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(73) 20

(72) 395 - 3 103 203
462 - 4 109 1603
386 - 4 B 205

(74)
:

(54)

가
.
a)) ;) ;)
/g ; c) 130 230 m²/g ; d) ; b) 20 80 m²
.
가
, PCR 가 ,
.
,
,
,
,
,

[]

, 가 .

[]

가 , ,

가 가 .

, 가

가 (cleaning)

(fog: background)

(roller)

(sub - roller)

가

가

(,)

(,)

(primary

charge roller: PCR)

가 PCR .

가

가 가

가

가 가

가 가

가 (blade) 가
가 (blocking)
가

(Tg)

, PCR 가 가

[]

- a)) ;
) ;
) ;
- b) 20 80 m²/g ;
- c) 130 230 m²/g ;
- d)

[]

가 () , P
가 CR

5 30 μm)

a))

2-

2-

1

가

2가

A,

A

1

A

2가

1

a))

100

1

가
20

C.I. 12, 13, 14, 15, 17, 62, 74, 83, 93, 94, 95, 109,
110, 111, 128, 129, 147, 168

C.I. 2, 3, 5, 6, 7,
23, 48 : 2, 48 : 3, 48 : 4, 57 : 1, 81 : 1, 144, 146, 166, 169, 177, 184, 185, 2
02, 206, 220, 221, 254

C.I. 1, 7, 15, 15 : 1, 15 : 2, 15 : 3, 15 : 4, 60, 62, 66

2

가

OHP

a))

4

100

0.5

5

가

b) 30 50 m²/g , 가 20 80 m²/g , .

c) 150 200 m²/g , . 130 230 m²/g , .

가 , BET 가 , 가 , 가 (m²/g) .

20 80 m²/g 가 , (solid) 130 m²/g , 230 m²/g 가 .

가 , 20 m²/g 130 230 m²/g (blocking) 가 , 가 , 가 .

80 m²/g 가 , 가 .

0.5 2.5 , 100 0.5 1.5 가 .

가 가 , 가 .

0.5 100 0.5 2.5 가 , PCR 가 , 1.5 .

0.5 100 0.5 1.5 , 가 2.5 .

가 , P - , 3 - , , , .

1

[1]

		()
		100
		5
		2
		3

()

100 , 2 , 3 , 4 , 1 89 1 32

[2]

[2]

	(m ² /g)		
A	20		
B	40		
C	80		
D	130	HMDS	
E	180	HMDS	
F	230	HMDS	

2 BET , HMDS (hexamethyldisilazane)

[3]

[3]

	(%)	(%)	(nm)
A	85	15	50
B	55	45	50
C	15	85	50
D	100	0	130
E	85	15	130
F	55	45	130
G	15	85	130
H	85	15	500
I	55	45	500
J	15	85	500

[4]

[4]

()				
1	100	A, 0.5	D, 0.5	F, 1.0
2	100	A, 0.5	D, 1.0	F, 1.0
3	100	A, 0.5	D, 1.5	F, 1.0
4	100	A, 1.0	D, 0.5	F, 1.0
5	100	A, 1.0	D, 1.0	F, 1.0
6	100	A, 1.0	D, 1.5	F, 1.0
7	100	A, 2.5	D, 0.5	F, 1.0
8	100	A, 2.5	D, 1.0	F, 1.0
9	100	A, 2.5	D, 1.5	F, 1.0
10	100	B, 0.5	D, 0.5	F, 1.0
11	100	B, 0.5	D, 1.0	F, 1.0
12	100	B, 0.5	D, 1.5	F, 1.0
13	100	B, 1.0	D, 0.5	F, 1.0
14	100	B, 1.0	D, 1.0	F, 1.0
15	100	B, 1.0	D, 1.5	F, 1.0
16	100	B, 2.5	D, 0.5	F, 1.0
17	100	B, 2.5	D, 1.0	F, 1.0
18	100	B, 2.5	D, 1.5	F, 1.0
19	100	C, 0.5	D, 0.5	F, 1.0
20	100	C, 0.5	D, 1.0	F, 1.0
21	100	C, 0.5	D, 1.5	F, 1.0
22	100	C, 1.0	D, 0.5	F, 1.0
23	100	C, 1.0	D, 1.0	F, 1.0
24	100	C, 1.0	D, 1.5	F, 1.0
25	100	C, 2.5	D, 0.5	F, 1.0
26	100	C, 2.5	D, 1.0	F, 1.0
27	100	C, 2.5	D, 1.5	F, 1.0
28	100	A, 0.5	E, 0.5	F, 1.0
29	100	A, 0.5	E, 1.0	F, 1.0
30	100	A, 0.5	E, 1.5	F, 1.0
31	100	A, 1.0	E, 0.5	F, 1.0
32	100	A, 1.0	E, 1.0	F, 1.0
33	100	A, 1.0	E, 1.5	F, 1.0
34	100	A, 2.5	E, 0.5	F, 1.0

[5]

()				
35	100	A, 2.5	E, 1.0	F, 1.0
36	100	A, 2.5	E, 1.5	F, 1.0
37	100	B, 0.5	E, 0.5	F, 1.0
38	100	B, 0.5	E, 1.0	F, 1.0
39	100	B, 0.5	E, 1.5	F, 1.0
40	100	B, 1.0	E, 0.5	F, 1.0
41	100	B, 1.0	E, 1.0	F, 1.0
42	100	B, 1.0	E, 1.5	F, 1.0
43	100	B, 2.5	E, 0.5	F, 1.0
44	100	B, 2.5	E, 1.0	F, 1.0
45	100	B, 2.5	E, 1.5	F, 1.0
46	100	C, 0.5	E, 0.5	F, 1.0
47	100	C, 0.5	E, 1.0	F, 1.0
48	100	C, 0.5	E, 1.5	F, 1.0
49	100	C, 1.0	E, 0.5	F, 1.0
50	100	C, 1.0	E, 1.0	F, 1.0
51	100	C, 1.0	E, 1.5	F, 1.0
52	100	C, 2.5	E, 0.5	F, 1.0
53	100	C, 2.5	E, 1.0	F, 1.0
54	100	C, 2.5	E, 1.5	F, 1.0
55	100	A, 0.5	F, 0.5	F, 1.0
56	100	A, 0.5	F, 1.0	F, 1.0
57	100	A, 0.5	F, 1.5	F, 1.0
58	100	A, 1.0	F, 0.5	F, 1.0
59	100	A, 1.0	F, 1.0	F, 1.0
60	100	A, 1.0	F, 1.5	F, 1.0
61	100	A, 2.5	F, 0.5	F, 1.0
62	100	A, 2.5	F, 1.0	F, 1.0
63	100	A, 2.5	F, 1.5	F, 1.0
64	100	B, 0.5	F, 0.5	F, 1.0
65	100	B, 0.5	F, 1.0	F, 1.0
66	100	B, 0.5	F, 1.5	F, 1.0
67	100	B, 1.0	F, 0.5	F, 1.0
68	100	B, 1.0	F, 1.0	F, 1.0

[6]

()				
69	100	B, 1.0	F, 1.5	F, 1.0
70	100	B, 2.5	F, 0.5	F, 1.0
71	100	B, 2.5	F, 1.0	F, 1.0
72	100	B, 2.5	F, 1.5	F, 1.0
73	100	C, 0.5	F, 0.5	F, 1.0
74	100	C, 0.5	F, 1.0	F, 1.0
75	100	C, 0.5	F, 1.5	F, 1.0
76	100	C, 1.0	F, 0.5	F, 1.0
77	100	C, 1.0	F, 1.0	F, 1.0
78	100	C, 1.0	F, 1.5	F, 1.0
79	100	C, 2.5	F, 0.5	F, 1.0
80	100	C, 2.5	F, 1.0	F, 1.0
81	100	C, 2.5	F, 1.5	F, 1.0
82	100	B, 1.0	E, 1.0	B, 0.3
83	100	B, 1.0	E, 1.0	B, 1.0
84	100	B, 1.0	E, 1.0	B, 2.5
85	100	B, 1.0	E, 1.0	F, 0.3
86	100	B, 1.0	E, 1.0	F, 2.5
87	100	B, 1.0	E, 1.0	I, 0.3
88	100	B, 1.0	E, 1.0	I, 1.0
89	100	B, 1.0	E, 1.0	I, 2.5
1	100	B, 1.0	D, 0.4	F, 1.0
2	100	B, 1.0	D, 1.6	F, 1.0
3	100	B, 0.4	E, 1.0	F, 1.0
4	100	B, 2.6	E, 1.0	F, 1.0
5	100	B, 1.0	E, 1.0	B, 0.2
6	100	B, 1.0	E, 1.0	B, 2.6
7	100	B, 1.0	E, 1.0	F, 0.2
8	100	B, 1.0	E, 1.0	F, 2.6
9	100	B, 1.0	E, 1.0	I, 0.2
10	100	B, 1.0	E, 1.0	I, 2.6
11	100	B, 1.0	E, 1.0	A, 1.0
12	100	B, 1.0	E, 1.0	C, 1.0

[7]

()				
13	100	B, 1.0	E, 1.0	D, 1.0
14	100	B, 1.0	E, 1.0	E, 1.0
15	100	B, 1.0	E, 1.0	G, 1.0
16	100	B, 1.0	E, 1.0	H, 1.0
17	100	B, 1.0	E, 1.0	J, 1.0
18	100	-	E, 0.5	F, 1.0
19	100	-	E, 1.0	F, 1.0
20	100	-	E, 1.5	F, 1.0
21	100	B, 0.5	-	F, 1.0
22	100	B, 1.0	-	F, 1.0
23	100	B, 2.5	-	F, 1.0
24	100	B, 0.5	E, 0.5	-
25	100	B, 0.5	E, 1.0	-
26	100	B, 0.5	E, 1.5	-
27	100	B, 1.0	E, 0.5	-
28	100	B, 1.0	E, 1.0	-
29	100	B, 1.0	E, 1.5	-
30	100	B, 2.5	E, 0.5	-
31	100	B, 2.5	E, 1.0	-
32	100	B, 2.5	E, 1.5	-

(가)

ML5300) , (20 , 55 % RH) 5,000 가 (() 5

[5]

[8]

	(I.D)	(Fog: background)	PCR	(blocking)
1	1.35	0		
2	1.38	0	0	
3	1.42		0	
4	1.39	0		0
5	1.43	0	0	0
6	1.45		0	0
7	1.48	0		0
8	1.51	0	0	0
9	1.52		0	0
10	1.33	0	0	
11	1.34	0	0	
12	1.37		0	
13	1.35	0		0
14	1.39	0	0	0
15	1.41		0	0
16	1.43	0		0
17	1.45	0	0	0
18	1.46		0	0
19	1.33	0	0	
20	1.35	0	0	
21	1.37		0	0
22	1.36	0	0	
23	1.38	0	0	
24	1.39		0	0
25	1.41	0		0
26	1.42	0	0	0
27	1.44		0	0
28	1.32	0		0
29	1.34	0	0	0
30	1.36		0	0
31	1.35	0	0	
32	1.37	0	0	
33	1.38		0	
34	1.40	0		0

[9]

	(I.D)	(Fog: background)	PCR	(blocking)
35	1.43	0	0	0
36	1.45		0	0
37	1.31	0		0
38	1.32	0	0	0
39	1.35		0	0
40	1.34	0		0
41	1.36	0	0	
42	1.38		0	0
43	1.42	0	0	0
44	1.45	0	0	0
45	1.50		0	0
46	1.33	0		0
47	1.35	0	0	0
48	1.37	0	0	0
49	1.35	0		0
50	1.38	0	0	0
51	1.39		0	0
52	1.43	0		0
53	1.46	0	0	
54	1.49	0	0	0
55	1.34	0	0	
56	1.37	0	0	0
57	1.42		0	0
58	1.38	0	0	0
59	1.43	0	0	0
60	1.46		0	0
61	1.48	0		0
62	1.50	0	0	0
63	1.51	0	0	0
64	1.33	0		0
65	1.34	0	0	0
66	1.36	0	0	0
67	1.35	0	0	
68	1.38	0	0	0

[10]

	(I.D)	(Fog: background)	PCR	(blocking)
69	1.40	0	0	0
70	1.42	0	0	0
71	1.44	0		0
72	1.47	0	0	0
73	1.32		0	0
74	1.35	0	0	0
75	1.36	0	0	0
76	1.35	0	0	0
77	1.38	0	0	
78	1.40	0	0	0
79	1.42		0	0
80	1.44	0	0	0
81	1.47	0	0	
82	1.34	0	0	0
83	1.38	0		0
84	1.42	0	0	0
85	1.34	0	0	0
86	1.38	0	0	0
87	1.36	0	0	0
88	1.37		0	0
89	1.40	0	0	
1	1.35		x	x
2	1.43	x		
3	1.32		x	x
4	1.50	x	x	
5	1.44		x	0
6	1.32	x		0
7	1.45		x	0
8	1.30	x		0
9	1.40		x	0
10	1.29	x		
11	1.34		x	0
12	1.27	x		0

[11]

	(I.D)	(Fog: background)	PCR	(blocking)
13	1.33		x	
14	1.35		x	0
15	1.43	x		
16	1.40		x	
17	1.47	x		
18	1.25		x	x
19	1.30			x
20	1.33			x
21	1.16	x	x	
22	1.22	x	x	
23	1.30		x	x
24	1.32		x	
25	1.35		x	x
26	1.39		x	
27	1.34	x	x	
28	1.36		x	x
29	1.40		x	x
30	1.36	x	x	x
31	1.42		x	
32	1.46		x	

0 5 (I.D) (solid) RD918 (I.D 1.3
가).

fog(background) 가

O: fog(background)

: fog(background)

x: fog(background)

, PCR 가 PCR

O: PCR

: PCR

x: PCR

, (solid) 2,000
, 2,000 가

0:

x:

5 (I.D)가 1.30 가 , 1 89 fog(background) PCR
 가 , fog(background)
 PCR 가 1 17 , fog(background)
 , 2 1 fog(background) PCR 18 32 가
 , PCR 가 가 ,

(57)

1.

- a)) ;
) ;
) ;
- b) 20 80 m²/g ;
- c) 130 230 m²/g ;
- d)

2.

- 1 ,
- a)) 100 ;
) 1 20 ;
) 0.5 5
 100 ;

- b) 20 80 m²/g 0.5 2.5 ;
- c) 130 230 m²/g 0.5 1.5 ;
- d) 0.3 2.5

3.

1 2 ,

a) 가

) 0.05 5

4.

1 2 ,

b) c) 가

5.

1 2 ,

b) c) 가

6.

4 5 ,

25 가 50 10,000 cps

7.

1 2 ,

d) 50 500 nm

8.

1 2 ,

d) 1 , , , , , , , ,

9.

19.

10 11 ,

b)) 20 80 % .