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(51) 。 Int. Cl. <sup>7</sup>  
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(43)

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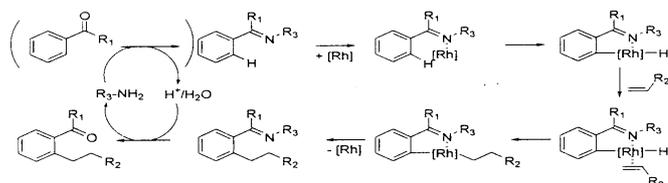
( R<sub>1</sub>, R<sub>2</sub>, R<sub>3</sub> )

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2

( , 1가 )가 , - 가 가 가

2

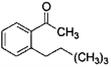
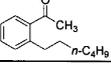
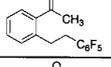
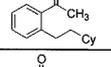
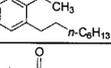
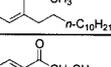
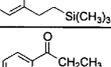
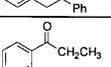
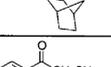
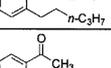
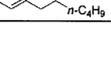


( R<sub>1</sub> , R<sub>2</sub> , R<sub>3</sub> , [Rh] 1가 )  
 가 , [Rh(C<sub>8</sub>H<sub>14</sub>)<sub>2</sub>Cl]<sub>2</sub> 1가 , RhCl<sub>3</sub>·H<sub>2</sub>O 1가  
 3가 , (PPh<sub>3</sub>)<sub>3</sub>RhCl 가 , 1가  
 3가 , tert - 가 .  
 , 100 150  
 2 4

[ 1 ]

500Mℓ 68 mg (0.32 mmol) N - (1 - ) - , 6 mg (0.0065 mmol)  
 (1) , 27 mg (0.32 mmol) 3,3 - - 1 - , 100 mg  
 1 N HCl 10 ml 가 150 2 가 , 3 ml THF ,  
 MgSO<sub>4</sub> 12 가 . Et<sub>2</sub>O CH<sub>2</sub>Cl<sub>2</sub> 3  
 ( = 5 : 2 ) 2 - (3,3 - ) - 1 -  
 97 % (64 mg; 0.31 mmol)  
 1 .

[ 1 ]

올레핀	생성물	수율(%)	비고
3,3-디메틸-1-부텐		97	
1-헥센		94	1-헥센 1.6 mmol 사용
1,2,3,4,5-펜타플루오르스티렌		91	
비닐시클로헥산		68	
1-옥텐		71	1-옥텐 1.6 mmol 사용
1-도데센		82	1-도데센 1.6 mmol 사용
트리메틸비닐 실란		96	
스티렌		41	
노보르닐렌		92	
2-펜텐		95	1-펜텐 1.6 mmol 사용
2-헥산		42	1-헥센 1.6 mmol 사용

[ 2]

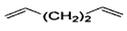
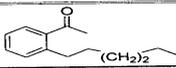
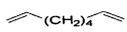
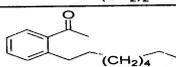
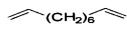
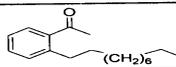
500Mℓ 63 mg (0.32 mmol) N - (1 - ) - , 6 mg (0.0065 mmol)  
 (1) , 27 mg (0.32 mmol) 3,3 - - 1 - , 100 mg  
 150 2 가 가 , 3 ml THF ,  
 1 N HCl 10 ml 가 12 가 . Et<sub>2</sub>O CH<sub>2</sub>Cl<sub>2</sub> 3  
 MgSO<sub>4</sub> ,  
 ( = 5 : 2 ) 2 - (3,3 - ) - 1 - 85  
 % (56 mg; 0.27 mmol) 2

[ 2]



500Mℓ 68 mg (0.32 mmol) N - (1 - ) - , 6 mg (0.0065 mmol)  
 (1) , 3.24 mmol , 100 mg ,  
 150 가 , 3 ml THF , 1 N HCl 10 ml  
 가 12 가 . Et<sub>2</sub>O CH<sub>2</sub>Cl<sub>2</sub> 3 Mg  
 SO<sub>4</sub> , Pd/C  
 ( = 5 : 2) 4  
 4

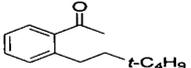
[ 4]

	diene	생성물	수율 (%)
1			92
2			97
3			92

[ 5]

1 5 1  
 , 5 .

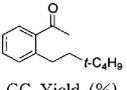
[ 5]

	온도 (°C)	 GC Yield (%)
1	80	12
2	100	53
3	130	81
4	150	86
5	170	83

[ 6]

500Mℓ 26 mg (0.22 mmol) , 12 mg (0.11 mmol) , 10.0 mg (0.011 mmol)  
 (1) , 91 mg (1.1 mmol) 3,3 - 1 - , 50 mg  
 ) - 1 - 150 2 가 , 2 - (3,3  
 (GC) 가 85% .  
 6

[ 6 ]

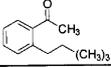
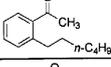
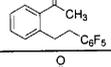
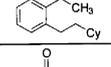
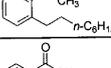
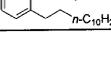
	벤질아민의 첨가량 (mol%)	 GC Yield (%)	비고
1	0	0	
2	30	43	
3	40	72	
4	50	85	7 %의 di-alkylation 생성물 포함
5	60	29	
6	70	33	
7	100	27	

[ 7 ]

500Mℓ 26 mg (0.22 mmol) , 12 mg (0.11 mmol) , 10.0 mg (0.011 mmol)  
 mmol) (1) , 91 mg (1.1 mmol) 3,3 - - 1 -  
 150 6 가 , 3 ml THF , 1 N HCl 10 m  
 1 가 12 가 . Et<sub>2</sub>O CH<sub>2</sub>Cl<sub>2</sub> ,  
 MgSO<sub>4</sub> = 5 : 2) 2 - (3,3 ) - 1 - 95 % (42 mg; 0.21 mmol)  
 ( 이)

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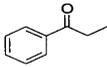
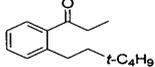
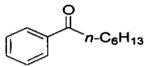
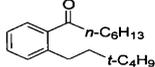
[ 7 ]

올레핀	생성물	수율(%)
3,3-디메틸-1-부텐		95
1-헥센		72
1,2,3,4,5-펜타플루오르스티렌		68
비닐시클로헥산		89
1-옥텐		15
1-도데센		17

[ 8]

8 0.22mmol 91mg(1.1mmol) 3,3 - - 1 -  
7 , 8 .

[ 8]

케톤	생성물	수율(%)
		86
		72
		87

(57)

1.

- , 가

2.

- , 1 가  
, 2

3.

1 가 2 , 1가 , 3가 ,

4.

1 2 , - , , , tert -