

Supporting Information

**Synthesis and Reactions of Diphosphinidenecyclobutene Ruthenium
Complexes Relevant to Catalytic Hydrosilylation of Terminal Alkynes**

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Table S1. Cartesian Coordinates of **3a'**

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	44	0	1.236425	-1.444959	0.130502
2	17	0	1.202766	-1.646481	2.543184
3	6	0	1.344238	-1.678661	-1.705627
4	8	0	1.397799	-1.865445	-2.852525
5	6	0	3.258720	-1.175831	0.300232
6	6	0	4.230499	-1.356229	-0.625715
7	15	0	-1.282598	-1.685906	0.095101
8	15	0	0.717704	0.734728	-0.028378
9	6	0	-0.935117	1.021946	-0.074817
10	6	0	-1.891938	-0.123269	-0.059890
11	6	0	-2.091236	1.935904	-0.119493
12	6	0	-2.992080	0.860961	-0.146657
13	6	0	5.688401	-1.326014	-0.407924
14	6	0	8.501315	-1.277250	-0.116616
15	6	0	6.285276	-1.077976	0.844428
16	6	0	6.541786	-1.552267	-1.504755
17	6	0	7.928542	-1.528103	-1.364459
18	6	0	7.669516	-1.053170	0.985647
19	6	0	-2.594904	-2.969474	0.085914
20	6	0	-4.468567	-5.040978	0.086891
21	6	0	-2.940357	-3.596387	1.307457
22	6	0	-3.171762	-3.388863	-1.137410
23	6	0	-4.111229	-4.425633	-1.111347
24	6	0	-3.886971	-4.628615	1.283225
25	6	0	1.776746	2.208747	0.100481
26	6	0	3.425984	4.443209	0.320214
27	6	0	1.841333	2.901424	1.334789
28	6	0	2.552958	2.609944	-1.013193
29	6	0	3.364605	3.741846	-0.882046
30	6	0	2.675257	4.022906	1.415443

31	6	0	-4.432954	0.703916	-0.279334
32	6	0	-7.211128	0.353706	-0.574267
33	6	0	-5.216275	1.673604	-0.940239
34	6	0	-5.070909	-0.449490	0.218150
35	6	0	-6.446622	-0.617057	0.076427
36	6	0	-6.588859	1.496893	-1.085808
37	6	0	-2.185177	3.387987	-0.064615
38	6	0	-2.322722	6.196181	0.075810
39	6	0	-1.129241	4.186297	-0.546526
40	6	0	-3.307248	4.027349	0.502697
41	6	0	-3.371498	5.415730	0.572290
42	6	0	-1.202778	5.575927	-0.482110
43	6	0	-2.815895	-2.744574	-2.459052
44	6	0	-2.348021	-3.158697	2.628879
45	6	0	2.546135	1.845437	-2.316417
46	6	0	1.044613	2.479152	2.548499
47	1	0	3.561552	-0.946641	1.324645
48	1	0	3.954389	-1.567757	-1.660150
49	1	0	9.581826	-1.258395	-0.001349
50	1	0	5.658009	-0.906136	1.713996
51	1	0	6.102671	-1.750452	-2.480519
52	1	0	8.561541	-1.706606	-2.230254
53	1	0	8.104499	-0.860006	1.963232
54	1	0	-5.195188	-5.849303	0.086202
55	1	0	-4.560984	-4.754677	-2.044689
56	1	0	-4.161729	-5.114096	2.216231
57	1	0	4.068102	5.315833	0.406134
58	1	0	3.960861	4.065451	-1.731027
59	1	0	2.736067	4.566205	2.354657
60	1	0	-8.283274	0.219322	-0.687901
61	1	0	-4.738866	2.554478	-1.356772
62	1	0	-4.485520	-1.210245	0.722197
63	1	0	-6.919744	-1.511312	0.472083
64	1	0	-7.174812	2.249625	-1.606120
65	1	0	-2.376638	7.279969	0.129792

66	1	0	-0.254327	3.713723	-0.979640
67	1	0	-4.116693	3.428496	0.906984
68	1	0	-4.239089	5.891093	1.021591
69	1	0	-0.380631	6.174033	-0.864722
70	1	0	-3.170686	-1.708116	-2.508426
71	1	0	-3.270981	-3.292420	-3.289797
72	1	0	-1.732619	-2.720622	-2.628079
73	1	0	-2.760357	-2.192183	2.948166
74	1	0	-1.260128	-3.032499	2.586054
75	1	0	-2.574135	-3.887633	3.413312
76	1	0	3.034265	0.870903	-2.195798
77	1	0	3.087223	2.396042	-3.091805
78	1	0	1.530394	1.658838	-2.684678
79	1	0	1.147676	1.407863	2.757229
80	1	0	-0.024444	2.683755	2.414420
81	1	0	1.378442	3.029935	3.433011

Table S2. Cartesian Coordinates of **3b**

Center Number	Atomic Number	Atomic Type	Coordinates (Angstroms)		
			X	Y	Z
1	44	0	-0.007720	-0.726241	-0.260646
2	6	0	-0.135983	0.153711	-1.877449
3	8	0	-0.215432	0.640985	-2.931392
4	17	0	0.227920	-2.446370	1.443364
5	15	0	-0.324948	1.224040	0.863664
6	15	0	2.414416	-0.315854	0.070709
7	6	0	1.353091	1.906085	1.365751
8	6	0	2.368979	0.773206	1.584633
9	6	0	-1.997284	-1.280359	-0.338310
10	6	0	-2.865496	-1.230649	-1.378329
11	6	0	-1.147393	2.608687	-0.033275
12	6	0	-2.535018	4.657675	-1.365222
13	6	0	-0.615197	3.905601	-0.097428
14	6	0	-2.386680	2.351867	-0.644034
15	6	0	-3.073923	3.370489	-1.302089
16	6	0	-1.305635	4.922251	-0.762378
17	6	0	-1.257050	1.179087	2.462218
18	6	0	-2.595157	1.210360	4.931048
19	6	0	-1.551114	-0.020526	3.122747
20	6	0	-1.646525	2.397427	3.049603
21	6	0	-2.307505	2.411016	4.276250
22	6	0	-2.216561	0.000281	4.352160
23	6	0	3.313696	0.689092	-1.197863
24	6	0	4.672180	2.083962	-3.231933
25	6	0	4.095545	1.815050	-0.896563
26	6	0	3.224696	0.275427	-2.537228
27	6	0	3.901807	0.962080	-3.544631
28	6	0	4.765791	2.509412	-1.906388
29	6	0	3.656895	-1.620164	0.464268
30	6	0	5.566954	-3.615557	0.960851

31	6	0	3.371856	-2.962373	0.177982
32	6	0	4.913539	-1.288084	0.995949
33	6	0	5.860241	-2.279829	1.248289
34	6	0	4.325044	-3.953343	0.423091
35	6	0	-4.200801	-1.851541	-1.465026
36	6	0	-6.786838	-2.967330	-1.733688
37	6	0	-4.998139	-1.588557	-2.595485
38	6	0	-4.733136	-2.700546	-0.474249
39	6	0	-6.006524	-3.246695	-0.606768
40	6	0	-6.273575	-2.135107	-2.729801
41	1	0	1.701410	2.554970	0.555485
42	1	0	1.240748	2.517659	2.267437
43	1	0	3.348758	1.184285	1.850993
44	1	0	2.055992	0.116848	2.404546
45	1	0	-2.327679	-1.816709	0.555391
46	1	0	-2.589379	-0.683334	-2.281673
47	1	0	-3.069596	5.449053	-1.883443
48	1	0	0.334479	4.143407	0.370303
49	1	0	-2.803715	1.349588	-0.613383
50	1	0	-4.029638	3.154382	-1.771343
51	1	0	-0.878048	5.920273	-0.806056
52	1	0	-3.115264	1.221570	5.885204
53	1	0	-1.251055	-0.967255	2.689005
54	1	0	-1.448234	3.338698	2.545214
55	1	0	-2.604831	3.359341	4.715888
56	1	0	-2.437444	-0.938772	4.852040
57	1	0	5.193670	2.624686	-4.016922
58	1	0	4.192270	2.162546	0.127811
59	1	0	2.619539	-0.589704	-2.794857
60	1	0	3.819313	0.625176	-4.574200
61	1	0	5.363384	3.381449	-1.653798
62	1	0	6.305599	-4.388499	1.155821
63	1	0	2.396725	-3.235513	-0.209323
64	1	0	5.165082	-0.251389	1.202957
65	1	0	6.827549	-2.009837	1.663685

66	1	0	4.088926	-4.990453	0.201436
67	1	0	-7.779628	-3.397933	-1.834324
68	1	0	-4.604152	-0.942359	-3.377524
69	1	0	-4.138525	-2.940453	0.402261
70	1	0	-6.392580	-3.900160	0.171856
71	1	0	-6.865893	-1.912002	-3.613942
