

正交实验设计方法优化膜蒸馏用聚丙烯平板疏水微孔膜的制备条件

五因子 3 水平

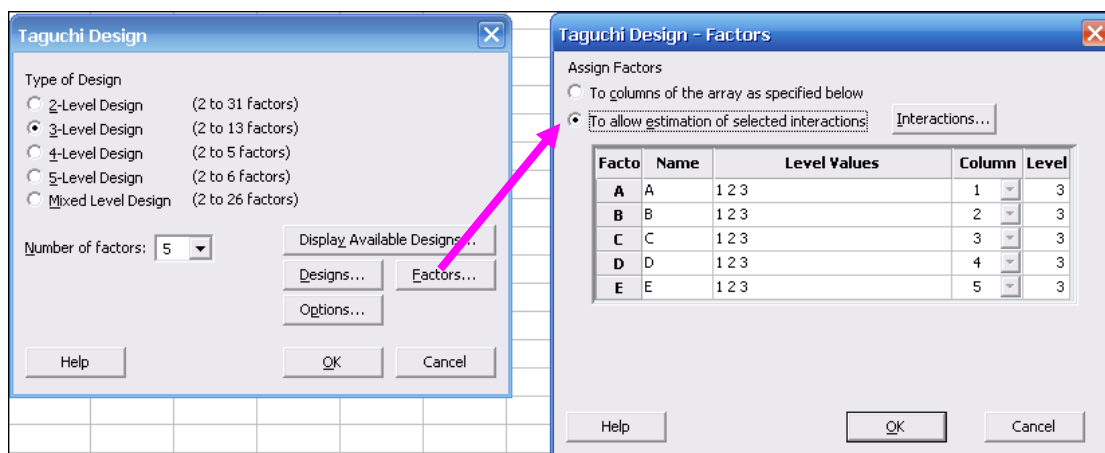
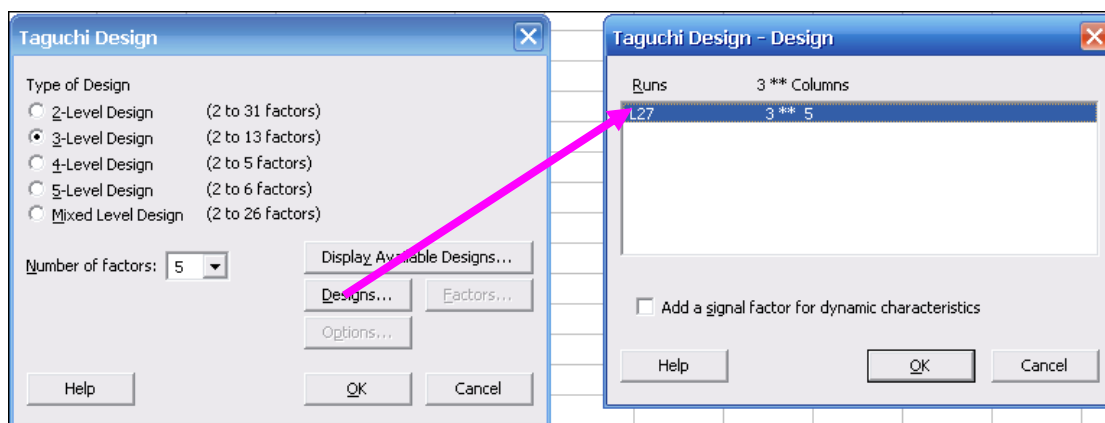
	因子				
水平	质量分数	淬冷温度	熔融指数	成核剂质量分数	成核剂
1	26	20	16	0.2	乙二酸
2	27	30	11	0.4	草酸
3	28	40	8	0.5	苯甲酸

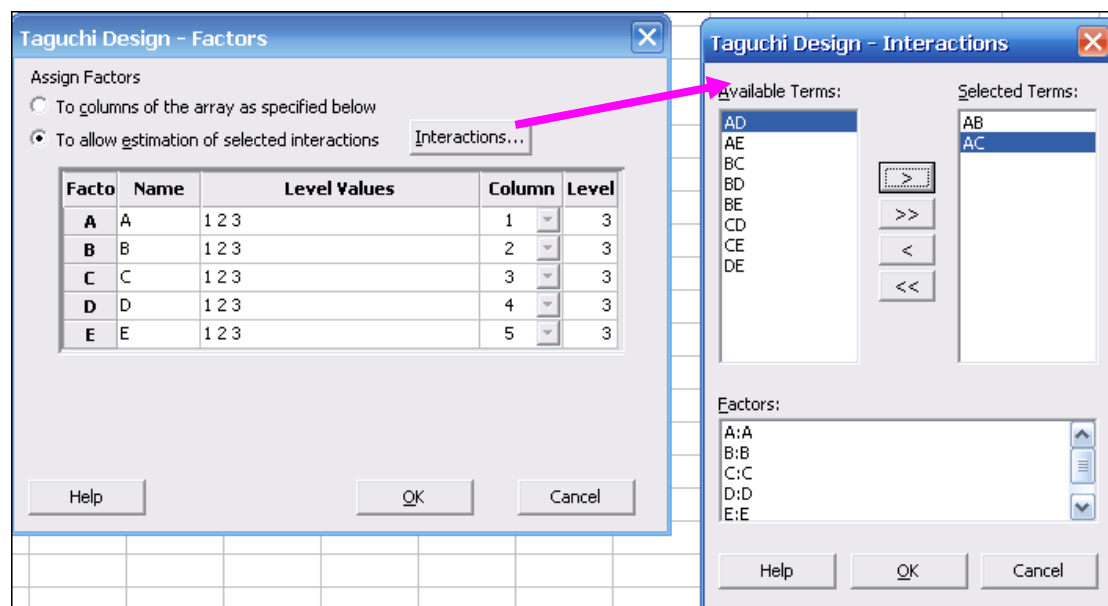
主效应: $(3-1)*5=10$

AB, AC 互作: $(3-1)*(3-1)*2=8$

总和: $n \geq 10+8+1+1=20$

选用 $L_{27}(3^5)$





实验实施完毕

↓	C1	C2	C3	C4	C5	C6
	A	B	C	D	E	y
1	1	1	1	1	1	415.187
2	1	1	2	2	2	360.450
3	1	1	3	3	3	445.678
4	1	2	1	2	2	503.483
5	1	2	2	3	3	499.108
6	1	2	3	1	1	529.055
7	1	3	1	3	3	309.719
8	1	3	2	1	1	418.886
9	1	3	3	2	2	493.321
10	2	1	1	1	2	371.145
11	2	1	2	2	3	393.349
12	2	1	3	3	1	337.336
13	2	2	1	2	3	328.573
14	2	2	2	3	1	377.253

↓	C1	C2	C3	C4	C5	C6
	A	B	C	D	E	y
15	2	2	3	1	2	388.684
16	2	3	1	3	1	313.396
17	2	3	2	1	2	400.196
18	2	3	3	2	3	409.373
19	3	1	1	1	3	439.552
20	3	1	2	2	1	411.532
21	3	1	3	3	2	413.689
22	3	2	1	2	1	411.267
23	3	2	2	3	2	507.188
24	3	2	3	1	3	427.224
25	3	3	1	3	2	421.575
26	3	3	2	1	3	403.260
27	3	3	3	2	1	542.444

方差分析结果

Analysis of Variance for y, using Adjusted SS for Tests						
Source	DF	Seq SS	Adj SS	Adj MS	F	P
A	2	31975	31975	15987	5.11	0.037
B	2	8528	8528	4264	1.36	0.310
C	2	12457	12457	6228	1.99	0.199
D	2	3124	3124	1562	0.50	0.625
E	2	2310	2310	1155	0.37	0.703
A*B	4	14923	14923	3731	1.19	0.384
A*C	4	4822	4822	1205	0.39	0.814
Error	8	25044	25044	3131		
Total	26	103183				

SAS 程序

```
cards;
1 1 1 1 1 415.187
1 1 2 2 2 360.450
1 1 3 3 3 445.678
1 2 1 2 2 503.483
1 2 2 3 3 499.108
1 2 3 1 1 529.055
1 3 1 3 3 309.719
1 3 2 1 1 418.886
1 3 3 2 2 493.321
2 1 1 1 2 371.145
2 1 2 2 3 393.349
2 1 3 3 1 337.336
2 2 1 2 3 328.573
2 2 2 3 1 377.253
2 2 3 1 2 388.684
2 3 1 3 1 313.396
2 3 2 1 2 400.196
2 3 3 2 3 409.373
3 1 1 1 3 439.552
3 1 2 2 1 411.532
3 1 3 3 2 413.689
3 2 1 2 1 411.267
3 2 2 3 2 507.188
3 2 3 1 3 427.224
3 3 1 3 2 421.575
3 3 2 1 3 403.260
3 3 3 2 1 542.444
;
proc anova;
class a b c d e;
model y = a b c d e a*b a*c;
run;
```

SAS 运行结果

Source	DF	Anova SS	Mean Square	F Value	Pr > F
a	2	31974.83869	15987.41934	5.11	0.0372
b	2	8528.02721	4264.01360	1.36	0.3097
c	2	12456.76981	6228.38491	1.99	0.1989
d	2	3124.15182	1562.07591	0.50	0.6249
e	2	2309.77156	1154.88578	0.37	0.7027
a*b	4	14923.30166	3730.82541	1.19	0.3844
a*c	4	4821.60507	1205.40127	0.39	0.8138