

Supplementary Materials

The supplementary materials present the coefficients, R^2 , and MAE of the model at the flow rate of 850 mL/min in Table S1.

Table S1. The coefficients, R^2 , and MAE of the model at the flow rate of 850 mL/min.

Initial temperature	Position	α	β	γ	δ	R^2 *	MAE (training)	MAE (validation)
25 °C	B1T	0.315	0.635	0.275	-45.426	0.984	0.30	0.41
	B1M	3.071	0.583	0.103	-117.019	0.984	0.37	0.33
	B1B	3.433	0.507	0.151	-110.795	0.983	0.35	0.34
	A1T	7.870	0.352	0.049	-106.977	0.981	0.34	0.34
	A1M	1.374	0.868	0.023	-28.129	0.992	0.26	0.41
	A1B	2.469	1.012	-0.106	37.827	0.986	0.33	0.43
	C1T	5.482	0.392	0.072	-123.632	0.990	0.29	0.31
	C1B	0.568	0.798	0.148	-20.626	0.996	0.16	0.49
	D1T	3.586	0.468	0.196	-93.724	0.986	0.28	0.32
	D1M	3.739	0.715	-0.045	-91.662	0.985	0.37	0.23
	D1B	2.617	0.676	0.102	-69.956	0.986	0.32	0.32
	E1T	4.296	0.509	0.067	-76.600	0.985	0.30	0.35
	E1M	3.659	0.695	-0.032	-97.057	0.985	0.38	0.32
	E1B	0.426	0.849	0.121	-13.763	0.997	0.15	0.38
	D2T	5.038	0.362	0.129	-147.938	0.987	0.31	0.32
	D2M	1.079	0.812	0.074	-57.106	0.992	0.27	0.31
	D2B	3.955	0.425	0.196	-119.144	0.977	0.38	0.39
35 °C	B1T	-4.264	1.046	0.191	49.565	0.985	0.51	0.62
	B1M	0.329	0.859	0.077	-25.984	0.993	0.42	0.40
	B1B	1.072	0.769	0.099	-26.020	0.991	0.41	0.43
	A1T	3.151	0.767	0.098	19.090	0.992	0.39	0.40
	A1M	0.792	0.938	0.018	-7.405	0.996	0.29	0.55
	A1B	3.234	0.985	-0.082	25.530	0.994	0.35	0.36
	C1T	0.767	0.795	0.100	-10.866	0.994	0.33	0.44
	C1B	0.625	0.827	0.115	-12.805	0.997	0.22	0.51
	D1T	1.182	0.706	0.158	-42.756	0.994	0.33	0.49
	D1M	1.217	0.955	-0.023	-4.814	0.992	0.43	0.28
	D1B	1.187	0.869	0.036	-11.231	0.994	0.34	0.40
	E1T	1.424	0.691	0.138	-43.944	0.994	0.31	0.40
	E1M	1.072	0.939	-0.022	-11.199	0.993	0.40	0.37
	E1B	0.679	0.857	0.097	-10.270	0.998	0.19	0.41
	D2T	-0.287	0.778	0.170	-20.616	0.991	0.42	0.46
	D2M	0.001	0.914	0.075	-19.549	0.996	0.31	0.37
	D2B	1.205	0.708	0.156	-30.231	0.989	0.44	0.46

* The R^2 of the model for the top layer is calculated from the response part.