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Supporting Information

for

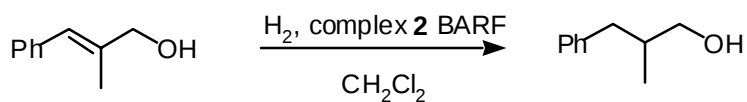
Enantioselective Hydrogenations of Arylalkenes Mediated by Ir(JM-Phos) Complexes

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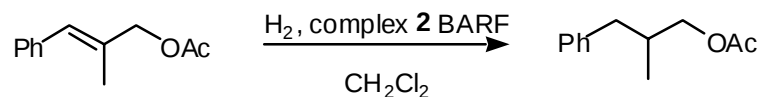
Tables of all the hydrogenation data collected for reactions 2 - 6.

Supplementary Table 1. Enantioselective Hydrogenation of an Allylic Acetate
(*cf* reaction 2)



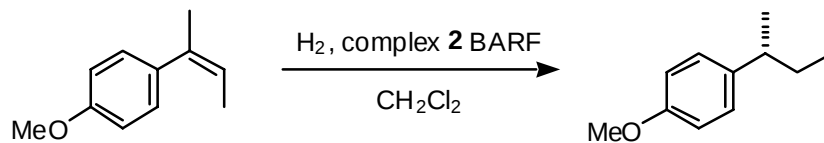
entry	complex cation	catalyst equiv. (mol %)	alkene conc. (M)	temp. (°C)	H ₂ pressure (bar)	yield ^a (%)	e.e. ^b (%)
1	2b	1.1	0.5	25	50	53	72
2	2b	1.1	0.5	-5	70	33	64
3	2c	0.5	1.1	25	50	13	52
4	2c	0.5	1.1	-5	70	40	61
5	2e	0.5	1.1	25	50	32	11
6	2f	0.5	1.1	25	50	20	-8
7	2g	0.5	1.1	25	50	3	27
8	2h	1.2	0.5	25	59	4	3
9	2i	0.5	1.1	25	50	95	57
10	2i	0.5	1.1	-5	70	30	49

^a GLC yield. ^b The enantiomeric excess was determined by GLC (100 °C, retention time: $t_1=55.2$ min, $t_2=56.3$ min). Absolute configurations were not determined.

Supplementary Table 2. Enantioselective Hydrogenation of an Allylic Alcohol

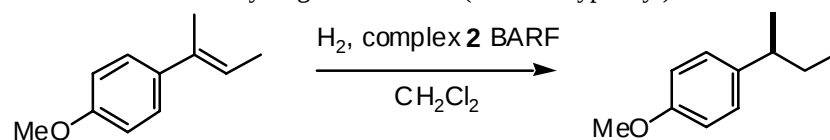
entry	complex cation	catalyst equiv. (mol %)	alkene conc. (M)	temp. (°C)	H ₂ pressure (bar)	yield ^a (%)	e.e. ^b (%)
1	2b	1	25	2	50	33	73
2	2c	1	25	2	50	80	67
3	2e	1	25	2	50	5	14
4	2f	1	25	2	50	11	47
5	2g	1	25	2	50	14	48

^a GLC yield. ^b The enantiomeric excess was determined by GLC (90 °C, retention time: t₁= 119.9 min, t₂= 123.3 min). Absolute configurations were not determined.

Supplementary Table 3. Enantioselective Hydrogenation of Z-2(4-Methoxyphenyl)-2-butene

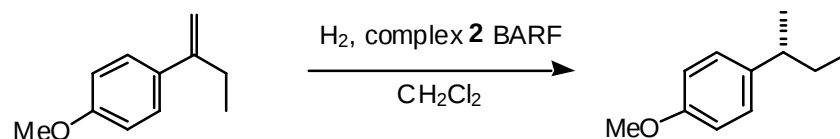
entry	complex cation	catalyst equiv. (mol %)	temp. (°C)	time (h)	H ₂ pressure (bar)	yield ^a (%)	e.e. ^b (%)
1	2a	0.6	25	2	50	99	33
2	2b	0.6	25	2	50	70	75
3	2b	1.0	-5	2	70	55	66
4	2c	0.3	25	2	50	80	64
5	2c	0.6	25	2	50	97	67
6	2c	0.6	-5	2	70	73	52
7	2c	0.3	60	2	50	95	62
8	2d	0.3	25	2	50	23	51
9	2e	0.6	25	2	50	84	29
10	2f	0.6	25	2	50	99	48
11	2i	0.3	25	2	50	30	35

^a GLC yield. ^b The enantiomeric excess was determined by GLC (75 °C, retention time: t₁ = 68.2 min, t₂ = 71.0 min).

Supplementary Table 4. Enantioselective Hydrogenation of *E*-2-(4-Methoxyphenyl)-2-butene

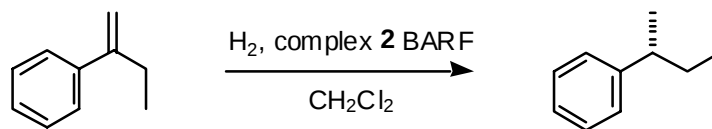
entry	complex cation	catalyst equiv. (mol %)	temp. (°C)	time (h)	H ₂ pressure (bar)	yield ^a (%)	e.e. ^b (%)
1	2b	0.6	25	2	50	90	80
2	2c	0.6	25	2	50	96	72
3	2d	0.6	25	2	50	83	73

^a GLC yield. ^b The enantiomeric excess was determined by GLC (75 °C, retention time: t₁ = 68.2 min, t₂ = 71.0 min).

Supplementary Table 5. Enantioselective Hydrogenation of 2(4-Methoxyphenyl)-1-butene

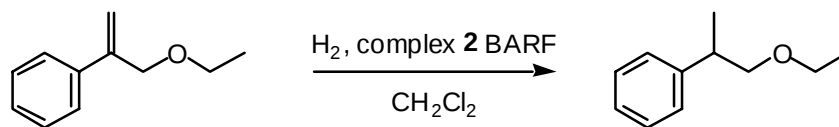
entry	complex cation	catalyst equiv. (mol %)	alkene conc. (M)	temp. (°C)	H ₂ pressure (bar)	yield ^a (%)	e.e. ^b (%)
1	2a	0.3	25	2	50	99	7
2	2b	0.3	-5	2	50	99	5
3	2b	0.3	25	2	50	99	34
4	2b	0.3	45	2	50	99	34
5	2b	0.3	60	2	50	99	44
6	2c	0.3	60	2	50	99	29
7	2e	0.3	25	2	50	99	29
8	2f	0.3	25	2	50	99	15
9	2h	0.3	25	2	50	10	0
10	2i	0.3	60	2	50	99	14

^a GLC yield. ^b The enantiomeric excess was determined by GLC (75 °C, retention time: t₁ = 68.2 min, t₂ = 71.0 min).

Supplementary Table 6. Enantioselective Hydrogenation of 2-Phenyl-1-butene

entry	complex cation	catalyst equiv. (mol %)	alkene conc. (M)	temp. (°C)	H ₂ pressure (bar)	yield ^a (%)	e.e. ^b (%)
1	2a	0.3	25	2	50	99	0
2	2b	0.3	25	2	50	99	40
3	2b	0.3	60	2	50	99	45
4	2c	0.3	25	2	50	99	22
5	2i	0.3	25	2	50	99	0

^a Isolated yield. ^b The enantiomeric excess was determined by the measurement of the optical rotation.

Supplementary Table 7. Enantioselective Hydrogenation of 3-Ethoxy-2-phenylpropene

entry	complex cation	catalyst equiv. (mol %)	temp. (°C)	time (h)	H ₂ pressure (bar)	yield ^a (%)	e.e. ^b (%)
1	2b	0.3	25	2	50	99	34
2	2c	0.3	25	2	50	99	25
3	2d	0.3	25	2	50	98	35
4	2i	0.3	25	2	50	90	40

^a GLC yield. ^b The enantiomeric excess was determined by GLC (70 °C, retention time: t₁ = 43.4 min, t₂ = 45.9 min). Absolute configurations were not determined.