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(43)

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2002 07 12

(21) 10 - 2000 - 0085129
(22) 2000 12 29

(71) 100 103 - 1203

(72) 100 103 - 1203
121 110 101
242 - 14
104 604

(74)
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(54)

가 가 , .

가 , 가 , 2 - , .

가

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2

가

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2

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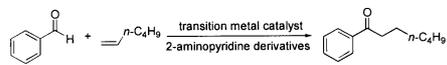
가

가

1

가 2-

[1]

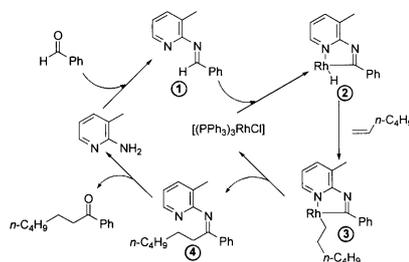


2

가 2-

, 가

【반응식 2】

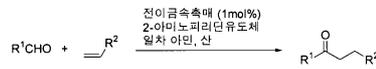


1% 2- , 80% 10 mol% 60 20 mo 가

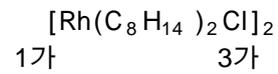
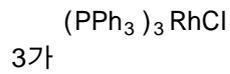
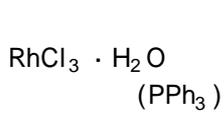
() 2- 가 가

가 , 2- 가 , 3

【반응식 3】



가 , 1가



2- 가 가

가

2- , tert- , p

가 가

가

4

2- -3-

(transimination)

1-

가 가 가

2- -3-

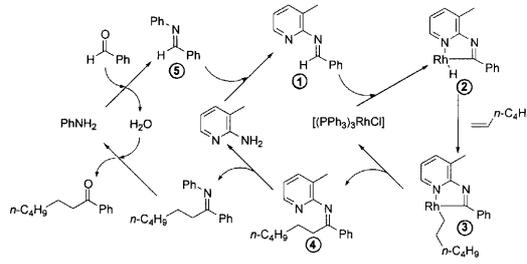
2- -3-

가 가

Rh(I)

2- -3-

【반응식 4】



< 1 >

0.5 ml (0.03 mmol) , 53 mg (0.5 mmol) , 28 mg (0.3 mmol) , 11 mg (0.1 mmol) 2- , 3- , 4 mg
 ol) , 210 mg (2.5 mmol) 1- 80 mg (0.87 mmol)
 Rh(PPh₃)₃Cl 가 , 9.25 mg (0.01 mmol)
 130 1 가 ,
 98% (93 mg, 0.49 mmol)

[1]

[1]

			(%)
1	1 -	1 - - 1 -	83
2	1 -	1 - - 1 -	98
3	1 -	1 - - 1 -	99
4	3,3- - 1 -	4,4- - 1 - - 1 -	84
5		4 - - 1 - - 1 -	95
6	2,3,4,5,6 -	3 - -	98
7		[2.2.1] - 2 - -	47
8	- -	1 - - 3 - - - 1 -	95

< 2 >

1 (0.1 mmol 2- - 3- , 0.03 mmol , 0.3 mmol
 , 2.5 mmol 1- , 0.87 mmol) 0.5 ml ,
 0.5 mmol 가 2-3 , 9.25 mg (0.01mmol)
 Rh(PPh₃)₃Cl 가 130 1 , 2

[2]

[2]

			(%)
1			98
2	- 4 -	1 - - 4 - - - 1 -	95
3	- 2 -	1 - - 2 - - - 1 -	91
4	4 - -	1 - (4 - -) - - 1 -	79
5	4 - -	1 - (4 - -) - - 1 -	57
6	4 - -	1 - p - - - 1 -	88
7	4 - -	1 - (4 - -) - - 1 -	47
8	4 - -	1 - (4 - -) - - 1 -	71
9	4 - -	1 - (4 - -) - - 1 -	88
10	3 - -	1 - - - 3 -	71

< 3 >

1 (0.5 mmol), 0.3 mmol, 0.03 mmol, 2.5 mmol, 1 -, 0.87 mmol, 0.5 ml, 3, 0.1 mmol, 2 -, 가, 2 - 3, 0.01 mmol Rh(PPh₃)₃Cl 가, 130, 1, GC, 3.

[3]

[3]

	2 -	(%)
1	2 -	18
2	2 - - 3 -	100
3	2 - - 4 -	11
4	2 - - 5 -	12
5	2 - - 6 -	3

< 4 >

1 (0.5 mmol), 0.1 mmol, 2 -, - 3 -, 0.3 mmol, 2.5 mmol, 1 -, 0.87 mmol, 0.5 ml, 4, 0.03 mmol, 가, 2 - 3, 0.01 mmol Rh(PPh₃)₃Cl 가, 130, 1, GC, 4.

[4]

[4]

		(%)
1		69
2		73
3	4 - -	82
4		100
5	4 - -	100
6	4 - -	100
7	-	95
8	p -	43
9		35

< 5 >

1 (0.5 mmol), 0.1 mmol 2 - - 3 - , 0.03 mmol
 , 2.5 mmol 1 - , 0.87 mmol) 0.5 ml
 5 0.3 mmol 가 . 2 - 3 , 0.01
 mmol Rh(PPh₃)₃Cl 가 . 130 1 . ,
 5 .

[5]

[5]

		(%)
1		33
2		98
3		87
4		79
5	tert -	59

< 6 >

1 (0.5 mmol), 0.1 mmol 2 - - 3 - , 0.3 mmol
 , 0.03mmol , 2.5 mmol 1 - , 0.87mmol) 0.5 ml
 가 . 가 2 - 3 , 0.01mmol 6
 가 . GC 130 1 . , 6 .

[6]

[6]

		(%)
1	Rh(PPh ₃) ₃ Cl	100
2	RhCl ₃ + PPh ₃ (3equiv.)	76
3	[Rh(C ₈ H ₁₄) ₂ Cl] ₂ + PPh ₃ (2.5 equiv.)	100
4	Rh(CO)Cl(PPh ₃) ₂	5
5	Ir(PPh ₃) ₃ Cl	4
6	Ru ₃ (CO) ₁₂	3
7	Ru(PPh ₃) ₃ Cl ₂	1

< 7 >

1 (0.5 mmol), 0.1 mmol 2 - - 3 - , 0.3 mmol
 , 0.03mmol , 2.5 mmol 1 - , 0.87mmol) 0.5 ml
 가 . 2 - 3 , 0.01 mmol [Rh(C₈H₁₄)₂Cl]₂ 7
 0.025 mmol 가 . 130 1 .
 7 , GC ,

[7]

[7]

			(%)
1	PPh ₃ (30 min)	2.0 equiv.	74
2	PPh ₃ (30 min)	2.5 equiv.	82
3	PPh ₃ (30 min)	3.0 equiv.	75
4	PPh ₃ (60 min)	2.5 equiv.	100
5	P(p - MeC ₆ H ₄) ₃	2.5 equiv.	99
6	P(p - MeOC ₆ H ₄) ₃	2.5 equiv.	99
7	P(o - MeC ₆ H ₄) ₃	2.5 equiv.	15
8	PCy ₃	2.5 equiv.	25
9	PPhCy ₂	2.5 equiv.	12
10	PBu ₃	2.5 equiv.	10
11	DPPE	2.5 equiv.	2

< 8 >

1 (0.5 mmol), 0.1 mmol 2 - - 3 - , 0.3 mmol
 , 0.03mmol) , 8 1 - 0.5 ml
 가 . 2 - 3 , 0.01mmol Rh(PPh₃)₃Cl 가 .
 130 1 , 1 -
 GC , 8 .

[8]

[8]

	1 -		(%)
1	1.0 mmol	0.87 mmol	42
2	1.5 mmol	0.87 mmol	66
3	2.0 mmol	0.87 mmol	93
4	2.5 mmol	0.87 mmol	100
5	2.5 mmol	0 mmol	100

< 9>

1 (0.5 mmol), 0.1 mmol 2- - 3- , 0.3 mmol
 , 0.03mmol , 2.5 mmol 1- , 0.87 mmol) 0.5 ml
 가 . 2-3 , 0.01mmol Rh(PPh₃)₃Cl 가 .
 130 9 GC , 9 .

[9]

[9]

	(min)	(%)
1	15	52
2	30	74
3	45	89
4	60	100
5	120	100

< 10>

1 (0.5 mmol), 0.1 mmol 2- - 3- , 0.3 mmol
 , 0.03 mmol , 2.5 mmol 1- , 0.87 mmol) 0.5 ml
 가 . 2-3 , 0.01 mmol Rh(PPh₃)₃Cl 가 .
 10 (70 130) 1 GC , 10 .

[10]

[10]

	()	(%)
1	70	13
2	100	52
3	130	100
4	150	100
5	170	100
6	130 (30 min)	74
7	150 (30 min)	82
8	170 (30 min)	86

< 11>

2 -
11

1
1
1

11

11

[11]

[11]

	(h)	2 -	2 - 가
1	0.5	8	62
2	1	9	100
3	2	12	100
4	4	16	100
5	6	19	100
6	8	20	100
7	12	24	100

(57)

1.

가 , 가 , 2 - ,

2.

1 , 가 , 1가 , 1가 가 , 3가 , 1
3가
2

3.

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가
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