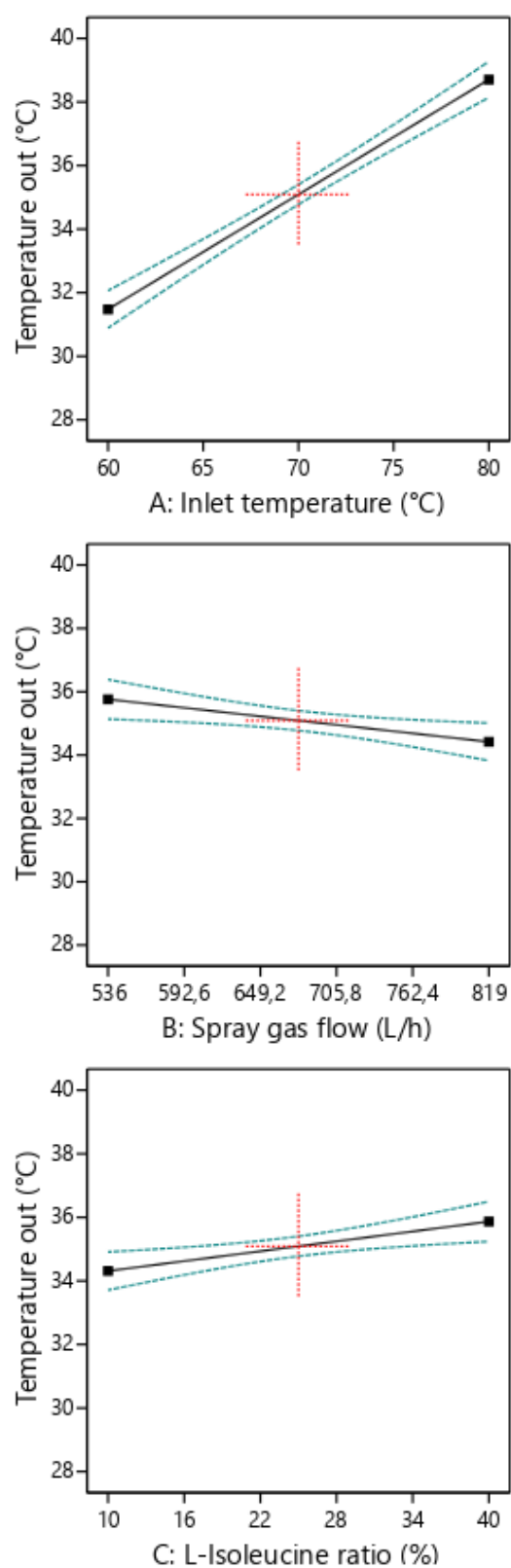
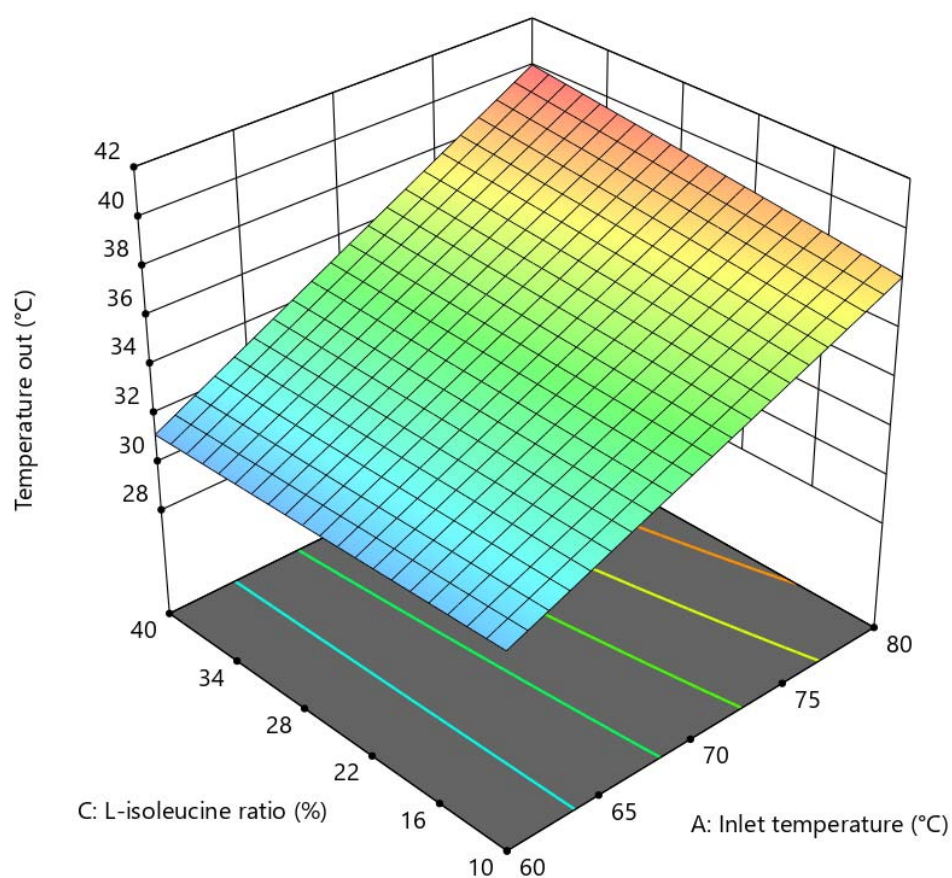


Supplementary Material



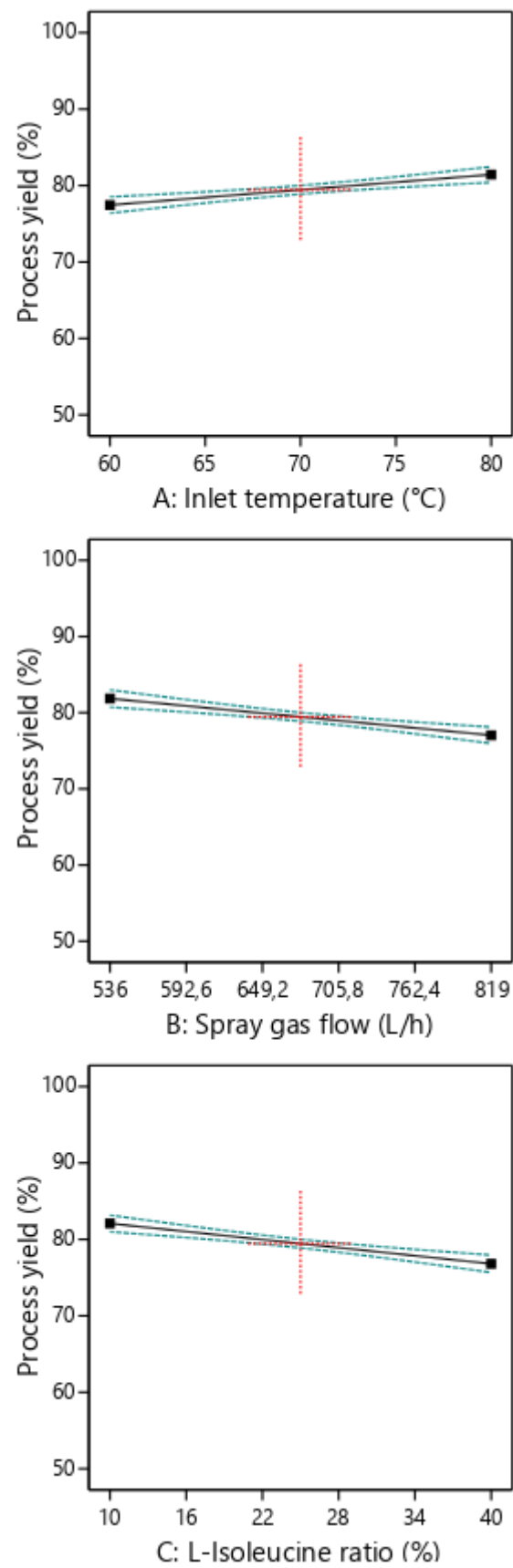
**Figure S1.** Temperature outlet, one-factor effect graphs with 95% CI bands for the LUZ19 experiments.



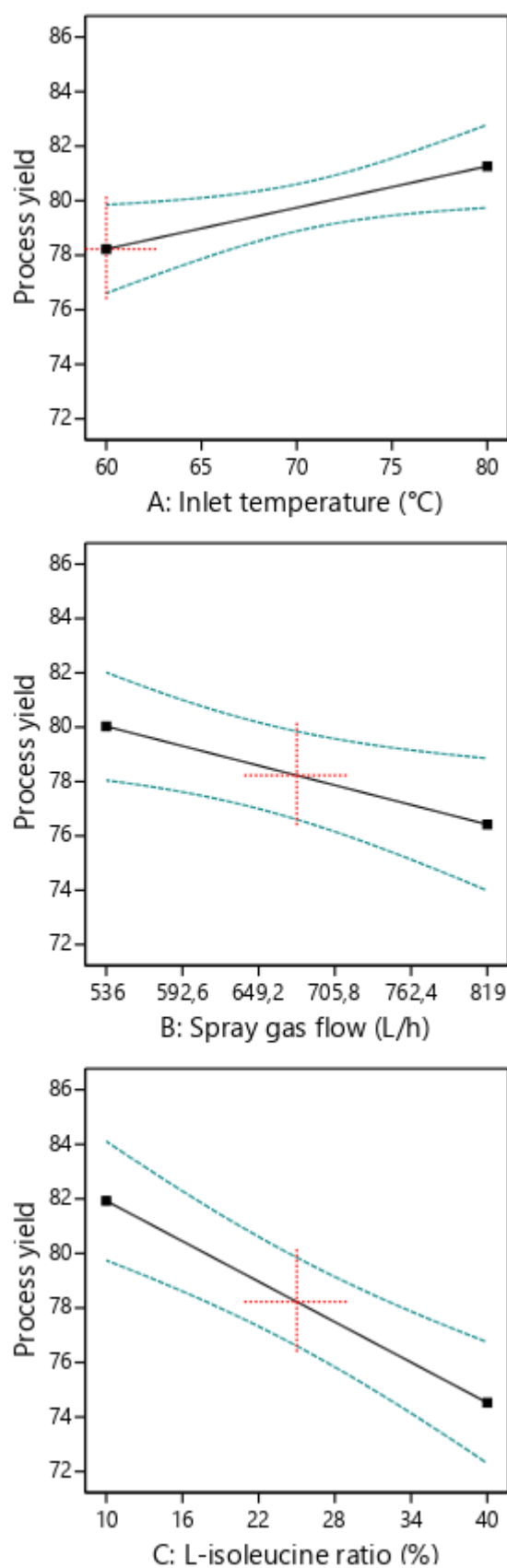
**Figure S2.** Temperature outlet, 3D surface graph for 14-1.

**Table S1.** Fit statistics for the models.

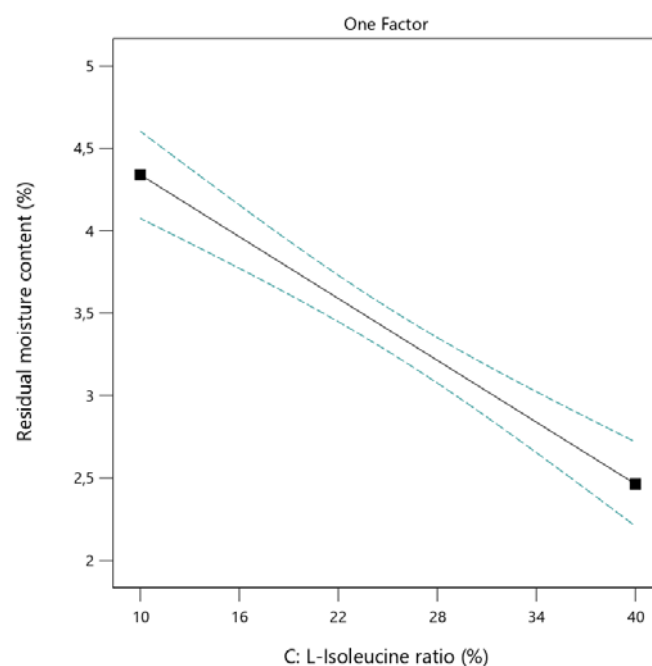
	LUZ19	14-1
<b>Outlet temperature (°C)</b>		
R <sup>2</sup>	0.9248	0.9676
Adjusted R <sup>2</sup>	0.9141	0.9608
Predicted R <sup>2</sup>	0.8448	0.9213
Adeq precision	24.3143	33.333
<b>Process yield (%)</b>		
R <sup>2</sup>	0.7924	0.7242
Adjusted R <sup>2</sup>	0.7628	0.6782
Predicted R <sup>2</sup>	0.5875	0.4153
<b>Residual moisture content (%)</b>		
R <sup>2</sup>	0.7835	0.8870
Adjusted R <sup>2</sup>	0.7732	0.8814
Predicted R <sup>2</sup>	0.6215	0.7810
<b>Loss of activity (Log10 PFU/mg)</b>		
R <sup>2</sup>	0,7930	0,6612
Adjusted R <sup>2</sup>	0,7516	0,5721
Predicted R <sup>2</sup>	0,5720	0,2424



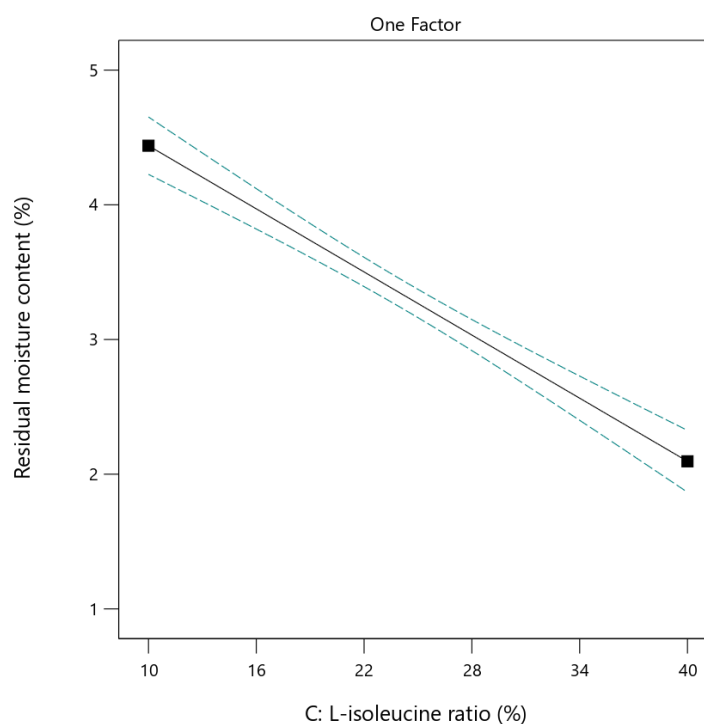
**Figure S3.** Process yield, one-factor effect graphs with 95% CI bands for the LUZ19 experiments.



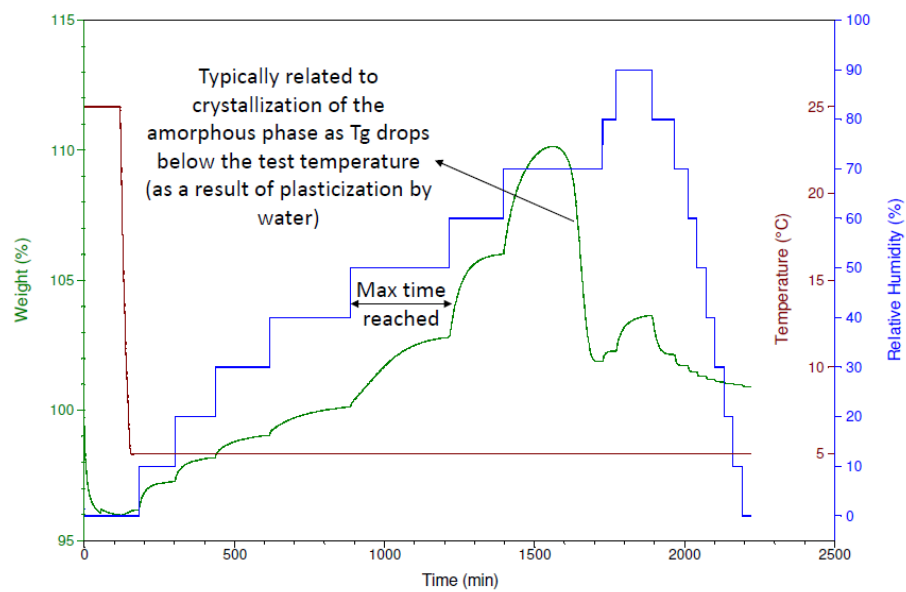
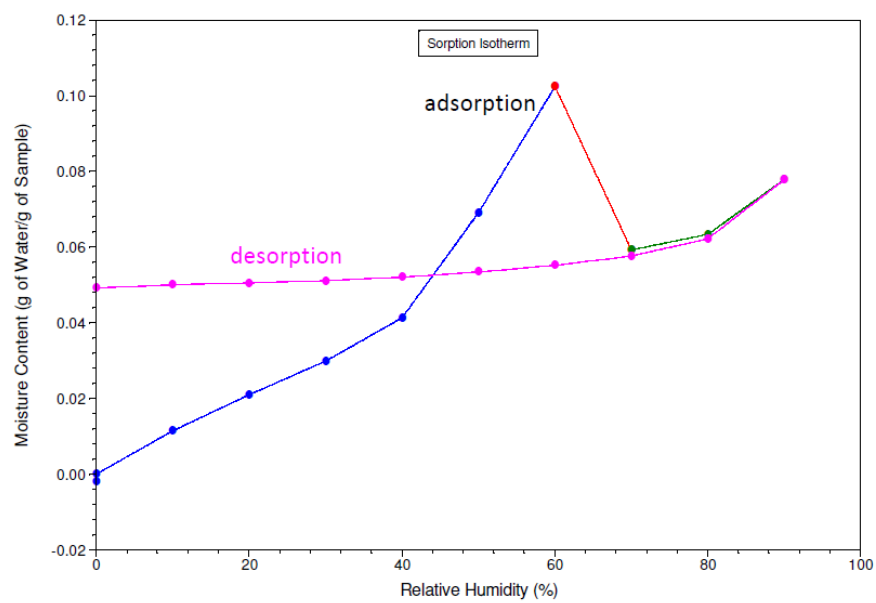
**Figure S4.** Process yield, one-factor effect graphs with 95% CI bands for the 14-1 experiments.



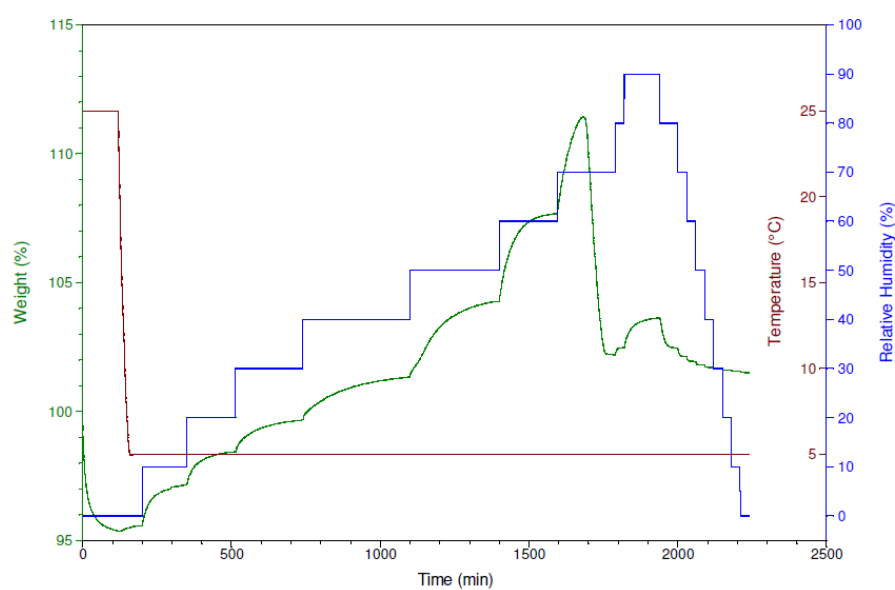
**Figure S5.** RMC, one-factor effect graphs with 95% CI bands for the LUZ19 experiments.



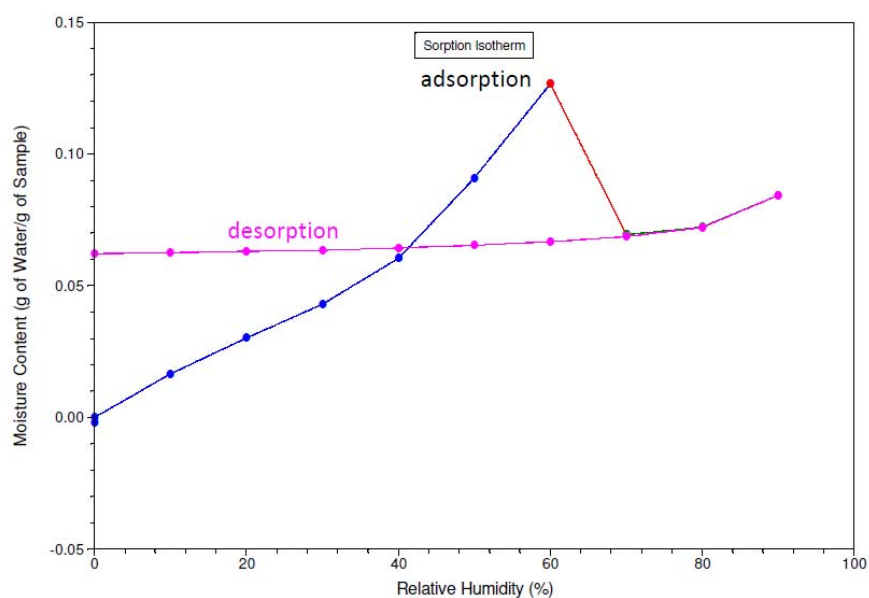
**Figure S6.** RMC, one-factor effect graphs with 95% CI bands for the 14-1 experiments.

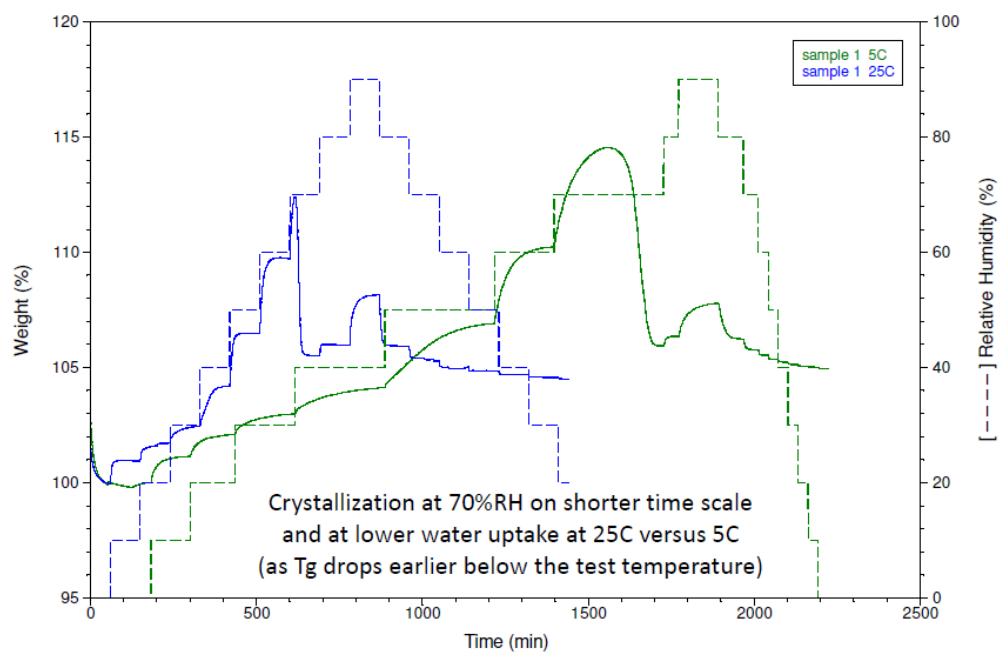
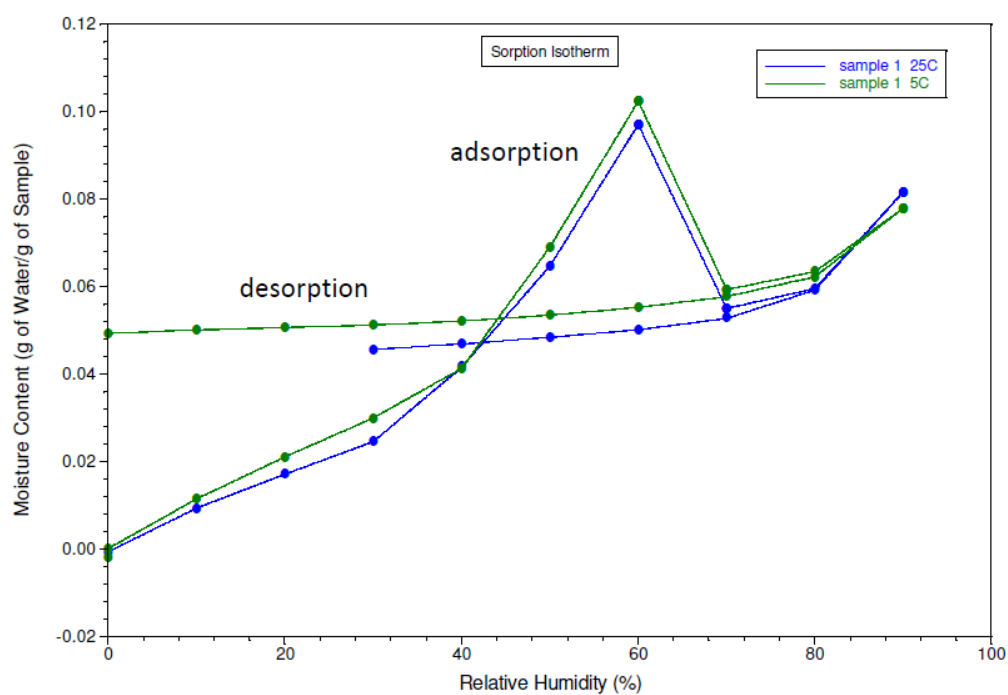
**A****B**

**C**

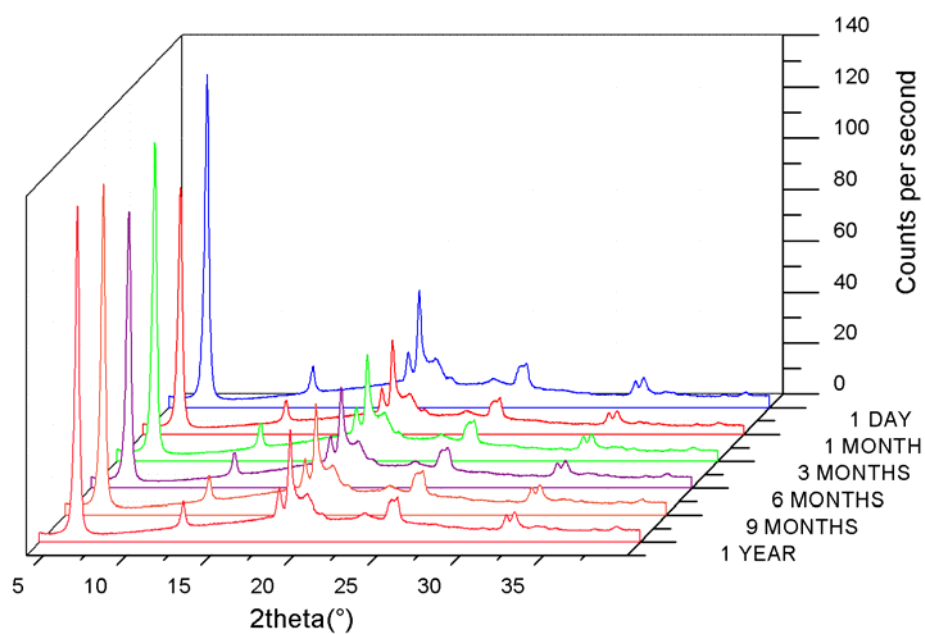
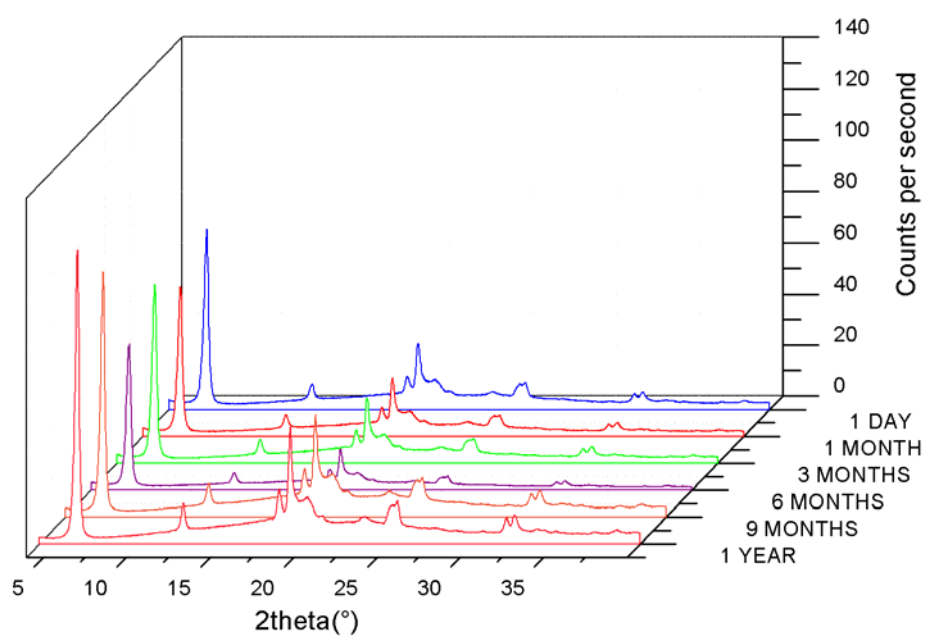


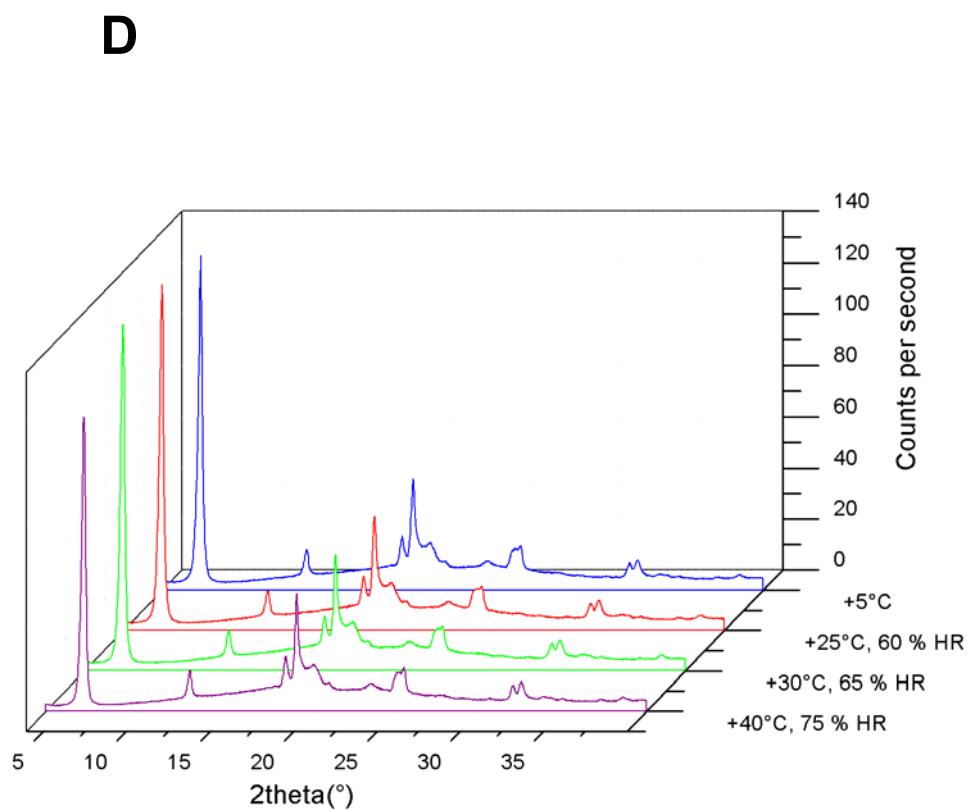
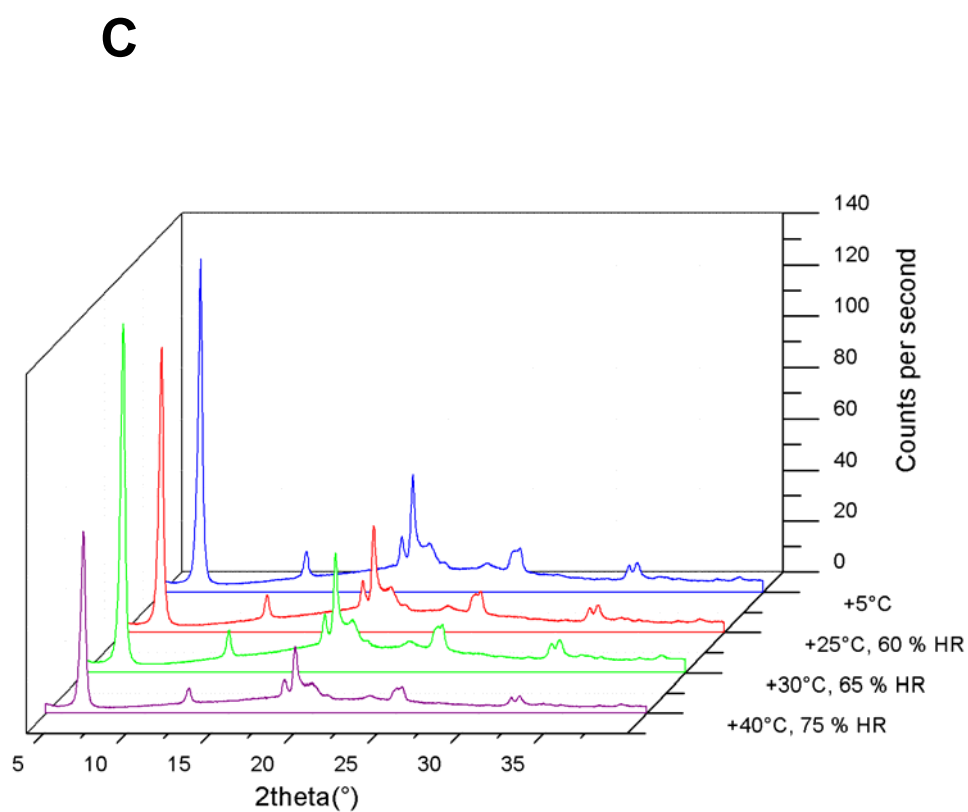
**D**



**E****F**

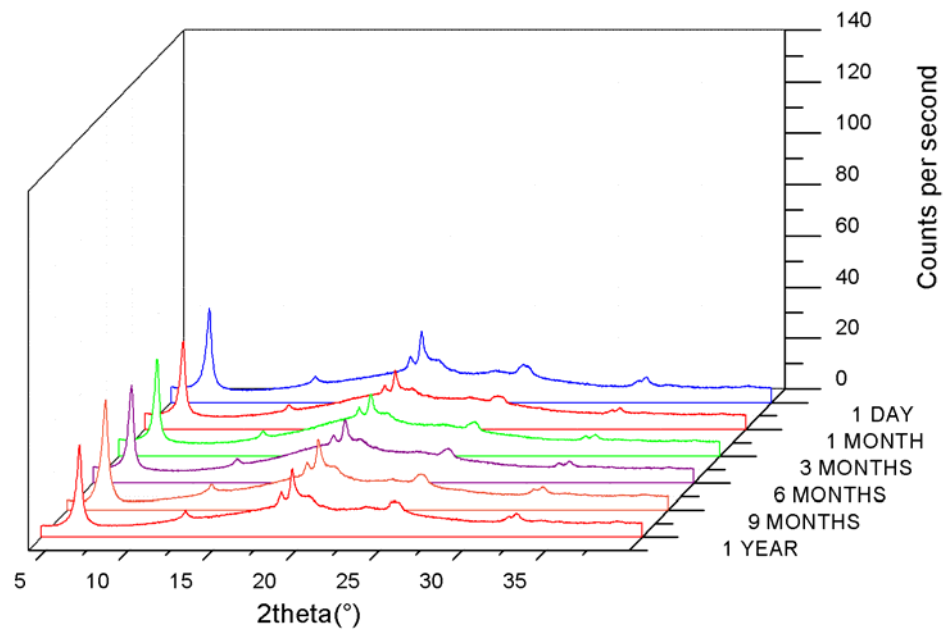
**Figure S1.** Dynamic Vapor Sorption (DVS) analyses for optimized spray-dried powder containing LUZ19 (A & B) and 14-1 (C&D) at +5 °C, as well as LUZ19 at +25 °C (E & F).

**A****B**

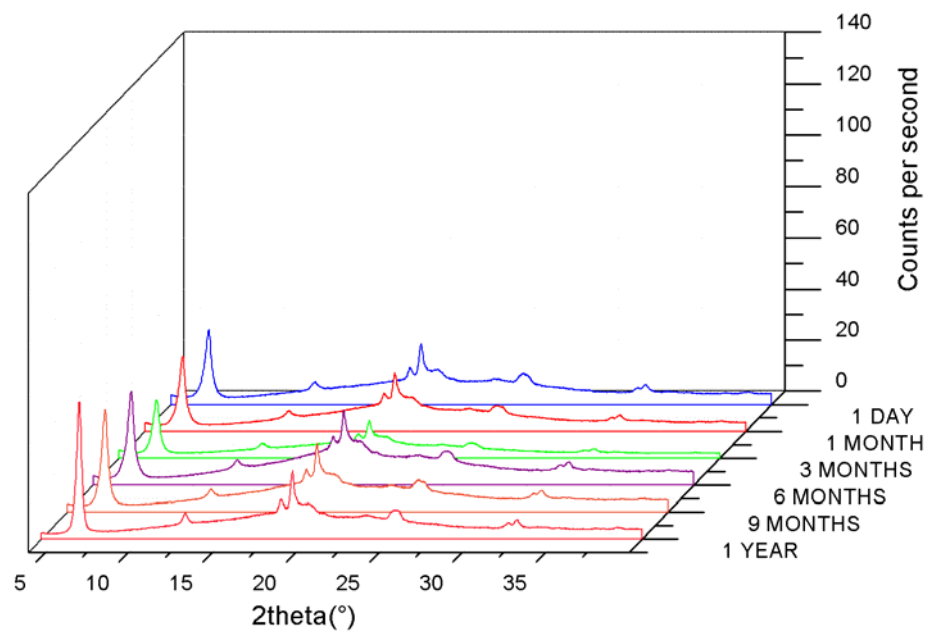


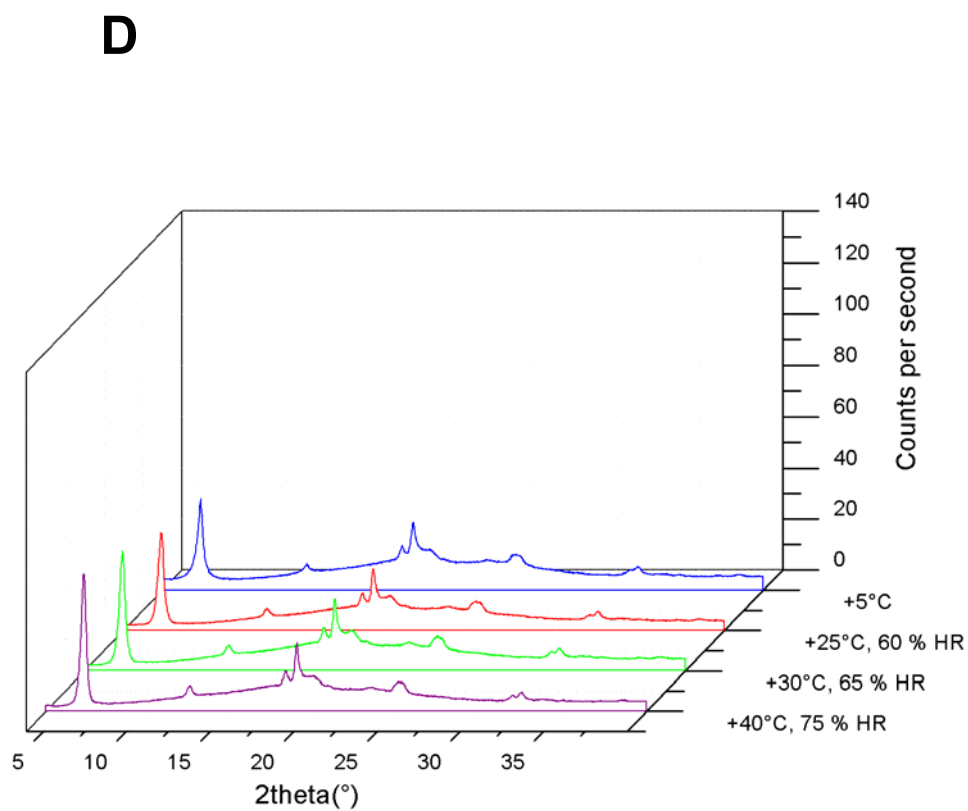
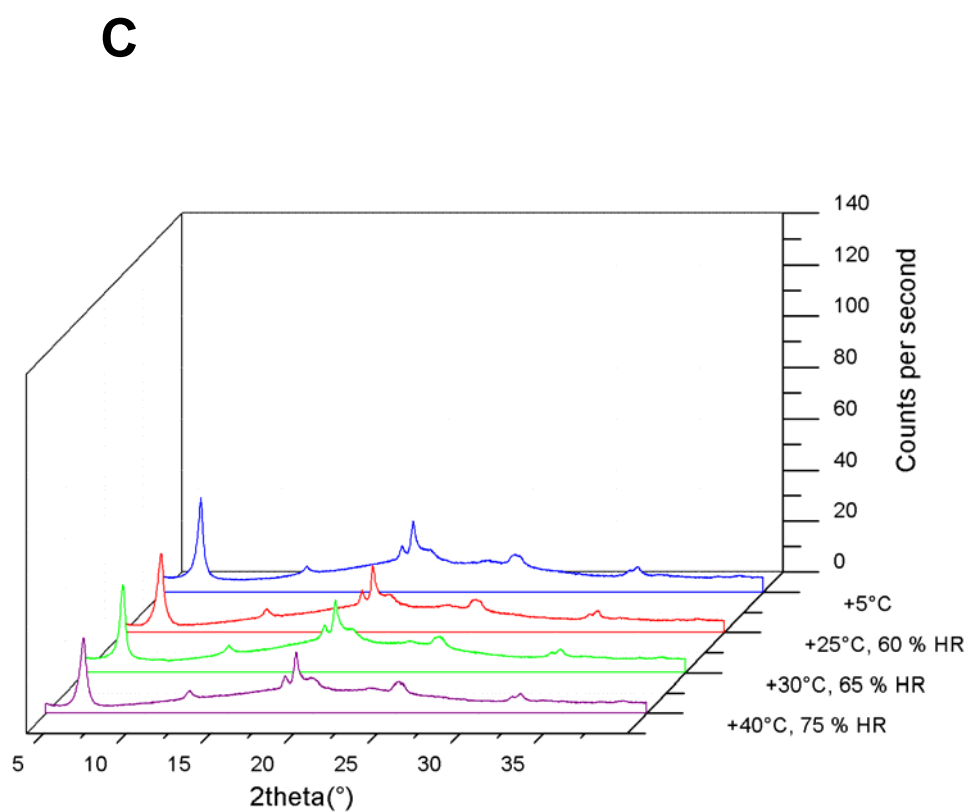
**Figure S8.** XRD profiles of optimized spray-dried powder containing LUZ19 stored at 5 °C (A) and 40 °C, 75% RH (B) over time, and at day 1 (C) and at 1 year (D) storage under different ICH conditions.

**A**



**B**





**Figure S9.** XRD profiles of optimized spray-dried powder containing 14-1 stored at 5 °C (A) and 40 °C, 75% RH (B) over time, and at day 1 (C) and at 1 year (D) of storage under different ICH conditions.