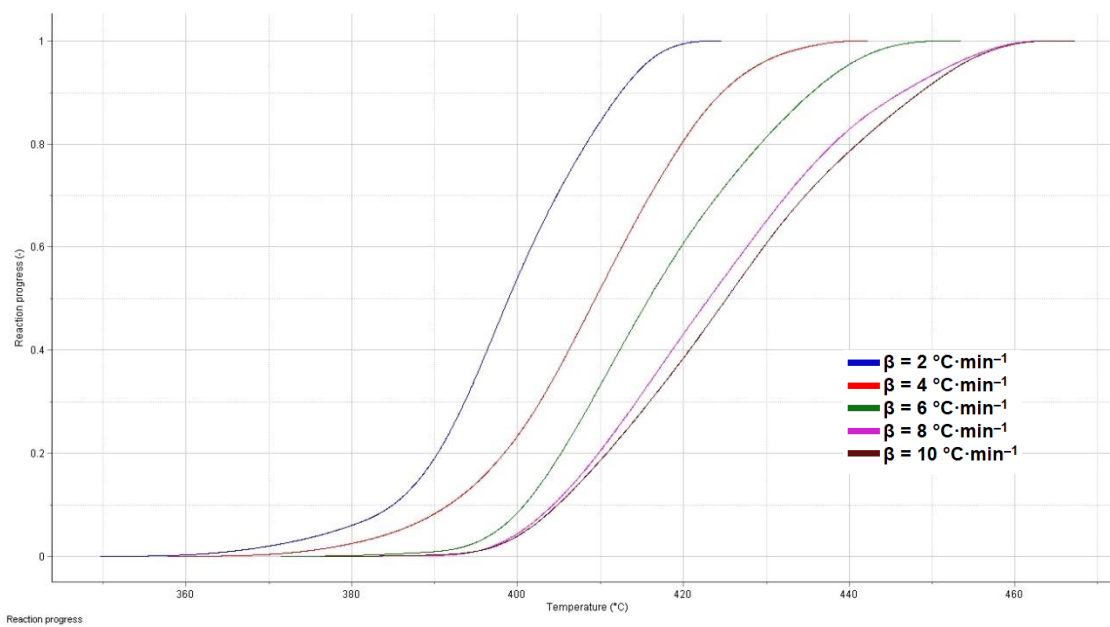


(b)

Figure S3. The plot according to the ASTM E698 kinetic method with the estimated activation energy of “process 1” for: (a) LNG and (b) LNGMIX

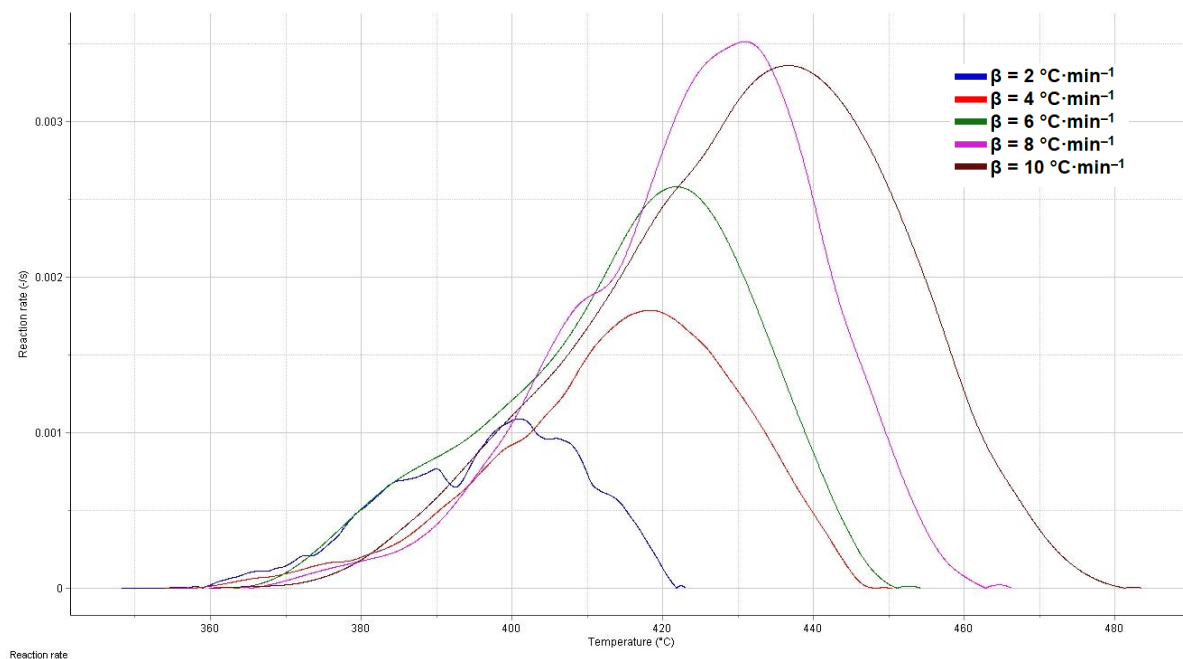


(a)

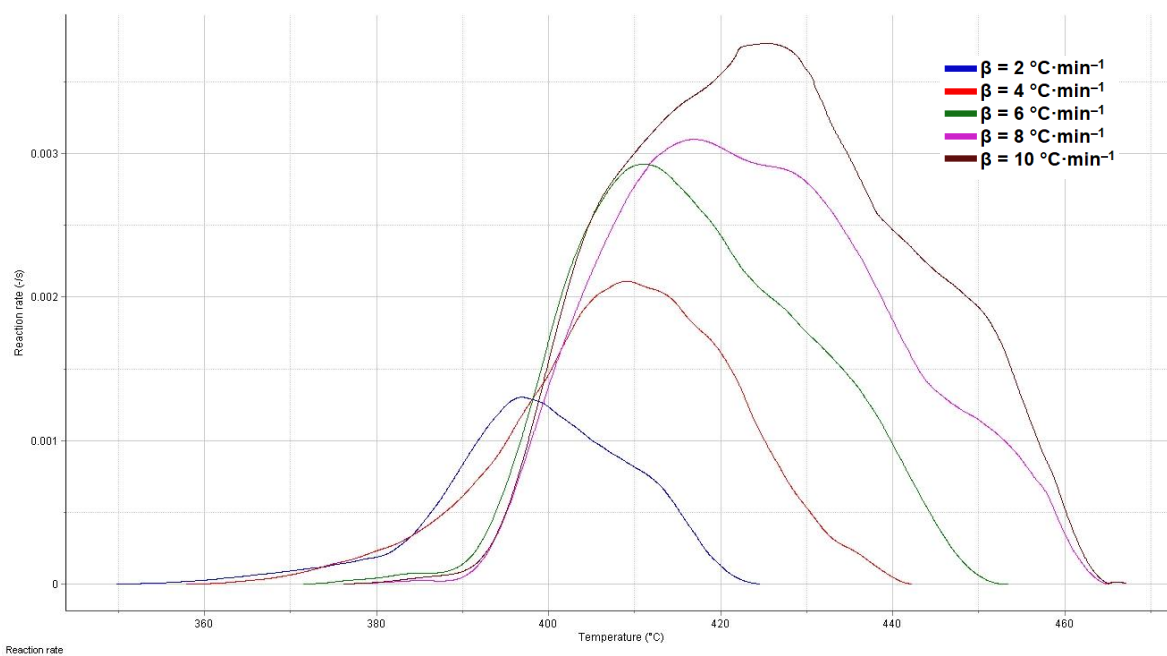


(b)

Figure S4. The reaction progress *vs.* temperature for “process 2” at selected heating rates for: (a) LNG and (b) LNGMIX

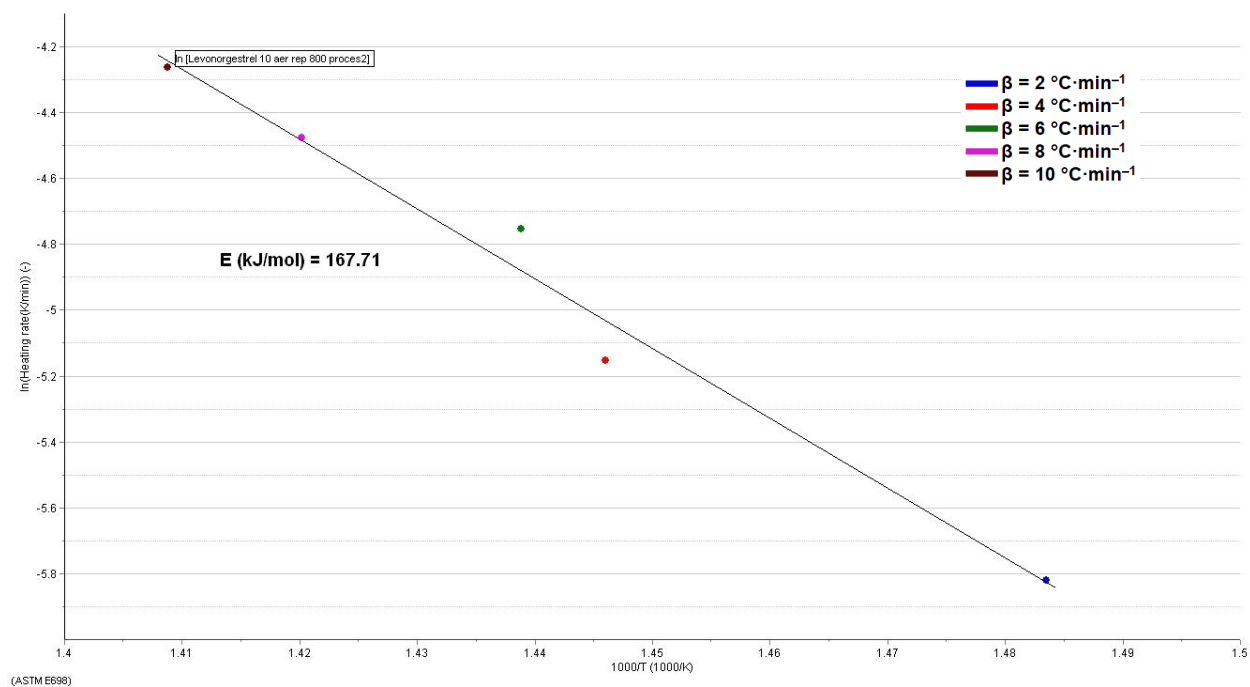


(a)

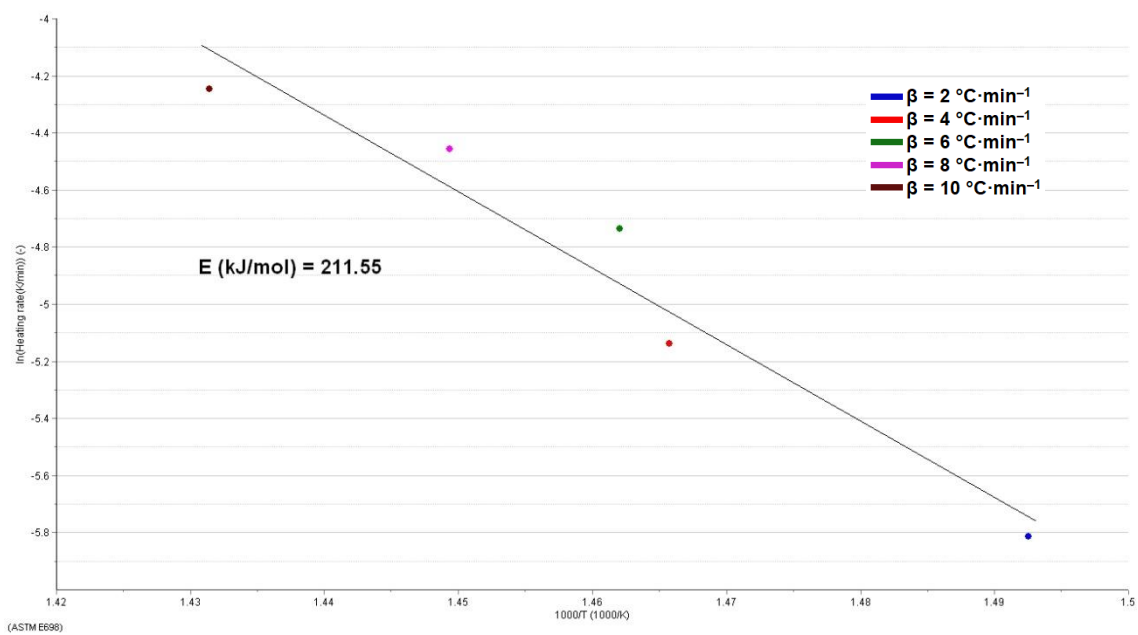


(b)

Figure S5. The reaction rate *vs.* temperature for “process 2” at selected heating rates for: (a) LNG and (b) LNGMIX

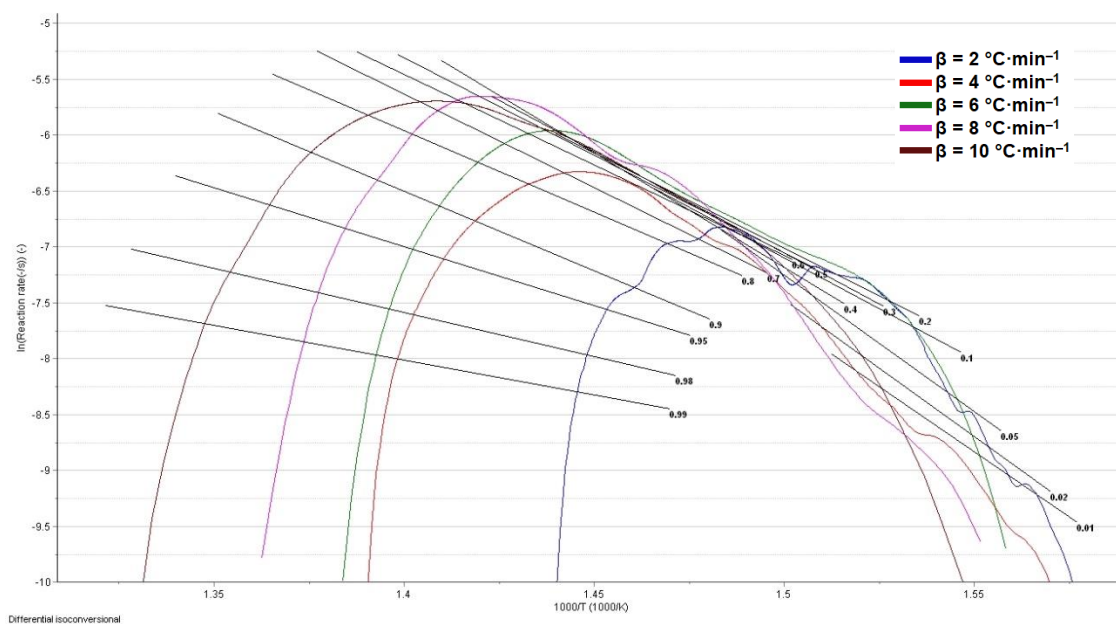


(a)

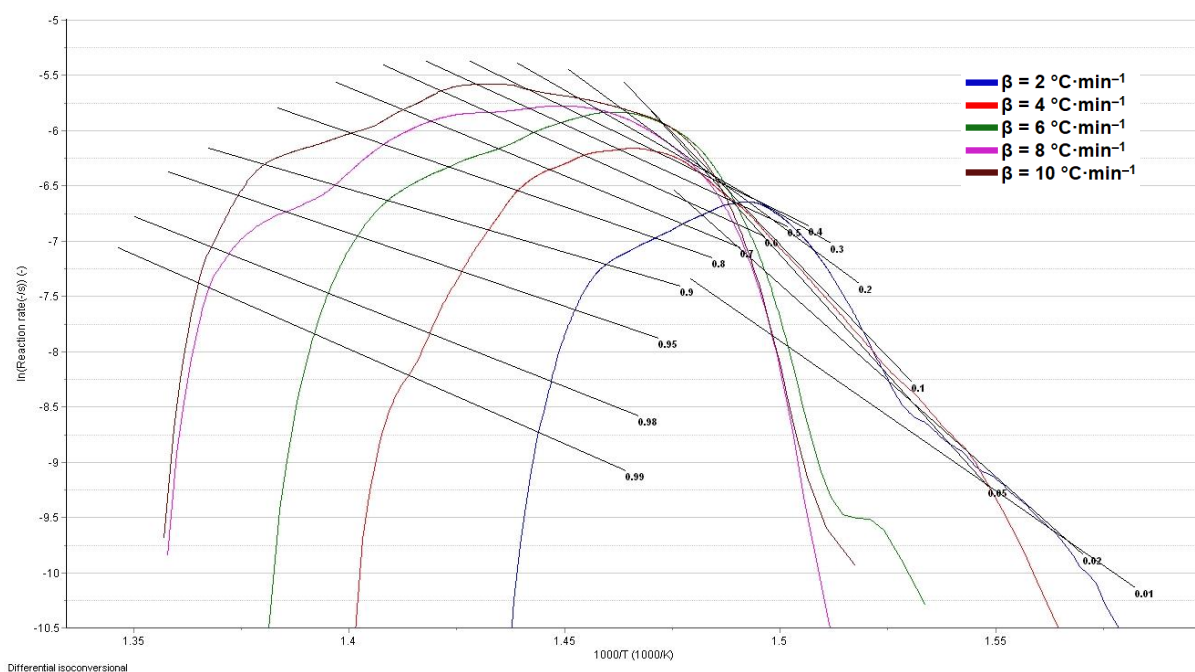


(b)

Figure S6. The plot according to the ASTM E698 kinetic method with the estimated activation energy of “process 2” for: (a) LNG and (b) LNGMIX

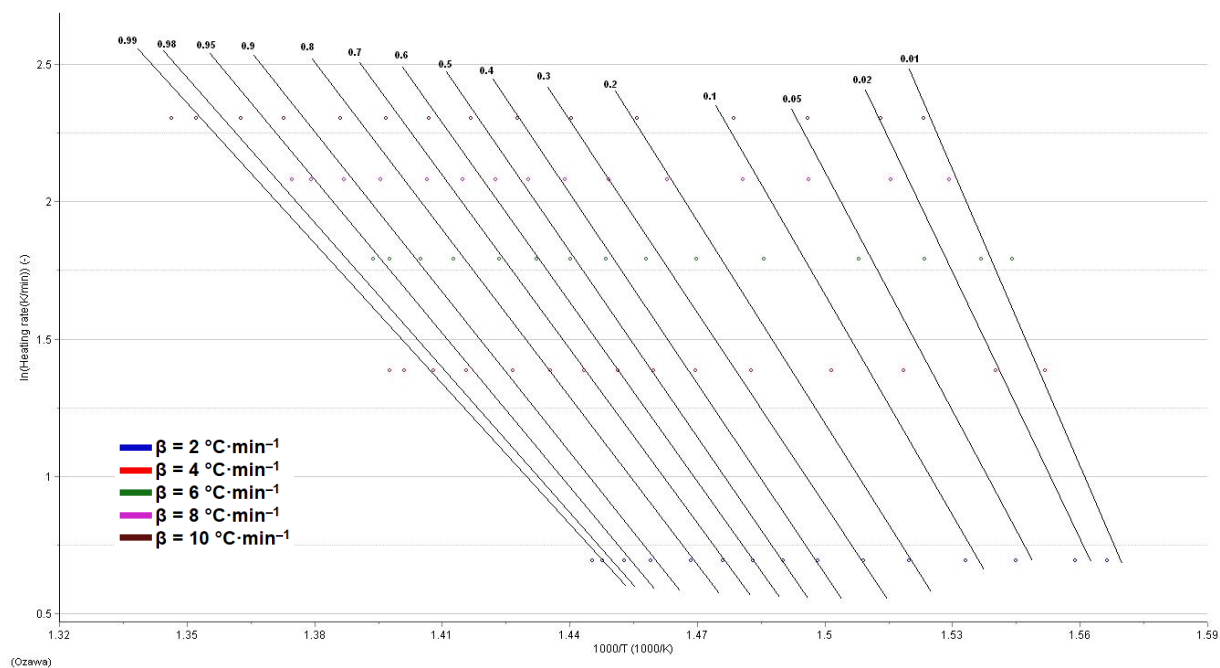


(a)

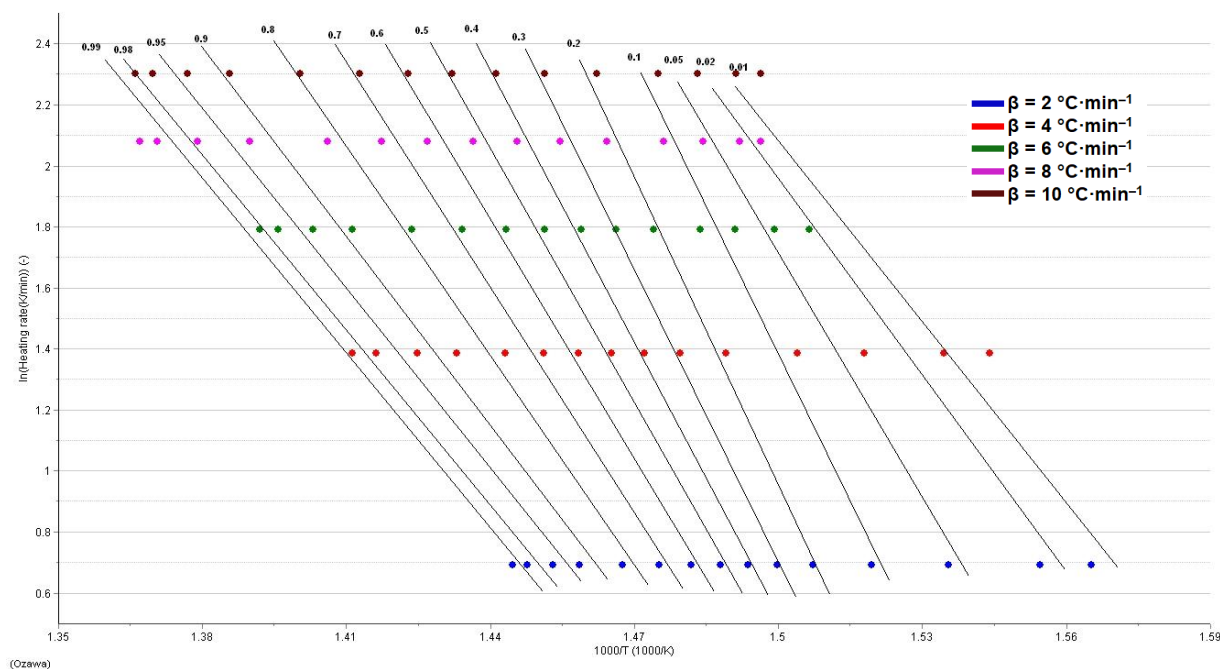


(b)

Figure S7. Linear plotting of FR differential isoconversional method of the analyzed “process 1” of decomposition for: (a) LNG and (b) LNGMIX



(a)



(b)

Figure S8. Linear plot of FWO integral isoconversional method of the analyzed “process 2” of decomposition process for: (a) LNG and (b) LNGMIX

Table S1. Variation of E_a vs. α for both samples LNG and LNGMIX for “process 2” using the FR and FWO isoconversional methods

α	Variation of E_a (kJ·mol ⁻¹) vs. α for			
	LNG		LNGMIX	
	FR	FWO	FR	FWO
0.05	203.5	228.5	361.3	211.1
0.1	151.3	211.9	338.0	254.4
0.15	146.6	202.1	280.9	266.2
0.2	141.3	194.4	239.3	265.5
0.25	146.9	188.4	210.4	259.9
0.3	151.0	184.4	186.5	252.3
0.35	174.9	182.2	168.1	243.7
0.4	170.4	182.3	157.1	235.0
0.45	154.1	180.5	152.7	227.0
0.5	144.7	177.9	147.9	219.6
0.55	139.2	175.0	146.9	212.8
0.6	134.7	172.1	145.7	206.7
0.65	136.2	169.2	139.5	200.8
0.7	139.1	166.7	133.2	194.7
0.75	130.4	164.1	122.0	188.1
0.8	121.8	160.9	111.5	180.7
0.85	122.5	157.3	99.5	172.4
0.9	118.5	153.9	94.6	163.1
0.95	87.8	147.5	109.6	154.8
$\bar{E}_a$ / kJ·mol ⁻¹	142.9±5.6	178.9±4.7	176.0±17.7	216.2±8.1