Electronic Supplementary Information (ESI)

Perturbation Theory Model of Reactivity and Enantioselectivity of palladium-catalyzed Heck-Heck cascade reactions

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Contents:

1. Dataset: experimental conditions

Solvents: 1 = DMF, 2 = Acetonitrile, 3 = Ethanol, 4 = THF, 5 = Dioxane, 6 = Toluene, 7 = Chloroform, 8 = DMA, 9 = NMP, 10 = Nitrobenzene and propanol.a) Coya, E.; Sotomayor, N.; Lete, E. *Adv. Synth. Catal.* **2015**, *357*, 3206. b) Maddafor, S. P.; Andersen, N. G.; Cristofoli, W. A.; Keay, *Am. Chem. Soc.* **1996**, *118*, 10766. c) Lau, S. Y. W.; Keay, B. A. *Synlett* **1999**, *5*, 605. d) Rankic, D. A.; Lucciola, D.; Keay, B. A. *Tetrahedron Lett* *51*, 5724. e) Lucciola, D.; Keay, B. A. *Synlett* **2011**, *11*, 1618.

Table S1. Dataset of the enantioselective cascade Heck-Heck reactions .

n	p	$^{p}\varepsilon_{ij}$(%)	Sub.	Codes Cat.	L.	Base	Sol.	Pr.	Config L.	Pr.	$\langle\varepsilon_i\rangle$	Pd (%)	L	B (eq.)	T (^{0}C)	t (h)	Ref
1	ee(%)	56	S01	Pd(OAc)$_2$	L01A	Et$_3$N	1	P01	R	R	46	5	14	2	80	72	a
2	ee(%)	63	S01	Pd(OAc)$_2$	L01A	Et$_3$N	1	P01	R	R	46	10	28	2	80	72	a
3	ee(%)	0	S01	Pd(OAc)$_2$	L01A	PMP	1	P01	R	R	46	10	28	2	80	72	a
4	ee(%)	29	S01	Pd(OAc)$_2$	L01A	Et$_3$N	1	P01	R	R	46	10	28	2	110	72	a
5	ee(%)	30	S01	Pd(OAc)$_2$	L01A	Cy$_2$NMe	1	P01	R	R	46	10	28	2	80	72	a
6	ee(%)	0	S01	Pd(OAc)$_2$	L01A	Et$_3$N	1	P01	R	R	46	10	28	2	80	72	a
7	ee(%)	67	S01	Pd(OAc)$_2$	L01A	Et$_3$N	2	P01	R	R	46	10	28	2	80	72	a
8	ee(%)	65	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	46	10	28	2	80	24	a
9	ee(%)	66	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	46	10	28	2	80	24	a
10	ee(%)	66	S01	Pd(dba)$_2$	L01A	PMP	2	P01	R	R	70	10	28	2	80	24	a
11	ee(%)	70	S01	Pd(dba)$_2$	L01A	PMP	3	P01	R	R	70	10	28	2	80	24	a
12	ee(%)	68	S01	Pd(OAc)$_2$	L01A	PMP	3	P01	R	R	46	10	28	2	80	48	a
13	ee(%)	0	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	46	10	28	2	40	72	a
14	ee(%)	63	S01	Pd(OAc)$_2$	L01A	Cy$_2$NMe	2	P01	R	R	46	10	28	2	80	30	a
15	ee(%)	63	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	46	10	28	1	80	48	a
16	ee(%)	63	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	46	10	28	3	80	48	a
17	ee(%)	58	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	46	10	28	2	80	24	a
18	ee(%)	0	S01	Pd(OAc)$_2$	L01A	Et$_3$N	4	P01	R	R	46	10	28	2	80	72	a
19	ee(%)	62	S01	Pd(OAc)$_2$	L01A	Et$_3$N	5	P01	R	R	46	10	28	2	80	72	a
20	ee(%)	49	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	46	10	28	2	80	31	a
21	ee(%)	40	S01	Pd(OAc)$_2$	L01A	PMP	6	P01	R	R	46	10	28	2	80	24	a
22	ee(%)	57	S01	Pd(OAc)$_2$	L01A	PMP	3	P01	R	R	46	10	28	2	80	24	a
23	ee(%)	55	S01	Pd(OAc)$_2$	L03A	PMP	2	P01	R	R	46	10	28	2	80	31	a
24	ee(%)	11	S01	Pd(OAc)$_2$	L04A	PMP	2	P01	R	R	46	10	28	2	80	24	a
25	ee(%)	34	S01	Pd(OAc)$_2$	L05A	PMP	2	P01	RR	R	43	10	28	2	80	31	a
26	ee(%)	41	S01	Pd(OAc)$_2$	L06A	PMP	1	P01	RR	R	43	10	28	2	80	48	a
27	ee(%)	53	S01	Pd(OAc)$_2$	L06A	Et$_3$N	1	P01	RR	R	43	10	28	2	40	72	a
28	ee(%)	28	S01	Pd(OAc)$_2$	L06A	Et$_3$N	2	P01	RR	R	43	10	28	2	80	24	a
29	ee(%)	57	S01	Pd(OAc)$_2$	L06A	Et$_3$N	4	P01	RR	R	43	10	28	2	80	72	a
30	ee(%)	55	S01	Pd(OAc)$_2$	L06A	Et$_3$N	4	P01	RR	R	43	10	28	2	80	72	a
31	ee(%)	46	S01	Pd(OAc)$_2$	L06A	PMP	4	P01	RR	R	43	10	28	2	40	72	a
32	ee(%)	56	S01	Pd(OAc)$_2$	L06A	Et$_3$N	5	P01	RR	R	43	10	28	2	80	72	a
33	ee(%)	54	S01	Pd(OAc)$_2$	L06A	Et$_3$N	5	P01	RR	R	43	10	20	3	80	72	a
34	ee(%)	30	S01	Pd(OAc)$_2$	L06A	Cy$_2$NMe	1	P01	RR	R	43	10	20	3	80	48	a
35	ee(%)	37	S01	Pd(OAc)$_2$	L06A	Cy$_2$NMe	1	P01	RR	R	43	10	20	2	80	9	a

36	ee(%)	53	S01	$Pd(OAc)_2$	L06A	Cy_2NMe	2	P01	RR	R	43	10	20	2	80	24	a
37	ee(%)	10	S01	$Pd(OAc)_2$	L07A	Et_3N	1	P01	RR	R	43	10	28	2	80	72	a
38	ee(%)	50	S01	$Pd(OAc)_2$	L01A	Et_3N	1	P01	R	R	70	5	14	2	80	72	a
39	ee(%)	71	S12	$Pd(OAc)_2$	L01A	PMP	2	P12	R	R	46	10	28	2	80	48	a
40	ee(%)	-69	S12	$Pd(OAc)_2$	L01B	PMP	2	P12	S	S	-69	10	28	2	80	48	a
41	ee(%)	61	S12	$Pd(OAc)_2$	L01A	PMP	2	P12	R	R	46	10	14	2	80	48	a
42	ee(%)	63	S02	$Pd(OAc)_2$	L01A	PMP	2	P02	R	R	46	10	28	2	80	48	a
43	ee(%)	72	S03	$Pd(OAc)_2$	L01A	PMP	2	P03	R	R	46	10	28	2	80	48	a
44	ee(%)	67	S04	$Pd(OAc)_2$	L01A	PMP	2	P04	R	R	46	10	28	2	80	48	a
45	ee(%)	69	S05	$Pd(OAc)_2$	L01A	PMP	2	P05	R	R	46	10	28	2	80	48	a
46	ee(%)	7	S06	$Pd(OAc)_2$	L01A	PMP	2	P06	R	R	46	10	28	2	80	48	a
47	ee(%)	63	S07	$Pd(OAc)_2$	L01A	PMP	2	P07	R	R	46	10	28	2	80	48	a
48	ee(%)	30	S08	$Pd(OAc)_2$	L01A	PMP	2	P08	R	R	46	10	28	2	80	48	a
49	ee(%)	71	S09	$Pd(OAc)_2$	L01A	PMP	2	P09	R	R	46	10	28	2	80	48	a
50	ee(%)	66	S10	$Pd(OAc)_2$	L01A	PMP	2	P10	R	R	46	10	28	2	80	48	a
51	ee(%)	61	S11	$Pd(OAc)_2$	L01A	PMP	2	P11	R	R	46	10	28	2	80	48	a
52	ee(%)	61	S12	$Pd(OAc)_2$	L01A	PMP	2	P12	R	R	46	10	28	2	80	48	a
53	ee(%)	28	S13	$Pd(OAc)_2$	L01A	PMP	2	P13	R	R	46	10	28	2	80	48	a
54	ee(%)	64	S14	$Pd(OAc)_2$	L01A	PMP	2	P14	R	R	46	10	28	2	80	48	a
55	ee(%)	0	S15	$Pd(OAc)_2$	L01A	PMP	2	P15	R	R	46	10	28	2	80	48	a
56	ee(%)	99	S16	$Pd(OAc)_2$	L01A	PMP	2	P16	R	R	46	10	28	2	80	48	a
57	ee(%)	64	S17	$Pd(OAc)_2$	L01A	PMP	2	P17	R	R	46	10	28	2	80	48	a
58	ee(%)	0	S18	$Pd(OAc)_2$	L01A	PMP	2	P18	R	R	46	10	28	2	80	48	a
59	ee(%)	0	S19	$Pd(OAc)_2$	L01A	PMP	2	P19	R	R	46	10	28	2	80	48	a
60	ee(%)	0	S20	$Pd(OAc)_2$	L01A	PMP	2	P20	R	R	46	10	28	2	80	48	a
61	ee(%)	-68	S21	$Pd_2(dba)_3$	L01B	PMP	6	P22	S	S	-68	2,5	10	8	110	12	b
62	ee(%)	90	S23	$Pd_2(dba)_3$	L01A	PMP	6	P24	R	R	70	5	10	5	110	48	c
63	ee(%)	71	S24	$Pd_2(dba)_3$	L01A	PMP	6	P25	R	R	70	5	10	5	110	48	c
65	ee(%)	96	S26	$Pd_2(dba)_3$	L01A	PMP	6	P27	R	R	70	5	10	5	110	72	c
66	ee(%)	71	S27	$Pd_2(dba)_3$	L01A	PMP	6	P28	R	R	70	5	10	5	110	72	c
67	ee(%)	16	S24	$Pd_2(dba)_3$	L01A	PMP	6	P25	R	R	70	5	10	5	110	48	c
68	ee(%)	60	S24	$Pd_2(dba)_3$	L01A	PMP	6	P25	R	R	70	5	10	5	60	48	c
69	ee(%)	7	S24	$Pd_2(dba)_3$	L01A	PMP	6	P25	R	R	70	5	10	5	60	48	c
70	ee(%)	69	S24	$Pd_2(dba)_3$	L01A	K_2CO_3	6	P25	R	R	70	5	10	5	110	72	c
71	ee(%)	-24	S23	$Pd_2(dba)_3$	L05A	PMP	6	P30	RR	S	-51	5	10	5	110	72	c
72	ee(%)	-77	S25	$Pd_2(dba)_3$	L05A	PMP	6	P31	RR	S	-51	5	10	5	110	96	c
73	ee(%)	0	S25	$Pd_2(dba)_3$	L01A	K_2CO_3	6	P26	R	R	70	5	10	5	110	96	c
74	ee(%)	-72	S24	$Pd_2(dba)_3$	L01B	PMP	6	P29	S	S	-68	5	20	5	110	48	d
75	ee(%)	0	S24	$Pd_2(dba)_3$	L08B	PMP	6	P25	S	R	42	5	20	5	110	48	d
76	ee(%)	74	S24	$Pd_2(dba)_3$	L09B	PMP	6	P25	S	R	42	5	20	5	110	48	d
77	ee(%)	46	S24	$Pd_2(dba)_3$	L10B	PMP	6	P25	S	R	42	5	20	5	110	48	d
78	ee(%)	14	S24	$Pd_2(dba)_3$	L11B	PMP	6	P25	S	R	42	5	20	5	110	48	d
79	ee(%)	28	S24	$Pd_2(dba)_3$	L03A	PMP	6	P25	R	R	70	5	20	5	110	48	d
80	ee(%)	-29	S24	$Pd_2(dba)_3$	L12A	PMP	6	P29	R	S	-35	5	20	5	110	48	d
81	ee(%)	47	S24	$Pd_2(dba)_3$	L12B	PMP	6	P25	S	R	42	5	20	5	110	48	d
82	ee(%)	-40	S24	$Pd_2(dba)_3$	L13A	PMP	6	P29	R	S	-35	5	20	5	110	48	d

83	*ee*(%)	28	S24	Pd$_2$(dba)$_3$	L03A	PMP	6	P25	R	R	70	5	20	5	110	44	e
84	*ee*(%)	-65	S24	Pd$_2$(dba)$_3$	L14B	PMP	6	P29	S	S	-68	5	20	5	110	44	e
85	*ee*(%)	85	S24	Pd$_2$(dba)$_3$	L02A	PMP	6	P25	R	R	70	5	20	5	110	44	e
86	*ee*(%)	70	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	70	5	20	5	110	44	e
87	*ee*(%)	71	S24	Pd$_2$(dba)$_3$	L15A	PMP	6	P25	R	R	70	5	20	5	110	44	e
88	*ee*(%)	81	S24	Pd$_2$(dba)$_3$	L19A	PMP	6	P25	R	R	70	5	20	5	110	44	e
89	*ee*(%)	94	S24	Pd$_2$(dba)$_3$	L16A	PMP	6	P25	R	R	70	5	20	5	110	44	e
90	*ee*(%)	74	S24	Pd$_2$(dba)$_3$	L17A	PMP	6	P25	R	R	70	5	20	5	110	44	e
91	*ee*(%)	82	S24	Pd$_2$(dba)$_3$	L18A	PMP	6	P25	R	R	70	5	20	5	110	44	e
92	*ee*(%)	62	S24	Pd$_2$(dba)$_3$	L03A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
93	*ee*(%)	68	S24	Pd$_2$(dba)$_3$	L14B	PMP	3	P25	S	R	42	5	20	5	110	1,5	e
94	*ee*(%)	90	S24	Pd$_2$(dba)$_3$	L02A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
95	*ee*(%)	71	S24	Pd$_2$(dba)$_3$	L01A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
96	*ee*(%)	81	S24	Pd$_2$(dba)$_3$	L15A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
97	*ee*(%)	86	S24	Pd$_2$(dba)$_3$	L19A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
98	*ee*(%)	97	S24	Pd$_2$(dba)$_3$	L16A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
99	*ee*(%)	93	S24	Pd$_2$(dba)$_3$	L17A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
100	*ee*(%)	84	S24	Pd$_2$(dba)$_3$	L18A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
101	*ee*(%)	0	S24	Pd$_2$(dba)$_3$	L01A	PMP	9	P25	R	R	70	5	20	5	110	1,5	e
102	*ee*(%)	72	S24	Pd$_2$(dba)$_3$	L01A	PMP	10	P25	R	R	70	5	20	5	110	1,5	e
103	*ee*(%)	61	S24	Pd$_2$(dba)$_3$	L01A	PMP	1	P25	R	R	70	5	20	5	110	1,5	e
104	*ee*(%)	70	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	70	5	20	5	110	1,5	e
105	*ee*(%)	71	S24	Pd$_2$(dba)$_3$	L01A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
106	*ee*(%)	68	S24	Pd$_2$(dba)$_3$	L01A	PMP	11	P25	R	R	70	5	20	5	110	1,5	e
107	*ee*(%)	27	S24	Pd$_2$(dba)$_3$	L03A	PMP	6	P25	R	R	70	5	20	5	110	44	e
108	*ee*(%)	85	S24	Pd$_2$(dba)$_3$	L02A	PMP	6	P25	R	R	70	5	20	5	110	44	e
109	*ee*(%)	70	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	70	5	20	5	110	44	e
110	*ee*(%)	71	S24	Pd$_2$(dba)$_3$	L15A	PMP	6	P25	R	R	70	5	20	5	110	44	e
111	*ee*(%)	94	S24	Pd$_2$(dba)$_3$	L16A	PMP	6	P25	R	R	70	5	20	5	110	44	e
112	*ee*(%)	74	S24	Pd$_2$(dba)$_3$	L17A	PMP	6	P25	R	R	70	5	20	5	110	44	e
113	*ee*(%)	23	S24	Pd$_2$(dba)$_3$	L03A	PMP	6	P25	R	R	70	5	20	5	110	44	e
114	*ee*(%)	78	S24	Pd$_2$(dba)$_3$	L02A	PMP	6	P25	R	R	70	5	20	5	110	44	e
115	*ee*(%)	70	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	70	5	20	5	110	44	e
116	*ee*(%)	65	S24	Pd$_2$(dba)$_3$	L15A	PMP	6	P25	R	R	70	5	20	5	110	44	e
117	*ee*(%)	94	S24	Pd$_2$(dba)$_3$	L16A	PMP	6	P25	R	R	70	5	20	5	110	44	e
118	*ee*(%)	83	S24	Pd$_2$(dba)$_3$	L17A	PMP	6	P25	R	R	70	5	20	5	110	44	e
119	*ee*(%)	63	S24	Pd$_2$(dba)$_3$	L03A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
120	*ee*(%)	92	S24	Pd$_2$(dba)$_3$	L02A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
121	*ee*(%)	74	S24	Pd$_2$(dba)$_3$	L01A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
122	*ee*(%)	85	S24	Pd$_2$(dba)$_3$	L15A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
123	*ee*(%)	99	S24	Pd$_2$(dba)$_3$	L16A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
124	*ee*(%)	95	S24	Pd$_2$(dba)$_3$	L17A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
125	*ee*(%)	62	S24	Pd$_2$(dba)$_3$	L03A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
126	*ee*(%)	90	S24	Pd$_2$(dba)$_3$	L02A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
127	*ee*(%)	71	S24	Pd$_2$(dba)$_3$	L01A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
128	*ee*(%)	81	S24	Pd$_2$(dba)$_3$	L15A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
129	*ee*(%)	97	S24	Pd$_2$(dba)$_3$	L16A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e

130	ee(%)	93	S24	Pd$_2$(dba)$_3$	L17A	PMP	3	P25	R	R	70	5	20	5	110	1,5	e
131	ee(%)	-28	S24	Pd$_2$(dba)$_3$	L03B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
132	ee(%)	65	S24	Pd$_2$(dba)$_3$	L14A	PMP	6	P25	R	R	68	5	20	5	110	44	e
133	ee(%)	-85	S24	Pd$_2$(dba)$_3$	L02B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
134	ee(%)	-70	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
135	ee(%)	-71	S24	Pd$_2$(dba)$_3$	L15B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
136	ee(%)	-81	S24	Pd$_2$(dba)$_3$	L19B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
137	ee(%)	-94	S24	Pd$_2$(dba)$_3$	L16B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
138	ee(%)	-74	S24	Pd$_2$(dba)$_3$	L17B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
139	ee(%)	-82	S24	Pd$_2$(dba)$_3$	L18B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
140	ee(%)	-30	S01	Pd$_2$(dba)$_3$	L01B	Cy$_2$NMe	1	P01	S	S	-48	10	28	2	80	72	a
141	ee(%)	-62	S24	Pd$_2$(dba)$_3$	L03B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
142	ee(%)	-68	S24	Pd$_2$(dba)$_3$	L14A	PMP	3	P29	R	S	-49	5	20	5	110	1,5	e
143	ee(%)	-90	S24	Pd$_2$(dba)$_3$	L02B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
144	ee(%)	-71	S24	Pd$_2$(dba)$_3$	L01B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
145	ee(%)	-81	S24	Pd$_2$(dba)$_3$	L15B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
146	ee(%)	-86	S24	Pd$_2$(dba)$_3$	L19B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
147	ee(%)	-97	S24	Pd$_2$(dba)$_3$	L16B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
148	ee(%)	-93	S24	Pd$_2$(dba)$_3$	L17B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
149	ee(%)	-84	S24	Pd$_2$(dba)$_3$	L18B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
150	ee(%)	0	S01	Pd(dba)$_2$	L01B	Et3N	1	P01	S	S	-48	10	28	2	80	72	a
151	ee(%)	0	S24	Pd$_2$(dba)$_3$	L01B	PMP	9	P29	S	S	-69	5	20	5	110	1,5	e
152	ee(%)	-72	S24	Pd$_2$(dba)$_3$	L01B	PMP	10	P29	S	S	-69	5	20	5	110	1,5	e
153	ee(%)	-61	S24	Pd$_2$(dba)$_3$	L01B	PMP	1	P29	S	S	-69	5	20	5	110	1,5	e
154	ee(%)	-70	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	-69	5	20	5	110	1,5	e
155	ee(%)	-71	S24	Pd$_2$(dba)$_3$	L01B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
156	ee(%)	-68	S24	Pd$_2$(dba)$_3$	L01B	PMP	11	P29	S	S	-69	5	20	5	110	1,5	e
157	ee(%)	-27	S24	Pd$_2$(dba)$_3$	L03B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
158	ee(%)	-85	S24	Pd$_2$(dba)$_3$	L02B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
159	ee(%)	-70	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
160	ee(%)	-71	S24	Pd$_2$(dba)$_3$	L15B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
161	ee(%)	-67	S01	Pd(OAc)$_2$	L01B	Et3N	2	P01	S	S	-48	10	28	2	80	72	a
162	ee(%)	-94	S24	Pd$_2$(dba)$_3$	L16B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
163	ee(%)	-74	S24	Pd$_2$(dba)$_3$	L17B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
164	ee(%)	-23	S24	Pd$_2$(dba)$_3$	L03B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
165	ee(%)	-78	S24	Pd$_2$(dba)$_3$	L02B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
166	ee(%)	-70	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
167	ee(%)	-65	S24	Pd$_2$(dba)$_3$	L15B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
168	ee(%)	-94	S24	Pd$_2$(dba)$_3$	L16B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
169	ee(%)	-83	S24	Pd$_2$(dba)$_3$	L17B	PMP	6	P29	S	S	-69	5	20	5	110	44	e
170	ee(%)	-63	S24	Pd$_2$(dba)$_3$	L03B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
171	ee(%)	-92	S24	Pd$_2$(dba)$_3$	L02B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
172	ee(%)	-65	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	-48	10	28	2	80	24	a
173	ee(%)	-74	S24	Pd$_2$(dba)$_3$	L01B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
174	ee(%)	-85	S24	Pd$_2$(dba)$_3$	L15B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
175	ee(%)	-99	S24	Pd$_2$(dba)$_3$	L16B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
176	ee(%)	-95	S24	Pd$_2$(dba)$_3$	L17B	PMP	3	P29	R	S	-49	5	20	5	110	1,5	e

177	ee(%)	-62	S24	Pd$_2$(dba)$_3$	L03B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
178	ee(%)	-90	S24	Pd$_2$(dba)$_3$	L02B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
179	ee(%)	-71	S24	Pd$_2$(dba)$_3$	L01B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
180	ee(%)	-81	S24	Pd$_2$(dba)$_3$	L15B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
181	ee(%)	-97	S24	Pd$_2$(dba)$_3$	L16B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
182	ee(%)	-93	S24	Pd$_2$(dba)$_3$	L17B	PMP	3	P29	S	S	-69	5	20	5	110	1,5	e
183	ee(%)	-66	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	-48	10	28	2	80	24	a
184	ee(%)	-66	S01	Pd(dba)$_2$	L01B	PMP	2	P01	S	S	-69	10	28	2	80	24	a
185	ee(%)	-70	S01	Pd(dba)$_2$	L01B	PMP	3	P01	S	S	-69	10	28	2	80	24	a
186	ee(%)	-68	S01	Pd(OAc)$_2$	L01B	PMP	3	P01	S	S	-48	10	28	2	80	48	a
188	ee(%)	-63	S01	Pd(OAc)$_2$	L01B	Cy$_2$NMe	2	P01	S	S	-48	10	28	2	80	30	a
189	ee(%)	-63	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	-48	10	28	1	80	48	a
190	ee(%)	-63	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	-48	10	28	3	80	48	a
191	ee(%)	-58	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	-48	10	28	2	80	24	a
193	ee(%)	-62	S01	Pd(OAc)$_2$	L01B	Et$_3$N	5	P01	S	S	-48	10	28	2	80	72	a
194	ee(%)	-49	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	-48	10	28	2	80	31	a
195	ee(%)	-40	S01	Pd(OAc)$_2$	L01B	PMP	6	P01	S	S	-48	10	28	2	80	24	a
196	ee(%)	-57	S01	Pd(OAc)$_2$	L01B	PMP	3	P01	S	S	-48	10	28	2	80	24	a
197	ee(%)	-55	S01	Pd(OAc)$_2$	L03B	PMP	2	P01	S	S	-48	10	28	2	80	31	a
198	ee(%)	-11	S01	Pd(OAc)$_2$	L04B	PMP	2	P01	S	S	-48	10	28	2	80	24	a
199	ee(%)	-34	S01	Pd(OAc)$_2$	L05B	PMP	2	P01	SS	S	-43	10	28	2	80	31	a
200	ee(%)	-41	S01	Pd(OAc)$_2$	L06B	PMP	1	P01	SS	S	-43	10	28	2	80	48	a
201	ee(%)	-53	S01	Pd(OAc)$_2$	L06B	Et$_3$N	1	P01	SS	S	-43	10	28	2	40	72	a
202	ee(%)	-28	S01	Pd(OAc)$_2$	L06B	Et$_3$N	2	P01	SS	S	-43	10	28	2	80	24	a
203	ee(%)	-57	S01	Pd(OAc)$_2$	L06B	Et$_3$N	4	P01	SS	S	-43	10	28	2	80	72	a
204	ee(%)	-55	S01	Pd(OAc)$_2$	L06B	Et$_3$N	4	P01	SS	S	-43	10	28	2	80	72	a
205	ee(%)	-46	S01	Pd(OAc)$_2$	L06B	PMP	4	P01	SS	S	-43	10	28	2	40	72	a
206	ee(%)	-56	S01	Pd(OAc)$_2$	L06B	Et$_3$N	5	P01	SS	S	-43	10	28	2	80	72	a
207	ee(%)	-54	S01	Pd(OAc)$_2$	L06B	Et$_3$N	5	P01	SS	S	-43	10	20	3	80	72	a
208	ee(%)	-30	S01	Pd(OAc)$_2$	L06B	Cy$_2$NMe	1	P01	SS	S	-43	10	20	3	80	48	a
209	ee(%)	-37	S01	Pd(OAc)$_2$	L06B	Cy$_2$NMe	1	P01	SS	S	-43	10	20	2	80	9	a
210	ee(%)	-53	S01	Pd(OAc)$_2$	L06B	Cy$_2$NMe	2	P01	SS	S	-43	10	20	2	80	24	a
211	ee(%)	-10	S01	Pd(OAc)$_2$	L07B	Et$_3$N	1	P01	SS	S	-43	10	28	2	80	72	a
212	ee(%)	-50	S01	Pd$_2$(dba)$_3$	L01B	Et$_3$N	1	P01	S	S	-69	5	14	2	80	72	a
213	ee(%)	-71	S12	Pd(OAc)$_2$	L01B	PMP	2	P12C	S	S	-48	10	28	2	80	48	a
214	ee(%)	69	S12	Pd(OAc)$_2$	L01A	PMP	2	P12C	R	R	69	10	28	2	80	48	a
215	ee(%)	-61	S12	Pd(OAc)$_2$	L01B	PMP	2	P12C	S	S	-48	10	14	2	80	48	a
216	ee(%)	-63	S02	Pd(OAc)$_2$	L01B	PMP	2	P02	S	S	-48	10	28	2	80	48	a
217	ee(%)	-72	S03	Pd(OAc)$_2$	L01B	PMP	2	P03	S	S	-48	10	28	2	80	48	a
218	ee(%)	-67	S04	Pd(OAc)$_2$	L01B	PMP	2	P04	S	S	-48	10	28	2	80	48	a
219	ee(%)	-69	S05	Pd(OAc)$_2$	L01B	PMP	2	P05	S	S	-48	10	28	2	80	48	a
220	ee(%)	-7	S06	Pd(OAc)$_2$	L01B	PMP	2	P06	S	S	-48	10	28	2	80	48	a
221	ee(%)	-63	S07	Pd(OAc)$_2$	L01B	PMP	2	P07C	S	S	-48	10	28	2	80	48	a
222	ee(%)	-30	S08	Pd(OAc)$_2$	L01B	PMP	2	P08C	S	S	-48	10	28	2	80	48	a
223	ee(%)	-71	S09	Pd(OAc)$_2$	L01B	PMP	2	P09C	S	S	-48	10	28	2	80	48	a
224	ee(%)	-66	S10	Pd(OAc)$_2$	L01B	PMP	2	P10C	S	S	-48	10	28	2	80	48	a

225	*ee*(%)	-61	S11	Pd(OAc)$_2$	L01B	PMP	2	P11C	S	S	-48	10	28	2	80	48	a
226	*ee*(%)	-61	S12	Pd(OAc)$_2$	L01B	PMP	2	P12C	S	S	-48	10	28	2	80	48	a
227	*ee*(%)	-28	S13	Pd(OAc)$_2$	L01B	PMP	2	P13C	S	S	-48	10	28	2	80	48	a
228	*ee*(%)	-64	S14	Pd(OAc)$_2$	L01B	PMP	2	P14C	S	S	-48	10	28	2	80	48	a
229	*ee*(%)	0	S15	Pd(OAc)$_2$	L01B	PMP	2	P15C	S	S	-48	10	28	2	80	48	a
230	*ee*(%)	-99	S16	Pd(OAc)$_2$	L01B	PMP	2	P16C	S	S	-48	10	28	2	80	48	a
231	*ee*(%)	-64	S17	Pd(OAc)$_2$	L01B	PMP	2	P17C	S	S	-48	10	28	2	80	48	a
232	*ee*(%)	0	S18	Pd(OAc)$_2$	L01B	PMP	2	P18C	S	S	-48	10	28	2	80	48	a
233	*ee*(%)	0	S19	Pd(OAc)$_2$	L01B	PMP	2	P19C	S	S	-48	10	28	2	80	48	a
234	*ee*(%)	0	S20	Pd(OAc)$_2$	L01B	PMP	2	P20C	S	S	-48	10	28	2	80	48	a
235	*ee*(%)	-56	S01	Pd(OAc)$_2$	L01B	Et3N	1	P01	S	S	-48	5	14	2	80	72	a
236	*ee*(%)	68	S21	Pd$_2$(dba)$_3$	L01A	PMP	6	P21	R	R	68	2,5	10	8	110	12	b
237	*ee*(%)	68	S22	Pd$_2$(dba)$_3$	L01A	PMP	6	P23C	R	R	68	5	10	5	110	48	c
238	*ee*(%)	-90	S23	Pd$_2$(dba)$_3$	L01B	PMP	6	P30	S	S	-69	5	10	5	110	48	c
239	*ee*(%)	-63	S01	Pd(OAc)$_2$	L01B	Et$_3$N	1	P01	S	S	-48	10	28	2	80	72	a
241	*ee*(%)	-96	S26	Pd$_2$(dba)$_3$	L01B	PMP	6	P27C	S	S	-69	5	10	5	110	72	c
242	*ee*(%)	-71	S27	Pd$_2$(dba)$_3$	L01B	PMP	6	P28C	S	S	-69	5	10	5	110	72	c
243	*ee*(%)	-16	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	-69	5	10	5	110	48	c
244	*ee*(%)	-60	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	-69	5	10	5	60	48	c
245	*ee*(%)	-7	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	-69	5	10	5	60	48	c
246	*ee*(%)	-69	S24	Pd$_2$(dba)$_3$	L01B	K$_2$CO$_3$	6	P29	S	S	-69	5	10	5	110	72	c
247	*ee*(%)	24	S23	Pd$_2$(dba)$_3$	L05B	PMP	6	P24	SS	R	51	5	10	5	110	72	c
248	*ee*(%)	77	S25	Pd$_2$(dba)$_3$	L05B	PMP	6	P26	SS	R	51	5	10	5	110	96	c
249	*ee*(%)	0	S01	Pd(OAc)$_2$	L01B	PMP	1	P01	S	S	-48	10	28	2	80	72	a
250	*ee*(%)	0	S25	Pd$_2$(dba)$_3$	L01B	K$_2$CO$_3$	6	P31	S	S	-69	5	10	5	110	96	c
251	*ee*(%)	72	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	68	5	20	5	110	48	d
252	*ee*(%)	0	S24	Pd$_2$(dba)$_3$	L08A	PMP	6	P29	R	S	-49	5	20	5	110	48	d
253	*ee*(%)	-74	S24	Pd$_2$(dba)$_3$	L09A	PMP	6	P29	R	S	-49	5	20	5	110	48	d
254	*ee*(%)	-46	S24	Pd$_2$(dba)$_3$	L10A	PMP	6	P29	R	S	-49	5	20	5	110	48	d
255	*ee*(%)	-14	S24	Pd$_2$(dba)$_3$	L11A	PMP	6	P29	R	S	-49	5	20	5	110	48	d
256	*ee*(%)	-28	S24	Pd$_2$(dba)$_3$	L03B	PMP	6	P29	S	S	-69	5	20	5	110	48	d
257	*ee*(%)	29	S24	Pd$_2$(dba)$_3$	L12B	PMP	6	P25	S	R	35	5	20	5	110	48	d
258	*ee*(%)	-47	S24	Pd$_2$(dba)$_3$	L12A	PMP	6	P29	R	S	-49	5	20	5	110	48	d
259	*ee*(%)	40	S24	Pd$_2$(dba)$_3$	L13B	PMP	6	P25	S	R	35	5	20	5	110	44	d
260	*ee*(%)	-29	S01	Pd(OAc)$_2$	L01B	Et3N	1	P01	S	S	-48	10	28	2	110	72	a
381	Yld(%)	5	S01	Pd(OAc)$_2$	L01A	Et3N	1	P01	R	R	36	5	14	2	80	72	a
382	Yld(%)	17	S01	Pd(OAc)$_2$	L01A	Et3N	1	P01	R	R	36	10	28	2	80	72	a
383	Yld(%)	7	S01	Pd(OAc)$_2$	L01A	PMP	1	P01	R	R	36	10	28	2	80	72	a
384	Yld(%)	3	S01	Pd(OAc)$_2$	L01A	Et$_3$N	1	P01	R	R	36	10	28	2	110	72	a
385	Yld(%)	8	S01	Pd(OAc)$_2$	L01A	Cy$_2$NMe	1	P01	R	R	36	10	28	2	80	72	a
386	Yld(%)	0	S01	Pd(OAc)$_2$	L01A	Et$_3$N	1	P01	R	R	36	10	28	2	80	72	a
387	Yld(%)	33	S01	Pd(OAc)$_2$	L01A	Et$_3$N	2	P01	R	R	36	10	28	2	80	72	a
388	Yld(%)	70	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	36	10	28	2	80	24	a
389	Yld(%)	72	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	36	10	28	2	80	24	a
390	Yld(%)	82	S01	Pd2(dba)3	L01A	PMP	2	P01	R	R	48	10	28	2	80	24	a
391	Yld(%)	66	S01	Pd(dba)$_2$	L01A	PMP	3	P01	R	R	48	10	28	2	80	24	a

392	Yld(%)	11	S01	Pd(OAc)$_2$	L01A	PMP	3	P01	R	R	36	10	28	2	80	48	a
393	Yld(%)	10	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	36	10	28	2	40	72	a
394	Yld(%)	65	S01	Pd(OAc)$_2$	L01A	Cy$_2$NMe	2	P01	R	R	36	10	28	2	80	30	a
395	Yld(%)	76	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	36	10	28	1	80	48	a
396	Yld(%)	43	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	36	10	28	3	80	48	a
397	Yld(%)	46	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	36	10	28	2	80	24	a
398	Yld(%)	13	S01	Pd(OAc)$_2$	L01A	Et$_3$N	4	P01	R	R	36	10	28	2	80	72	a
399	Yld(%)	19	S01	Pd(OAc)$_2$	L01A	Et$_3$N	5	P01	R	R	36	10	28	2	80	72	a
400	Yld(%)	75	S01	Pd(OAc)$_2$	L01A	PMP	2	P01	R	R	36	10	28	2	80	31	a
401	Yld(%)	5	S01	Pd(OAc)$_2$	L01A	PMP	6	P01	R	R	36	10	28	2	80	24	a
402	Yld(%)	33	S01	Pd(OAc)$_2$	L01A	PMP	3	P01	R	R	36	10	28	2	80	24	a
403	Yld(%)	54	S01	Pd(OAc)$_2$	L03A	PMP	2	P01	R	R	36	10	28	2	80	31	a
404	Yld(%)	70	S01	Pd(OAc)$_2$	L04A	PMP	2	P01	R	R	36	10	28	2	80	24	a
405	Yld(%)	18	S01	Pd(OAc)$_2$	L05A	PMP	2	P01	RR	R	37	10	28	2	80	31	a
406	Yld(%)	73	S01	Pd(OAc)$_2$	L06A	PMP	1	P01	RR	R	37	10	28	2	80	48	a
407	Yld(%)	59	S01	Pd(OAc)$_2$	L06A	Et$_3$N	1	P01	RR	R	37	10	28	2	40	72	a
408	Yld(%)	44	S01	Pd(OAc)$_2$	L06A	Et$_3$N	2	P01	RR	R	37	10	28	2	80	24	a
409	Yld(%)	69	S01	Pd(OAc)$_2$	L06A	Et$_3$N	4	P01	RR	R	37	10	28	2	80	72	a
410	Yld(%)	43	S01	Pd(OAc)$_2$	L06A	Et$_3$N	4	P01	RR	R	37	10	28	2	80	72	a
411	Yld(%)	24	S01	Pd(OAc)$_2$	L06A	PMP	4	P01	RR	R	37	10	28	2	40	72	a
412	Yld(%)	18	S01	Pd(OAc)$_2$	L06A	Et$_3$N	5	P01	RR	R	37	10	28	2	80	72	a
413	Yld(%)	8	S01	Pd(OAc)$_2$	L06A	Et$_3$N	5	P01	RR	R	37	10	20	3	80	72	a
414	Yld(%)	75	S01	Pd(OAc)$_2$	L06A	Cy$_2$NMe	1	P01	RR	R	37	10	20	3	80	48	a
415	Yld(%)	34	S01	Pd(OAc)$_2$	L06A	Cy$_2$NMe	1	P01	RR	R	37	10	20	2	80	9	a
416	Yld(%)	8	S01	Pd(OAc)$_2$	L06A	Cy$_2$NMe	2	P01	RR	R	37	10	20	2	80	24	a
417	Yld(%)	9	S01	Pd(OAc)$_2$	L07A	Et$_3$N	1	P01	RR	R	37	10	28	2	80	72	a
418	Yld(%)	4	S01	Pd$_2$(dba)$_3$	L01A	Et$_3$N	1	P01	R	R	48	5	14	2	80	72	a
419	Yld(%)	66	S12	Pd(OAc)$_2$	L01A	PMP	2	P12	R	R	36	10	28	2	80	48	a
420	Yld(%)	51	S12	Pd(OAc)$_2$	L01B	PMP	2	P12	S	S	51	10	28	2	80	48	a
421	Yld(%)	54	S12	Pd(OAc)$_2$	L01A	PMP	2	P12	R	R	36	10	14	2	80	48	a
422	Yld(%)	58	S02	Pd(OAc)$_2$	L01A	PMP	2	P02	R	R	36	10	28	2	80	48	a
423	Yld(%)	38	S03	Pd(OAc)$_2$	L01A	PMP	2	P03	R	R	36	10	28	2	80	48	a
424	Yld(%)	60	S04	Pd(OAc)$_2$	L01A	PMP	2	P04	R	R	36	10	28	2	80	48	a
425	Yld(%)	60	S05	Pd(OAc)$_2$	L01A	PMP	2	P05	R	R	36	10	28	2	80	48	a
426	Yld(%)	55	S06	Pd(OAc)$_2$	L01A	PMP	2	P06	R	R	36	10	28	2	80	48	a
427	Yld(%)	51	S07	Pd(OAc)$_2$	L01A	PMP	2	P07	R	R	36	10	28	2	80	48	a
428	Yld(%)	13	S08	Pd(OAc)$_2$	L01A	PMP	2	P08	R	R	36	10	28	2	80	48	a
429	Yld(%)	66	S09	Pd(OAc)$_2$	L01A	PMP	2	P09	R	R	36	10	28	2	80	48	a
430	Yld(%)	46	S10	Pd(OAc)$_2$	L01A	PMP	2	P10	R	R	36	10	28	2	80	48	a
431	Yld(%)	54	S11	Pd(OAc)$_2$	L01A	PMP	2	P11	R	R	36	10	28	2	80	48	a
432	Yld(%)	68	S12	Pd(OAc)$_2$	L01A	PMP	2	P12	R	R	36	10	28	2	80	48	a
433	Yld(%)	10	S13	Pd(OAc)$_2$	L01A	PMP	2	P13	R	R	36	10	28	2	80	48	a
434	Yld(%)	49	S14	Pd(OAc)$_2$	L01A	PMP	2	P14	R	R	36	10	28	2	80	48	a
435	Yld(%)	0	S15	Pd(OAc)$_2$	L01A	PMP	2	P15	R	R	36	10	28	2	80	48	a
436	Yld(%)	11	S16	Pd(OAc)$_2$	L01A	PMP	2	P16	R	R	36	10	28	2	80	48	a
437	Yld(%)	45	S17	Pd(OAc)$_2$	L01A	PMP	2	P17	R	R	36	10	28	2	80	48	a

438	Yld(%)	0	S18	Pd(OAc)$_2$	L01A	PMP	2	P18	R	R	36	10	28	2	80	48	a
439	Yld(%)	0	S19	Pd(OAc)$_2$	L01A	PMP	2	P19	R	R	36	10	28	2	80	48	a
440	Yld(%)	0	S20	Pd(OAc)$_2$	L01A	PMP	2	P20	R	R	36	10	28	2	80	48	a
441	Yld(%)	82	S21	Pd$_2$(dba)$_3$	L01B	PMP	6	P22	S	S	71	2,5	10	8	110	12	b
442	Yld(%)	78	S23	Pd$_2$(dba)$_3$	L01A	PMP	6	P24	R	R	48	5	10	5	110	48	c
443	Yld(%)	83	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	48	5	10	5	110	48	c
444	Yld(%)	7	S25	Pd$_2$(dba)$_3$	L01A	PMP	6	P26	R	R	48	5	10	5	110	72	c
445	Yld(%)	71	S26	Pd$_2$(dba)$_3$	L01A	PMP	6	P27	R	R	48	5	10	5	110	72	c
446	Yld(%)	68	S27	Pd$_2$(dba)$_3$	L01A	PMP	6	P28	R	R	48	5	10	5	110	72	c
447	Yld(%)	63	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	48	5	10	5	110	48	c
448	Yld(%)	60	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	48	5	10	5	60	48	c
449	Yld(%)	54	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	48	5	10	5	60	48	c
450	Yld(%)	74	S24	Pd$_2$(dba)$_3$	L01A	K$_2$CO$_3$	6	P25	R	R	48	5	10	5	110	72	c
451	Yld(%)	61	S23	Pd$_2$(dba)$_3$	L05A	PMP	6	P30	RR	S	64	5	10	5	110	72	c
452	Yld(%)	66	S25	Pd$_2$(dba)$_3$	L05A	PMP	6	P31	RR	S	64	5	10	5	110	96	c
453	Yld(%)	0	S25	Pd$_2$(dba)$_3$	L01A	K$_2$CO$_3$	6	P26	R	R	48	5	10	5	110	96	c
454	Yld(%)	88	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	71	5	20	5	110	48	d
455	Yld(%)	0	S24	Pd$_2$(dba)$_3$	L08B	PMP	6	P25	S	R	68	5	20	5	110	48	d
456	Yld(%)	93	S24	Pd$_2$(dba)$_3$	L09B	PMP	6	P25	S	R	68	5	20	5	110	48	d
457	Yld(%)	84	S24	Pd$_2$(dba)$_3$	L10B	PMP	6	P25	S	R	68	5	20	5	110	48	d
458	Yld(%)	73	S24	Pd$_2$(dba)$_3$	L11B	PMP	6	P25	S	R	68	5	20	5	110	48	d
459	Yld(%)	42	S24	Pd$_2$(dba)$_3$	L03A	PMP	6	P25	R	R	48	5	20	5	110	48	d
460	Yld(%)	90	S24	Pd$_2$(dba)$_3$	L12A	PMP	6	P29	R	S	89	5	20	5	110	48	d
461	Yld(%)	77	S24	Pd$_2$(dba)$_3$	L12B	PMP	6	P25	S	R	68	5	20	5	110	48	d
462	Yld(%)	88	S24	Pd$_2$(dba)$_3$	L13A	PMP	6	P29	R	S	89	5	20	5	110	48	d
463	Yld(%)	98	S24	Pd$_2$(dba)$_3$	L03A	PMP	6	P25	R	R	48	5	20	5	110	44	e
464	Yld(%)	42	S24	Pd$_2$(dba)$_3$	L14B	PMP	6	P29	S	S	71	5	20	5	110	44	e
465	Yld(%)	53	S24	Pd$_2$(dba)$_3$	L02A	PMP	6	P25	R	R	48	5	20	5	110	44	e
466	Yld(%)	91	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	48	5	20	5	110	44	e
467	Yld(%)	93	S24	Pd$_2$(dba)$_3$	L15A	PMP	6	P25	R	R	48	5	20	5	110	44	e
468	Yld(%)	54	S24	Pd$_2$(dba)$_3$	L19A	PMP	6	P25	R	R	48	5	20	5	110	44	e
469	Yld(%)	76	S24	Pd$_2$(dba)$_3$	L16A	PMP	6	P25	R	R	48	5	20	5	110	44	e
470	Yld(%)	59	S24	Pd$_2$(dba)$_3$	L17A	PMP	6	P25	R	R	48	5	20	5	110	44	e
471	Yld(%)	18	S24	Pd$_2$(dba)$_3$	L18A	PMP	6	P25	R	R	48	5	20	5	110	44	e
472	Yld(%)	55	S24	Pd$_2$(dba)$_3$	L03A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
473	Yld(%)	80	S24	Pd$_2$(dba)$_3$	L14B	PMP	3	P25	S	R	68	5	20	5	110	1,5	e
474	Yld(%)	35	S24	Pd$_2$(dba)$_3$	L02A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
475	Yld(%)	35	S24	Pd$_2$(dba)$_3$	L01A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
476	Yld(%)	56	S24	Pd$_2$(dba)$_3$	L15A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
477	Yld(%)	56	S24	Pd$_2$(dba)$_3$	L19A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
478	Yld(%)	6	S24	Pd$_2$(dba)$_3$	L16A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
479	Yld(%)	19	S24	Pd$_2$(dba)$_3$	L17A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
480	Yld(%)	18	S24	Pd$_2$(dba)$_3$	L18A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
481	Yld(%)	0	S24	Pd$_2$(dba)$_3$	L01A	PMP	9	P25	R	R	48	5	20	5	110	1,5	e
482	Yld(%)	9	S24	Pd$_2$(dba)$_3$	L01A	PMP	10	P25	R	R	48	5	20	5	110	1,5	e
483	Yld(%)	24	S24	Pd$_2$(dba)$_3$	L01A	PMP	1	P25	R	R	48	5	20	5	110	1,5	e
484	Yld(%)	71	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	48	5	20	5	110	1,5	e

485	Yld(%)	46	S24	Pd$_2$(dba)$_3$	L01A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
486	Yld(%)	57	S24	Pd$_2$(dba)$_3$	L01A	PMP	11	P25	R	R	48	5	20	5	110	1,5	e
487	Yld(%)	96	S24	Pd$_2$(dba)$_3$	L03A	PMP	6	P25	R	R	48	5	20	5	110	44	e
488	Yld(%)	50	S24	Pd$_2$(dba)$_3$	L02A	PMP	6	P25	R	R	48	5	20	5	110	44	e
489	Yld(%)	87	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	48	5	20	5	110	44	e
490	Yld(%)	91	S24	Pd$_2$(dba)$_3$	L15A	PMP	6	P25	R	R	48	5	20	5	110	44	e
491	Yld(%)	58	S24	Pd$_2$(dba)$_3$	L16A	PMP	6	P25	R	R	48	5	20	5	110	44	e
492	Yld(%)	58	S24	Pd$_2$(dba)$_3$	L17A	PMP	6	P25	R	R	48	5	20	5	110	44	e
493	Yld(%)	96	S24	Pd$_2$(dba)$_3$	L03A	PMP	6	P25	R	R	48	5	20	5	110	44	e
494	Yld(%)	39	S24	Pd$_2$(dba)$_3$	L02A	PMP	6	P25	R	R	48	5	20	5	110	44	e
495	Yld(%)	54	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	48	5	20	5	110	44	e
496	Yld(%)	70	S24	Pd$_2$(dba)$_3$	L15A	PMP	6	P25	R	R	48	5	20	5	110	44	e
497	Yld(%)	16	S24	Pd$_2$(dba)$_3$	L16A	PMP	6	P25	R	R	48	5	20	5	110	44	e
498	Yld(%)	3	S24	Pd$_2$(dba)$_3$	L17A	PMP	6	P25	R	R	48	5	20	5	110	44	e
499	Yld(%)	45	S24	Pd$_2$(dba)$_3$	L03A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
500	Yld(%)	31	S24	Pd$_2$(dba)$_3$	L02A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
501	Yld(%)	52	S24	Pd$_2$(dba)$_3$	L01A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
502	Yld(%)	63	S24	Pd$_2$(dba)$_3$	L15A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
503	Yld(%)	3	S24	Pd$_2$(dba)$_3$	L16A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
504	Yld(%)	9	S24	Pd$_2$(dba)$_3$	L17A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
505	Yld(%)	51	S24	Pd$_2$(dba)$_3$	L03A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
506	Yld(%)	16	S24	Pd$_2$(dba)$_3$	L02A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
507	Yld(%)	33	S24	Pd$_2$(dba)$_3$	L01A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
508	Yld(%)	47	S24	Pd$_2$(dba)$_3$	L15A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
509	Yld(%)	0,4	S24	Pd$_2$(dba)$_3$	L16A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
510	Yld(%)	4	S24	Pd$_2$(dba)$_3$	L17A	PMP	3	P25	R	R	48	5	20	5	110	1,5	e
511	Yld(%)	98	S24	Pd$_2$(dba)$_3$	L03B	PMP	6	P29	S	S	48	5	20	5	110	44	e
512	Yld(%)	42	S24	Pd$_2$(dba)$_3$	L14A	PMP	6	P25	R	R	71	5	20	5	110	44	e
513	Yld(%)	53	S24	Pd$_2$(dba)$_3$	L02B	PMP	6	P29	S	S	48	5	20	5	110	44	e
514	Yld(%)	91	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	48	5	20	5	110	44	e
515	Yld(%)	93	S24	Pd$_2$(dba)$_3$	L15B	PMP	6	P29	S	S	48	5	20	5	110	44	e
516	Yld(%)	54	S24	Pd$_2$(dba)$_3$	L19B	PMP	6	P29	S	S	48	5	20	5	110	44	e
517	Yld(%)	76	S24	Pd$_2$(dba)$_3$	L16B	PMP	6	P29	S	S	48	5	20	5	110	44	e
518	Yld(%)	59	S24	Pd$_2$(dba)$_3$	L17B	PMP	6	P29	S	S	48	5	20	5	110	44	e
519	Yld(%)	18	S24	Pd$_2$(dba)$_3$	L18B	PMP	6	P29	S	S	48	5	20	5	110	44	e
520	Yld(%)	8	S01	Pd$_2$(dba)$_3$	L01B	Cy$_2$NMe	1	P01	S	S	36	10	28	2	80	72	a
521	Yld(%)	55	S24	Pd$_2$(dba)$_3$	L03B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
522	Yld(%)	80	S24	Pd$_2$(dba)$_3$	L14A	PMP	3	P29	R	S	59	5	20	5	110	1,5	e
523	Yld(%)	35	S24	Pd$_2$(dba)$_3$	L02B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
524	Yld(%)	35	S24	Pd$_2$(dba)$_3$	L01B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
525	Yld(%)	56	S24	Pd$_2$(dba)$_3$	L15B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
526	Yld(%)	56	S24	Pd$_2$(dba)$_3$	L19B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
527	Yld(%)	6	S24	Pd$_2$(dba)$_3$	L16B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
528	Yld(%)	19	S24	Pd$_2$(dba)$_3$	L17B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
529	Yld(%)	18	S24	Pd$_2$(dba)$_3$	L18B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
530	Yld(%)	0	S01	Pd$_2$(dba)$_3$	L01B	Et$_3$N	1	P01	S	S	36	10	28	2	80	72	a
531	Yld(%)	0	S24	Pd$_2$(dba)$_3$	L01B	PMP	9	P29	S	S	48	5	20	5	110	1,5	e

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532	Yld(%)	9	S24	Pd$_2$(dba)$_3$	L01B	PMP	10	P29	S	S	48	5	20	5	110	1,5	e
533	Yld(%)	24	S24	Pd$_2$(dba)$_3$	L01B	PMP	1	P29	S	S	48	5	20	5	110	1,5	e
534	Yld(%)	71	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	48	5	20	5	110	1,5	e
535	Yld(%)	46	S24	Pd$_2$(dba)$_3$	L01B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
536	Yld(%)	57	S24	Pd$_2$(dba)$_3$	L01B	PMP	11	P29	S	S	48	5	20	5	110	1,5	e
537	Yld(%)	96	S24	Pd$_2$(dba)$_3$	L03B	PMP	6	P29	S	S	48	5	20	5	110	44	e
538	Yld(%)	50	S24	Pd$_2$(dba)$_3$	L02B	PMP	6	P29	S	S	48	5	20	5	110	44	e
539	Yld(%)	87	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	48	5	20	5	110	44	e
540	Yld(%)	91	S24	Pd$_2$(dba)$_3$	L15B	PMP	6	P29	S	S	48	5	20	5	110	44	e
541	Yld(%)	33	S01	Pd(dba)$_2$	L01B	Et3N	2	P01	S	S	36	10	28	2	80	72	a
542	Yld(%)	58	S24	Pd$_2$(dba)$_3$	L16B	PMP	6	P29	S	S	48	5	20	5	110	44	e
543	Yld(%)	58	S24	Pd$_2$(dba)$_3$	L17B	PMP	6	P29	S	S	48	5	20	5	110	44	e
544	Yld(%)	96	S24	Pd$_2$(dba)$_3$	L03B	PMP	6	P29	S	S	48	5	20	5	110	44	e
545	Yld(%)	39	S24	Pd$_2$(dba)$_3$	L02B	PMP	6	P29	S	S	48	5	20	5	110	44	e
546	Yld(%)	54	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	48	5	20	5	110	44	e
547	Yld(%)	70	S24	Pd$_2$(dba)$_3$	L15B	PMP	6	P29	S	S	48	5	20	5	110	44	e
548	Yld(%)	16	S24	Pd$_2$(dba)$_3$	L16B	PMP	6	P29	S	S	48	5	20	5	110	44	e
549	Yld(%)	3	S24	Pd$_2$(dba)$_3$	L17B	PMP	6	P29	S	S	48	5	20	5	110	44	e
550	Yld(%)	45	S24	Pd$_2$(dba)$_3$	L03B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
551	Yld(%)	31	S24	Pd$_2$(dba)$_3$	L02B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
552	Yld(%)	70	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	36	10	28	2	80	24	a
553	Yld(%)	52	S24	Pd$_2$(dba)$_3$	L01B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
554	Yld(%)	63	S24	Pd$_2$(dba)$_3$	L15B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
555	Yld(%)	3	S24	Pd$_2$(dba)$_3$	L16B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
556	Yld(%)	9	S24	Pd$_2$(dba)$_3$	L17B	PMP	3	P29	R	S	59	5	20	5	110	1,5	e
557	Yld(%)	51	S24	Pd$_2$(dba)$_3$	L03B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
558	Yld(%)	16	S24	Pd$_2$(dba)$_3$	L02B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
559	Yld(%)	33	S24	Pd$_2$(dba)$_3$	L01B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
560	Yld(%)	47	S24	Pd$_2$(dba)$_3$	L15B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
561	Yld(%)	0,4	S24	Pd$_2$(dba)$_3$	L16B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
562	Yld(%)	4	S24	Pd$_2$(dba)$_3$	L17B	PMP	3	P29	S	S	48	5	20	5	110	1,5	e
563	Yld(%)	72	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	36	10	28	2	80	24	a
564	Yld(%)	82	S01	Pd(dba)$_2$	L01B	PMP	2	P01	S	S	48	10	28	2	80	24	a
565	Yld(%)	66	S01	Pd$_2$(dba)$_3$	L01B	PMP	3	P01	S	S	48	10	28	2	80	24	a
566	Yld(%)	11	S01	Pd(OAc)$_2$	L01B	PMP	3	P01	S	S	36	10	28	2	80	48	a
567	Yld(%)	10	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	36	10	28	2	40	72	a
568	Yld(%)	65	S01	Pd(OAc)$_2$	L01B	Cy$_2$NMe	2	P01	S	S	36	10	28	2	80	30	a
569	Yld(%)	76	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	36	10	28	1	80	48	a
570	Yld(%)	43	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	36	10	28	3	80	48	a
571	Yld(%)	46	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	36	10	28	2	80	24	a
572	Yld(%)	13	S01	Pd(OAc)$_2$	L01B	Et$_3$N	4	P01	S	S	36	10	28	2	80	72	a
573	Yld(%)	19	S01	Pd(OAc)$_2$	L01B	Et$_3$N	5	P01	S	S	36	10	28	2	80	72	a
574	Yld(%)	75	S01	Pd(OAc)$_2$	L01B	PMP	2	P01	S	S	36	10	28	2	80	31	a
575	Yld(%)	5	S01	Pd(OAc)$_2$	L01B	PMP	6	P01	S	S	36	10	28	2	80	24	a
576	Yld(%)	33	S01	Pd(OAc)$_2$	L01B	PMP	3	P01	S	S	36	10	28	2	80	24	a
577	Yld(%)	54	S01	Pd(OAc)$_2$	L03B	PMP	2	P01	S	S	36	10	28	2	80	31	a
578	Yld(%)	70	S01	Pd(OAc)$_2$	L04B	PMP	2	P01	S	S	36	10	28	2	80	24	a

579	Yld(%)	18	S01	Pd(OAc)$_2$	L05B	PMP	2	P01	SS	S	37	10	28	2	80	31	a
580	Yld(%)	73	S01	Pd(OAc)$_2$	L06B	PMP	1	P01	SS	S	37	10	28	2	80	48	a
581	Yld(%)	59	S01	Pd(OAc)$_2$	L06B	Et$_3$N	1	P01	SS	S	37	10	28	2	40	72	a
582	Yld(%)	44	S01	Pd(OAc)$_2$	L06B	Et$_3$N	2	P01	SS	S	37	10	28	2	80	24	a
583	Yld(%)	69	S01	Pd(OAc)$_2$	L06B	Et$_3$N	4	P01	SS	S	37	10	28	2	80	72	a
584	Yld(%)	43	S01	Pd(OAc)$_2$	L06B	Et$_3$N	4	P01	SS	S	37	10	28	2	80	72	a
585	Yld(%)	24	S01	Pd(OAc)$_2$	L06B	PMP	4	P01	SS	S	37	10	28	2	40	72	a
586	Yld(%)	18	S01	Pd(OAc)$_2$	L06B	Et$_3$N	5	P01	SS	S	37	10	28	2	80	72	a
587	Yld(%)	8	S01	Pd(OAc)$_2$	L06B	Et$_3$N	5	P01	SS	S	37	10	20	3	80	72	a
588	Yld(%)	75	S01	Pd(OAc)$_2$	L06B	Cy$_2$NMe	1	P01	SS	S	37	10	20	3	80	48	a
589	Yld(%)	34	S01	Pd(OAc)$_2$	L06B	Cy$_2$NMe	1	P01	SS	S	37	10	20	2	80	9	a
590	Yld(%)	8	S01	Pd(OAc)$_2$	L06B	Cy$_2$NMe	2	P01	SS	S	37	10	20	2	80	24	a
591	Yld(%)	9	S01	Pd(OAc)$_2$	L07B	Et$_3$N	1	P01	SS	S	37	10	28	2	80	72	a
592	Yld(%)	4	S01	Pd(OAc)$_2$	L01B	Et$_3$N	1	P01	S	S	48	5	14	2	80	72	a
593	Yld(%)	66	S12	Pd(OAc)$_2$	L01B	PMP	2	P12	S	S	36	10	28	2	80	48	a
594	Yld(%)	51	S12	Pd(OAc)$_2$	L01A	PMP	2	P12	R	R	51	10	28	2	80	48	a
595	Yld(%)	54	S12	Pd(OAc)$_2$	L01B	PMP	2	P12	S	S	36	10	14	2	80	48	a
596	Yld(%)	58	S02	Pd(OAc)$_2$	L01B	PMP	2	P02	S	S	36	10	28	2	80	48	a
597	Yld(%)	38	S03	Pd(OAc)$_2$	L01B	PMP	2	P03	S	S	36	10	28	2	80	48	a
598	Yld(%)	60	S04	Pd(OAc)$_2$	L01B	PMP	2	P04	S	S	36	10	28	2	80	48	a
599	Yld(%)	60	S05	Pd(OAc)$_2$	L01B	PMP	2	P05	S	S	36	10	28	2	80	48	a
600	Yld(%)	55	S06	Pd(OAc)$_2$	L01B	PMP	2	P06	S	S	36	10	28	2	80	48	a
601	Yld(%)	51	S07	Pd(OAc)$_2$	L01B	PMP	2	P07	S	S	36	10	28	2	80	48	a
602	Yld(%)	13	S08	Pd(OAc)$_2$	L01B	PMP	2	P08	S	S	36	10	28	2	80	48	a
603	Yld(%)	66	S09	Pd(OAc)$_2$	L01B	PMP	2	P09	S	S	36	10	28	2	80	48	a
604	Yld(%)	46	S10	Pd(OAc)$_2$	L01B	PMP	2	P10	S	S	36	10	28	2	80	48	a
605	Yld(%)	54	S11	Pd(OAc)$_2$	L01B	PMP	2	P11	S	S	36	10	28	2	80	48	a
606	Yld(%)	68	S12	Pd(OAc)$_2$	L01B	PMP	2	P12	S	S	36	10	28	2	80	48	a
607	Yld(%)	10	S13	Pd(OAc)$_2$	L01B	PMP	2	P13	S	S	36	10	28	2	80	48	a
608	Yld(%)	49	S14	Pd(OAc)$_2$	L01B	PMP	2	P14	S	S	36	10	28	2	80	48	a
609	Yld(%)	0	S15	Pd(OAc)$_2$	L01B	PMP	2	P15	S	S	36	10	28	2	80	48	a
610	Yld(%)	11	S16	Pd(OAc)$_2$	L01B	PMP	2	P16	S	S	36	10	28	2	80	48	a
611	Yld(%)	45	S17	Pd(OAc)$_2$	L01B	PMP	2	P17	S	S	36	10	28	2	80	48	a
612	Yld(%)	0	S18	Pd(OAc)$_2$	L01B	PMP	2	P18	S	S	36	10	28	2	80	48	a
613	Yld(%)	0	S19	Pd(OAc)$_2$	L01B	PMP	2	P19	S	S	36	10	28	2	80	48	a
614	Yld(%)	0	S20	Pd(OAc)$_2$	L01B	PMP	2	P20	S	S	36	10	28	2	80	48	a
615	Yld(%)	5	S01	Pd(OAc)$_2$	L01B	Et$_3$N	1	P01	S	S	36	5	14	2	80	72	a
616	Yld(%)	82	S21	Pd$_2$(dba)$_3$	L01A	PMP	6	P21	R	R	71	2,5	10	8	110	12	b
618	Yld(%)	78	S23	Pd$_2$(dba)$_3$	L01B	PMP	6	P30	S	S	48	5	10	5	110	48	c
619	Yld(%)	17	S01	Pd(OAc)2	L01B	Et$_3$N	1	P01	S	S	36	10	28	2	80	72	a
620	Yld(%)	7	S25	Pd$_2$(dba)$_3$	L01B	PMP	6	P31	S	S	48	5	10	5	110	72	c
621	Yld(%)	71	S26	Pd$_2$(dba)$_3$	L01B	PMP	6	P27	S	S	48	5	10	5	110	72	c
622	Yld(%)	68	S27	Pd$_2$(dba)$_3$	L01B	PMP	6	P28	S	S	48	5	10	5	110	72	c
623	Yld(%)	63	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	48	5	10	5	110	48	c
624	Yld(%)	60	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	S	S	48	5	10	5	60	48	c
625	Yld(%)	54	S24	Pd$_2$(dba)$_3$	L01B	PMP	6	P29	SS	S	48	5	10	5	60	48	c

626	Yld(%)	74	S24	Pd$_2$(dba)$_3$	L01B	K$_2$CO$_3$	6	P29	S	S	48	5	10	5	110	72	c
627	Yld(%)	61	S23	Pd$_2$(dba)$_3$	L05B	PMP	6	P24	SS	R	64	5	10	5	110	72	c
628	Yld(%)	66	S25	Pd$_2$(dba)$_3$	L05B	PMP	6	P26	SS	R	64	5	10	5	110	96	c
629	Yld(%)	7	S01	Pd(OAc)$_2$	L01B	PMP	1	P01	S	S	36	10	28	2	80	72	a
630	Yld(%)	0	S25	Pd$_2$(dba)$_3$	L01B	K$_2$CO$_3$	6	P31	S	S	48	5	10	5	110	96	c
631	Yld(%)	88	S24	Pd$_2$(dba)$_3$	L01A	PMP	6	P25	R	R	71	5	20	5	110	48	d
632	Yld(%)	0	S24	Pd$_2$(dba)$_3$	L08A	PMP	6	P29	R	S	59	5	20	5	110	48	d
633	Yld(%)	93	S24	Pd$_2$(dba)$_3$	L09A	PMP	6	P29	R	S	59	5	20	5	110	48	d
634	Yld(%)	84	S24	Pd$_2$(dba)$_3$	L10A	PMP	6	P29	R	S	59	5	20	5	110	48	d
635	Yld(%)	73	S24	Pd$_2$(dba)$_3$	L11A	PMP	6	P29	R	S	59	5	20	5	110	48	d
636	Yld(%)	42	S24	Pd$_2$(dba)$_3$	L03B	PMP	6	P29	S	S	48	5	20	5	110	48	d
637	Yld(%)	90	S24	Pd$_2$(dba)$_3$	L12B	PMP	6	P25	S	R	89	5	20	5	110	48	d
638	Yld(%)	77	S24	Pd$_2$(dba)$_3$	L12A	PMP	6	P29	R	S	59	5	20	5	110	48	d
639	Yld(%)	88	S24	Pd$_2$(dba)$_3$	L13B	PMP	6	P25	S	R	89	5	20	5	110	44	d
640	Yld(%)	3	S01	Pd(OAc)$_2$	L01B	Et$_3$N	1	P01	S	S	36	10	28	2	110	72	a

2. Dataset: Input variables and model results

TableS 2. Input variables and model results

n	p	$^p\varepsilon_{ij}$(%)			γ_1V_1 (Sub.)	γ_2V_2 (Sub.)	γ_5V_5 (lig.)	γ_4V_4 (base)	γ_3V_3 (prod.)	γ_6V_6 (solv.)
		obs	pred	res						
1	*ee*(%)	56	26.4	29.6	-37.2	1078.1	87696.6	44.4	170.6	1014194.0
2	*ee*(%)	63	31.6	31.4	-37.2	1078.1	350786.3	44.4	170.6	1014194.0
3	*ee*(%)	0	37.3	-37.3	-37.2	1078.1	350786.3	221.4	170.6	1014194.0
4	*ee*(%)	29	25.1	3.9	-37.2	1078.1	350786.3	44.4	170.6	1394516.8
5	*ee*(%)	30	42.2	-12.2	-37.2	1078.1	350786.3	372.2	170.6	1014194.0
6	*ee*(%)	0	31.6	-31.6	-37.2	1078.1	350786.3	44.4	170.6	1014194.0
7	*ee*(%)	67	31.1	35.9	-37.2	1078.1	350786.3	44.4	170.6	1042071.1
8	*ee*(%)	65	48.8	16.2	-37.2	1078.1	350786.3	221.4	170.6	347357.0
9	*ee*(%)	66	48.8	17.2	-37.2	1078.1	350786.3	221.4	170.6	347357.0
10	*ee*(%)	66	74.0	-8.0	-56.4	1633.7	531567.1	335.5	258.5	526370.4
11	*ee*(%)	70	79.1	-9.1	-56.4	1633.7	531567.1	335.5	258.5	226641.0
12	*ee*(%)	68	49.6	18.4	-37.2	1078.1	350786.3	221.4	170.6	299125.3
13	*ee*(%)	0	45.8	-45.8	-37.2	1078.1	350786.3	221.4	170.6	521035.5
14	*ee*(%)	63	52.2	10.8	-37.2	1078.1	350786.3	372.2	170.6	434196.3
15	*ee*(%)	63	39.2	23.8	-37.2	1078.1	350786.3	110.7	170.6	694714.0
16	*ee*(%)	63	46.4	16.6	-37.2	1078.1	350786.3	332.1	170.6	694714.0
17	*ee*(%)	58	48.8	9.2	-37.2	1078.1	350786.3	221.4	170.6	347357.0
18	*ee*(%)	0	41.0	-41.0	-37.2	1078.1	350786.3	44.4	170.6	464617.7
19	*ee*(%)	62	39.6	22.4	-37.2	1078.1	350786.3	44.4	170.6	546921.4
20	*ee*(%)	49	47.0	2.0	-37.2	1078.1	350786.3	221.4	170.6	448669.5
21	*ee*(%)	40	54.2	-14.2	-37.2	1078.1	350786.3	221.4	170.6	33187.0
22	*ee*(%)	57	52.2	4.8	-37.2	1078.1	350786.3	221.4	170.6	149562.6
23	*ee*(%)	55	47.0	8.0	-37.2	1078.1	350786.3	221.4	170.6	448669.5
24	*ee*(%)	11	53.5	-42.5	-37.2	1078.1	589032.0	221.4	170.6	347357.0
25	*ee*(%)	34	43.5	-9.5	-34.4	996.8	324320.1	204.7	157.7	414818.2
26	*ee*(%)	41	46.2	-5.2	-34.4	996.8	641361.5	204.7	157.7	625116.6
27	*ee*(%)	53	43.6	9.4	-34.4	996.8	641361.5	41.1	157.7	468837.4
28	*ee*(%)	28	46.1	-18.1	-34.4	996.8	641361.5	41.1	157.7	321149.5
29	*ee*(%)	57	44.2	12.8	-34.4	996.8	641361.5	41.1	157.7	429563.1
30	*ee*(%)	55	44.2	10.8	-34.4	996.8	641361.5	41.1	157.7	429563.1
31	*ee*(%)	46	53.2	-7.2	-34.4	996.8	641361.5	204.7	157.7	214781.5
32	*ee*(%)	56	42.9	13.1	-34.4	996.8	641361.5	41.1	157.7	505657.1
33	*ee*(%)	54	43.8	10.2	-34.4	996.8	458115.4	61.6	157.7	282284.3
34	*ee*(%)	30	52.7	-22.7	-34.4	996.8	458115.4	516.1	157.7	625116.6
35	*ee*(%)	37	55.8	-18.8	-34.4	996.8	458115.4	344.1	157.7	117209.4
36	*ee*(%)	53	52.3	0.7	-34.4	996.8	458115.4	344.1	157.7	321149.5
37	*ee*(%)	10	31.1	-21.1	-34.4	996.8	419778.6	41.1	157.7	937674.8
38	*ee*(%)	50	40.0	10.0	-56.4	1633.7	132891.8	67.3	258.5	1536867.6
39	*ee*(%)	71	56.6	14.4	-38.0	1503.6	350786.3	221.4	242.8	694714.0

40	ee(%)	-69	-84.7	15.7	56.9	-2250.8	-525117.6	-331.5	-363.5	-1039968.0
41	ee(%)	61	53.1	7.9	-38.0	1503.6	175393.2	221.4	242.8	694714.0
42	ee(%)	63	42.2	20.8	-36.7	1078.1	350786.3	221.4	161.4	694714.0
43	ee(%)	72	44.3	27.7	-40.2	227.2	350786.3	221.4	172.1	694714.0
44	ee(%)	67	44.8	22.2	-38.5	652.7	350786.3	221.4	171.3	694714.0
45	ee(%)	69	63.6	5.4	-40.3	652.7	350786.3	221.4	244.3	694714.0
46	ee(%)	7	42.8	-35.8	-37.2	1078.1	350786.3	221.4	170.6	694714.0
47	ee(%)	63	42.8	20.2	-37.2	1078.1	350786.3	221.4	170.6	694714.0
48	ee(%)	30	39.5	-9.5	-36.0	1503.6	350786.3	221.4	169.8	694714.0
49	ee(%)	71	60.6	10.4	-39.1	1078.1	350786.3	221.4	243.6	694714.0
50	ee(%)	66	82.9	-16.9	-40.3	1078.1	350786.3	221.4	316.6	694714.0
51	ee(%)	61	32.2	28.8	-35.4	3190.1	350786.3	221.4	245.3	694714.0
52	ee(%)	61	56.6	4.4	-38.0	1503.6	350786.3	221.4	242.8	694714.0
53	ee(%)	28	29.6	-1.6	-34.6	2339.2	350786.3	221.4	173.8	694714.0
54	ee(%)	64	63.1	0.9	-38.2	227.2	350786.3	221.4	181.6	694714.0
55	ee(%)	0	32.4	-32.4	-37.7	821.4	350786.3	221.4	138.8	694714.0
56	ee(%)	99	47.9	51.1	-39.2	821.4	350786.3	221.4	200.4	694714.0
57	ee(%)	64	53.3	10.7	-37.2	227.2	350786.3	221.4	142.7	694714.0
58	ee(%)	0	49.0	-49.0	-37.6	1078.1	350786.3	221.4	191.1	694714.0
59	ee(%)	0	4.7	-4.7	-36.0	1503.6	350786.3	221.4	88.5	694714.0
60	ee(%)	0	26.7	-26.7	-36.2	2014.3	350786.3	221.4	173.9	694714.0
61	ee(%)	-68	-61.1	-6.9	45.9	-6289.4	-46432.5	-1313.1	-289.3	-33825.0
62	ee(%)	90	72.5	17.5	-46.0	5139.4	94922.7	838.9	265.8	138298.0
63	ee(%)	71	65.6	5.4	-45.1	5139.4	94922.7	838.9	234.5	138298.0
65	ee(%)	96	72.5	23.5	-46.0	5139.4	94922.7	838.9	268.5	207446.9
66	ee(%)	71	79.9	-8.9	-46.9	5139.4	94922.7	838.9	299.7	207446.9
67	ee(%)	16	65.6	-49.6	-45.1	5139.4	94922.7	838.9	234.5	138298.0
68	ee(%)	60	55.2	4.8	-45.1	5139.4	94922.7	838.9	234.5	748317.7
69	ee(%)	7	55.2	-48.2	-45.1	5139.4	94922.7	838.9	234.5	748317.7
70	ee(%)	69	39.1	29.9	-45.1	5139.4	94922.7	56.6	234.5	207446.9
71	ee(%)	-24	-51.5	27.5	33.3	-3715.8	-68629.5	-606.5	-192.2	-149985.0
72	ee(%)	-77	-53.9	-23.1	36.0	-3715.8	-68629.5	-606.5	-244.3	-199980.0
73	ee(%)	0	49.2	-49.2	-49.7	5139.4	94922.7	56.6	337.9	276595.9
74	ee(%)	-72	-66.0	-6.0	44.1	-5028.0	-185730.0	-820.7	-229.5	-135300.0
75	ee(%)	0	41.6	-41.6	-26.8	3053.6	189406.0	498.4	139.4	82170.0
76	ee(%)	74	41.6	32.4	-26.8	3053.6	189406.0	498.4	139.4	82170.0
77	ee(%)	46	41.6	4.4	-26.8	3053.6	189406.0	498.4	139.4	82170.0
78	ee(%)	14	44.4	-30.4	-26.8	3053.6	331087.0	498.4	139.4	82170.0
79	ee(%)	28	67.5	-39.5	-45.1	5139.4	189845.4	838.9	234.5	138298.0
80	ee(%)	-29	-34.6	5.6	22.3	-2538.5	-157458.0	-414.3	-115.9	-68310.0
81	ee(%)	47	41.6	5.4	-26.8	3053.6	189406.0	498.4	139.4	82170.0
82	ee(%)	-40	-34.6	-5.4	22.3	-2538.5	-157458.0	-414.3	-115.9	-68310.0
83	ee(%)	28	67.7	-39.7	-45.1	5139.4	189845.4	838.9	234.5	126773.1
84	ee(%)	-65	-66.2	1.2	44.1	-5028.0	-185730.0	-820.7	-229.5	-124025.0
85	ee(%)	85	72.8	12.2	-45.1	5139.4	447722.2	838.9	234.5	126773.1
86	ee(%)	70	67.7	2.3	-45.1	5139.4	189845.4	838.9	234.5	126773.1
87	ee(%)	71	72.8	-1.8	-45.1	5139.4	447722.2	838.9	234.5	126773.1

88	ee(%)	81	70.3	10.7	-45.1	5139.4	318783.8	838.9	234.5	126773.1
89	ee(%)	94	72.8	21.2	-45.1	5139.4	447722.2	838.9	234.5	126773.1
90	ee(%)	74	76.4	-2.4	-45.1	5139.4	627788.9	838.9	234.5	126773.1
91	ee(%)	82	70.3	11.7	-45.1	5139.4	318783.8	838.9	234.5	126773.1
92	ee(%)	62	69.6	-7.6	-45.1	5139.4	189845.4	838.9	234.5	19477.0
93	ee(%)	68	41.3	26.7	-26.8	3053.6	112797.0	498.4	139.4	11572.3
94	ee(%)	90	74.7	15.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
95	ee(%)	71	69.6	1.4	-45.1	5139.4	189845.4	838.9	234.5	19477.0
96	ee(%)	81	74.7	6.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
97	ee(%)	86	72.1	13.9	-45.1	5139.4	318783.8	838.9	234.5	19477.0
98	ee(%)	97	74.7	22.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
99	ee(%)	93	78.2	14.8	-45.1	5139.4	627788.9	838.9	234.5	19477.0
100	ee(%)	84	72.1	11.9	-45.1	5139.4	318783.8	838.9	234.5	19477.0
101	ee(%)	0	69.1	-69.1	-45.1	5139.4	189845.4	838.9	234.5	47136.6
102	ee(%)	72	69.1	2.9	-45.1	5139.4	189845.4	838.9	234.5	46329.8
103	ee(%)	61	69.1	-8.1	-45.1	5139.4	189845.4	838.9	234.5	44024.9
104	ee(%)	70	69.8	0.2	-45.1	5139.4	189845.4	838.9	234.5	4321.8
105	ee(%)	71	69.6	1.4	-45.1	5139.4	189845.4	838.9	234.5	19477.0
106	ee(%)	68	69.6	-1.6	-45.1	5139.4	189845.4	838.9	234.5	18439.7
107	ee(%)	27	67.7	-40.7	-45.1	5139.4	189845.4	838.9	234.5	126773.1
108	ee(%)	85	72.8	12.2	-45.1	5139.4	447722.2	838.9	234.5	126773.1
109	ee(%)	70	67.7	2.3	-45.1	5139.4	189845.4	838.9	234.5	126773.1
110	ee(%)	71	72.8	-1.8	-45.1	5139.4	447722.2	838.9	234.5	126773.1
111	ee(%)	94	72.8	21.2	-45.1	5139.4	447722.2	838.9	234.5	126773.1
112	ee(%)	74	76.4	-2.4	-45.1	5139.4	627788.9	838.9	234.5	126773.1
113	ee(%)	23	67.7	-44.7	-45.1	5139.4	189845.4	838.9	234.5	126773.1
114	ee(%)	78	72.8	5.2	-45.1	5139.4	447722.2	838.9	234.5	126773.1
115	ee(%)	70	67.7	2.3	-45.1	5139.4	189845.4	838.9	234.5	126773.1
116	ee(%)	65	72.8	-7.8	-45.1	5139.4	447722.2	838.9	234.5	126773.1
117	ee(%)	94	72.8	21.2	-45.1	5139.4	447722.2	838.9	234.5	126773.1
118	ee(%)	83	76.4	6.6	-45.1	5139.4	627788.9	838.9	234.5	126773.1
119	ee(%)	63	69.6	-6.6	-45.1	5139.4	189845.4	838.9	234.5	19477.0
120	ee(%)	92	74.7	17.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
121	ee(%)	74	69.6	4.4	-45.1	5139.4	189845.4	838.9	234.5	19477.0
122	ee(%)	85	74.7	10.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
123	ee(%)	99	74.7	24.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
124	ee(%)	95	78.2	16.8	-45.1	5139.4	627788.9	838.9	234.5	19477.0
125	ee(%)	62	69.6	-7.6	-45.1	5139.4	189845.4	838.9	234.5	19477.0
126	ee(%)	90	74.7	15.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
127	ee(%)	71	69.6	1.4	-45.1	5139.4	189845.4	838.9	234.5	19477.0
128	ee(%)	81	74.7	6.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
129	ee(%)	97	74.7	22.3	-45.1	5139.4	447722.2	838.9	234.5	19477.0
130	ee(%)	93	78.2	14.8	-45.1	5139.4	627788.9	838.9	234.5	19477.0
131	ee(%)	-28	-67.2	39.2	44.8	-5105.4	-188591.1	-833.3	-233.0	-125935.5
132	ee(%)	65	66.2	-1.2	-44.1	5021.8	185503.5	819.7	229.2	123873.8
133	ee(%)	-85	-72.3	-12.7	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
134	ee(%)	-70	-67.2	-2.8	44.8	-5105.4	-188591.1	-833.3	-233.0	-125935.5

135	ee(%)	-71	-72.3	1.3	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
136	ee(%)	-81	-69.8	-11.2	44.8	-5105.4	-316677.5	-833.3	-233.0	-125935.5
137	ee(%)	-94	-72.3	-21.7	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
138	ee(%)	-74	-75.8	1.8	44.8	-5105.4	-623641.1	-833.3	-233.0	-125935.5
139	ee(%)	-82	-69.8	-12.2	44.8	-5105.4	-316677.5	-833.3	-233.0	-125935.5
140	ee(%)	-30	-44.3	14.3	39.0	-1130.7	-367897.9	-390.3	-178.9	-1063666.9
141	ee(%)	-62	-69.1	7.1	44.8	-5105.4	-188591.1	-833.3	-233.0	-19348.3
142	ee(%)	-68	-48.9	-19.1	31.7	-3615.9	-133570.3	-590.2	-165.0	-13703.5
143	ee(%)	-90	-74.1	-15.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3
144	ee(%)	-71	-69.1	-1.9	44.8	-5105.4	-188591.1	-833.3	-233.0	-19348.3
145	ee(%)	-81	-74.1	-6.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3
146	ee(%)	-86	-71.6	-14.4	44.8	-5105.4	-316677.5	-833.3	-233.0	-19348.3
147	ee(%)	-97	-74.1	-22.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3
148	ee(%)	-93	-77.7	-15.3	44.8	-5105.4	-623641.1	-833.3	-233.0	-19348.3
149	ee(%)	-84	-71.6	-12.4	44.8	-5105.4	-316677.5	-833.3	-233.0	-19348.3
150	ee(%)	0	-33.1	33.1	39.0	-1130.7	-367897.9	-46.6	-178.9	-1063666.9
151	ee(%)	0	-68.6	68.6	44.8	-5105.4	-188591.1	-833.3	-233.0	-46825.1
152	ee(%)	-72	-68.6	-3.4	44.8	-5105.4	-188591.1	-833.3	-233.0	-46023.7
153	ee(%)	-61	-68.7	7.7	44.8	-5105.4	-188591.1	-833.3	-233.0	-43734.0
154	ee(%)	-70	-69.3	-0.7	44.8	-5105.4	-188591.1	-833.3	-233.0	-4293.3
155	ee(%)	-71	-69.1	-1.9	44.8	-5105.4	-188591.1	-833.3	-233.0	-19348.3
156	ee(%)	-68	-69.1	1.1	44.8	-5105.4	-188591.1	-833.3	-233.0	-18317.9
157	ee(%)	-27	-67.2	40.2	44.8	-5105.4	-188591.1	-833.3	-233.0	-125935.5
158	ee(%)	-85	-72.3	-12.7	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
159	ee(%)	-70	-67.2	-2.8	44.8	-5105.4	-188591.1	-833.3	-233.0	-125935.5
160	ee(%)	-71	-72.3	1.3	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
161	ee(%)	-67	-32.6	-34.4	39.0	-1130.7	-367897.9	-46.6	-178.9	-1092903.8
162	ee(%)	-94	-72.3	-21.7	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
163	ee(%)	-74	-75.8	1.8	44.8	-5105.4	-623641.1	-833.3	-233.0	-125935.5
164	ee(%)	-23	-67.2	44.2	44.8	-5105.4	-188591.1	-833.3	-233.0	-125935.5
165	ee(%)	-78	-72.3	-5.7	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
166	ee(%)	-70	-67.2	-2.8	44.8	-5105.4	-188591.1	-833.3	-233.0	-125935.5
167	ee(%)	-65	-72.3	7.3	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
168	ee(%)	-94	-72.3	-21.7	44.8	-5105.4	-444764.0	-833.3	-233.0	-125935.5
169	ee(%)	-83	-75.8	-7.2	44.8	-5105.4	-623641.1	-833.3	-233.0	-125935.5
170	ee(%)	-63	-69.1	6.1	44.8	-5105.4	-188591.1	-833.3	-233.0	-19348.3
171	ee(%)	-92	-74.1	-17.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3
172	ee(%)	-65	-51.1	-13.9	39.0	-1130.7	-367897.9	-232.2	-178.9	-364301.3
173	ee(%)	-74	-69.1	-4.9	44.8	-5105.4	-188591.1	-833.3	-233.0	-19348.3
174	ee(%)	-85	-74.1	-10.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3
175	ee(%)	-99	-74.1	-24.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3
176	ee(%)	-95	-55.0	-40.0	31.7	-3615.9	-441696.0	-590.2	-165.0	-13703.5
177	ee(%)	-62	-69.1	7.1	44.8	-5105.4	-188591.1	-833.3	-233.0	-19348.3
178	ee(%)	-90	-74.1	-15.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3
179	ee(%)	-71	-69.1	-1.9	44.8	-5105.4	-188591.1	-833.3	-233.0	-19348.3
180	ee(%)	-81	-74.1	-6.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3
181	ee(%)	-97	-74.1	-22.9	44.8	-5105.4	-444764.0	-833.3	-233.0	-19348.3

182	ee(%)	-93	-77.7	-15.3	44.8	-5105.4	-623641.1	-833.3	-233.0	-19348.3
183	ee(%)	-66	-51.1	-14.9	39.0	-1130.7	-367897.9	-232.2	-178.9	-364301.3
184	ee(%)	-66	-73.4	7.4	56.0	-1622.9	-528054.9	-333.3	-256.8	-522892.6
185	ee(%)	-70	-78.6	8.6	56.0	-1622.9	-528054.9	-333.3	-256.8	-225143.6
186	ee(%)	-68	-52.0	-16.0	39.0	-1130.7	-367897.9	-232.2	-178.9	-313716.8
188	ee(%)	-63	-54.7	-8.3	39.0	-1130.7	-367897.9	-390.3	-178.9	-455376.6
189	ee(%)	-63	-41.1	-21.9	39.0	-1130.7	-367897.9	-116.1	-178.9	-728602.5
190	ee(%)	-63	-48.6	-14.4	39.0	-1130.7	-367897.9	-348.3	-178.9	-728602.5
191	ee(%)	-58	-51.1	-6.9	39.0	-1130.7	-367897.9	-232.2	-178.9	-364301.3
193	ee(%)	-62	-41.5	-20.5	39.0	-1130.7	-367897.9	-46.6	-178.9	-573600.5
194	ee(%)	-49	-49.3	0.3	39.0	-1130.7	-367897.9	-232.2	-178.9	-470555.8
195	ee(%)	-40	-56.8	16.8	39.0	-1130.7	-367897.9	-232.2	-178.9	-34805.9
196	ee(%)	-57	-54.7	-2.3	39.0	-1130.7	-367897.9	-232.2	-178.9	-156858.4
197	ee(%)	-55	-49.3	-5.7	39.0	-1130.7	-367897.9	-232.2	-178.9	-470555.8
198	ee(%)	-11	-56.1	45.1	39.0	-1130.7	-617765.2	-232.2	-178.9	-364301.3
199	ee(%)	-34	-43.5	9.5	34.4	-996.8	-324320.1	-204.7	-157.7	-414818.2
200	ee(%)	-41	-46.2	5.2	34.4	-996.8	-641361.5	-204.7	-157.7	-625116.6
201	ee(%)	-53	-43.5	-9.5	34.4	-996.8	-641361.5	-41.1	-157.7	-468837.4
202	ee(%)	-28	-46.1	18.1	34.4	-996.8	-641361.5	-41.1	-157.7	-321149.5
203	ee(%)	-57	-44.2	-12.8	34.4	-996.8	-641361.5	-41.1	-157.7	-429563.1
204	ee(%)	-55	-44.2	-10.8	34.4	-996.8	-641361.5	-41.1	-157.7	-429563.1
205	ee(%)	-46	-53.2	7.2	34.4	-996.8	-641361.5	-204.7	-157.7	-214781.5
206	ee(%)	-56	-42.9	-13.1	34.4	-996.8	-641361.5	-41.1	-157.7	-505657.1
207	ee(%)	-54	-43.8	-10.2	34.4	-996.8	-458115.4	-61.6	-157.7	-282284.3
208	ee(%)	-30	-55.5	25.5	34.4	-996.8	-458115.4	-516.1	-157.7	-461473.5
209	ee(%)	-37	-55.8	18.8	34.4	-996.8	-458115.4	-344.1	-157.7	-117209.4
210	ee(%)	-53	-52.3	-0.7	34.4	-996.8	-458115.4	-344.1	-157.7	-321149.5
211	ee(%)	-10	-31.1	21.1	34.4	-996.8	-419778.6	-41.1	-157.7	-937674.8
212	ee(%)	-50	-39.7	-10.3	56.0	-1622.9	-132013.7	-66.9	-256.8	-1526713.3
213	ee(%)	-71	-59.3	-11.7	39.9	-1576.9	-367897.9	-232.2	-254.7	-728602.5
214	ee(%)	69	84.7	-15.7	-56.9	2250.8	525117.6	331.5	363.5	1039968.0
215	ee(%)	-61	-55.7	-5.3	39.9	-1576.9	-183948.9	-232.2	-254.7	-728602.5
216	ee(%)	-63	-44.2	-18.8	38.5	-1130.7	-367897.9	-232.2	-169.2	-728602.5
217	ee(%)	-72	-46.4	-25.6	42.2	-238.3	-367897.9	-232.2	-180.5	-728602.5
218	ee(%)	-67	-47.0	-20.0	40.4	-684.5	-367897.9	-232.2	-179.7	-728602.5
219	ee(%)	-69	-66.6	-2.4	42.3	-684.5	-367897.9	-232.2	-256.2	-728602.5
220	ee(%)	-7	-44.9	37.9	39.0	-1130.7	-367897.9	-232.2	-178.9	-728602.5
221	ee(%)	-63	-44.9	-18.1	39.0	-1130.7	-367897.9	-232.2	-178.9	-728602.5
222	ee(%)	-30	-41.4	11.4	37.8	-1576.9	-367897.9	-232.2	-178.1	-728602.5
223	ee(%)	-71	-63.5	-7.5	41.0	-1130.7	-367897.9	-232.2	-255.4	-728602.5
224	ee(%)	-66	-86.9	20.9	42.3	-1130.7	-367897.9	-232.2	-332.0	-728602.5
225	ee(%)	-61	-33.7	-27.3	37.1	-3345.7	-367897.9	-232.2	-257.3	-728602.5
226	ee(%)	-61	-59.3	-1.7	39.9	-1576.9	-367897.9	-232.2	-254.7	-728602.5
227	ee(%)	-28	-31.0	3.0	36.3	-2453.3	-367897.9	-232.2	-182.3	-728602.5
228	ee(%)	-64	-66.1	2.1	40.0	-238.3	-367897.9	-232.2	-190.4	-728602.5
229	ee(%)	0	-33.9	33.9	39.5	-861.4	-367897.9	-232.2	-145.6	-728602.5
230	ee(%)	-99	-50.2	-48.8	41.1	-861.4	-367897.9	-232.2	-210.2	-728602.5

231	*ee*(%)	-64	-55.9	-8.1	39.0	-238.3	-367897.9	-232.2	-149.7	-728602.5
232	*ee*(%)	0	-51.3	51.3	39.4	-1130.7	-367897.9	-232.2	-200.5	-728602.5
233	*ee*(%)	0	-4.9	4.9	37.8	-1576.9	-367897.9	-232.2	-92.8	-728602.5
234	*ee*(%)	0	-28.0	28.0	37.9	-2112.5	-367897.9	-232.2	-182.3	-728602.5
235	*ee*(%)	-56	-27.6	-28.4	39.0	-1130.7	-91974.5	-46.6	-178.9	-1063666.9
236	*ee*(%)	68	61.1	6.9	-45.8	6281.7	46375.9	1311.5	289.0	33783.8
237	*ee*(%)	68	53.0	15.0	-46.4	6281.7	92751.8	819.7	319.4	135135.0
238	*ee*(%)	-90	-72.0	-18.0	45.7	-5105.4	-94295.5	-833.3	-264.0	-137384.2
239	*ee*(%)	-63	-33.1	-29.9	39.0	-1130.7	-367897.9	-46.6	-178.9	-1063666.9
241	*ee*(%)	-96	-72.0	-24.0	45.7	-5105.4	-94295.5	-833.3	-266.7	-206076.3
242	*ee*(%)	-71	-79.3	8.3	46.6	-5105.4	-94295.5	-833.3	-297.7	-206076.3
243	*ee*(%)	-16	-65.2	49.2	44.8	-5105.4	-94295.5	-833.3	-233.0	-137384.2
244	*ee*(%)	-60	-54.8	-5.2	44.8	-5105.4	-94295.5	-833.3	-233.0	-743373.5
245	*ee*(%)	-7	-54.8	47.8	44.8	-5105.4	-94295.5	-833.3	-233.0	-743373.5
246	*ee*(%)	-69	-38.8	-30.2	44.8	-5105.4	-94295.5	-56.2	-233.0	-206076.3
247	*ee*(%)	24	51.6	-27.6	-33.3	3715.8	68629.5	606.5	192.2	149985.0
248	*ee*(%)	77	53.9	23.1	-36.0	3715.8	68629.5	606.5	244.3	199980.0
249	*ee*(%)	0	-39.1	39.1	39.0	-1130.7	-367897.9	-232.2	-178.9	-1063666.9
250	*ee*(%)	0	-48.9	48.9	49.4	-5105.4	-94295.5	-56.2	-335.6	-274768.4
251	*ee*(%)	72	66.0	6.0	-44.1	5021.8	185503.5	819.7	229.2	135135.0
252	*ee*(%)	0	-49.2	49.2	31.7	-3615.9	-224288.0	-590.2	-165.0	-97302.9
253	*ee*(%)	-74	-49.2	-24.8	31.7	-3615.9	-224288.0	-590.2	-165.0	-97302.9
254	*ee*(%)	-46	-49.2	3.2	31.7	-3615.9	-224288.0	-590.2	-165.0	-97302.9
255	*ee*(%)	-14	-52.6	38.6	31.7	-3615.9	-392061.7	-590.2	-165.0	-97302.9
256	*ee*(%)	-28	-67.0	39.0	44.8	-5105.4	-188591.1	-833.3	-233.0	-137384.2
257	*ee*(%)	29	34.6	-5.6	-22.3	2538.5	157458.0	414.3	115.9	68310.0
258	*ee*(%)	-47	-49.2	2.2	31.7	-3615.9	-224288.0	-590.2	-165.0	-97302.9
259	*ee*(%)	40	34.7	5.3	-22.3	2538.5	157458.0	414.3	115.9	62617.5
260	*ee*(%)	-29	-26.2	-2.8	39.0	-1130.7	-367897.9	-46.6	-178.9	-1462542.0
381	Yld(%)	5	20.5	-15.5	-28.9	837.1	68095.4	34.5	132.5	787509.9
382	Yld(%)	17	24.5	-7.5	-28.9	837.1	272381.5	34.5	132.5	787509.9
383	Yld(%)	7	29.0	-22.0	-28.9	837.1	272381.5	171.9	132.5	787509.9
384	Yld(%)	3	19.5	-16.5	-28.9	837.1	272381.5	34.5	132.5	1082826.1
385	Yld(%)	8	32.8	-24.8	-28.9	837.1	272381.5	289.0	132.5	787509.9
386	Yld(%)	0	24.5	-24.5	-28.9	837.1	272381.5	34.5	132.5	787509.9
387	Yld(%)	33	24.2	8.8	-28.9	837.1	272381.5	34.5	132.5	809156.1
388	Yld(%)	70	37.9	32.1	-28.9	837.1	272381.5	171.9	132.5	269718.7
389	Yld(%)	72	37.9	34.1	-28.9	837.1	272381.5	171.9	132.5	269718.7
390	Yld(%)	82	50.4	31.6	-38.4	1112.4	361925.3	228.5	176.0	358387.0
391	Yld(%)	66	53.9	12.1	-38.4	1112.4	361925.3	228.5	176.0	154311.9
392	Yld(%)	11	38.5	-27.5	-28.9	837.1	272381.5	171.9	132.5	232267.3
393	Yld(%)	10	35.6	-25.6	-28.9	837.1	272381.5	171.9	132.5	404578.0
394	Yld(%)	65	40.5	24.5	-28.9	837.1	272381.5	289.0	132.5	337148.4
395	Yld(%)	76	30.5	45.5	-28.9	837.1	272381.5	86.0	132.5	539437.4
396	Yld(%)	43	36.1	6.9	-28.9	837.1	272381.5	257.9	132.5	539437.4
397	Yld(%)	46	37.9	8.1	-28.9	837.1	272381.5	171.9	132.5	269718.7
398	Yld(%)	13	31.9	-18.9	-28.9	837.1	272381.5	34.5	132.5	360770.2

399	Yld(%)	19	30.8	-11.8	-28.9	837.1	272381.5	34.5	132.5	424678.1
400	Yld(%)	75	36.5	38.5	-28.9	837.1	272381.5	171.9	132.5	348386.7
401	Yld(%)	5	42.1	-37.1	-28.9	837.1	272381.5	171.9	132.5	25769.3
402	Yld(%)	33	40.5	-7.5	-28.9	837.1	272381.5	171.9	132.5	116133.7
403	Yld(%)	54	36.5	17.5	-28.9	837.1	272381.5	171.9	132.5	348386.7
404	Yld(%)	70	41.6	28.4	-28.9	837.1	457376.5	171.9	132.5	269718.7
405	Yld(%)	18	37.9	-19.9	-29.9	867.2	282170.2	178.1	137.2	360906.8
406	Yld(%)	73	40.2	32.8	-29.9	867.2	558007.7	178.1	137.2	543874.0
407	Yld(%)	59	37.9	21.1	-29.9	867.2	558007.7	35.7	137.2	407905.5
408	Yld(%)	44	40.1	3.9	-29.9	867.2	558007.7	35.7	137.2	279411.7
409	Yld(%)	69	38.5	30.5	-29.9	867.2	558007.7	35.7	137.2	373735.4
410	Yld(%)	43	38.5	4.5	-29.9	867.2	558007.7	35.7	137.2	373735.4
411	Yld(%)	24	46.3	-22.3	-29.9	867.2	558007.7	178.1	137.2	186867.7
412	Yld(%)	18	37.4	-19.4	-29.9	867.2	558007.7	35.7	137.2	439939.9
413	Yld(%)	8	38.1	-30.1	-29.9	867.2	398576.9	53.6	137.2	245597.5
414	Yld(%)	75	45.8	29.2	-29.9	867.2	398576.9	449.0	137.2	543874.0
415	Yld(%)	34	48.6	-14.6	-29.9	867.2	398576.9	299.4	137.2	101976.4
416	Yld(%)	8	45.5	-37.5	-29.9	867.2	398576.9	299.4	137.2	279411.7
417	Yld(%)	9	27.1	-18.1	-29.9	867.2	365222.5	35.7	137.2	815811.0
418	Yld(%)	4	27.3	-23.3	-38.4	1112.4	90481.3	45.8	176.0	1046398.8
419	Yld(%)	66	43.9	22.1	-29.5	1167.5	272381.5	171.9	188.5	539437.4
420	Yld(%)	51	62.6	-11.6	-42.1	1663.6	388130.4	245.0	268.7	768672.0
421	Yld(%)	54	41.2	12.8	-29.5	1167.5	136190.8	171.9	188.5	539437.4
422	Yld(%)	58	32.8	25.2	-28.5	837.1	272381.5	171.9	125.3	539437.4
423	Yld(%)	38	34.4	3.6	-31.2	176.4	272381.5	171.9	133.6	539437.4
424	Yld(%)	60	34.8	25.2	-29.9	506.8	272381.5	171.9	133.0	539437.4
425	Yld(%)	60	49.4	10.6	-31.3	506.8	272381.5	171.9	189.7	539437.4
426	Yld(%)	55	33.3	21.7	-28.9	837.1	272381.5	171.9	132.5	539437.4
427	Yld(%)	51	33.3	17.7	-28.9	837.1	272381.5	171.9	132.5	539437.4
428	Yld(%)	13	30.7	-17.7	-28.0	1167.5	272381.5	171.9	131.9	539437.4
429	Yld(%)	66	47.0	19.0	-30.4	837.1	272381.5	171.9	189.1	539437.4
430	Yld(%)	46	64.4	-18.4	-31.3	837.1	272381.5	171.9	245.8	539437.4
431	Yld(%)	54	25.0	29.0	-27.5	2477.1	272381.5	171.9	190.5	539437.4
432	Yld(%)	68	43.9	24.1	-29.5	1167.5	272381.5	171.9	188.5	539437.4
433	Yld(%)	10	23.0	-13.0	-26.8	1816.4	272381.5	171.9	135.0	539437.4
434	Yld(%)	49	49.0	0.0	-29.6	176.4	272381.5	171.9	141.0	539437.4
435	Yld(%)	0	25.2	-25.2	-29.3	637.8	272381.5	171.9	107.8	539437.4
436	Yld(%)	11	37.2	-26.2	-30.5	637.8	272381.5	171.9	155.6	539437.4
437	Yld(%)	45	41.4	3.6	-28.9	176.4	272381.5	171.9	110.8	539437.4
438	Yld(%)	0	38.1	-38.1	-29.2	837.1	272381.5	171.9	148.4	539437.4
439	Yld(%)	0	3.7	-3.7	-28.0	1167.5	272381.5	171.9	68.7	539437.4
440	Yld(%)	0	20.8	-20.8	-28.1	1564.1	272381.5	171.9	135.0	539437.4
441	Yld(%)	82	63.3	18.7	-47.4	6504.2	48018.0	1357.9	299.2	34980.0
442	Yld(%)	78	49.4	28.6	-31.3	3499.2	64629.5	571.2	181.0	94162.2
443	Yld(%)	83	44.7	38.3	-30.7	3499.2	64629.5	571.2	159.7	94162.2
444	Yld(%)	7	51.6	-44.6	-33.9	3499.2	64629.5	571.2	230.0	141243.3
445	Yld(%)	71	49.4	21.6	-31.3	3499.2	64629.5	571.2	182.8	141243.3

446	Yld(%)	68	54.4	13.6	-31.9	3499.2	64629.5	571.2	204.1	141243.3
447	Yld(%)	63	44.7	18.3	-30.7	3499.2	64629.5	571.2	159.7	94162.2
448	Yld(%)	60	37.6	22.4	-30.7	3499.2	64629.5	571.2	159.7	509503.1
449	Yld(%)	54	37.6	16.4	-30.7	3499.2	64629.5	571.2	159.7	509503.1
450	Yld(%)	74	26.6	47.4	-30.7	3499.2	64629.5	38.5	159.7	141243.3
451	Yld(%)	61	64.8	-3.8	-41.8	4672.3	86296.5	762.6	241.6	188595.0
452	Yld(%)	66	67.8	-1.8	-45.2	4672.3	86296.5	762.6	307.1	251460.0
453	Yld(%)	0	33.5	-33.5	-33.9	3499.2	64629.5	38.5	230.0	188324.4
454	Yld(%)	88	68.3	19.7	-45.7	5199.7	192072.0	848.7	237.3	139920.0
455	Yld(%)	0	68.0	-68.0	-43.8	4991.2	309591.3	814.7	227.8	134310.0
456	Yld(%)	93	68.0	25.0	-43.8	4991.2	309591.3	814.7	227.8	134310.0
457	Yld(%)	84	68.0	16.0	-43.8	4991.2	309591.3	814.7	227.8	134310.0
458	Yld(%)	73	72.6	0.4	-43.8	4991.2	541174.3	814.7	227.8	134310.0
459	Yld(%)	42	46.0	-4.0	-30.7	3499.2	129259.0	571.2	159.7	94162.2
460	Yld(%)	90	89.3	0.7	-57.5	6548.6	406196.0	1068.9	298.9	176220.0
461	Yld(%)	77	68.0	9.0	-43.8	4991.2	309591.3	814.7	227.8	134310.0
462	Yld(%)	88	89.3	-1.3	-57.5	6548.6	406196.0	1068.9	298.9	176220.0
463	Yld(%)	98	46.1	51.9	-30.7	3499.2	129259.0	571.2	159.7	86315.4
464	Yld(%)	42	68.5	-26.5	-45.7	5199.7	192072.0	848.7	237.3	128260.0
465	Yld(%)	53	49.6	3.4	-30.7	3499.2	304838.2	571.2	159.7	86315.4
466	Yld(%)	91	46.1	44.9	-30.7	3499.2	129259.0	571.2	159.7	86315.4
467	Yld(%)	93	49.6	43.4	-30.7	3499.2	304838.2	571.2	159.7	86315.4
468	Yld(%)	54	47.9	6.1	-30.7	3499.2	217048.6	571.2	159.7	86315.4
469	Yld(%)	76	49.6	26.4	-30.7	3499.2	304838.2	571.2	159.7	86315.4
470	Yld(%)	59	52.0	7.0	-30.7	3499.2	427439.3	571.2	159.7	86315.4
471	Yld(%)	18	47.9	-29.9	-30.7	3499.2	217048.6	571.2	159.7	86315.4
472	Yld(%)	55	47.4	7.6	-30.7	3499.2	129259.0	571.2	159.7	13261.2
473	Yld(%)	80	67.5	12.5	-43.8	4991.2	184371.0	814.7	227.8	18915.3
474	Yld(%)	35	50.8	-15.8	-30.7	3499.2	304838.2	571.2	159.7	13261.2
475	Yld(%)	35	47.4	-12.4	-30.7	3499.2	129259.0	571.2	159.7	13261.2
476	Yld(%)	56	50.8	5.2	-30.7	3499.2	304838.2	571.2	159.7	13261.2
477	Yld(%)	56	49.1	6.9	-30.7	3499.2	217048.6	571.2	159.7	13261.2
478	Yld(%)	6	50.8	-44.8	-30.7	3499.2	304838.2	571.2	159.7	13261.2
479	Yld(%)	19	53.3	-34.3	-30.7	3499.2	427439.3	571.2	159.7	13261.2
480	Yld(%)	18	49.1	-31.1	-30.7	3499.2	217048.6	571.2	159.7	13261.2
481	Yld(%)	0	47.1	-47.1	-30.7	3499.2	129259.0	571.2	159.7	32093.6
482	Yld(%)	9	47.1	-38.1	-30.7	3499.2	129259.0	571.2	159.7	31544.3
483	Yld(%)	24	47.1	-23.1	-30.7	3499.2	129259.0	571.2	159.7	29975.0
484	Yld(%)	71	47.6	23.4	-30.7	3499.2	129259.0	571.2	159.7	2942.6
485	Yld(%)	46	47.4	-1.4	-30.7	3499.2	129259.0	571.2	159.7	13261.2
486	Yld(%)	57	47.4	9.6	-30.7	3499.2	129259.0	571.2	159.7	12555.0
487	Yld(%)	96	46.1	49.9	-30.7	3499.2	129259.0	571.2	159.7	86315.4
488	Yld(%)	50	49.6	0.4	-30.7	3499.2	304838.2	571.2	159.7	86315.4
489	Yld(%)	87	46.1	40.9	-30.7	3499.2	129259.0	571.2	159.7	86315.4
490	Yld(%)	91	49.6	41.4	-30.7	3499.2	304838.2	571.2	159.7	86315.4
491	Yld(%)	58	49.6	8.4	-30.7	3499.2	304838.2	571.2	159.7	86315.4
492	Yld(%)	58	52.0	6.0	-30.7	3499.2	427439.3	571.2	159.7	86315.4

493	Yld(%)	96	46.1	49.9	-30.7	3499.2	129259.0	571.2	159.7	86315.4
494	Yld(%)	39	49.6	-10.6	-30.7	3499.2	304838.2	571.2	159.7	86315.4
495	Yld(%)	54	46.1	7.9	-30.7	3499.2	129259.0	571.2	159.7	86315.4
496	Yld(%)	70	49.6	20.4	-30.7	3499.2	304838.2	571.2	159.7	86315.4
497	Yld(%)	16	49.6	-33.6	-30.7	3499.2	304838.2	571.2	159.7	86315.4
498	Yld(%)	3	52.0	-49.0	-30.7	3499.2	427439.3	571.2	159.7	86315.4
499	Yld(%)	45	47.4	-2.4	-30.7	3499.2	129259.0	571.2	159.7	13261.2
500	Yld(%)	31	50.8	-19.8	-30.7	3499.2	304838.2	571.2	159.7	13261.2
501	Yld(%)	52	47.4	4.6	-30.7	3499.2	129259.0	571.2	159.7	13261.2
502	Yld(%)	63	50.8	12.2	-30.7	3499.2	304838.2	571.2	159.7	13261.2
503	Yld(%)	3	50.8	-47.8	-30.7	3499.2	304838.2	571.2	159.7	13261.2
504	Yld(%)	9	53.3	-44.3	-30.7	3499.2	427439.3	571.2	159.7	13261.2
505	Yld(%)	51	47.4	3.6	-30.7	3499.2	129259.0	571.2	159.7	13261.2
506	Yld(%)	16	50.8	-34.8	-30.7	3499.2	304838.2	571.2	159.7	13261.2
507	Yld(%)	33	47.4	-14.4	-30.7	3499.2	129259.0	571.2	159.7	13261.2
508	Yld(%)	47	50.8	-3.8	-30.7	3499.2	304838.2	571.2	159.7	13261.2
509	Yld(%)	0,4	50.8	-50.4	-30.7	3499.2	304838.2	571.2	159.7	13261.2
510	Yld(%)	4	53.3	-49.3	-30.7	3499.2	427439.3	571.2	159.7	13261.2
511	Yld(%)	98	46.2	51.8	-30.8	3503.2	129404.9	571.8	159.9	86412.8
512	Yld(%)	42	68.5	-26.5	-45.7	5199.7	192072.0	848.7	237.3	128260.0
513	Yld(%)	53	49.6	3.4	-30.8	3503.2	305182.3	571.8	159.9	86412.8
514	Yld(%)	91	46.2	44.8	-30.8	3503.2	129404.9	571.8	159.9	86412.8
515	Yld(%)	93	49.6	43.4	-30.8	3503.2	305182.3	571.8	159.9	86412.8
516	Yld(%)	54	47.9	6.1	-30.8	3503.2	217293.6	571.8	159.9	86412.8
517	Yld(%)	76	49.6	26.4	-30.8	3503.2	305182.3	571.8	159.9	86412.8
518	Yld(%)	59	52.1	6.9	-30.8	3503.2	427921.8	571.8	159.9	86412.8
519	Yld(%)	18	47.9	-29.9	-30.8	3503.2	217293.6	571.8	159.9	86412.8
520	Yld(%)	8	32.8	-24.8	-28.9	837.1	272381.5	289.0	132.5	787509.9
521	Yld(%)	55	47.4	7.6	-30.8	3503.2	129404.9	571.8	159.9	13276.1
522	Yld(%)	80	59.2	20.8	-38.4	4372.8	161526.9	713.7	199.6	16571.7
523	Yld(%)	35	50.9	-15.9	-30.8	3503.2	305182.3	571.8	159.9	13276.1
524	Yld(%)	35	47.4	-12.4	-30.8	3503.2	129404.9	571.8	159.9	13276.1
525	Yld(%)	56	50.9	5.1	-30.8	3503.2	305182.3	571.8	159.9	13276.1
526	Yld(%)	56	49.1	6.9	-30.8	3503.2	217293.6	571.8	159.9	13276.1
527	Yld(%)	6	50.9	-44.9	-30.8	3503.2	305182.3	571.8	159.9	13276.1
528	Yld(%)	19	53.3	-34.3	-30.8	3503.2	427921.8	571.8	159.9	13276.1
529	Yld(%)	18	49.1	-31.1	-30.8	3503.2	217293.6	571.8	159.9	13276.1
530	Yld(%)	0	24.5	-24.5	-28.9	837.1	272381.5	34.5	132.5	787509.9
531	Yld(%)	0	47.1	-47.1	-30.8	3503.2	129404.9	571.8	159.9	32129.8
532	Yld(%)	9	47.1	-38.1	-30.8	3503.2	129404.9	571.8	159.9	31579.9
533	Yld(%)	24	47.1	-23.1	-30.8	3503.2	129404.9	571.8	159.9	30008.8
534	Yld(%)	71	47.6	23.4	-30.8	3503.2	129404.9	571.8	159.9	2945.9
535	Yld(%)	46	47.4	-1.4	-30.8	3503.2	129404.9	571.8	159.9	13276.1
536	Yld(%)	57	47.4	9.6	-30.8	3503.2	129404.9	571.8	159.9	12569.1
537	Yld(%)	96	46.2	49.8	-30.8	3503.2	129404.9	571.8	159.9	86412.8
538	Yld(%)	50	49.6	0.4	-30.8	3503.2	305182.3	571.8	159.9	86412.8
539	Yld(%)	87	46.2	40.8	-30.8	3503.2	129404.9	571.8	159.9	86412.8
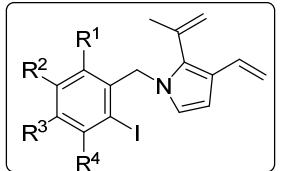
540	Yld(%)	91	49.6	41.4	-30.8	3503.2	305182.3	571.8	159.9	86412.8
541	Yld(%)	33	24.2	8.8	-28.9	837.1	272381.5	34.5	132.5	809156.1
542	Yld(%)	58	49.6	8.4	-30.8	3503.2	305182.3	571.8	159.9	86412.8
543	Yld(%)	58	52.1	5.9	-30.8	3503.2	427921.8	571.8	159.9	86412.8
544	Yld(%)	96	46.2	49.8	-30.8	3503.2	129404.9	571.8	159.9	86412.8
545	Yld(%)	39	49.6	-10.6	-30.8	3503.2	305182.3	571.8	159.9	86412.8
546	Yld(%)	54	46.2	7.8	-30.8	3503.2	129404.9	571.8	159.9	86412.8
547	Yld(%)	70	49.6	20.4	-30.8	3503.2	305182.3	571.8	159.9	86412.8
548	Yld(%)	16	49.6	-33.6	-30.8	3503.2	305182.3	571.8	159.9	86412.8
549	Yld(%)	3	52.1	-49.1	-30.8	3503.2	427921.8	571.8	159.9	86412.8
550	Yld(%)	45	47.4	-2.4	-30.8	3503.2	129404.9	571.8	159.9	13276.1
551	Yld(%)	31	50.9	-19.9	-30.8	3503.2	305182.3	571.8	159.9	13276.1
552	Yld(%)	70	37.9	32.1	-28.9	837.1	272381.5	171.9	132.5	269718.7
553	Yld(%)	52	47.4	4.6	-30.8	3503.2	129404.9	571.8	159.9	13276.1
554	Yld(%)	63	50.9	12.1	-30.8	3503.2	305182.3	571.8	159.9	13276.1
555	Yld(%)	3	50.9	-47.9	-30.8	3503.2	305182.3	571.8	159.9	13276.1
556	Yld(%)	9	66.6	-57.6	-38.4	4372.8	534144.0	713.7	199.6	16571.7
557	Yld(%)	51	47.4	3.6	-30.8	3503.2	129404.9	571.8	159.9	13276.1
558	Yld(%)	16	50.9	-34.9	-30.8	3503.2	305182.3	571.8	159.9	13276.1
559	Yld(%)	33	47.4	-14.4	-30.8	3503.2	129404.9	571.8	159.9	13276.1
560	Yld(%)	47	50.9	-3.9	-30.8	3503.2	305182.3	571.8	159.9	13276.1
561	Yld(%)	0,4	50.9	-50.5	-30.8	3503.2	305182.3	571.8	159.9	13276.1
562	Yld(%)	4	53.3	-49.3	-30.8	3503.2	427921.8	571.8	159.9	13276.1
563	Yld(%)	72	37.9	34.1	-28.9	837.1	272381.5	171.9	132.5	269718.7
564	Yld(%)	82	50.4	31.6	-38.4	1113.6	362333.8	228.7	176.2	358791.6
565	Yld(%)	66	53.9	12.1	-38.4	1113.6	362333.8	228.7	176.2	154486.0
566	Yld(%)	11	38.5	-27.5	-28.9	837.1	272381.5	171.9	132.5	232267.3
567	Yld(%)	10	35.6	-25.6	-28.9	837.1	272381.5	171.9	132.5	404578.0
568	Yld(%)	65	40.5	24.5	-28.9	837.1	272381.5	289.0	132.5	337148.4
569	Yld(%)	76	30.5	45.5	-28.9	837.1	272381.5	86.0	132.5	539437.4
570	Yld(%)	43	36.1	6.9	-28.9	837.1	272381.5	257.9	132.5	539437.4
571	Yld(%)	46	37.9	8.1	-28.9	837.1	272381.5	171.9	132.5	269718.7
572	Yld(%)	13	31.9	-18.9	-28.9	837.1	272381.5	34.5	132.5	360770.2
573	Yld(%)	19	30.8	-11.8	-28.9	837.1	272381.5	34.5	132.5	424678.1
574	Yld(%)	75	36.5	38.5	-28.9	837.1	272381.5	171.9	132.5	348386.7
575	Yld(%)	5	42.1	-37.1	-28.9	837.1	272381.5	171.9	132.5	25769.3
576	Yld(%)	33	40.5	-7.5	-28.9	837.1	272381.5	171.9	132.5	116133.7
577	Yld(%)	54	36.5	17.5	-28.9	837.1	272381.5	171.9	132.5	348386.7
578	Yld(%)	70	41.6	28.4	-28.9	837.1	457376.5	171.9	132.5	269718.7
579	Yld(%)	18	37.9	-19.9	-29.9	867.2	282170.2	178.1	137.2	360906.8
580	Yld(%)	73	40.2	32.8	-29.9	867.2	558007.7	178.1	137.2	543874.0
581	Yld(%)	59	37.9	21.1	-29.9	867.2	558007.7	35.7	137.2	407905.5
582	Yld(%)	44	40.1	3.9	-29.9	867.2	558007.7	35.7	137.2	279411.7
583	Yld(%)	69	38.5	30.5	-29.9	867.2	558007.7	35.7	137.2	373735.4
584	Yld(%)	43	38.5	4.5	-29.9	867.2	558007.7	35.7	137.2	373735.4
585	Yld(%)	24	46.3	-22.3	-29.9	867.2	558007.7	178.1	137.2	186867.7
586	Yld(%)	18	37.4	-19.4	-29.9	867.2	558007.7	35.7	137.2	439939.9

587	Yld(%)	8	38.1	-30.1	-29.9	867.2	398576.9	53.6	137.2	245597.5
588	Yld(%)	75	48.3	26.7	-29.9	867.2	398576.9	449.0	137.2	401498.6
589	Yld(%)	34	48.6	-14.6	-29.9	867.2	398576.9	299.4	137.2	101976.4
590	Yld(%)	8	45.5	-37.5	-29.9	867.2	398576.9	299.4	137.2	279411.7
591	Yld(%)	9	27.1	-18.1	-29.9	867.2	365222.5	35.7	137.2	815811.0
592	Yld(%)	4	27.3	-23.3	-38.4	1113.6	90583.4	45.9	176.2	1047579.9
593	Yld(%)	66	43.9	22.1	-29.5	1167.5	272381.5	171.9	188.5	539437.4
594	Yld(%)	51	62.6	-11.6	-42.1	1663.6	388130.4	245.0	268.7	768672.0
595	Yld(%)	54	41.2	12.8	-29.5	1167.5	136190.8	171.9	188.5	539437.4
596	Yld(%)	58	32.8	25.2	-28.5	837.1	272381.5	171.9	125.3	539437.4
597	Yld(%)	38	34.4	3.6	-31.2	176.4	272381.5	171.9	133.6	539437.4
598	Yld(%)	60	34.8	25.2	-29.9	506.8	272381.5	171.9	133.0	539437.4
599	Yld(%)	60	49.4	10.6	-31.3	506.8	272381.5	171.9	189.7	539437.4
600	Yld(%)	55	33.3	21.7	-28.9	837.1	272381.5	171.9	132.5	539437.4
601	Yld(%)	51	33.3	17.7	-28.9	837.1	272381.5	171.9	132.5	539437.4
602	Yld(%)	13	30.7	-17.7	-28.0	1167.5	272381.5	171.9	131.9	539437.4
603	Yld(%)	66	47.0	19.0	-30.4	837.1	272381.5	171.9	189.1	539437.4
604	Yld(%)	46	64.4	-18.4	-31.3	837.1	272381.5	171.9	245.8	539437.4
605	Yld(%)	54	25.0	29.0	-27.5	2477.1	272381.5	171.9	190.5	539437.4
606	Yld(%)	68	43.9	24.1	-29.5	1167.5	272381.5	171.9	188.5	539437.4
607	Yld(%)	10	23.0	-13.0	-26.8	1816.4	272381.5	171.9	135.0	539437.4
608	Yld(%)	49	49.0	0.0	-29.6	176.4	272381.5	171.9	141.0	539437.4
609	Yld(%)	0	25.2	-25.2	-29.3	637.8	272381.5	171.9	107.8	539437.4
610	Yld(%)	11	37.2	-26.2	-30.5	637.8	272381.5	171.9	155.6	539437.4
611	Yld(%)	45	41.4	3.6	-28.9	176.4	272381.5	171.9	110.8	539437.4
612	Yld(%)	0	38.1	-38.1	-29.2	837.1	272381.5	171.9	148.4	539437.4
613	Yld(%)	0	3.7	-3.7	-28.0	1167.5	272381.5	171.9	68.7	539437.4
614	Yld(%)	0	20.8	-20.8	-28.1	1564.1	272381.5	171.9	135.0	539437.4
615	Yld(%)	5	20.5	-15.5	-28.9	837.1	68095.4	34.5	132.5	787509.9
616	Yld(%)	82	63.3	18.7	-47.4	6504.2	48018.0	1357.9	299.2	34980.0
618	Yld(%)	78	49.4	28.6	-31.4	3503.2	64702.5	571.8	181.2	94268.5
619	Yld(%)	17	24.5	-7.5	-28.9	837.1	272381.5	34.5	132.5	787509.9
620	Yld(%)	7	51.7	-44.7	-33.9	3503.2	64702.5	571.8	230.3	141402.7
621	Yld(%)	71	49.4	21.6	-31.4	3503.2	64702.5	571.8	183.0	141402.7
622	Yld(%)	68	54.4	13.6	-31.9	3503.2	64702.5	571.8	204.3	141402.7
623	Yld(%)	63	44.7	18.3	-30.8	3503.2	64702.5	571.8	159.9	94268.5
624	Yld(%)	60	37.6	22.4	-30.8	3503.2	64702.5	571.8	159.9	510078.2
625	Yld(%)	54	37.6	16.4	-30.8	3503.2	64702.5	571.8	159.9	510078.2
626	Yld(%)	74	26.6	47.4	-30.8	3503.2	64702.5	38.6	159.9	141402.7
627	Yld(%)	61	64.8	-3.8	-41.8	4672.3	86296.5	762.6	241.6	188595.0
628	Yld(%)	66	67.8	-1.8	-45.2	4672.3	86296.5	762.6	307.1	251460.0
629	Yld(%)	7	29.0	-22.0	-28.9	837.1	272381.5	171.9	132.5	787509.9
630	Yld(%)	0	33.6	-33.6	-33.9	3503.2	64702.5	38.6	230.3	188537.0
631	Yld(%)	88	68.3	19.7	-45.7	5199.7	192072.0	848.7	237.3	139920.0
632	Yld(%)	0	59.6	-59.6	-38.4	4372.8	271232.0	713.7	199.6	117668.6
633	Yld(%)	93	59.6	33.4	-38.4	4372.8	271232.0	713.7	199.6	117668.6
634	Yld(%)	84	59.6	24.4	-38.4	4372.8	271232.0	713.7	199.6	117668.6
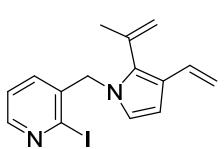
635	Yld(%)	73	63.6	9.4	-38.4	4372.8	474121.1	713.7	199.6	117668.6
636	Yld(%)	42	46.0	-4.0	-30.8	3503.2	129404.9	571.8	159.9	94268.5
637	Yld(%)	90	89.3	0.7	-57.5	6548.6	406196.0	1068.9	298.9	176220.0
638	Yld(%)	77	59.6	17.4	-38.4	4372.8	271232.0	713.7	199.6	117668.6
639	Yld(%)	88	89.5	-1.5	-57.5	6548.6	406196.0	1068.9	298.9	161535.0
640	Yld(%)	3	19.5	-16.5	-28.9	837.1	272381.5	34.5	132.5	1082826.1

3. Molecule codes
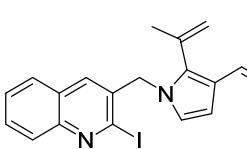
- ***SUBSTRATES***
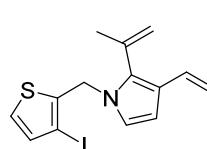
S01 $R^1 = R^4 = H$, $R^2 = R^3 = CH_3O$	**S08** $R^1 = H$, $R^2 = R^3 = R^4 = CH_3O$
S02 $R^1 = R^4 = H$, $R^2 = R^3 = -OCH_2O-$	**S09** $R^1 = R^4 = H$, $R^2 = BnO$, $R^3 = CH_3O$
S03 $R^1 = R^2 = R^3 = R^4 = H$	**S10** $R^1 = R^4 = H$, $R^2 = R^3 = BnO$
S04 $R^1 = R^3 = R^4 = H$, $R^2 = CH_3O$	**S11** $R^1 = R^4 = H$, $R^2 = 3\text{-}NO_2BnO$, $R^3 = CH_3O$
S05 $R^1 = R^3 = R^4 = H$, $R^2 = BnO$	**S12** $R^1 = R^4 = H$, $R^2 = 3\text{-}CH_3OBnO$, $R^3 = CH_3O$,
S06 $R^1 = R^3 = H$, $R^2 = R^4 = CH_3O$	**S13** $R^1 = R^3 = R^4 = H$, $R^2 = NO_2$
S07 $R^1 = R^2 = CH_3O$, $R^3 = R^4 = H$	**S14** $R^1 = R^3 = R^4 = H$, $R^2 = F$
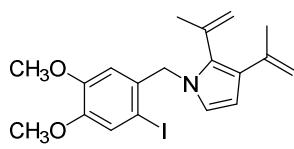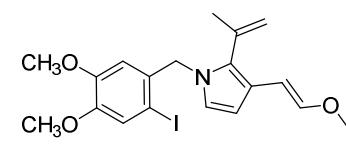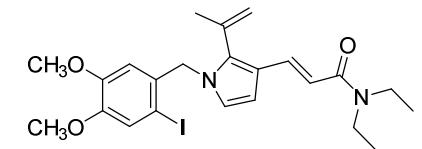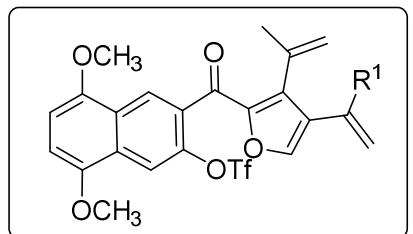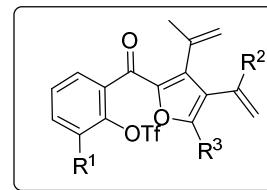
S15 **S16** **S17** **S18** **S19** **S20**
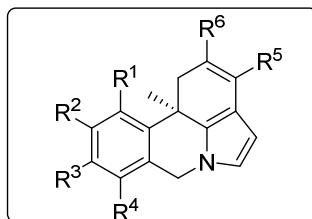
S21	$R^1 = H$
S22	$R^1 = CH_3$
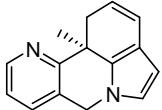
S23	$R^1 = R^3 = H$, $R^2 = CH_3$
S24	$R^1 = R^2 = R^3 = H$
S25	$R^1 = R^3 = H$, $R^2 = Ph$
S26	$R^1 = CH_3$, $R^2 = R^3 = H$
S27	$R^1 = R^2 = CH_3$, $R^3 = H$
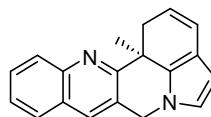
• **PRODUCTS**
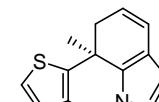
P01	$R^1 = R^4 = R^5 = R^6 = H, R^2 = R^3 = CH_3O$	**P07**	$R^1 = R^2 = R^5 = R^6 = H, R^3 = R^4 = CH_3O$	**P13**	$R^1 = R^2 = R^4 = R^5 = H, R^3 = NO_2$
P02	$R^1 = R^4 = H, R^2 = R^3 = -OCH_2O-$	**P08**	$R^1 = R^2 = R^3 = CH_3O, R^4 = R^5 = R^6 = H$	**P14**	$R^1 = R^2 = R^4 = R^5 = H, R^3 = F$
P03	$R^1 = R^2 = R^3 = R^4 = R^5 = R^6 = H$	**P09**	$R^1 = R^4 = R^5 = R^6 = H, R^2 = CH_3O, R^3 = BnO$	**P18**	$R^1 = R^4 = R^6 = H, R^2 = R^3 = CH_3O, R^5 = CH_3$
P04	$R^1 = R^2 = R^4 = R^5 = R^6 = H, R^3 = CH_3O$	**P10**	$R^1 = R^4 = R^5 = R^6 = H, R^2 = R^3 = BnO$	**P19**	$R^1 = R^4 = R^5 = H, R^2 = R^3 = R^6 = CH_3O$
P05	$R^1 = R^2 = R^4 = R^5 = R^6 = H, R^3 = BnO$	**P11**	$R^1 = R^4 = R^5 = R^6 = H, R^2 = CH_3O, R^3 = 3\text{-}NO_2BnO$	**P20**	$R^1 = R^4 = R^5 = H, R^2 = R^3 = CH_3O, R^6 = CONEt_2$
P06	$R^2 = R^4 = R^5 = R^6 = H, R^1 = R^3 = CH_3O$	**P12**	$R^1 = R^4 = R^5 = R^6 = H, R^2 = CH_3O, R^3 = 3\text{-}CH_3OBnO$		
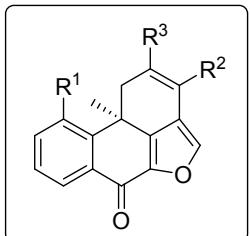
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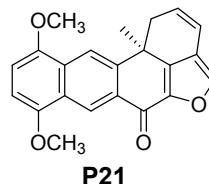
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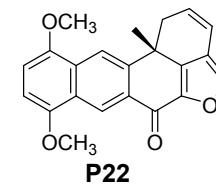
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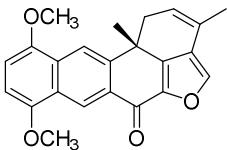
P24	$R^1 = R^3 = H, R^2 = CH_3$
P25	$R^1 = R^2 = R^3 = H$
P26	$R^1 = R^3 = H, R^2 = Ph$
P27	$R^1 = CH_3, R^2 = R^3 = H$
P28	$R^1 = R^2 = CH_3, R^3 = H$
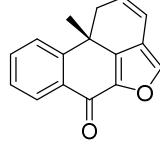
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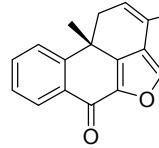
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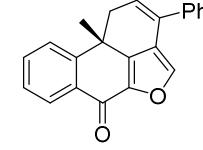
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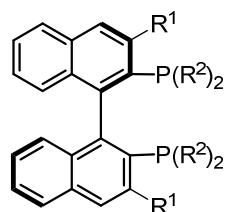
P30

P31

- *LIGANDS*

(R) **LXA**
(S) **LXB**

L01A R^1= H, R^2= Ph
L03A R^1= H, R^2= 3,5-(CH$_3$)$_2$Ph
L08A R^1= OCH$_3$, R^2= Ph
L09A R^1= OiPr, R^2= Ph
L10A R^1= OBn, R^2= Ph
L11A R^1= OPiv, R^2= Ph
L13A R^1= OiPr, R^2= 3,5-(CH$_3$)$_2$Ph
L14A R^1= H, R^2= 3-CH$_3$Ph
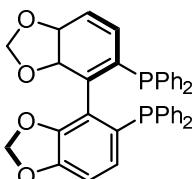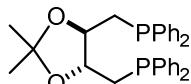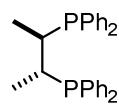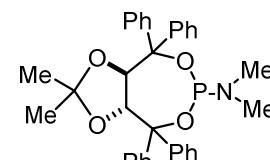
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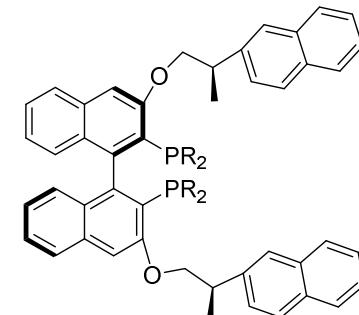
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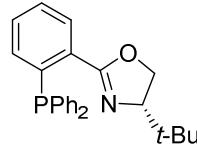
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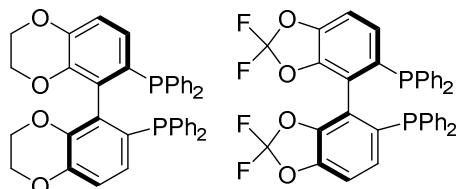
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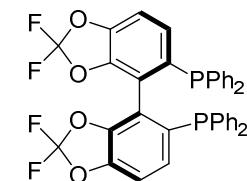
L12A R = 3,5-(CH$_3$)$_2$Ph
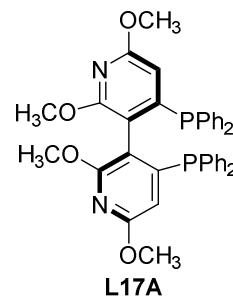
L07A
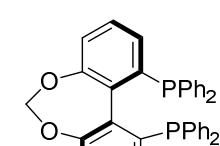
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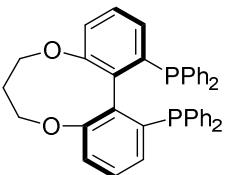
L16A

L17A
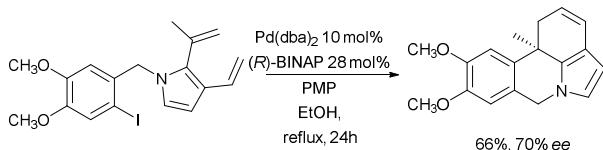
L18A

L19A
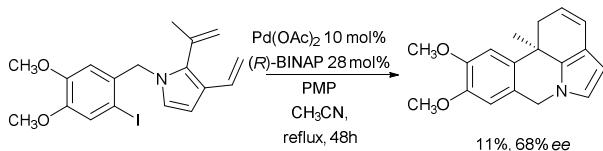
4. Experimental procedure for the synthesis of (*R*)-9,10-dimethoxy-11b-methyl-7,11b-dihydro-1H-pyrrolo[3,2,1-*de*]phenanthridine.[1]

4.1 Reaction of 1-(2-iodo-4,5-dimethoxybenzyl)-2-(prop-1-en-2-yl)-3-vinyl-1H-pyrrole with Pd(dba)$_2$/PMP in EtOH.

To a solution of 1-(2-iodo-4,5-dimethoxybenzyl)-2-(prop-1-en-2-yl)-3-vinyl-1H-pyrrole (53 mg, 0.13 mmol) in anhydrous EtOH (2 mL) under an argon atmosphere, (*R*)-BINAP (23 mg, 0.04 mmol), PMP (0.05 mL, 0.26 mmol) and Pd(dba)$_2$ (7.5 mg, 0.013 mmol) were added. The mixture was heated under reflux for 24 h. Then the reaction mixture was diluted with AcOEt (50 mL), washed with saturated NH$_4$Cl (1×30 mL) and H$_2$O (2×30 mL). The combined organic extracts were dried (Na$_2$SO$_4$), and concentrated under vacuum. Flash column chromatography (silica gel, hexane/AcOEt) afforded the pyrrolophenanthridine as an oil; yield: 24 mg (66%). IR (ATR): n=1511 cm^{-1} (C=C); 1HNMR (300 MHz, CDCl$_3$): d = 1.28 (s, 3H, CH$_3$), 2.56–2.82 (m, 2H, 2×H-1), 3.89 (s, 3H, OCH$_3$), 3.92 (s, 3H,OCH$_3$), 5.01 (d, J=15.4 Hz, 1H, H-7a), 5.04 (d, J=15.4 Hz, 1H, H-7b), 5.52–5.70 (m, 1H, H-2), 6.10 (d, J=2.6 Hz, 1H, H-4), 6.49 (dd, J=9.4, 3.1 Hz, 1H, H-3), 6.61 (d, J=2.6 Hz, 1H, H-5), 6.72 (s, 1H, H-11), 6.86 (s, 1H, H-8); 13C NMR (75.5 MHz, CDCl$_3$): d=27.4 (CH3), 34.1 (C-11b), 37.1 (C-1), 47.0 (C-7), 56.4 (2×OCH$_3$), 105.7 (C-4), 107.8 (C-11), 109.9 (C-8), 113.4 (C-3a), 117.0 (C-5), 117.8 (C-2), 122.9 (C-11a), 123.1 (C-3), 132.0 (C-3a1), 135.6 (C-7a), 147.3 (C-9), 148.8 (C-10); MS (CI): m/z (rel. intensity)=282 (MH+, 100), 281 (M+, 67), 267 (22), 266 (78); HR-MS (CI): m/z=282.1489, calcd. for C$_{18}$H$_{20}$NO$_2$ [MH]+: 282.1494. [α]$^{20}_D$: +22.7 (c=0.32, CH$_2$Cl$_2$). The enantiomeric excess was determined by HPLC to be 70%, [Chiralcel OZ3, hexane/isopropyl alcohol 98:2, 0.8 mL.min^{-1}, tr (minor)=15.8 min (14.86%), tr (major)= 16.7 min (85.14%)].
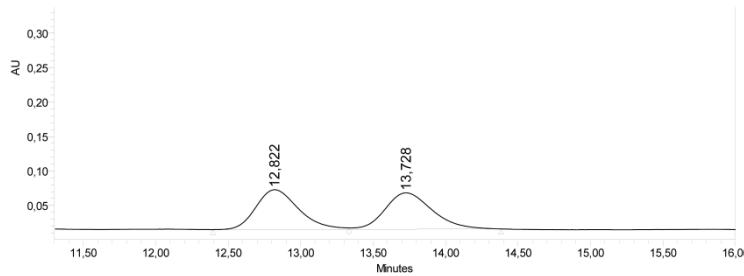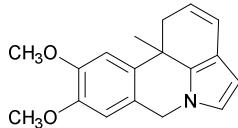
4.1 Reaction of 1-(2-iodo-4,5-dimethoxybenzyl)-2-(prop-1-en-2-yl)-3-vinyl-1H-pyrrole with Pd(OAc)$_2$/PMP in EtOH.


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[1] E. Coya, N. Sotomayor, E. Lete, *Adv. Synt. Catal.* 2015, **357**, 3206-3214 (Highlighted in: *SYNFACTS*, 2016, **12**, 0067-0067).

To a solution of 1-(2-iodo-4,5-dimethoxybenzyl)-2-(prop-1-en-2-yl)-3-vinyl-1H-pyrrole (47 mg, 0.11 mmol) in anhydrous EtOH (2 mL) under an argon atmosphere, (R)-BINAP (20 mg, 0.01 mmol), PMP (0.04 mL, 0.23 mmol) and Pd(OAc)$_2$ (2.6 mg, 0.011 mmol) were added. The mixture was heated under reflux for 48 h. Then the reaction mixture was diluted with AcOEt (50 mL), washed with saturated NH$_4$Cl (1×30 mL) and H$_2$O (2×30 mL). The combined organic extracts were dried (Na$_2$SO$_4$), and concentrated under vacuum. Flash column chromatography (silica gel, hexane/AcOEt) afforded the pyrrolophenanthridine as an oil; yield: 9.9 mg (11%). The enantiomeric excess was determined by HPLC to be 68%, [Chiralcel OZ3, hexane/isopropyl alcohol 98:2, 1 mL.min^{-1}, tr (minor)= 12.3 min (16.21%), tr (major)= 12.9 min (83.79%)].
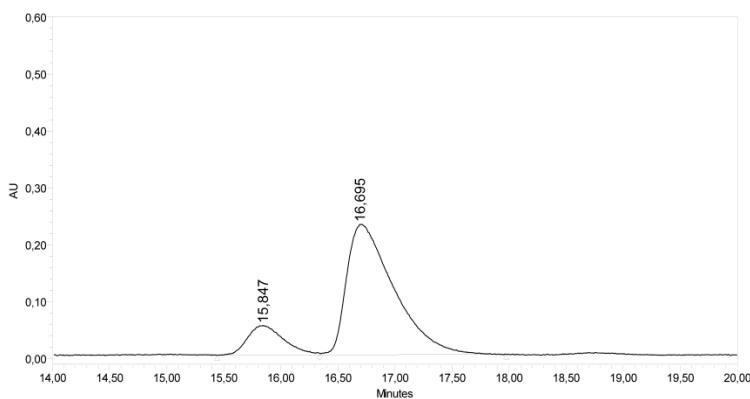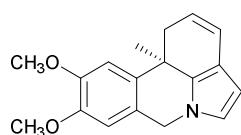
## 5. Copies of HPLC chromatograms

Racemic mixture

	RT	Area	% Area	Height
1	12,822	1182037	49,81	57840
2	13,728	1190822	50,19	52806

Chiralcel OZ3, hexane/isopropyl alcohol 98:2, 1 mL.min^{-1}
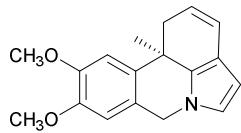
Scheme 4. (R)-9,10-dimethoxy-11b-methyl-7,11b-dihydro-1H-pyrrolo[3,2,1-de]phenanthridine
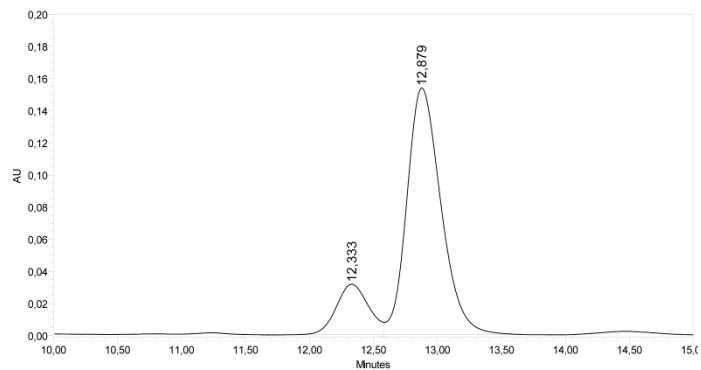
(Pd(dba)$_2$/PMP in EtOH)

	RT	Area	% Area	Height
1	15,847	1153186	14,86	52035
2	16,695	6605511	85,14	229342

Chiralcel OZ3, hexane/isopropyl alcohol 98:2, 0.8 mL.min^{-1}

(*R*)-9,10-dimethoxy-11b-methyl-7,11b-dihydro-1H-pyrrolo[3,2,1-*de*]phenanthridine (Pd(OAc)$_2$/PMP in EtOH)

	RT	Area	% Area	Height
1	12,333	550012	16,21	31353
2	12,879	2843771	83,79	153423

Chiralcel OZ3, hexane/isopropyl alcohol 98:2, 1 mL.min^{-1}