

Supplementary Material

Table S1: Box-Behnken Response Surface Method for monolith heat transfer study

Run	Independent Variable									
	Coded Value					Actual Value				
	X ₁	X ₂	X ₃	X ₄	X ₅	External Monolith Flow Temp [°C]	Mass Flow [SCFM]	Internal Monolith Applied Temp Rise [°C]	Mass Flow [SLPM]	Arrangement [C or X]
1	-	-	-	0	C	200	20	+0	50	Coflow
					X					Counterflow
2	-	-	0	-	C	200	20	+50	15	Coflow
					X					Counterflow
3	-	-	+	0	C	200	20	+100	50	Coflow
					X					Counterflow
4	-	0	+	0	C	200	60	+100	50	Coflow
					X					Counterflow
5	-	+	-	-	C	200	100	+0	15	Coflow
					X					Counterflow
6	-	+	0	+	C	200	100	+50	85	Coflow
					X					Counterflow
7	-	+	+	+	C	200	100	+100	85	Coflow
					X					Counterflow
8	0	-	-	+	C	400	20	+0	85	Coflow
					X					Counterflow
9	0	-	0	+	C	400	20	+50	85	Coflow
					X					Counterflow
10	0	-	+	-	C	400	20	+100	15	Coflow
					X					Counterflow
11	0	0	+	-	C	400	60	+100	15	Coflow
					X					Counterflow
12	0	+	-	0	C	400	100	+0	50	Coflow
					X					Counterflow
13	0	+	0	0	C	400	100	+50	50	Coflow
					X					Counterflow
14	0	+	+	-	C	400	100	+100	15	Coflow
					X					Counterflow
15	+	-	-	-	C	600	20	+0	15	Coflow
					X					Counterflow
16	+	-	0	0	C	600	20	+50	50	Coflow
					X					Counterflow
17	+	-	+	+	C	600	20	+100	85	Coflow
					X					Counterflow
18	+	0	+	+	C	600	60	+100	85	Coflow
					X					Counterflow
19	+	+	-	+	C	600	100	+0	85	Coflow
					X					Counterflow
20	+	+	0	-	C	600	100	+50	15	Coflow
					X					Counterflow
21	+	+	+	0	C	600	100	+100	50	Coflow
					X					Counterflow