Supplemental

A design methodology of crystal growth furnace and process aided by two-step optimization using machine learning models and genetic algorithm

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Table S1. DNN accuracy of Molde A

		MSE	MAE	R2
fold1 T[K]	*t* (min)	4.639	2.769	0.998
	log10[N/(/m2)]	0.110	0.059	0.872
fold2 T[K]	*t* (min)	4.347	2.707	0.998
	log10[N/(/m2)]	0.066	0.037	0.944
fold3 T[K]	*t* (min)	6.416	3.533	0.996
	log10[N/(/m2)]	0.125	0.053	0.818
fold4 T[K]	*t* (min)	4.918	2.663	0.997
	log10[N/(/m2)]	0.118	0.053	0.881
fold5 T[K]	*t* (min)	4.473	2.843	0.998
	log10[N/(/m2)]	0.092	0.044	0.888

Table S2. DNN accuracy of Molde B

	MSE	MAE	R2
fold1 T (K) fold2	19.012	13.224	0.793
T (K) fold3 T	15.828	11.481	0.854
(K) fold4 T (K)	19.23	14.077	0.788
fold5 T (K)	21.29	14.194	0.742
	14.638	10.902	0.862

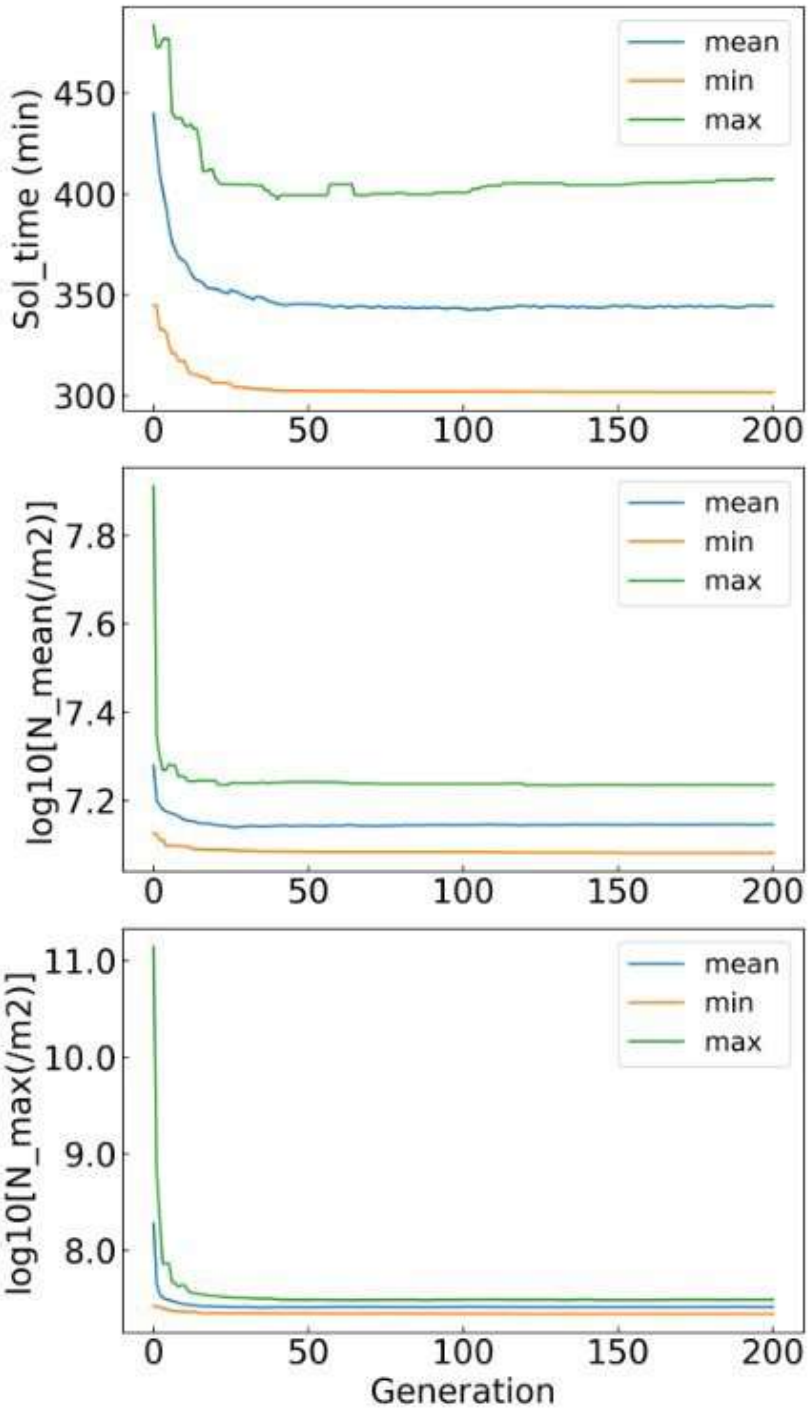

Figure S1. The progress of the three objective functions in the genetic algorithm for Model A. The solution converged sufficiently within the 200 generations.

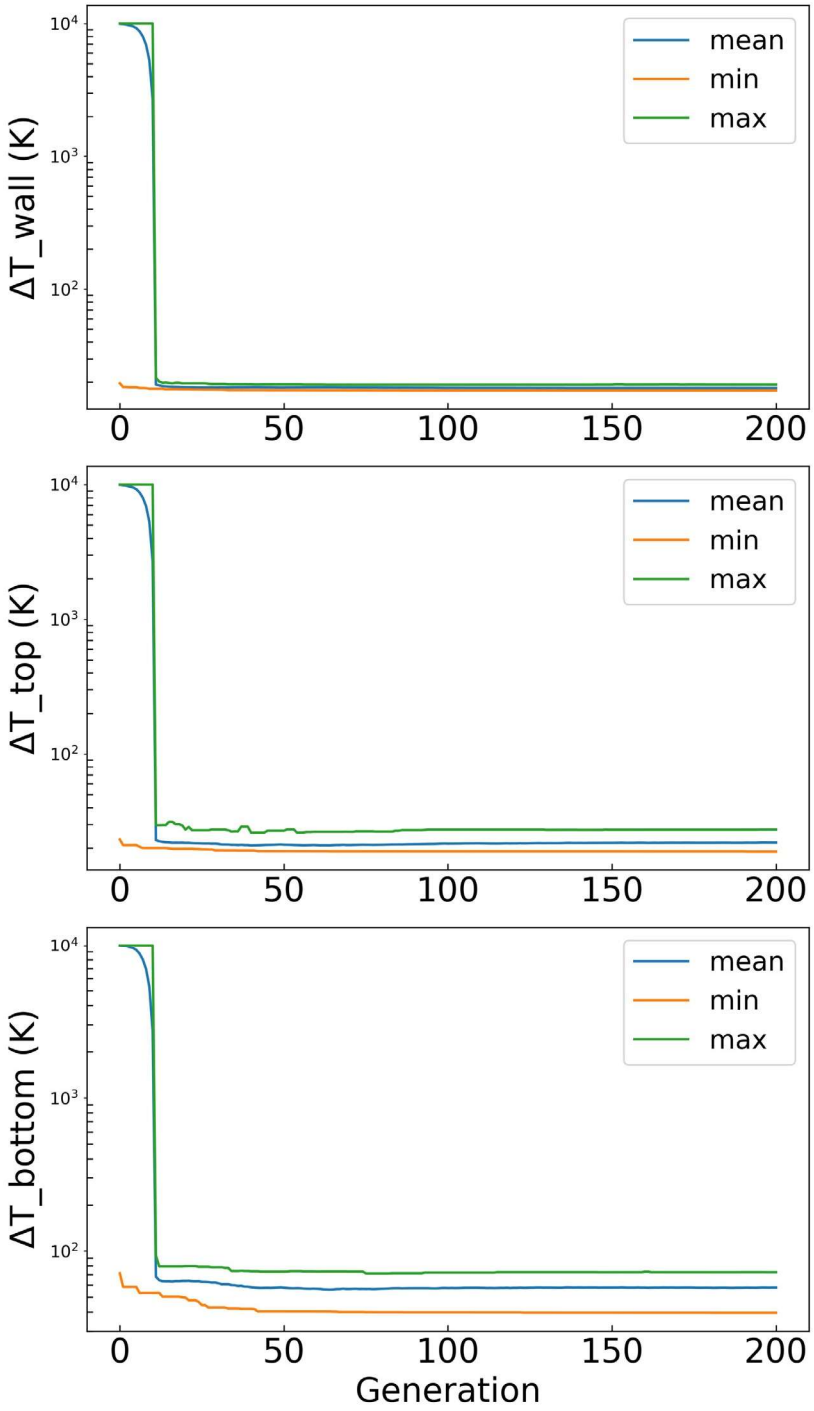

Figure S2. The progress of the three objective functions in the genetic algorithm for Model B. The solution converged sufficiently within the 200 generations.