Supplementary information

Oxidative Radical Si-Incorporation: A Selective and Facile Entry to Si-Containing Heterocycles

Yuan Yang, Ren-Jie Song,* Yang Li, Xuan-Hui Ouyang, Jin-Heng Li,* and De-Liang He*

State Key Laboratory of Chemo/Biosensing and Chemometrics, Hunan University, Changsha 410082, China, Key Laboratory of Jiangxi Province for Persistent Pollutants Control and Resources Recycle, Nanchang Hangkong University, Nanchang 330063, China, and State Key Laboratory of Applied Organic Chemistry, Lanzhou University, Lanzhou 730000, China.

E-mail: srj0731@hnu@hnu.edu.cn, jhli@hnu.edu.cn and delianghe@hnu.edu.cn

List of Contents

(A) General Information

^{1}H NMR , ^{13}C NMR and ^{19}F NMR spectra were recorded on a Bruker 400 MHz or 500 MHz advance spectrometer at room temperature in $CDCl_3$ with tetramethylsilane as internal standard. Low-resolution mass spectra (LRMS) data were measured on GCMS-QP2010 Ultra. High-resolution mass spectra (HRMS) was recorded on an electrospray ionization (ESI) apparatus using time-of-flight (TOF) mass spectrometry. Melting Point were recorded on Hanon MP100 Apparatus. All products were identified by ^{1}H and ^{13}C NMR, HRMS. Unless otherwise noted, all reactions were carried out using standard Schlenk techniques, and all starting materials and solvents were commercially available and were used without further purification. Column chromatography was performed on silica gel (300-400 mesh) using petroleum ether (PE)/ethyl acetate (EA).

(a) Typical Experimental Procedure for Synthesis of Silino[3,4-c]quinolin-5(3*H*)-ones (3):

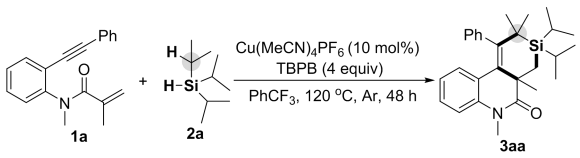
To a Schlenk tube were added *N*-(2-(Ethynyl)aryl)acrylamides **1** (0.2 mmol), silanes **2** (3 equiv), $Cu(MeCN)_4PF_6$ (10 mol%), TBPB (4 equiv), and $PhCF_3$ (2 mL). Then the tube is evacuated briefly under high vacuum and charged with argon through using standard Schlenk techniques; this process is repeated three times. Then the reaction mixture was stirred at 120 ^{o}C (oil bath temperature) for the indicated time (about 48 h) until complete consumption of starting material as monitored by TLC and/or GC-MS analysis. After the reaction was finished, the reaction mixture was filtered through Celite to give a light yellow solution, and concentrated in vacuum. The resulting residue was purified by silica gel column chromatography (petroleum ether/ethyl acetate) to afford the desired products **3**.

(b) Typical Experimental Procedure for Synthesis of Silolo[3,4-c]quinolin-4-ones (5):

To a Schlenk tube were added *N*-(2-(Ethynyl)aryl)acrylamides **1** (0.2 mmol), silanes **2** (2 equiv), TBPB (2 equiv), and $PhCF_3$ (2 mL). Then the tube is evacuated briefly under high vacuum and charged with argon through using standard Schlenk techniques; this process is repeated three times. Then the reaction mixture was stirred at 120 °C (oil bath temperature) for the indicated time (about 15 h) until complete consumption of starting material as monitored by TLC and/or GC-MS analysis. After the reaction was finished, the reaction mixture was filtered through Celite to give a light yellow solution, and concentrated in vacuum. The resulting residue was purified by silica gel column chromatography (petroleum ether/ethyl acetate) to afford the desired products **5**.

(c) Optimization of the reaction conditions

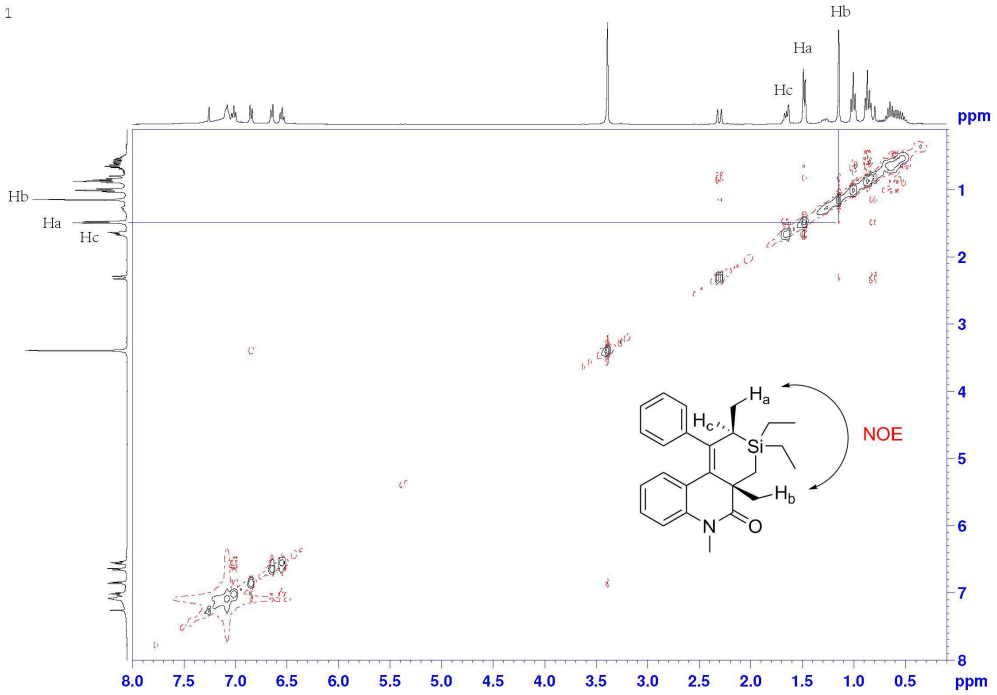
Table S1. Optimization of the reaction conditions[a]

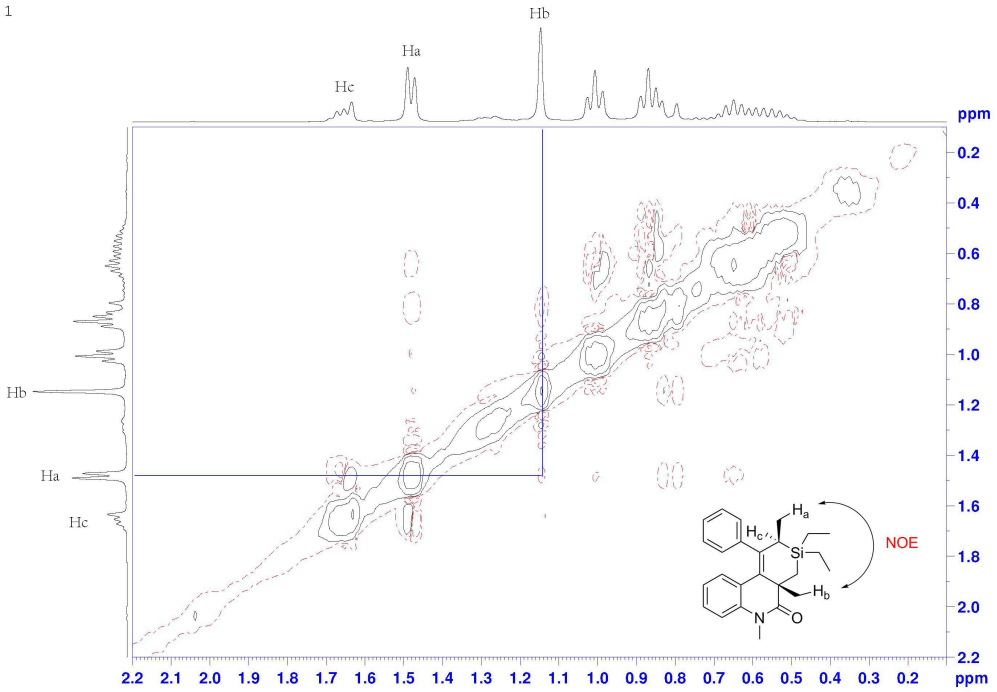


Entry	Variation from the Standard Conditions	Yield [%][b]
1	None	67
2	Withou $Cu(MeCN)_4PF_6$	trace
3	$Cu(MeCN)_4PF_6$ (5 mol%)	45
4	$Cu(MeCN)_4PF_6$ (15 mol%)	68
5	CuCl instead of $Cu(MeCN)_4PF_6$	49
6	CuBr instead of $Cu(MeCN)_4PF_6$	51
7	Without TBPB	0
8	TBPB (3 equiv)	46
9	TBPB (5 equiv)	70
10	TBHP instead of TBPB	<5
11	DTBP instead of TBPB	33
12	PhCl instead of $PhCF_3$	37
13	*t*BuOH instead of $PhCF_3$	48
14	At 130 °C	64
15	At 100 °C	49
16[c]	none	65

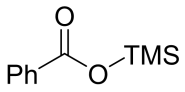
[a] Standard conditions: **1a** (0.2 mmol), **2a** (3 equiv), $Cu(MeCN)_4PF_6$ (10 mol%), TBPB (4 equiv), $PhCF_3$ (2 mL), 120 °C, argon and 48 h. [b] Yield is that of the isolated product. [c] **1a** (1 mmol).

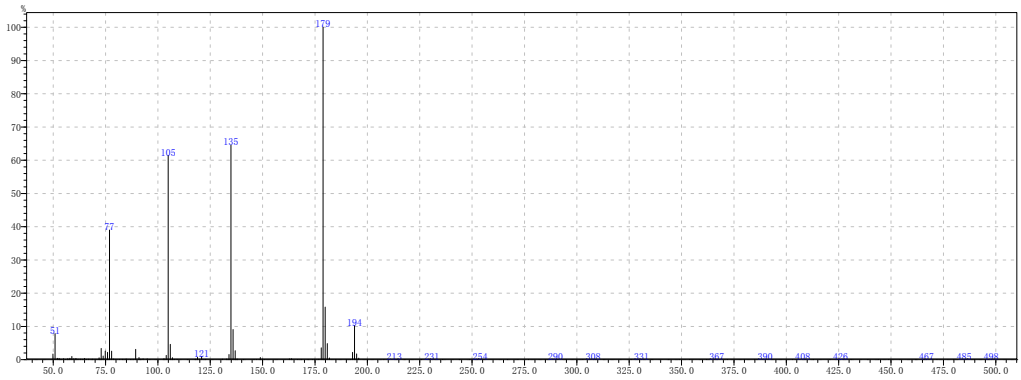
(d) NOE of product 3ad





(e) GC-MS analysis of trimethylsilyl benzoate





[MS Spectrum]

# of Peaks 197

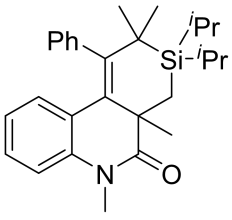
Raw Spectrum 6.190 (scan : 539) Base Peak m/z 178.85 (Inten : 1,904,850)

Background 6.155 (scan : 532)

m/z	Absolute Intensity	Relative Intensity	m/z	Absolute Intensity	Relative Intensity	m/z	Absolute Intensity	Relative Intensity
49.90	32084	1.68	64.95	6800	0.36	80.70	355	0.02
50.90	149342	7.84	65.85	1677	0.09	81.65	1809	0.09
51.95	7747	0.41	66.90	2865	0.15	83.05	1429	0.08
52.85	6601	0.35	68.65	2584	0.14	84.85	3237	0.17
53.80	1923	0.10	70.00	1691	0.09	86.90	462	0.02
54.95	4845	0.25	70.90	1105	0.06	88.45	1133	0.06
55.90	1162	0.06	71.90	10192	0.54	89.40	59442	3.12
56.95	5356	0.28	72.90	64242	3.37	90.95	12465	0.65
57.95	8239	0.43	73.85	20544	1.08	91.85	2973	0.16
58.90	18214	0.96	74.90	49313	2.59	92.95	4545	0.24
59.85	5311	0.28	75.95	41936	2.20	94.85	4643	0.24
60.85	7212	0.38	76.90	743266	39.02	96.20	763	0.04
61.90	2566	0.13	77.90	48801	2.56	98.20	71	0.00
62.95	3011	0.16	78.85	3458	0.18	99.20	177	0.01
63.90	1570	0.08	79.90	736	0.04	101.20	171	0.01

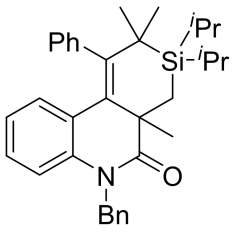
102.90	5101	0.27	135.90	173099	9.09	168.70	687	0.04
103.95	24198	1.27	136.90	50911	2.67	171.70	928	0.05
104.90	1170960	61.47	137.85	3778	0.20	173.70	471	0.02
105.90	87685	4.60	138.90	265	0.01	174.90	1627	0.09
106.90	11004	0.58	140.90	481	0.03	176.85	1421	0.07
107.90	1669	0.09	143.90	355	0.02	177.95	67507	3.54
109.15	1573	0.08	145.90	481	0.03	178.85	1904850	100.00
114.20	451	0.02	147.05	708	0.04	179.85	301610	15.83
117.85	2316	0.12	148.85	12519	0.66	180.85	91733	4.82
118.90	13367	0.70	150.00	3411	0.18	181.85	9392	0.49
119.85	2858	0.15	151.00	1210	0.06	182.90	58	0.00
120.85	17240	0.91	152.00	238	0.01	184.90	475	0.02
122.85	1938	0.10	154.00	387	0.02	189.90	674	0.04
125.90	386	0.02	157.00	59	0.00	191.90	593	0.03
127.90	36	0.00	159.00	383	0.02	192.95	41241	2.17
130.80	2496	0.13	161.70	184	0.01	193.85	195139	10.24
132.85	3215	0.17	162.75	3999	0.21	194.85	33310	1.75
133.95	29581	1.55	163.75	5160	0.27	195.90	8477	0.45
134.90	1229759	64.56	166.70	509	0.03			

(B) Analytical data

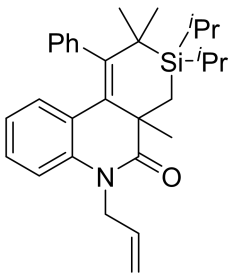


3,3-diisopropyl-2,2,4a,6-tetramethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3aa): White solid, mp 136.6-138.4 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.42 (d, *J* = 7.6 Hz, 1H), 7.27 (d, *J* = 6.8 Hz, 1H), 7.09 (t, *J* = 7.4 Hz, 1H), 6.97-6.92 (m, 2H), 6.80 (d, *J* = 8.0 Hz, 1H), 6.55 (d, *J* = 7.6 Hz, 1H), 6.48 (t, *J* = 7.4 Hz, 1H), 6.43 (d, *J* = 7.6 Hz, 1H), 3.36 (s, 3H), 2.41 (d, *J* = 15.6 Hz, 1H), 1.42 (s, 3H), 1.20-1.19 (m, 7H), 1.15 (s, 4H), 1.13 (s, 3H), 1.05-1.04 (m, 3H), 0.89 (d, *J* =

15.2 Hz, 1H), 0.83 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.6, 149.0, 141.0, 138.7, 132.8, 131.4, 130.8, 130.3, 129.1, 127.9, 126.4, 126.2, 125.9, 121.4, 112.9, 45.7, 30.7, 30.4, 28.9, 24.0, 23.3, 19.6, 19.5, 19.4, 18.9, 13.9, 11.5, 10.8; LRMS (EI, 70 eV) *m/z* (%): 431 (M^+, 1), 416 (100), 330 (7); HRMS *m/z* (ESI) calcd for $C_{28}H_{38}NOSi$ $[M+H]^+$ 432.2717, found 432.2725.

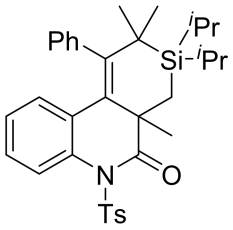


6-benzyl-3,3-diisopropyl-2,2,4a-trimethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ba): Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.43 (d, *J* = 7.6 Hz, 1H), 7.31-7.25 (m, 3H), 7.23-7.19 (m, 3H), 7.08 (t, *J* = 7.4 Hz, 1H), 6.91 (t, *J* = 7.6 Hz, 1H), 6.81 (t, *J* = 7.6 Hz, 1H), 6.71 (d, *J* = 8.0 Hz, 1H), 6.57 (d, *J* = 7.6 Hz, 1H), 6.44 (t, *J* = 7.6 Hz, 1H), 6.40 (d, *J* = 7.6 Hz, 1H), 5.32 (d, *J* = 16.0 Hz, 1H), 5.02 (d, *J* = 16.0 Hz, 1H), 2.46 (d, *J* = 15.6 Hz, 1H), 1.41 (s, 3H), 1.27 (s, 3H), 1.21-1.20 (m, 7H), 1.15 (s, 4H), 1.08-1.07 (m, 3H), 0.93 (d, *J* = 15.6 Hz, 1H), 0.88 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.5, 149.6, 140.9, 137.9, 137.4, 132.6, 131.5, 130.8, 130.4, 129.4, 128.5, 127.9, 126.9, 126.4 (2C), 126.2, 125.9, 121.6, 114.1, 47.2, 45.8, 30.3, 28.8, 24.2, 23.5, 19.7, 19.5 (2C), 19.0, 13.7, 11.5, 11.0; LRMS (EI, 70 eV) *m/z* (%): 492 (M^+-15, 100), 386 (3), 91 (40); HRMS *m/z* (ESI) calcd for $C_{34}H_{42}NOSi$ $[M+H]^+$ 508.3030, found 508.3041.

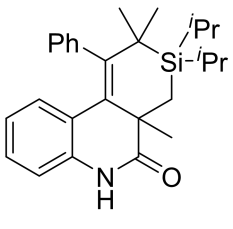


6-allyl-3,3-diisopropyl-2,2,4a-trimethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ca): Colourless oil; ^{1}H NMR (500 MHz, $CDCl_3$) δ: 7.43 (d, *J* = 7.5 Hz, 1H), 7.28 (td, *J* = 7.5, 1.0 Hz, 1H), 7.09 (t, *J* = 7.5 Hz, 1H), 6.96-6.89 (m, 2H), 6.80 (d, *J* = 8.0 Hz, 1H), 6.56 (dd, *J* = 7.5, 1.5 Hz, 1H), 6.48-6.45 (m, 1H), 6.43 (d, *J* = 7.5 Hz, 1H), 5.92-5.85 (m, 1H), 5.17 (dd, *J* = 10.5, 1.0 Hz, 1H), 5.11 (dd, *J* = 17.5, 1.5 Hz, 1H), 4.74-4.70 (m, 1H), 4.39-4.35 (m, 1H), 2.43 (d, *J* = 15.5 Hz, 1H), 1.42 (s,

3H), 1.20-1.15 (m, 14H), 1.06-1.04 (m, 3H), 0.89 (d, *J* = 15.5 Hz, 1H), 0.84 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ: 174.0, 149.3, 141.0, 137.8, 132.7, 132.6, 131.5, 130.7, 130.3, 129.1, 127.9, 126.3, 126.2, 125.9, 121.4, 115.9, 113.7, 45.9, 45.7, 30.4, 28.9, 23.9, 23.3, 19.6, 19.5, 19.4, 18.8, 13.7, 11.5, 10.8; LRMS (EI, 70 eV) *m/z* (%): 457 (M^+, 1), 442 (100), 386 (5); HRMS *m/z* (ESI) calcd for $C_{30}H_{40}NOSi$ $[M+H]^+$ 458.2874, found 458.2881.

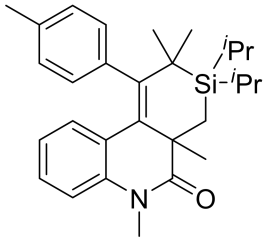


3,3-diisopropyl-2,2,4a-trimethyl-1-phenyl-6-tosyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3da): Light yellow solid, mp 160.1-162.2 °C (uncorrected); ^{1}H NMR (500 MHz, $CDCl_3$) δ: 8.04 (d, *J* = 8.5 Hz, 2H), 7.58 (d, *J* = 8.0 Hz, 1H), 7.41-7.38 (m, 3H), 7.32 (t, *J* = 7.3 Hz, 1H), 7.18 (t, *J* = 7.5 Hz, 1H), 7.11 (td, *J* = 7.5, 0.5 Hz, 1H), 7.09-7.05 (m, 1H), 6.79-6.76 (m, 1H), 6.67 (dd, *J* = 7.5, 1.0 Hz, 1H), 6.57 (d, *J* = 7.5 Hz, 1H), 2.47 (s, 3H), 2.06 (d, *J* = 15.5 Hz, 1H), 1.26 (s, 3H), 1.20-1.19 (m, 7H), 1.08 (s, 4H), 1.01 (s, 3H), 0.92-0.89 (m, 4H), 0.80 (s, 3H); ^{13}C NMR (125 MHz, $CDCl_3$) δ: 174.6, 151.0, 144.8, 140.0, 136.7, 133.6, 132.8, 131.1, 130.9, 130.6, 130.1, 129.3, 129.0, 128.3, 126.3 (3C), 125.0, 122.1, 48.5, 29.1, 27.8, 25.0, 23.6, 21.6, 20.0, 19.6, 19.2, 17.7, 14.1, 11.1 (2C); LRMS (EI, 70 eV) *m/z* (%): 416 (M^+-155, 100), 386 (8), 131 (70), 91 (22); HRMS *m/z* (ESI) calcd for $C_{34}H_{42}NO_3SSi$ $[M+H]^+$ 572.2649, found 572.2661.

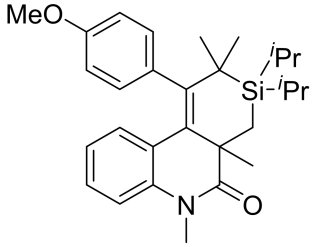


3,3-diisopropyl-2,2,4a-trimethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ea): White solid, mp 250.1-251.8 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 8.21 (s, 1H), 7.43 (d, *J* = 6.8 Hz, 1H), 7.28 (d, *J* = 9.6 Hz, 1H), 7.11 (t, *J* = 6.4 Hz, 1H), 6.94 (t, *J* = 7.0 Hz, 1H), 6.89 (t, *J* = 7.2 Hz, 1H), 6.62 (d, *J* = 7.2 Hz, 1H), 6.52 (d, *J* = 7.2 Hz, 1H), 6.45-6.38 (s, 2H), 2.40 (d, *J* = 15.2 Hz, 1H),

1.44 (s, 3H), 1.24-1.09 (m, 17H), 0.89 (d, *J* = 15.6 Hz, 1H), 0.83 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.1, 150.2, 141.1, 135.3, 132.3, 131.7, 130.6, 130.2, 128.0, 127.2, 126.5, 126.3, 126.0, 121.4, 113.8, 45.4, 30.6, 29.1, 23.9, 23.5, 19.7 (2C), 19.5, 19.0, 12.8, 11.4, 10.8; LRMS (EI, 70 eV) *m/z* (%): 417 (M^+, 1), 402 (100), 316 (6); HRMS *m/z* (ESI) calcd for $C_{27}H_{36}NOSi$ $[M+H]^+$ 418.2561, found 418.2567.

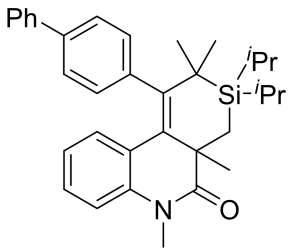


3,3-diisopropyl-2,2,4a,6-tetramethyl-1-(p-tolyl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3fa): White solid, mp 134.2-135.5 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.30 (d, *J* = 7.6 Hz, 1H), 7.08 (d, *J* = 8.0 Hz, 1H), 6.96 (t, *J* = 7.6 Hz, 1H), 6.80 (d, *J* = 8.0 Hz, 1H), 6.74 (d, *J* = 7.6 Hz, 1H), 6.57 (d, *J* = 7.6 Hz, 1H), 6.50 (t, *J* = 7.4 Hz, 1H), 6.30 (d, *J* = 8.0 Hz, 1H), 3.36 (s, 3H), 2.40 (d, *J* = 15.2 Hz, 1H), 2.25 (s, 3H), 1.40 (s, 3H), 1.19-1.18 (m, 7H), 1.14 (s, 4H), 1.11 (s, 3H), 1.03-1.02 (m, 3H), 0.88 (d, *J* = 15.2 Hz, 1H), 0.83 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.7, 149.0, 138.7, 137.9, 135.3, 132.6, 131.5, 130.7, 130.0, 129.3, 128.5, 127.0, 126.2, 121.5, 112.9, 45.7, 30.7, 30.4, 28.9, 24.0, 23.3, 21.1, 19.6, 19.5, 19.4, 18.9, 13.9, 11.5, 10.8; LRMS (EI, 70 eV) *m/z* (%): 445 (M^+, 1), 430 (100), 344 (6); HRMS *m/z* (ESI) calcd for $C_{29}H_{40}NOSi$ $[M+H]^+$ 446.2874, found 446.2887.

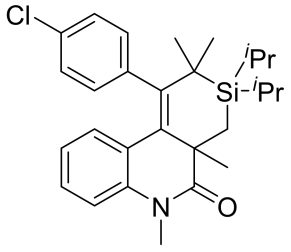


3,3-diisopropyl-1-(4-methoxyphenyl)-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ga): White solid, mp 143.2-145.4 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.32 (d, *J* = 8.0 Hz, 1H), 6.96 (t, *J* = 7.6 Hz, 1H), 6.85-6.80 (m, 2H), 6.57-6.50 (m, 2H), 6.48 (dd, *J* = 8.4, 2.4 Hz, 1H), 6.33 (d, *J* = 8.4 Hz, 1H), 3.74 (s, 3H), 3.36 (s, 3H), 2.40 (d, *J* = 15.2 Hz, 1H), 1.40 (s, 3H), 1.19 (s, 7H), 1.14 (s, 4H), 1.11 (s, 3H), 1.03-1.02 (m, 3H), 0.88 (d, *J* = 15.2 Hz, 1H), 0.83 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.7, 157.7,

148.7, 138.7, 133.4, 132.8, 132.0, 131.5, 131.0, 129.3, 126.2, 121.6, 113.0, 112.9, 112.0, 55.0, 45.7, 30.7, 30.4, 28.9, 24.0, 23.4, 19.6, 19.5, 19.4, 18.9, 13.9, 11.5, 10.8; LRMS (EI, 70 eV) *m/z* (%): 461 (M^+, 1), 446 (100), 360 (3); HRMS *m/z* (ESI) calcd for $C_{29}H_{40}NO_2Si$ $[M+H]^+$ 462.2823, found 462.2835.

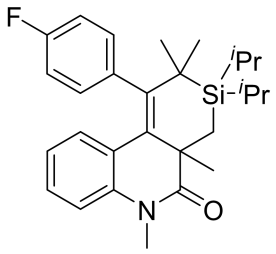


1-([1,1'-biphenyl]-4-yl)-3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ha): White solid, mp 150.6-152.3 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.57-7.54 (m, 3H), 7.49 (d, *J* = 7.6 Hz, 1H), 7.40 (t, *J* = 7.2 Hz, 2H), 7.30 (t, *J* = 7.2 Hz, 1H), 7.20 (d, *J* = 7.6 Hz, 1H), 6.96 (t, *J* = 7.4 Hz, 1H), 6.82 (d, *J* = 8.0 Hz, 1H), 6.60 (d, *J* = 7.6 Hz, 1H), 6.50-6.46 (m, 2H), 3.38 (s, 3H), 2.43 (d, *J* = 15.2 Hz, 1H), 1.46 (s, 3H), 1.21-1.14 (m, 14H), 1.05 (s, 3H), 0.93-0.88 (m, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.6, 148.7, 140.7, 140.2, 138.7, 138.3, 133.0, 131.5, 131.3, 130.6, 129.0, 128.7, 127.1, 126.8, 126.4 (2C), 124.8, 121.6, 113.0, 45.8, 30.8, 30.4, 29.0, 24.0, 23.3, 19.6, 19.5 (2C), 18.9, 13.9, 11.5, 10.8; LRMS (EI, 70 eV) *m/z* (%): 492 (M^+-15, 100), 406 (5), 246 (4); HRMS *m/z* (ESI) calcd for $C_{34}H_{42}NOSi$ $[M+H]^+$ 508.3030, found 508.3037.

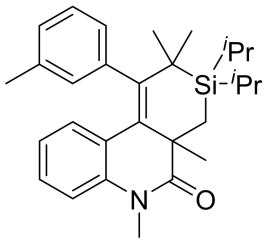


1-(4-chlorophenyl)-3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ia): White solid, mp 148.6-151.1 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.36 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.27 (dd, *J* = 8.5, 2.0 Hz, 1H), 7.01-6.98 (m, 1H), 6.91 (dd, *J* = 8.0, 2.5 Hz, 1H), 6.82 (d, *J* = 8.0 Hz, 1H), 6.56-6.51 (m, 2H), 6.36 (dd, *J* = 8.5, 2.0 Hz, 1H), 3.36 (s, 3H), 2.41 (d, *J* = 15.5 Hz, 1H), 1.40 (s, 3H), 1.19-1.18 (m, 7H), 1.14-1.12 (m, 7H), 1.02-1.00 (m, 3H), 0.88 (d, *J* = 15.5 Hz, 1H), 0.81 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.4, 147.7, 139.5,

138.7, 133.6, 132.1, 131.7, 131.4, 131.3, 128.6, 128.1, 126.7, 126.5, 121.7, 113.1, 45.8, 30.7, 30.4, 28.9, 23.9, 23.2, 19.6, 19.4 (2C), 18.8, 13.8, 11.4, 10.7; LRMS (EI, 70 eV) *m/z* (%): 467 (M^++2, 0.4), 465 (M^+, 1), 452 (38), 450 (100), 364 (7); HRMS *m/z* (ESI) calcd for $C_{28}H_{37}{}^{35}ClNOSi$ $[M+H]^+$ 466.2328, found 466.2341.

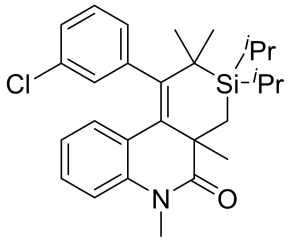


1-(4-fluorophenyl)-3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ja): White solid, mp 135.1-136.7 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.39-7.36 (m, 1H), 7.02-6.97 (m, 2H), 6.82 (d, *J* = 8.0 Hz, 1H), 6.64 (td, *J* = 8.6, 2.4 Hz, 1H), 6.55-6.50 (m, 2H), 6.40-6.36 (m, 1H), 3.36 (s, 3H), 2.40 (d, *J* = 15.2 Hz, 1H), 1.40 (s, 3H), 1.19-1.18 (m, 7H), 1.15 (s, 4H), 1.12 (s, 3H), 1.03-1.02 (m, 3H), 0.89 (d, *J* = 15.2 Hz, 1H), 0.82 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.5, 161.2 (d, *J* = 243.4 Hz), 147.9, 138.7, 136.9 (d, *J* = 3.6 Hz), 133.5, 132.4 (d, *J* = 7.5 Hz), 131.4, 131.3 (d, *J* = 7.7 Hz), 128.8, 126.5, 121.6, 114.8 (d, *J* = 20.6 Hz), 113.3 (d, *J* = 21.2 Hz), 113.1, 45.8, 30.7, 30.3, 28.9, 24.0, 23.3, 19.6, 19.5, 19.4, 18.8, 13.9, 11.5, 10.8; ^{19}F NMR (375 MHz, $CDCl_3$) δ: -116.6; LRMS (EI, 70 eV) *m/z* (%): 449 (M^+, 1), 434 (100), 348 (7); HRMS *m/z* (ESI) calcd for $C_{28}H_{37}FNOSi$ $[M+H]^+$ 450.2623, found 450.2631.

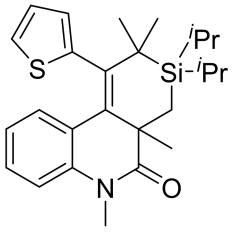


3,3-diisopropyl-2,2,4a,6-tetramethyl-1-(m-tolyl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ka): White solid, mp 120.5-121.9 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.26-7.20 (m, 1H), 7.15 (t, *J* = 7.4 Hz, 0.47H), 6.98-6.90 (m, 2H), 6.84-6.79 (m, 1.53H), 6.58 (t, *J* = 7.2 Hz, 1H), 6.51-6.46 (m, 1H), 6.23-6.20 (m, 1H), 3.37 (s, 1.4H), 3.35 (s, 1.6H) 2.43-2.38 (m, 2.6H), 2.01 (s, 1.4H), 1.42 (s, 1.6H), 1.39 (s, 1.4H) 1.20-1.19 (m, 7H), 1.15 (s, 4H), 1.12 (s, 3H), 1.07-1.04 (m, 3H), 0.88 (d, *J* = 15.6 Hz, 1H), 0.84 (s, 1.4H), 0.83 (s, 1.6H); ^{13}C NMR (100 MHz,

$CDCl_3$) δ: 174.7 (2C), 149.1 (2C), 140.9, 140.8, 138.6 (2C), 137.3, 135.5, 132.5 (2C), 131.4, 131.3, 131.2, 130.9, 129.2, 129.1, 127.9, 127.6, 127.5, 126.6, 126.5, 126.3, 126.0, 121.4 (2C), 112.9, 112.8, 45.7, 30.7, 30.4 (2C), 28.9, 28.8, 24.0, 23.9, 23.3 (2C), 21.7, 21.3, 19.7, 19.6, 19.5 (2C), 18.9 (2C), 14.0, 13.9, 11.5 (2C), 10.9, 10.8; LRMS (EI, 70 eV) *m/z* (%): 445 (M^+, 1), 430 (100), 344 (6); HRMS *m/z* (ESI) calcd for $C_{29}H_{40}NOSi$ $[M+H]^+$ 446.2874, found 446.2883.

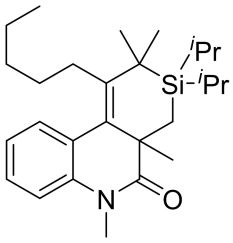


1-(3-chlorophenyl)-3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3la): White solid, mp 138.5-140.2 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.44 (s, 0.55H), 7.32 (d, *J* = 7.6 Hz, 0.45H), 7.22 (t, *J* = 7.6 Hz, 0.45H), 7.09 (d, *J* = 8.0 Hz, 1H), 7.05-6.94 (m, 1H), 6.89-6.81 (m, 1.55H), 6.56-6.52 (m, 2H), 6.41 (s, 0.45H), 6.32 (d, *J* = 7.2 Hz, 0.55H), 3.37 (s, 1.35H), 3.36 (s, 1.65H), 2.41 (d, *J* = 15.2 Hz, 1H), 1.43 (s, 1.65H), 1.40 (s, 1.35H), 1.19-1.13 (m, 14H), 1.02 (s, 3H), 0.88 (d, *J* = 15.2 Hz, 1H), 0.83 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.3 (2C), 147.5, 147.4, 142.9 (2C), 138.7, 138.6, 133.8 (2C), 133.6, 132.5, 131.4, 131.1, 130.4, 129.9, 129.0, 128.5 (2C), 128.3, 127.5, 126.9, 126.7, 126.1, 121.7, 121.5, 113.2, 113.0, 45.8 (2C), 30.7 (2C), 30.4, 29.0, 28.8, 23.9, 23.8, 23.3, 23.2, 19.6, 19.5, 19.4 (2C), 18.9, 18.8, 13.8, 11.4, 10.8, 10.7; LRMS (EI, 70 eV) *m/z* (%): 467 (M^++2, 0.4), 465 (M^+, 1), 452 (37), 450 (100), 364 (3); HRMS *m/z* (ESI) calcd for $C_{28}H_{37}{}^{35}ClNOSi$ $[M+H]^+$ 466.2328, found 466.2332.

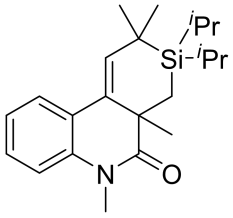


3,3-diisopropyl-2,2,4a,6-tetramethyl-1-(thiophen-2-yl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ma): White solid, mp 133.5-134.8 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.09-7.02 (m, 2H), 6.84 (d, *J* = 8.0 Hz, 4H), 6.62 (t, *J* = 7.6 Hz, 1H), 3.35 (s, 3H), 2.42 (d, *J* = 15.2 Hz, 1H), 1.39 (s, 3H), 1.17-1.12 (m,

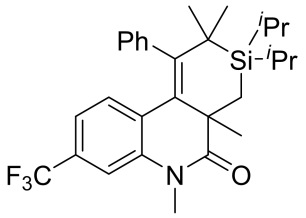
14H), 0.97 (s, 3H), 0.90 (s, 3H), 0.83 (d, J = 15.6 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.0, 138.5, 136.5, 129.8, 126.8, 125.8, 121.8, 113.1, 46.2, 30.7, 28.4, 19.4, 19.3, 19.2, 18.4, 13.6, 11.5, 10.5; LRMS (EI, 70 eV) *m/z* (%): 437 (M^+, 1), 422 (100), 336 (6); HRMS *m/z* (ESI) calcd for $C_{26}H_{36}NOSSi$ $[M+H]^+$ 438.2281, found 438.2293.



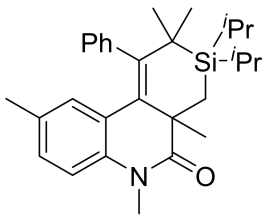
3,3-diisopropyl-2,2,4a,6-tetramethyl-1-pentyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3na): Colourless oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.29 (d, J = 7.6 Hz, 1H), 7.23 (t, J = 7.6 Hz, 1H), 7.02 (t, J = 7.2 Hz, 1H), 6.92 (d, J = 8.0 Hz, 1H), 3.31 (s, 3H), 2.27 (d, J = 15.2 Hz, 1H), 2.20-2.18 (m, 2H), 1.78-1.67 (m, 1H), 1.55-1.48 (s, 1H), 1.32-1.06 (m, 21H), 1.02 (s, 3H), 0.88-0.85 (m, 6H), 0.77 (d, J = 15.6 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 175.3, 148.1, 138.8, 130.6, 130.1, 128.9, 127.1, 121.9, 113.6, 45.8, 32.3, 31.9, 30.6, 30.3, 28.6, 23.5, 22.5, 22.2, 19.8, 19.5, 19.1, 18.6, 14.1, 13.7, 11.0, 10.5; LRMS (EI, 70 eV) *m/z* (%): 425 (M^+, 1), 410 (100), 324 (3); HRMS *m/z* (ESI) calcd for $C_{27}H_{44}NOSi$ $[M+H]^+$ 426.3187, found 426.3195.



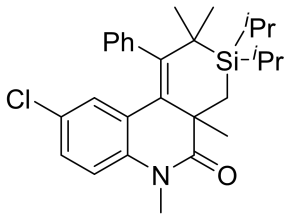
3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3oa): Colourless oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.38 (d, J = 7.6 Hz, 1H), 7.26 (d, J = 7.8 Hz, 1H), 7.04 (t, J = 7.4 Hz, 1H), 6.93 (d, J = 8.0 Hz, 1H), 5.77 (s, 1H), 3.36 (s, 3H), 2.19 (d, J = 15.6 Hz, 1H), 1.17-1.14 (m, 14H), 1.09-1.07 (m, 6H), 0.93-0.91 (m, 3H), 0.86 (d, J = 15.6 Hz, 1H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.6, 142.5, 138.0, 134.8, 128.5, 127.8, 125.4, 122.9, 113.6, 44.4, 30.5, 30.3, 28.3, 27.2, 20.8, 19.7, 19.3, 19.0, 18.4, 13.4, 11.8, 11.0; LRMS (EI, 70 eV) *m/z* (%): 355 (M^+, 1), 340 (100), 254 (9); HRMS *m/z* (ESI) calcd for $C_{22}H_{34}NOSi$ $[M+H]^+$ 356.2404, found 356.2413.



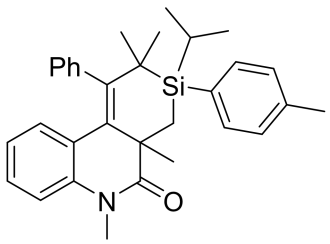
3,3-diisopropyl-2,2,4a,6-tetramethyl-1-phenyl-8-(trifluoromethyl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3pa): White solid, mp 115.6-117.4 ^{o}C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.43 (d, *J* = 7.2 Hz, 1H), 7.30 (t, *J* = 7.2 Hz, 1H), 7.13 (t, *J* = 7.0 Hz, 1H), 7.02 (s, 1H), 6.95 (t, *J* = 7.4 Hz, 1H), 6.73 (d, *J* = 8.0 Hz, 1H), 6.65 (d, *J* = 7.6 Hz, 1H), 6.39 (d, *J* = 7.6 Hz, 1H), 3.40 (s, 3H), 2.42 (d, *J* = 15.2 Hz, 1H), 1.44 (s, 3H), 1.20-1.12 (m, 14H), 1.03 (s, 3H), 0.91 (d, *J* = 15.6 Hz, 1H), 0.83 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.5, 151.2, 140.3, 139.1, 132.6, 131.6, 130.5, 130.0, 128.4 (q, *J* = 32.2 Hz), 128.2, 126.5, 126.4, 123.9 (q, *J* = 270.4 Hz), 118.0 (q, *J* = 3.6 Hz), 109.8 (q, *J* = 3.6 Hz), 45.6, 30.8, 30.4, 28.8, 23.8, 23.6, 19.6, 19.4 (2C), 18.8, 13.9, 11.4, 10.7; ^{19}F NMR (375 MHz, $CDCl_3$) δ: -62.5; LRMS (EI, 70 eV) *m/z* (%): 499 (M^+, 1), 484 (100), 398 (7); HRMS *m/z* (ESI) calcd for $C_{29}H_{37}F_3NOSi$ $[M+H]^+$ 500.2591, found 500.2603.



3,3-diisopropyl-2,2,4a,6,9-pentamethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3qa): White solid, mp 117.9-118.7 ^{o}C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.44 (d, *J* = 8.0 Hz, 1H), 7.28 (d, *J* = 8.0 Hz, 1H), 7.09 (t, *J* = 7.5 Hz, 1H), 6.94 (td, *J* = 7.5, 1.0 Hz, 1H), 6.74 (dd, *J* = 8.0, 1.0 Hz, 1H), 6.67 (d, *J* = 8.0 Hz, 1H), 6.42 (d, *J* = 7.5 Hz, 1H), 6.35 (d, *J* = 1.5 Hz, 1H), 3.34 (s, 3H), 2.40 (d, *J* = 15.0 Hz, 1H), 1.85 (s, 3H), 1.42 (s, 3H), 1.20-1.19 (m, 7H), 1.15-1.13 (m, 7H), 1.04-1.03 (m, 3H), 0.88 (d, *J* = 15.5 Hz, 1H), 0.84 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.5, 148.8, 141.2, 136.3, 133.0, 132.3, 130.7 (2C), 130.5, 128.8, 127.9, 126.8, 126.0, 125.8, 112.6, 45.7, 30.7, 30.5, 28.9, 24.0, 23.3, 20.2, 19.6, 19.5 (2C), 18.9, 13.9, 11.5, 10.8; LRMS (EI, 70 eV) *m/z* (%): 445 (M^+, 1), 430 (100), 344 (6); HRMS *m/z* (ESI) calcd for $C_{29}H_{40}NOSi$ $[M+H]^+$ 446.2874, found 446.2880.



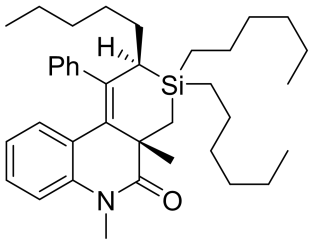
9-chloro-3,3-diisopropyl-2,2,4a,6-tetramethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ra): White solid, mp 121.0-122.5 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.43 (d, *J* = 7.6 Hz, 1H), 7.33 (t, *J* = 7.6 Hz, 1H), 7.15 (t, *J* = 7.4 Hz, 1H), 6.99 (t, *J* = 7.4 Hz, 1H), 6.92 (dd, *J* = 8.8, 1.6 Hz, 1H), 6.72 (d, *J* = 8.8 Hz, 1H), 6.53 (s, 1H), 6.42 (d, *J* = 7.6 Hz, 1H), 3.34 (s, 3H), 2.39 (d, *J* = 15.2 Hz, 1H), 1.42 (s, 3H), 1.19 (s, 7H), 1.14 (s, 7H), 1.04-1.03 (m, 3H), 0.90 (d, *J* = 15.2 Hz, 1H), 0.85 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.4, 150.6, 140.4, 137.3, 131.8, 131.2, 130.6, 130.4, 130.2, 128.1, 126.8, 126.5, 126.4, 126.2, 114.0, 45.6, 30.8, 30.4, 28.8, 23.9, 23.5, 19.6, 19.5, 19.4, 18.9, 13.9, 11.5, 10.8; LRMS (EI, 70 eV) *m/z* (%): 467 (M^++2, 0.3), 465 (M^+, 1), 452 (42), 450 (100), 364 (2); HRMS *m/z* (ESI) calcd for $C_{28}H_{37}{}^{35}ClNOSi$ $[M+H]^+$ 466.2328, found 466.2335.



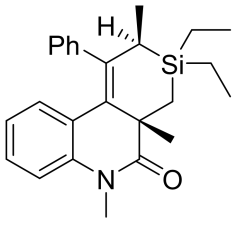
3-isopropyl-2,2,4a,6-tetramethyl-1-phenyl-3-(p-tolyl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ab): dr = 1:1;

Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.52 (d, *J* = 7.2 Hz, 2H), 7.43 (d, *J* = 7.6 Hz, 1H), 7.29 (t, *J* = 7.6 Hz, 1H), 7.21 (d, *J* = 7.6 Hz, 2H), 7.11 (t, *J* = 7.2 Hz, 1H), 7.00-6.95 (m, 2H), 6.84 (d, *J* = 8.0 Hz, 1H), 6.57-6.49 (m, 3H), 3.39 (s, 3H), 2.68 (d, *J* = 15.2 Hz, 1H), 2.37 (s, 3H), 1.34 (d, *J* = 15.6 Hz, 1H), 1.28 (s, 3H), 1.21 (s, 3H), 1.07-1.03 (m, 7H), 0.81 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.3, 148.8, 141.4, 138.9, 138.8, 135.0, 132.8, 131.6, 131.3, 130.7, 130.0, 129.0, 128.6, 128.0, 126.5 (2C), 125.9, 121.5, 113.0, 46.1, 30.9, 30.8, 29.9, 22.5, 22.4, 21.5, 18.3, 17.8, 12.8, 10.9; LRMS (EI, 70 eV) *m/z* (%): 479 (M^+, 1), 464 (100), 304 (2); HRMS *m/z* (ESI) calcd for $C_{32}H_{38}NOSi$ $[M+H]^+$ 480.2717, found 480.2730.

^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.55 (d, *J* = 7.2 Hz, 2H), 7.38 (d, *J* = 7.6 Hz, 1H), 7.28 (d, *J* = 7.6 Hz, 1H), 7.16 (d, *J* = 7.2 Hz, 2H), 7.09 (d, *J* = 7.4 Hz, 1H), 6.98-6.91 (m, 2H), 6.81 (d, *J* = 8.0 Hz, 1H), 6.64 (d, *J* = 7.6 Hz, 1H), 6.51 (t, *J* = 7.4 Hz, 1H), 6.33 (d, *J* = 7.6 Hz, 1H), 3.32 (s, 3H), 2.58 (d, *J* = 15.6 Hz, 1H), 2.34 (s, 3H), 1.29-1.24 (m, 5H), 1.21-1.17 (m, 5H), 1.15-1.14 (m, 4H), 0.86 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 175.4, 149.1, 140.1, 138.8, 138.6, 135.4, 134.2, 131.1, 130.9, 130.5, 130.3, 129.0, 128.3, 127.8, 126.5, 126.0, 125.9, 121.5, 113.1, 45.5, 30.8, 29.0, 26.4, 25.7, 22.8, 21.4, 19.5, 19.0, 13.4, 11.1; LRMS (EI, 70 eV) *m/z* (%): 479 (M^+, 1), 464 (100), 304 (6); HRMS *m/z* (ESI) calcd for $C_{32}H_{38}NOSi$ $[M+H]^+$ 480.2717, found 480.2725.

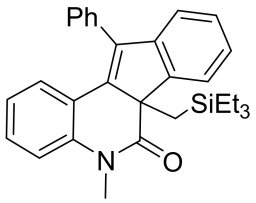


(2R,4aS)-3,3-dihexyl-4a,6-dimethyl-2-pentyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3H)-one (3ac): dr > 20:1; Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.26-7.00 (m, 6H), 6.85 (d, *J* = 8.0 Hz, 1H), 6.66 (d, *J* = 7.2 Hz, 1H), 6.55 (t, *J* = 7.2 Hz, 1H), 3.39 (s, 3H), 2.35 (d, *J* = 15.2 Hz, 1H), 2.00-1.79 (m, 2H), 1.59 (s, 3H), 1.37-1.08 (m, 26H), 0.94-0.79 (s, 7H), 0.64-0.45 (m, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 173.9, 147.6, 144.5, 138.9, 133.3, 131.8, 128.7, 127.8 (2C), 126.8, 125.9, 121.7, 113.1, 46.4, 34.4, 33.6, 33.4, 32.5, 31.5, 31.3, 31.2, 30.8, 30.4, 30.0, 29.7, 23.8, 23.7, 22.6 (2C), 22.5, 15.0, 14.1 (2C), 11.7, 11.0; HRMS *m/z* (ESI) calcd for $C_{37}H_{56}NOSi$ $[M+H]^+$ 558.4126, found 558.4135.

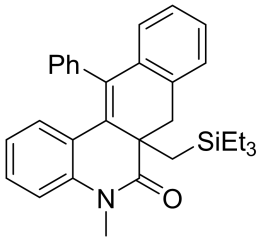


(2R,4aS)-3,3-diethyl-2,4a,6-trimethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3H)-one (3ad): dr > 20:1; Colorless oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.26-7.00 (m, 6H), 6.85 (d, *J* = 8.4 Hz, 1H), 6.65 (d, *J* = 7.6 Hz, 1H), 6.55 (d, *J* = 7.4 Hz, 1H), 3.39 (s, 3H), 2.30 (d, *J* = 15.2 Hz, 1H), 1.69-1.64 (m, 1H), 1.48 (d, J = 7.2 Hz, 3H), 1.15 (s, 3H), 1.01 (t, *J* = 8.0 Hz, 3H), 0.87 (t, *J* = 7.8 Hz, 3H), 0.81 (d, *J* =

15.2 Hz, 1H), 0.71-0.49 (m, 4H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 173.9, 147.5, 145.3, 138.9, 133.0, 131.5, 128.6, 127.8 (2C), 126.8, 125.9, 121.7, 113.2, 46.2, 30.8, 30.1, 23.8, 18.7, 13.9, 7.5, 7.2, 2.2, 2.0; LRMS (EI, 70 eV) *m/z* (%): 389 (M^+, 1), 374 (100), 344 (16), 87 (40); HRMS *m/z* (ESI) calcd for $C_{25}H_{32}NOSi$ $[M+H]^+$ 390.2248, found 390.2263.

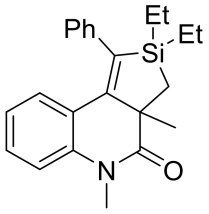


5-methyl-11-phenyl-6a-((triethylsilyl)methyl)-5,6a-dihydro-6*H*-indeno[1,2-c]quinolin-6-one (4sd): Yellow solid, mp 57.6-58.8 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.94-7.92 (m, 1H), 7.40-7.30 (m, 5H), 7.26-7.24 (m, 2H), 7.20 (d, *J* = 8.0 Hz, 1H), 7.14-7.11 (m, 1H), 7.09-7.03 (m, 2H), 6.82 (t, *J* = 7.6 Hz, 1H), 3.37 (s, 3H), 1.64 (d, *J* = 14.4 Hz, 1H), 1.24 (d, *J* = 14.4 Hz, 1H), 0.52 (t, *J* = 7.8 Hz, 9H), 0.05--0.06 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 172.0, 145.0, 144.4, 140.1, 138.9, 138.5, 134.3, 129.0, 128.8, 128.4, 127.8, 127.7, 127.4, 126.3, 125.7, 122.4, 121.5, 120.4, 115.0, 57.8, 30.4, 22.0, 7.2, 3.6; LRMS (EI, 70 eV) *m/z* (%): 451 (M^+, 50), 436 (34), 374 (100), 87 (46); HRMS *m/z* (ESI) calcd for $C_{30}H_{34}NOSi$ $[M+H]^+$ 452.2404, found 452.2415.

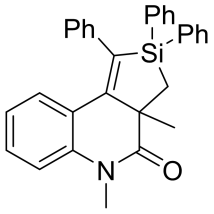


5-methyl-12-phenyl-6a-((triethylsilyl)methyl)-6a,7-dihydrobenzo[j]phenanthridin-6(5*H*)-one (4td): yellow solid, mp 68.5-70.2 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.40-7.31 (m, 3H), 7.28-7.16 (m, 4H), 7.11-7.05 (m, 3H), 6.92 (d, *J* = 8.0 Hz, 1H), 6.79 (d, *J* = 8.0 Hz, 1H), 6.59 (t, *J* = 7.6 Hz, 1H), 3.52 (d, *J* = 16.4 Hz, 1H), 3.39-3.35 (m, 4H), 1.06-1.00 (m, 2H), 0.76 (t, *J* = 7.8 Hz, 9H), 0.44-0.34 (m, 6H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 174.0, 139.6, 139.0, 135.1, 134.3, 133.4, 133.0, 131.1, 130.8, 128.6 (2C), 128.0, 127.6, 127.1, 126.4, 125.9, 123.5, 121.9, 114.1, 45.2, 38.6, 30.3, 18.9, 7.3, 3.8; LRMS (EI, 70 eV) *m/z* (%): 465 (M^+, 10), 436 (100), 388

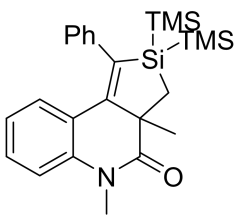
(35), 336 (56); HRMS *m/z* (ESI) calcd for $C_{31}H_{36}NOSi$ $[M+H]^+$ 466.2561, found 466.2573.



2,2-diethyl-3a,5-dimethyl-1-phenyl-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5ae): Light yellow oil; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.24 (t, *J* = 7.4 Hz, 2H), 7.20-7.14 (m, 2H), 6.99 (t, *J* = 8.2 Hz, 3H), 6.88 (d, *J* = 7.6 Hz, 1H), 6.69 (t, *J* = 7.4 Hz, 1H), 3.44 (s, 3H), 1.77 (d, *J* = 16.0 Hz, 1H), 1.27 (s, 3H), 1.15 (t, *J* = 7.6 Hz, 3H), 1.04 (d, *J* = 15.6 Hz, 1H), 0.98-0.87 (m, 2H), 0.76 (t, *J* = 7.6 Hz, 3H), 0.62-0.47 (m, 2H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.1, 150.9, 142.1, 141.1, 139.6, 129.5, 128.6, 128.5, 127.4, 125.6, 123.1, 121.8, 114.5, 53.6, 30.5, 28.7, 16.7, 8.1, 7.2, 6.2, 4.4; LRMS (EI, 70 eV) *m/z* (%): 361 (M^+, 100), 346 (52), 284 (26), 151 (29); HRMS *m/z* (ESI) calcd for $C_{23}H_{28}NOSi$ $[M+H]^+$ 362.1935, found 362.1943.

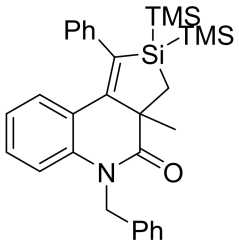


3a,5-dimethyl-1,2,2-triphenyl-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5af): Light yellow solid, mp 175.1-176.6 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.68 (d, *J* = 6.4 Hz, 2H), 7.64-7.58 (m, 1H), 7.49-7.42 (m, 2H), 7.36 (d, *J* = 7.2 Hz, 2H), 7.30 (d, *J* = 7.0 Hz, 1H), 7.22 (t, *J* = 7.8 Hz, 3H), 7.15-7.09 (m, 3H), 7.03 (d, *J* = 8.0 Hz, 1H), 6.98 (d, *J* = 7.2 Hz, 3H), 6.72 (t, *J* = 7.4 Hz, 1H), 3.44 (s, 3H), 2.32 (d, *J* = 16.0 Hz, 1H), 1.55 (d, *J* = 16.0 Hz, 1H), 1.40 (s, 3H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 175.5, 153.1, 140.2, 139.9, 139.7, 135.6, 135.0, 133.9, 133.9, 129.8, 129.7, 129.5, 129.0, 128.5, 128.1 (2C), 127.8, 126.0, 123.0, 122.0, 114.7, 53.8, 30.5, 28.5, 19.9; LRMS (EI, 70 eV) *m/z* (%): 457 (M^+, 56), 379 (89), 339 (100); HRMS *m/z* (ESI) calcd for $C_{31}H_{28}NOSi$ $[M+H]^+$ 458.1935, found 458.1946.

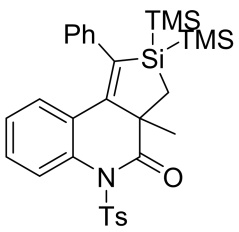


3a,5-dimethyl-1-phenyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5ag): White solid,

mp 178.8-180.7 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.22 (t, *J* = 7.4 Hz, 2H), 7.18-7.11 (m, 2H), 6.98 (t, *J* = 7.4 Hz, 3H), 6.91 (d, *J* = 8.0 Hz, 1H), 6.68 (t, *J* = 7.6 Hz, 1H), 3.43 (s, 3H), 2.02 (d, *J* = 15.2 Hz, 1H), 1.27 (s, 3H), 1.22 (d, *J* = 15.6 Hz, 1H), 0.31 (s, 9H), -0.12 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.4, 147.2, 142.6, 141.8, 139.5, 129.5, 128.5, 128.3, 127.7, 125.7, 123.3, 121.8, 114.5, 56.3, 30.4, 27.7, 16.6, 0.0, -1.4; LRMS (EI, 70 eV) *m/z* (%): 449 (M^+, 52), 434 (100), 376 (63), 246 (47), 73 (55); HRMS *m/z* (ESI) calcd for $C_{25}H_{36}NOSi_3$ $[M+H]^+$ 450.2099, found 450.2104.

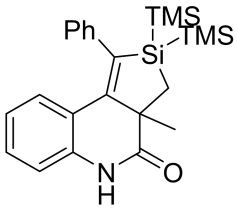


5-benzyl-3a-methyl-1-phenyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5bg): Light yellow solid, mp 125.6-127.8 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.32 (t, *J* = 7.4 Hz, 2H), 7.26- 7.21 (m, 5H), 7.14 (t, *J* = 7.2 Hz, 1H), 7.03-6.97 (m, 3H), 6.91-6.88 (m, 2H), 6.64 (t, *J* = 7.6 Hz, 1H), 5.48 (d, *J* = 16.4 Hz, 1H), 5.02 (d, *J* = 16.4 Hz, 1H), 2.18 (d, *J* = 15.6 Hz, 1H), 1.41 (s, 3H), 1.22 (d, *J* = 15.6 Hz, 1H), 0.33 (s, 9H), -0.09 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.3, 147.2, 143.0, 141.8, 138.7, 137.3, 129.6, 128.7, 128.5, 128.2, 127.8, 127.0, 126.2, 125.8, 123.7, 122.0, 115.5, 56.5, 46.8, 27.9, 16.0, -0.1, -1.4; LRMS (EI, 70 eV) *m/z* (%): 452 (M^+-73, 37), 361 (33), 91 (100), 73 (35); HRMS *m/z* (ESI) calcd for $C_{31}H_{40}NOSi_3$ $[M+H]^+$ 526.2412, found 526.2424.

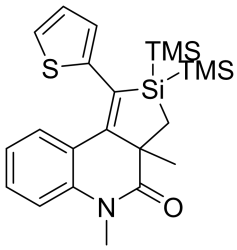


3a-methyl-1-phenyl-5-tosyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5dg): White solid, mp 200.2-202.3 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.92 (d, *J* = 8.0 Hz, 2H), 7.77 (d, *J* = 8.0 Hz, 1H), 7.33-7.28 (m, 5H), 7.22 (t, *J* = 7.2 Hz, 1H), 7.03 (d, *J* = 7.2 Hz, 2H), 6.97 (t, *J* = 7.6 Hz, 1H), 6.88 (d, *J* = 7.6 Hz, 1H), 2.42 (s, 3H), 1.72 (d, *J* = 15.6 Hz, 1H), 1.17 (s, 3H), 1.05 (d, *J* =

15.6 Hz, 1H), 0.30 (s, 9H), -0.25 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.2, 145.7, 144.7, 144.0, 140.5, 136.6, 134.9, 129.3, 129.1, 128.7, 128.5, 128.0, 127.6 (2C), 126.4, 125.7, 123.9, 59.3, 26.3, 21.6, 16.2, -0.3, -1.5; LRMS (EI, 70 eV) *m/z* (%): 434 (M^+-155, 37), 346 (41), 73 (100); HRMS *m/z* (ESI) calcd for $C_{31}H_{40}NO_3SSi_3$ $[M+H]^+$ 590.2031, found 590.2045.

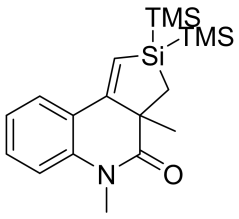


3a-methyl-1-phenyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5eg): Light yellow solid, mp 208.2-210.1 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 8.19 (s, 1H), 7.24 (t, *J* = 7.6 Hz, 2H), 7.15 (t, *J* = 7.2 Hz, 1H), 7.09 (t, *J* = 7.6 Hz, 1H), 6.97 (d, *J* = 7.6 Hz, 2H), 6.87 (d, *J* = 8.0 Hz, 1H), 6.79 (d, *J* = 8.0 Hz, 1H), 6.64 (t, *J* = 7.6 Hz, 1H), 1.97 (d, *J* = 15.2 Hz, 1H), 1.37 (s, 3H), 1.21 (d, *J* = 15.2 Hz, 1H), 0.31 (s, 9H), -0.11 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 177.53, 147.0, 143.7, 141.9, 136.3, 129.6, 128.6, 128.4, 127.5, 125.8, 122.0, 121.6, 115.2, 56.2, 28.0, 15.5, 0.0, -1.4; LRMS (EI, 70 eV) *m/z* (%): 435 (M^+, 60), 420 (100), 362 (100), 232 (75), 73 (95); HRMS *m/z* (ESI) calcd for $C_{24}H_{34}NOSi_3$ $[M+H]^+$ 436.1943, found 436.1954.

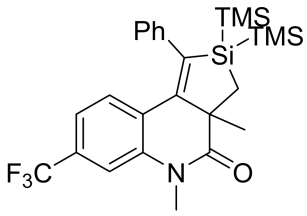


3a,5-dimethyl-1-(thiophen-2-yl)-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5mg): Light yellow solid, mp 168.7-170.4 °C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.29 (d, *J* = 7.6 Hz, 1H), 7.22 (t, *J* = 7.8 Hz, 1H), 7.14 (d, *J* = 5.2 Hz, 1H), 7.01 (d, *J* = 8.4 Hz, 1H), 6.89 (t, *J* = 4.0 Hz, 1H), 6.81 (t, *J* = 7.6 Hz, 1H), 6.64 (d, *J* = 3.6 Hz, 1H), 3.42 (s, 3H), 2.04 (d, *J* = 15.2 Hz, 1H), 1.23 (s, 3H), 1.18 (d, *J* = 15.6 Hz, 1H), 0.32 (s, 9H), -0.05 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.0, 148.6, 143.2, 139.6, 133.7, 129.2, 128.8, 127.1, 124.7, 124.3, 123.2, 121.9, 114.7, 56.4, 30.4, 27.4, 16.7, -0.1, -1.4; LRMS (EI, 70 eV) *m/z* (%): 455

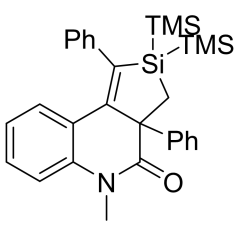
(M^+, 56), 440 (89), 382 (67), 246 (55), 73 (100); HRMS *m/z* (ESI) calcd for $C_{23}H_{34}NOSSi_3$ $[M+H]^+$ 456.1663, found 456.1673.



3a,5-dimethyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5og): yellow oil liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.47 (d, *J* = 7.6 Hz, 1H), 7.18 (t, *J* = 7.8 Hz, 1H), 6.93 (t, *J* = 7.4 Hz, 1H), 6.88 (d, *J* = 8.4 Hz, 1H), 6.13 (s, 1H), 3.28 (s, 3H), 1.79 (d, *J* = 15.2 Hz, 1H), 1.15 (d, *J* = 15.2 Hz, 1H), 1.12(s, 3H), 0.09 (s, 9H), 0.00 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.3, 157.0, 138.4, 129.0, 126.1, 124.1, 124.0, 122.6, 114.5, 55.1, 30.1, 28.8, 17.4, -0.2, -1.1; LRMS (EI, 70 eV) *m/z* (%): 373 (M^+, 45), 358 (100), 260 (90), 212 (45), 73 (47); HRMS *m/z* (ESI) calcd for $C_{19}H_{32}NOSi_3$ $[M+H]^+$ 374.1786, found 374.1799.

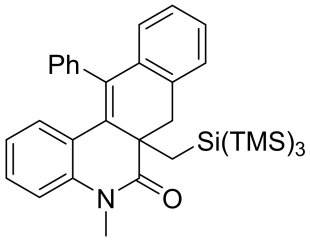


3a,5-dimethyl-1-phenyl-7-(trifluoromethyl)-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5pg): Light yellow solid, mp 114.5-116.2 ^{o}C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.24 (t, *J* = 7.6 Hz, 2H), 7.20 (s, 1H), 7.16 (t, *J* = 7.4 Hz, 1H), 7.00-6.92 (m, 4H), 3.47 (s, 3H), 2.05 (d, *J* = 15.6 Hz, 1H), 1.26 (s, 3H), 1.22 (d, *J* = 15.6 Hz, 1H), 0.31 (s, 9H), -0.11 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.1, 146.3, 145.5, 141.2, 139.9, 130.0 (q, *J* = 32.4 Hz), 129.8, 128.7, 127.5, 126.5 (d, *J* = 1.2 Hz), 126.2, 123.9 (q, *J* = 270.5 Hz), 118.5 (q, *J* = 3.7 Hz), 111.3 (q, *J* = 3.9 Hz), 56.1, 30.5, 27.7, 16.5, -0.1, -1.4; ^{19}F NMR (375 MHz, $CDCl_3$) δ: -62.7; LRMS (EI, 70 eV) *m/z* (%): 444 (M^+-73, 74), 354 (52), 314 (60), 73 (100); HRMS *m/z* (ESI) calcd for $C_{26}H_{35}F_3NOSi_3$ $[M+H]^+$ 518.1973, found 518.1981.

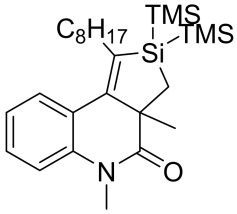


5-methyl-1,3a-diphenyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5sg): White solid, mp 184.5-186.5 ^{o}C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ:

7.14 (t, *J* = 6.8 Hz, 4H), 7.07-6.99 (m, 3H), 6.97-6.91 (m, 3H), 6.90-6.83 (m, 2H), 6.66 (d, *J* = 8.0 Hz, 1H), 6.50 (t, *J* = 7.6 Hz, 1H), 3.31 (s, 3H), 2.49 (d, *J* = 15.6 Hz, 1H), 1.21 (d, *J* = 15.6 Hz, 1H), 0.00 (s, 9H), -0.21 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 173.2, 147.5, 144.9, 144.6, 141.4, 139.2, 129.1, 128.5, 128.2, 128.0 (2C), 126.4, 126.3, 126.0, 124.9, 121.9, 114.7, 65.0, 30.8, 19.6, -0.1, -1.3; LRMS (EI, 70 eV) *m/z* (%): 496 (M^+-15, 17), 438 (100), 246 (19), 73 (41); HRMS *m/z* (ESI) calcd for $C_{30}H_{38}NOSi_3$ $[M+H]^+$ 512.2256, found 512.2263.



6a-((1,1,1,3,3,3-hexamethyl-2-(trimethylsilyl)trisilan-2-yl)methyl)-5-methyl-12-phenyl-6a,7-dihydrobenzo[j]phenanthridin-6(5*H*)-one (4tg): Light yellow solid, mp 176.1-177.1 ^{o}C (uncorrected); ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.20-7.18 (m, 3H), 7.16 (s, 1H), 7.07 (d, *J* = 7.4 Hz, 1H), 7.02-6.91 (m, 4H), 6.83 (d, *J* = 8.0 Hz, 1H), 6.70 (d, *J* = 7.6 Hz, 1H), 6.56-6.51 (m, 2H), 3.68 (d, *J* = 16.4 Hz, 1H), 3.27 (s, 3H), 3.15 (d, *J* = 16.4 Hz, 1H), 1.34 (d, *J* = 14.8 Hz, 1H), 1.19 (d, *J* = 14.8 Hz, 1H), 0.00 (s, 27H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 173.2, 139.0, 138.5, 136.3, 133.7, 133.1, 132.5, 130.7, 129.8, 128.3, 128.0 (2C), 127.4, 127.0, 126.3, 126.2, 125.7, 121.9, 113.9, 45.8, 36.6, 30.6, 19.3, 1.4; HRMS *m/z* (ESI) calcd for $C_{34}H_{48}NOSi_4$ $[M+H]^+$ 598.2807, found 598.2815.

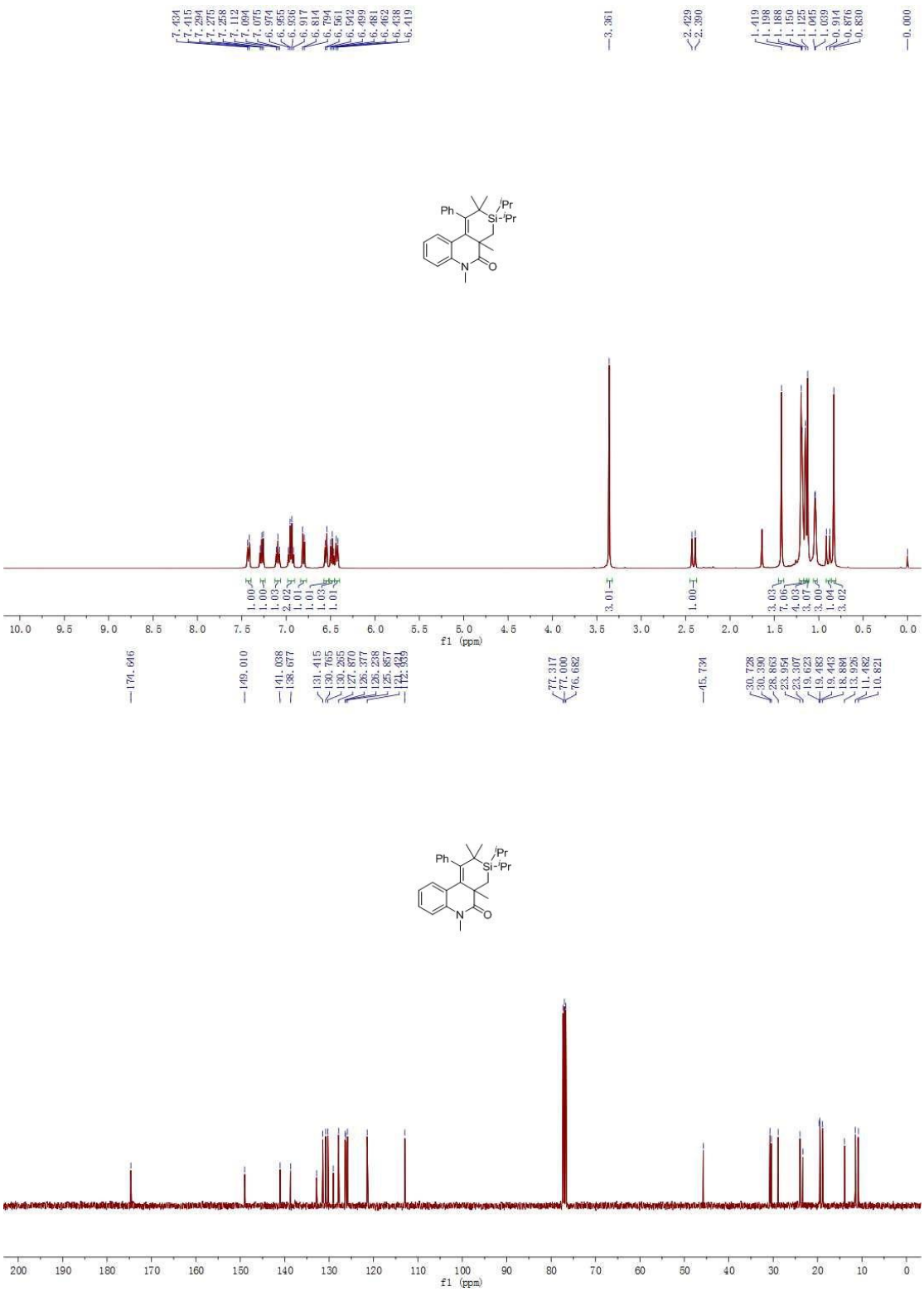


3a,5-dimethyl-1-octyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5ug): Colourless oil liquid; ^{1}H NMR (400 MHz, $CDCl_3$) δ: 7.29 (d, *J* = 7.6 Hz, 1H), 7.23 (d, *J* = 8.4 Hz, 1H), 7.03 (t, *J* = 7.4 Hz, 1H), 6.98 (d, *J* = 8.0 Hz, 1H), 3.33 (s, 3H), 2.53-2.45 (m, 1H), 2.31-2.23 (m, 1H), 1.98 (d, *J* = 15.6 Hz, 1H), 1.48-1.40 (m, 2H), 1.33-1.21 (m, 10H), 1.08 (s, 3H), 0.95 (d, *J* = 15.6 Hz, 1H), 0.84 (t, *J* = 6.4 Hz, 3H), 0.17 (s, 9H), 0.08 (s, 9H); ^{13}C NMR (100 MHz, $CDCl_3$) δ: 176.7, 146.2, 143.3,

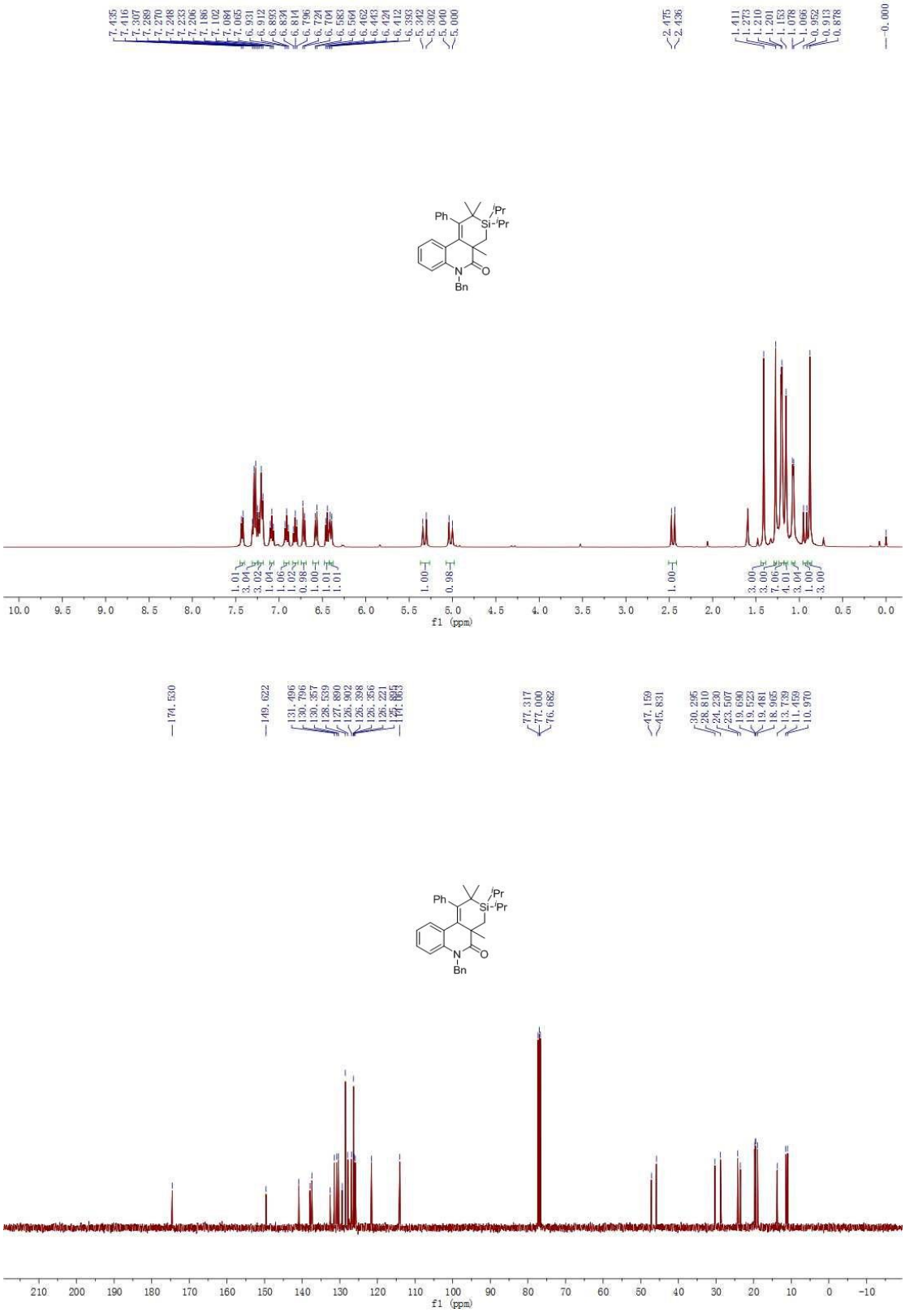
139.3, 128.1, 127.9, 124.8, 122.0, 114.5, 56.0, 32.1, 31.8 (2C), 30.4, 30.2, 29.4, 29.3, 27.7, 22.7, 15.1, 14.1, -0.3, -0.8; LRMS (EI, 70 eV) *m/z* (%): 412 (M^+-73, 42), 386 (100), 246 (72), 73 (51); HRMS *m/z* (ESI) calcd for $C_{27}H_{48}NOSi_3$ $[M+H]^+$ 486.3038, found 486.3053.

(C) Spectra

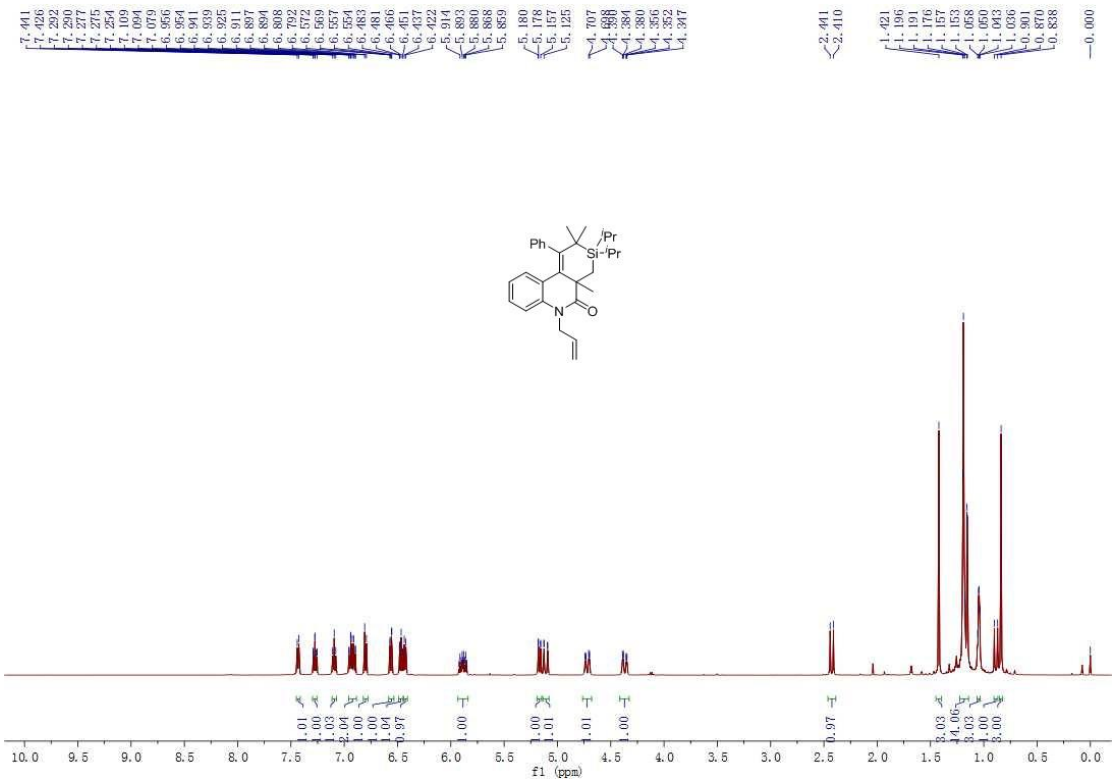
3,3-diisopropyl-2,2,4a,6-tetramethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3aa)

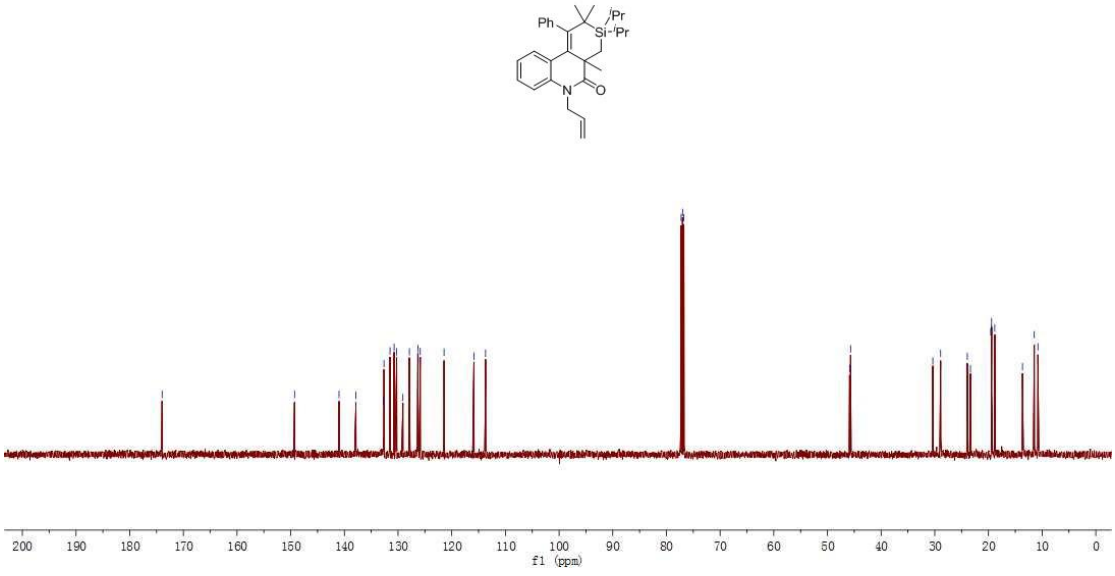


6-benzyl-3,3-diisopropyl-2,2,4a-trimethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ba)

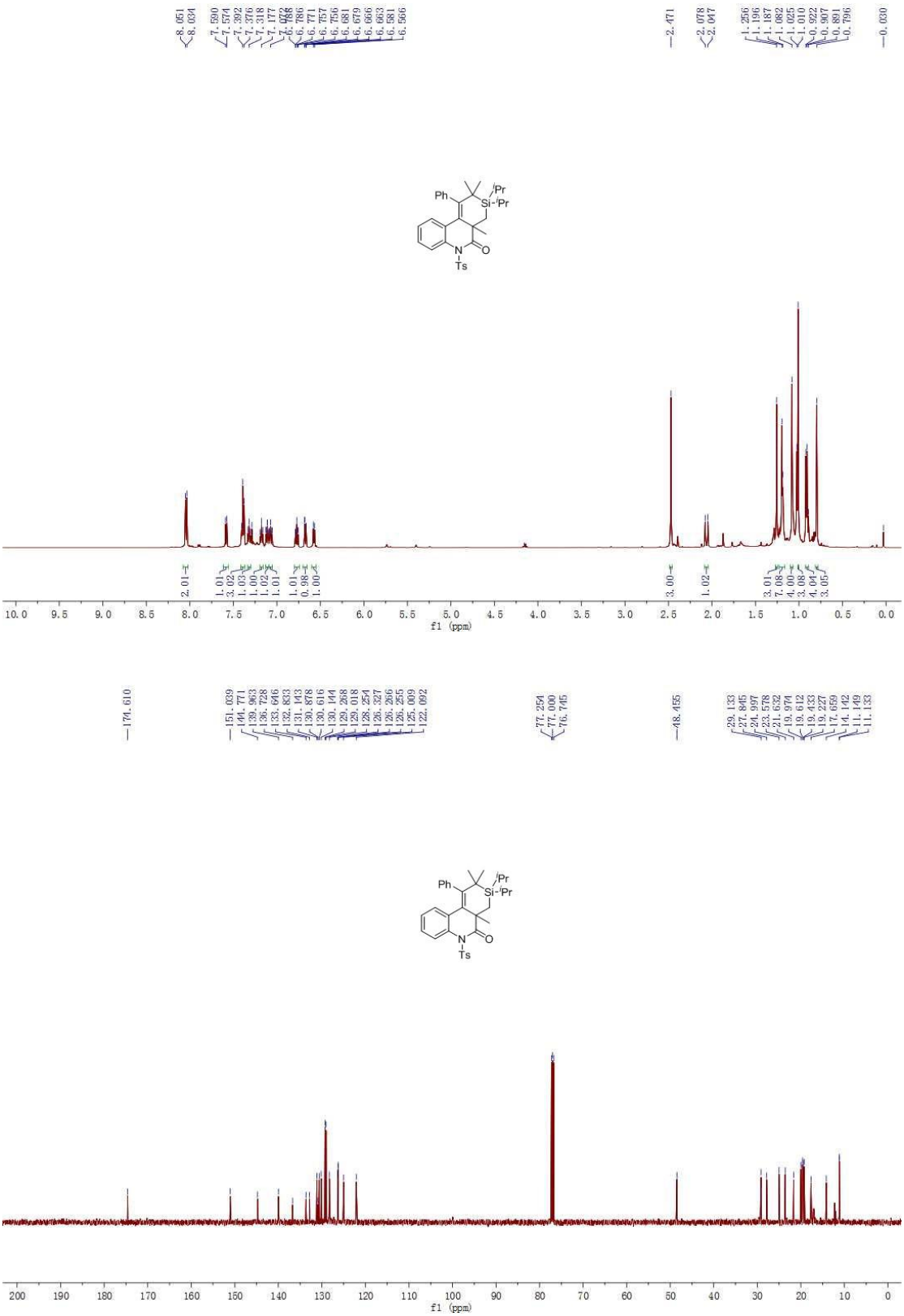


6-allyl-3,3-diisopropyl-2,2,4a-trimethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ca)

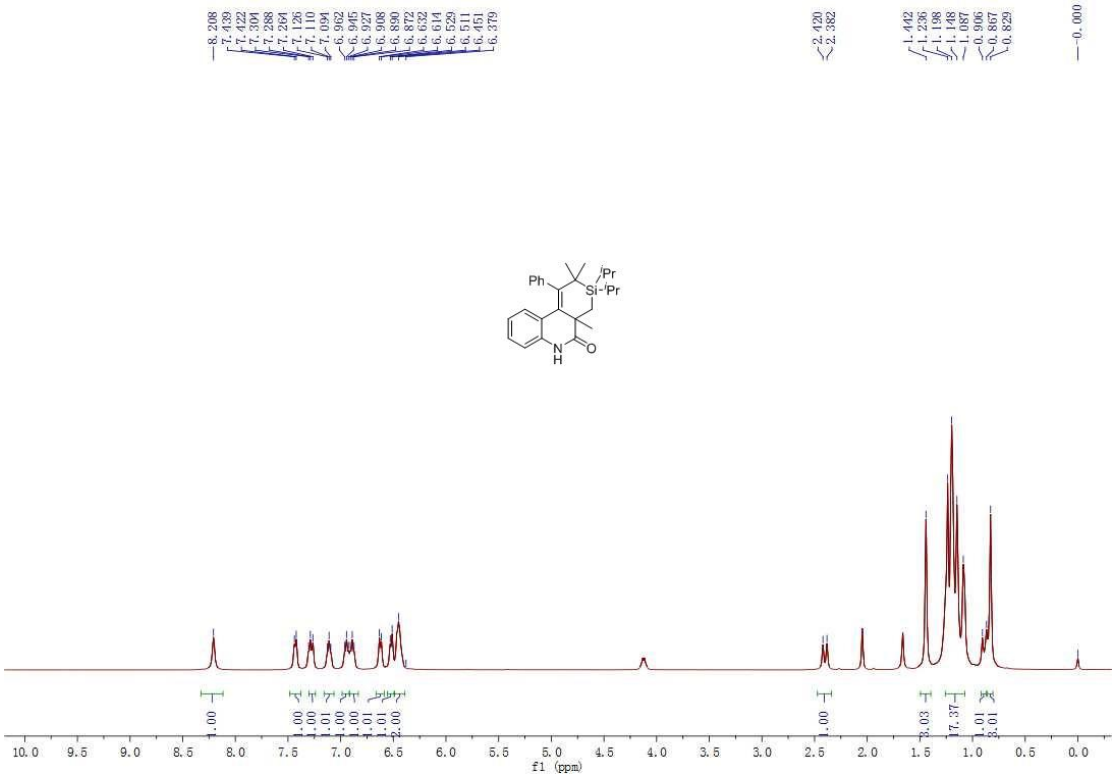


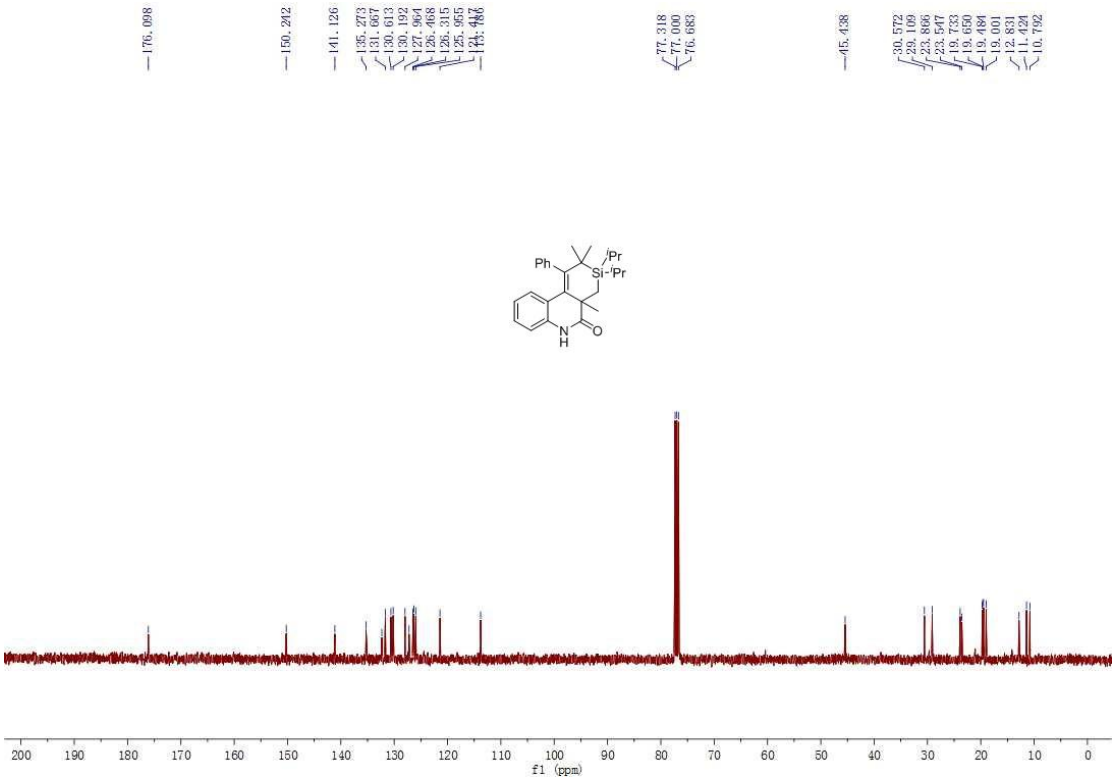


3,3-diisopropyl-2,2,4a-trimethyl-1-phenyl-6-tosyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3da)

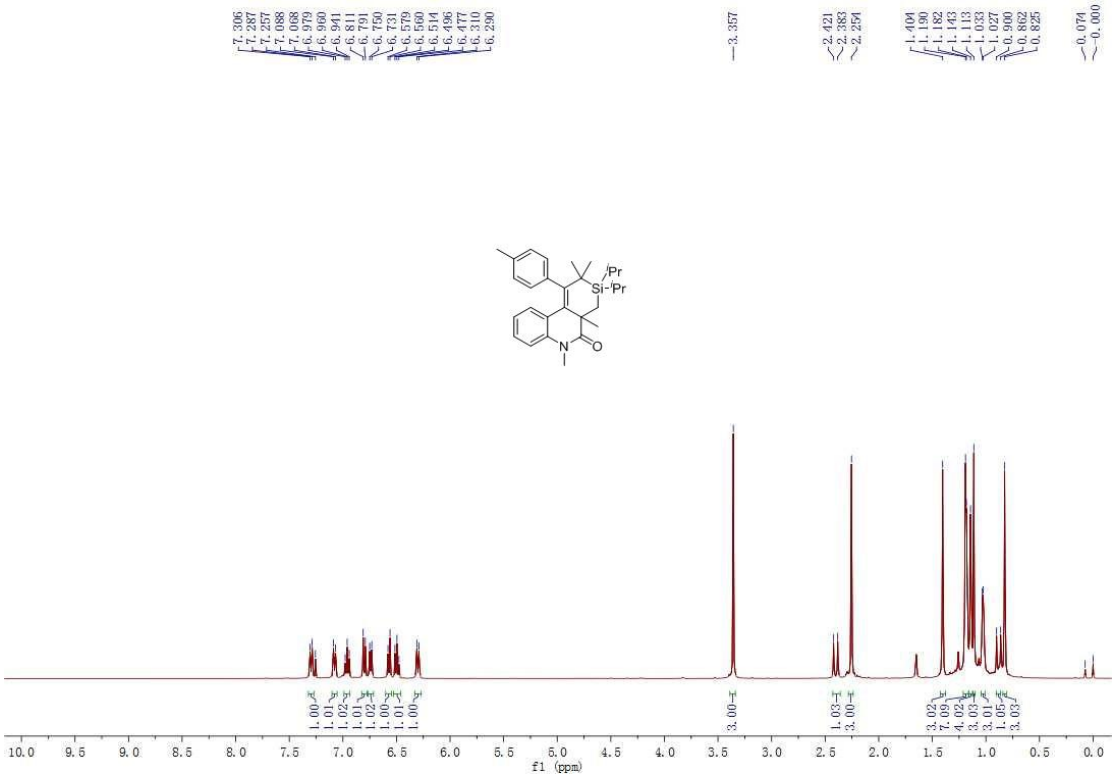


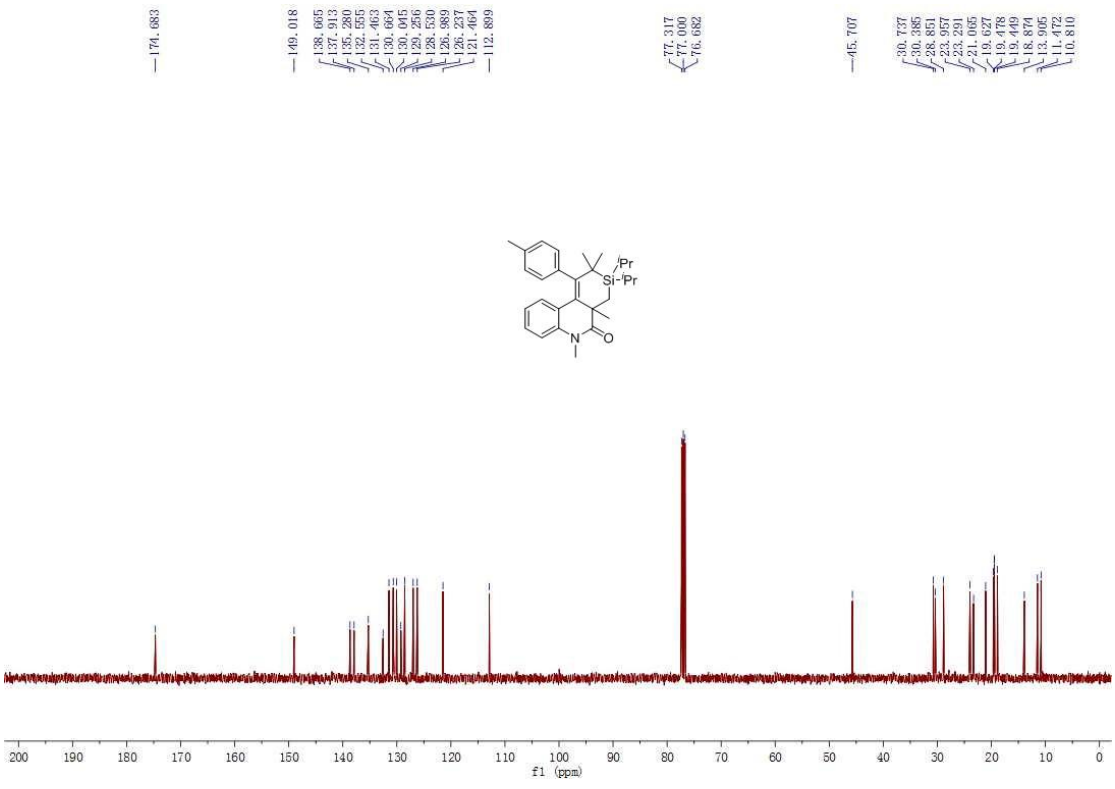
3,3-diisopropyl-2,2,4a-trimethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ea)



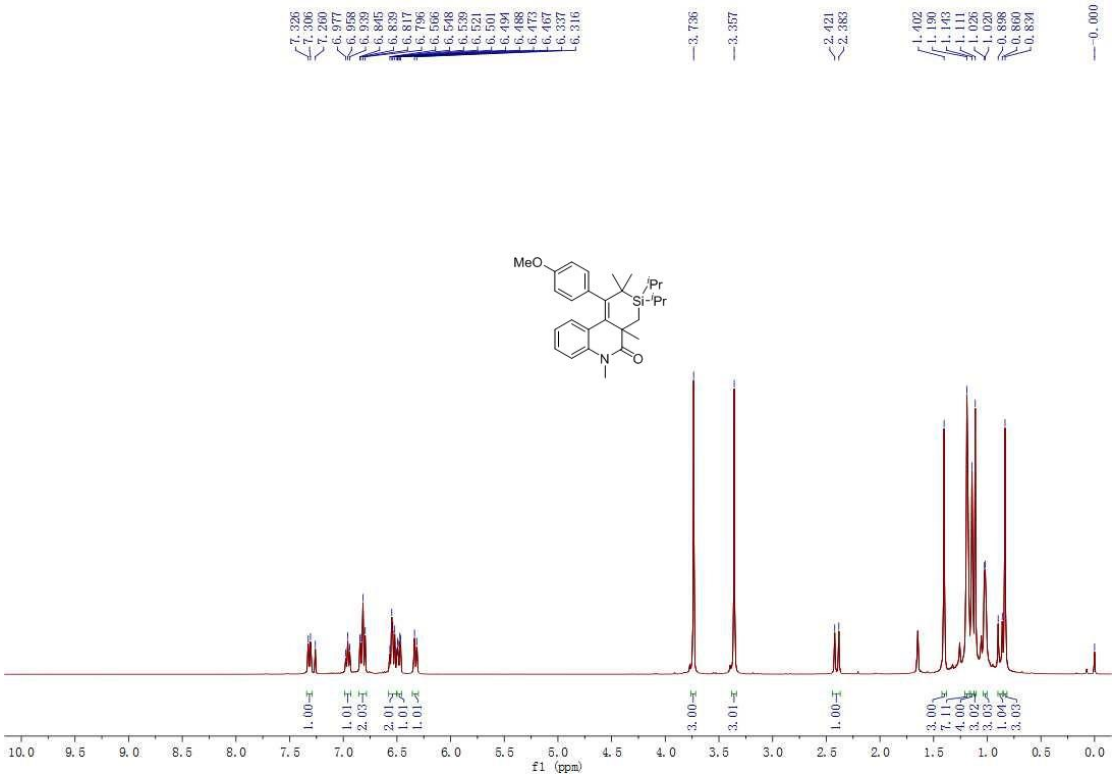


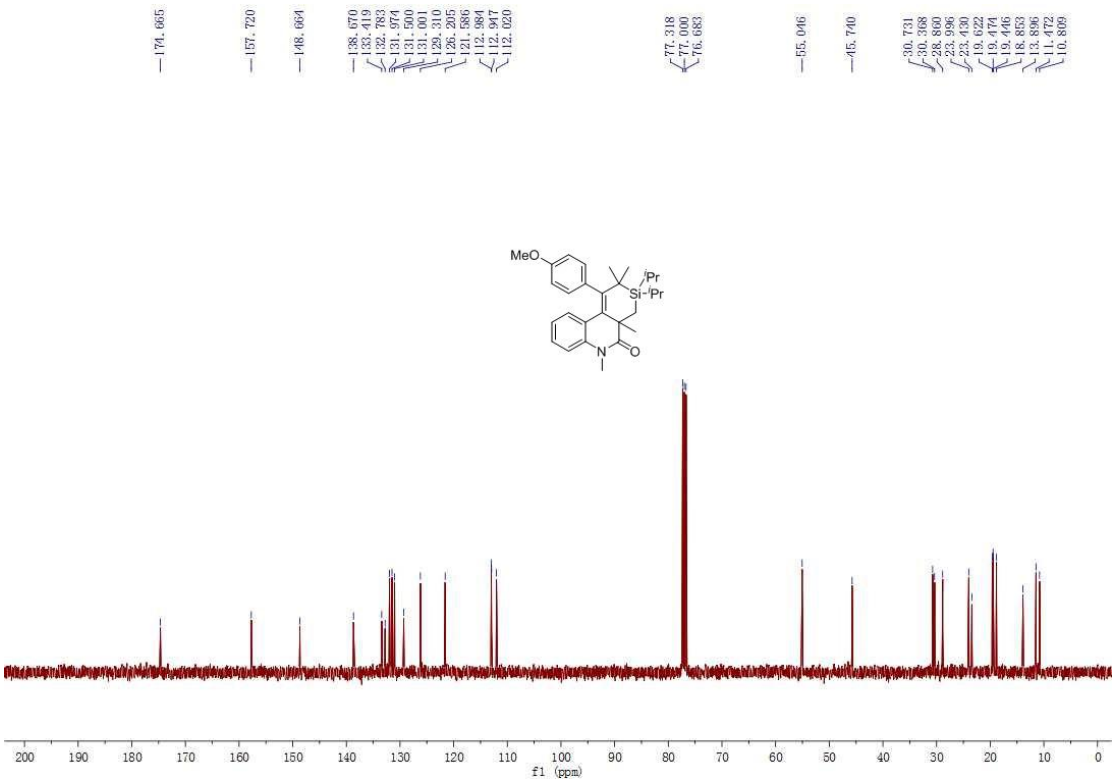
3,3-diisopropyl-2,2,4a,6-tetramethyl-1-(p-tolyl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3fa)



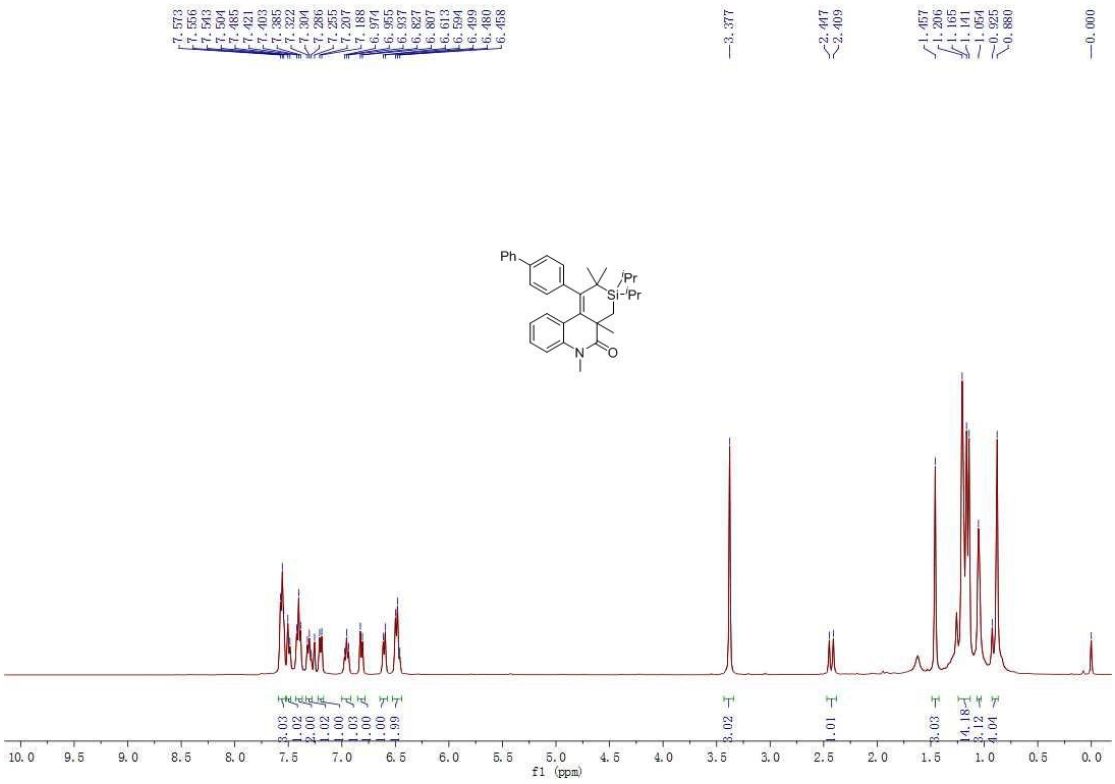


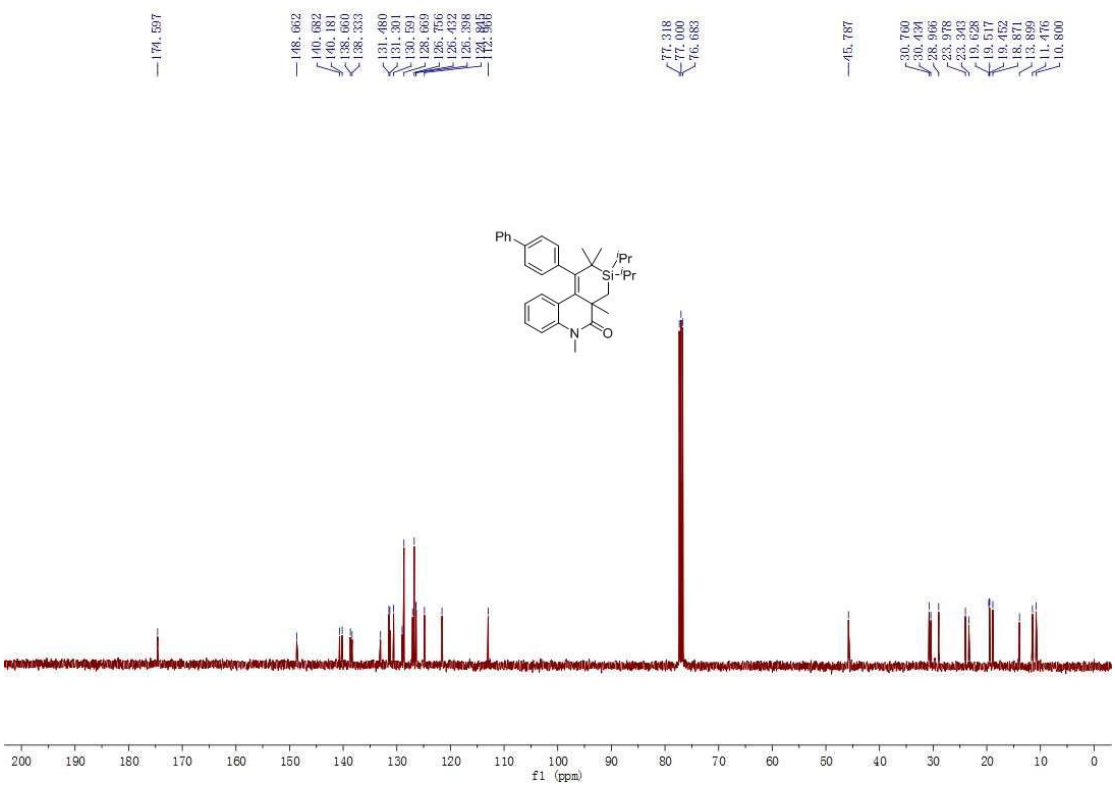
3,3-diisopropyl-1-(4-methoxyphenyl)-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ga)



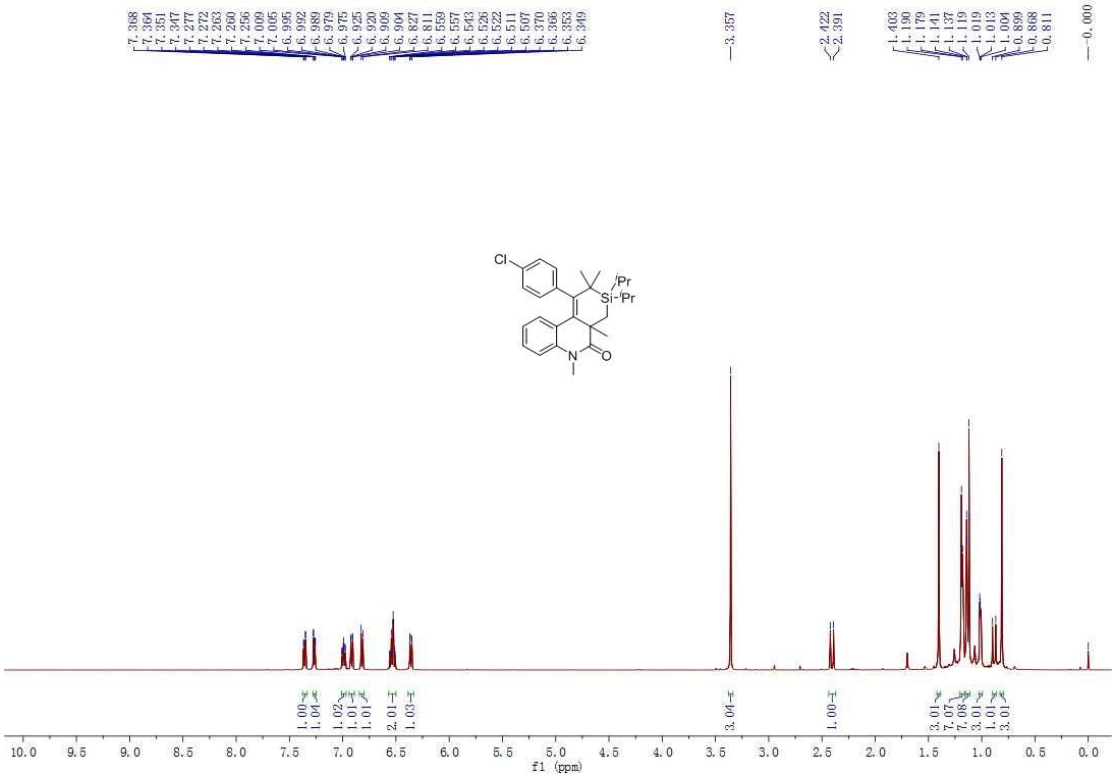


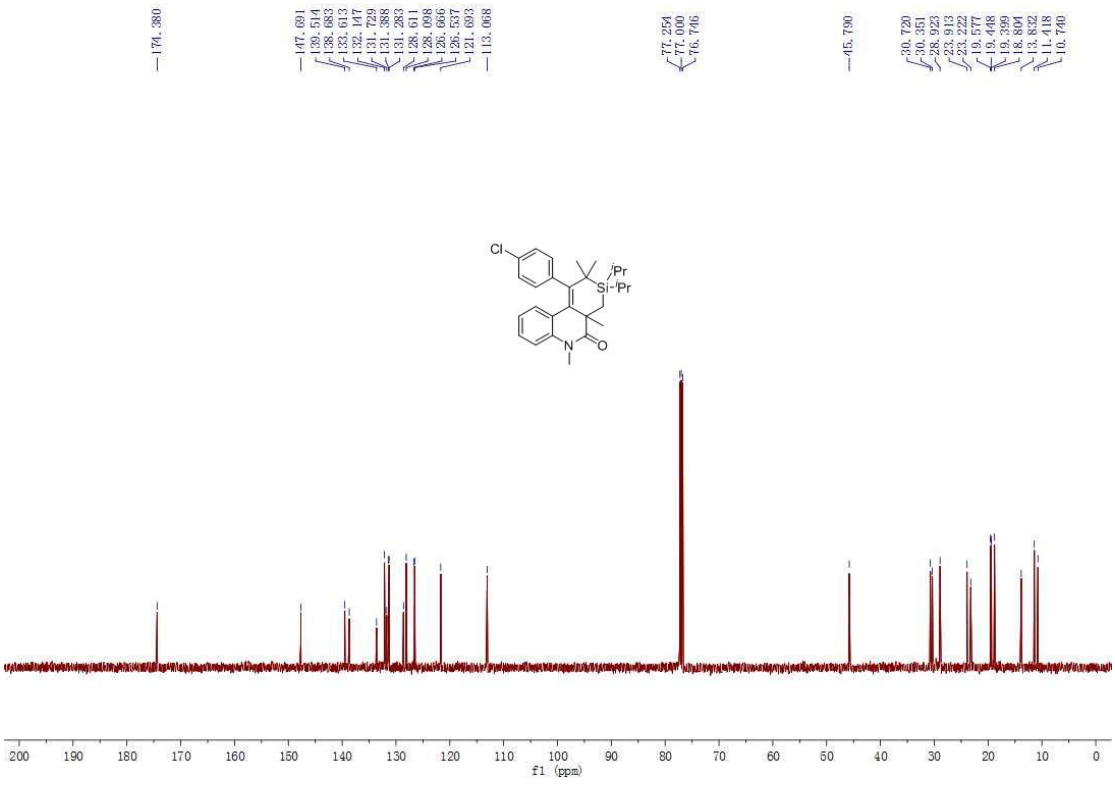
1-([1,1'-biphenyl]-4-yl)-3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ha):



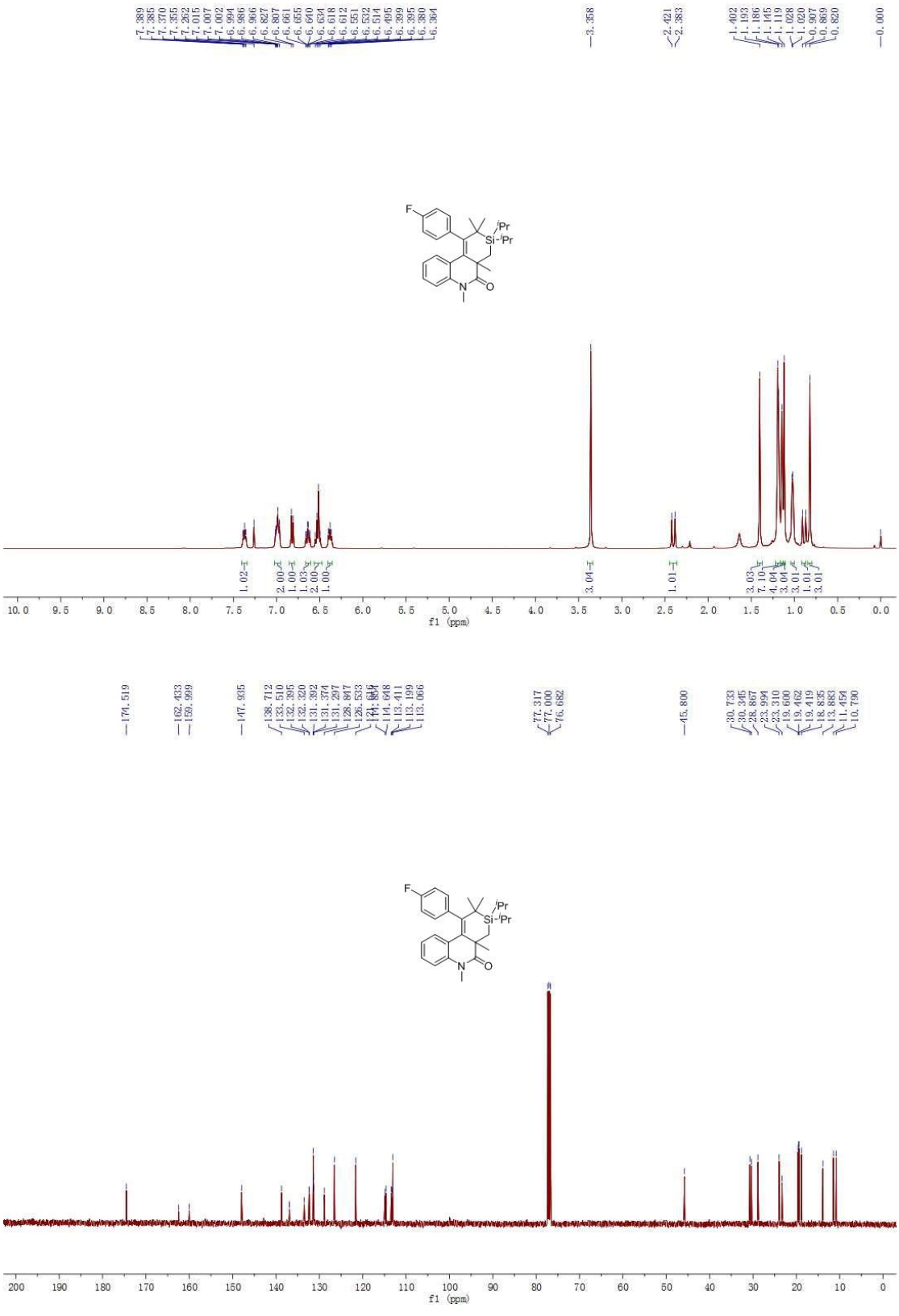


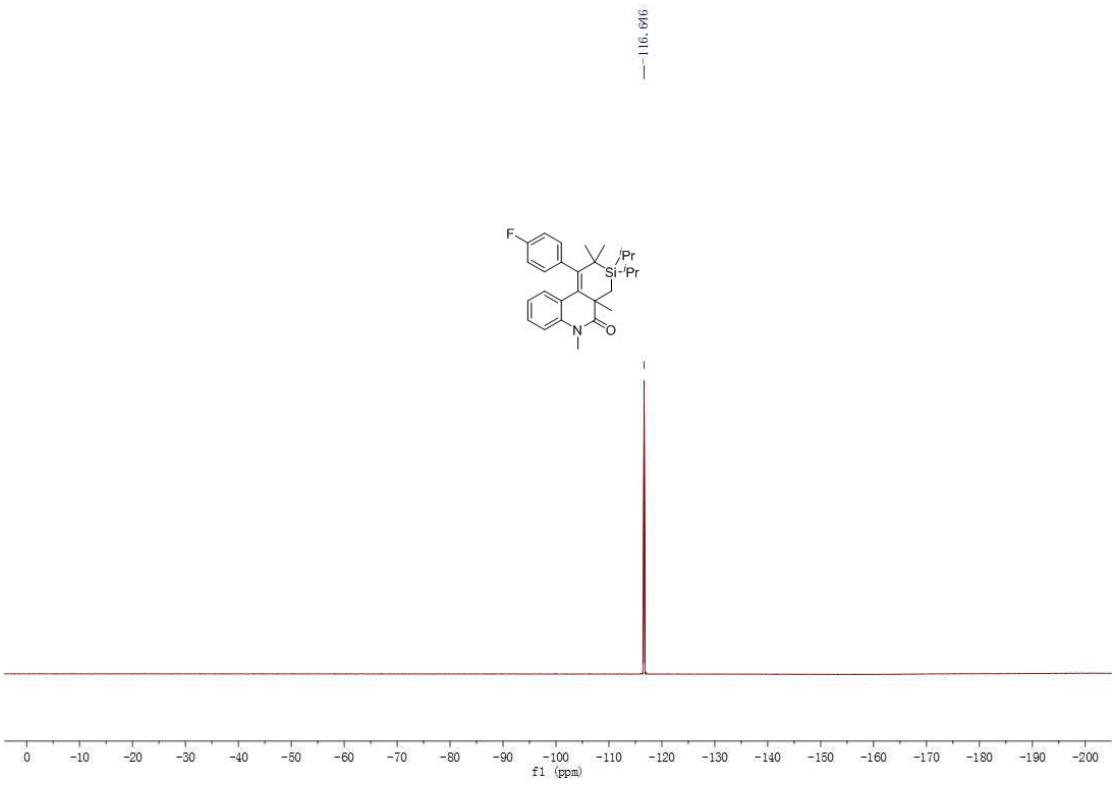
1-(4-chlorophenyl)-3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ia)



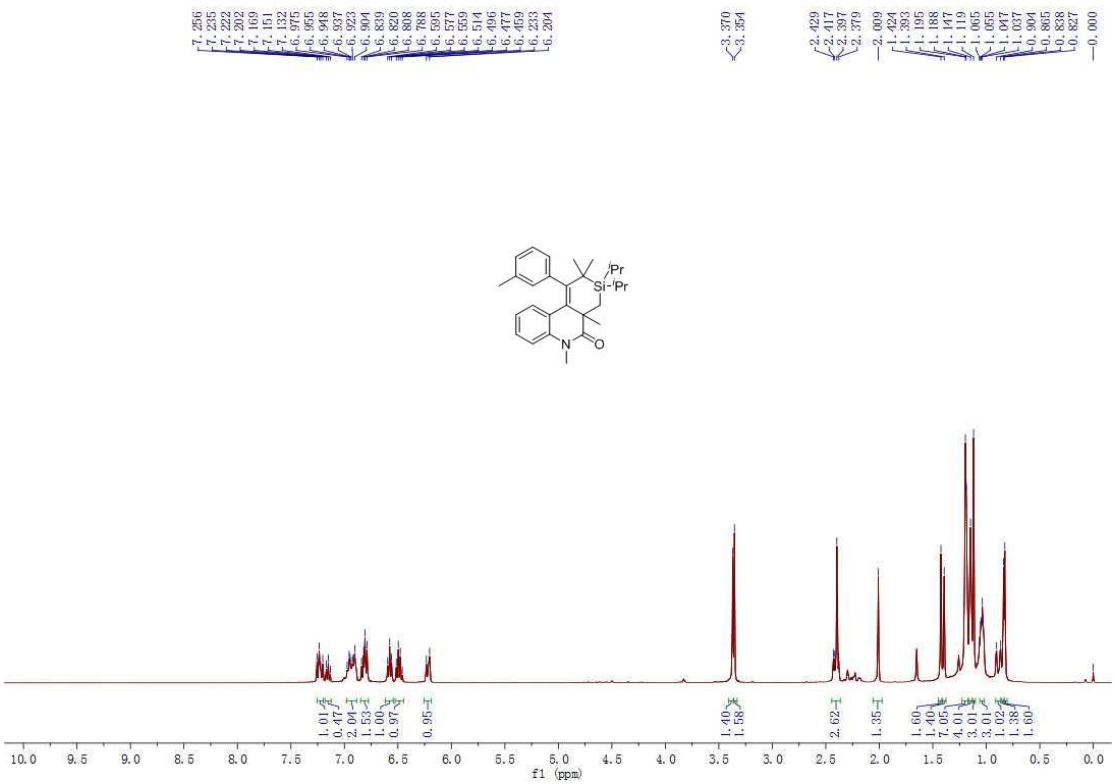


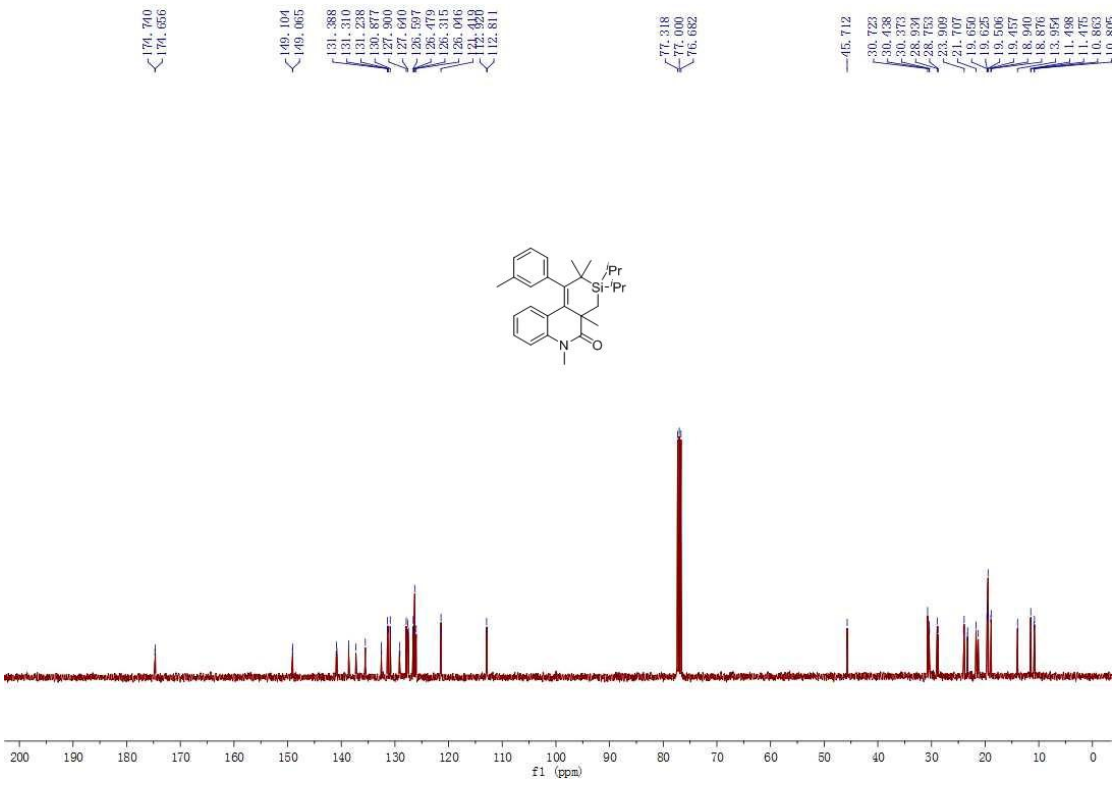
1-(4-fluorophenyl)-3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ja)



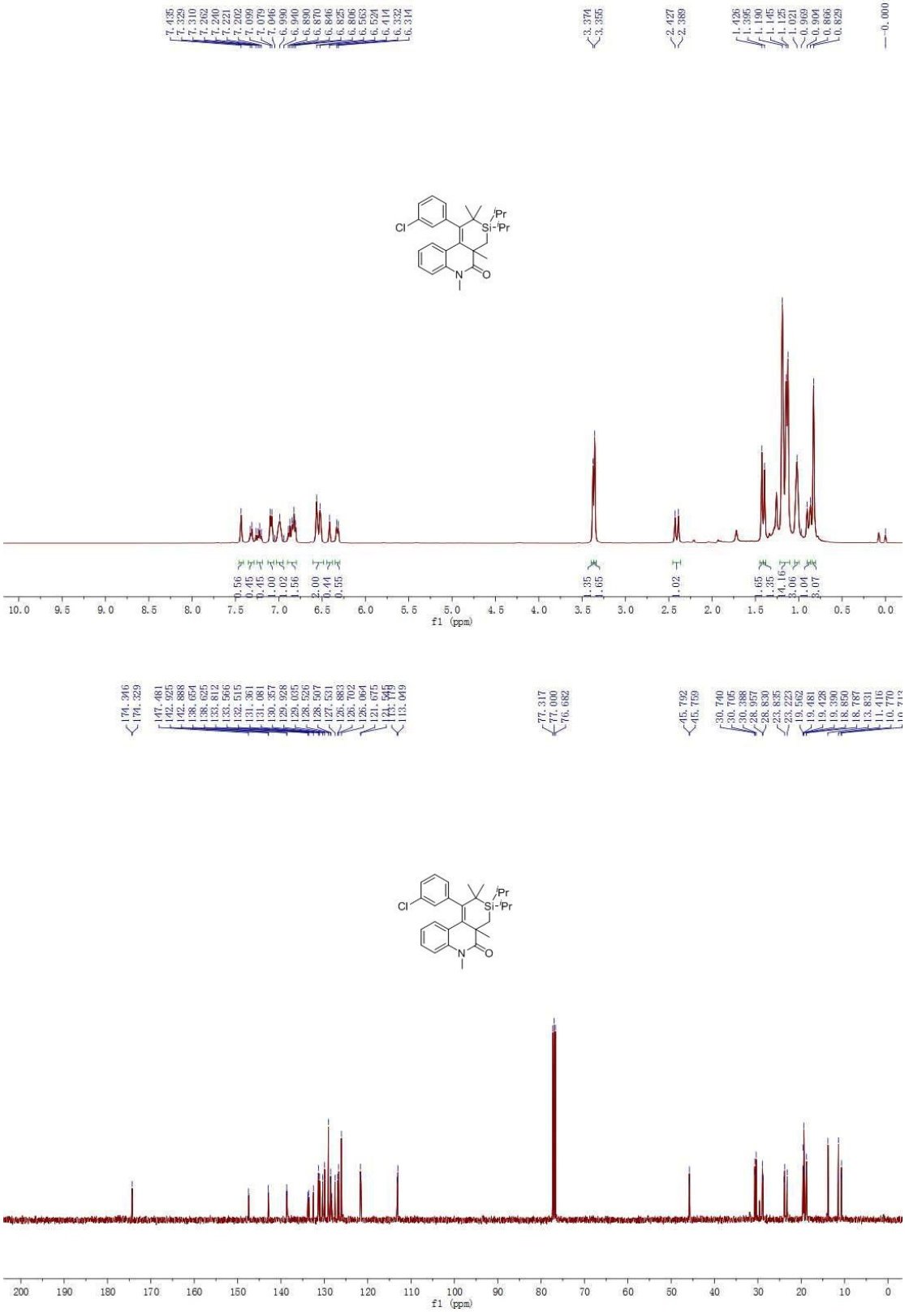

-116.646
F
Si
iPr
iPr
N
O
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
-150
-160
-170
-180
-190
-200
f1 (ppm)

3,3-diisopropyl-2,2,4a,6-tetramethyl-1-(m-tolyl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ka)

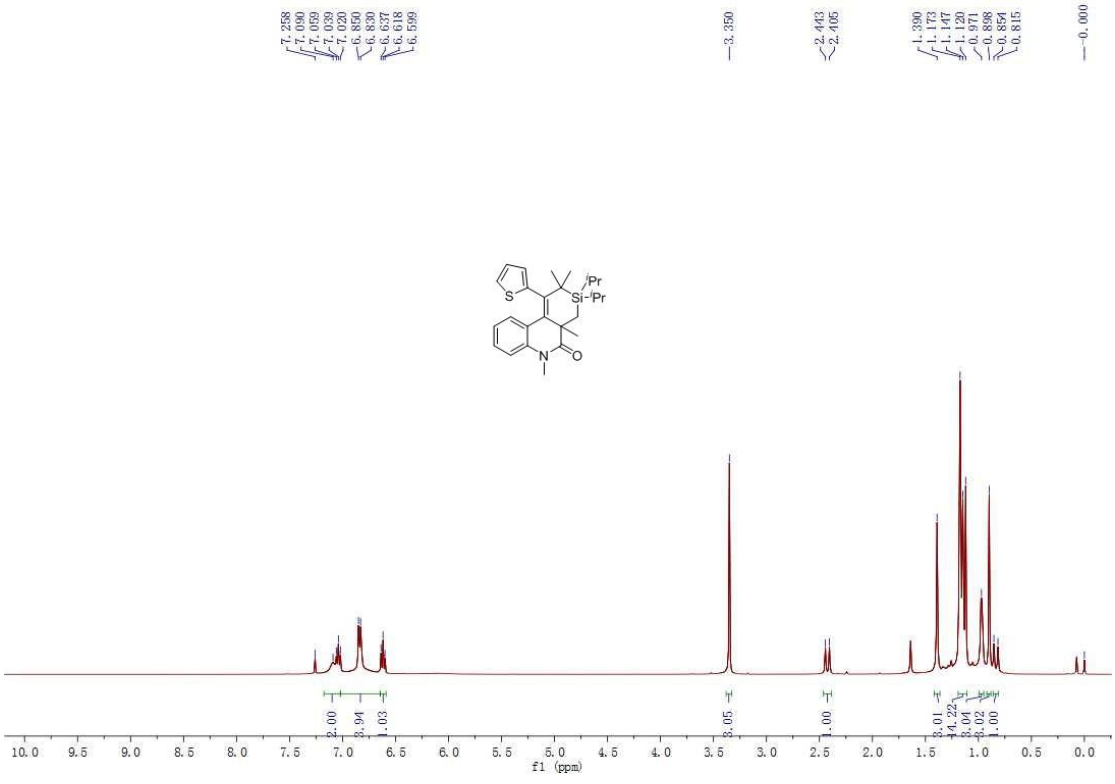


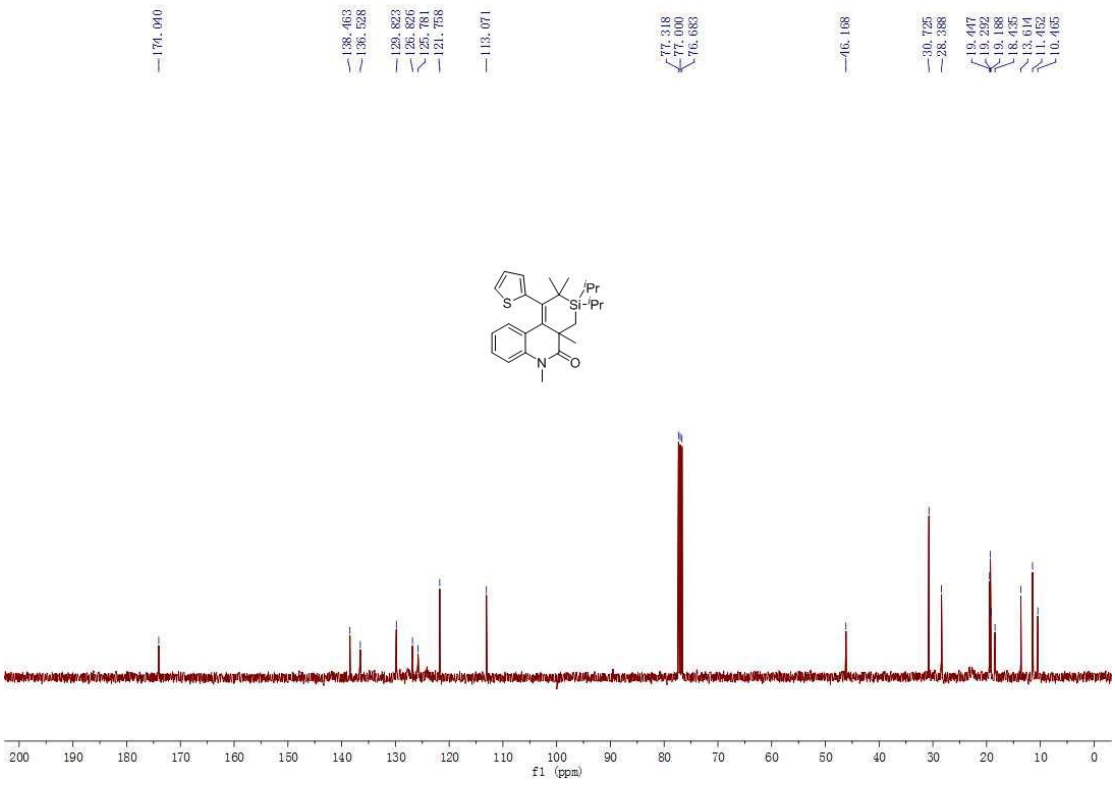


1-(3-chlorophenyl)-3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3la)

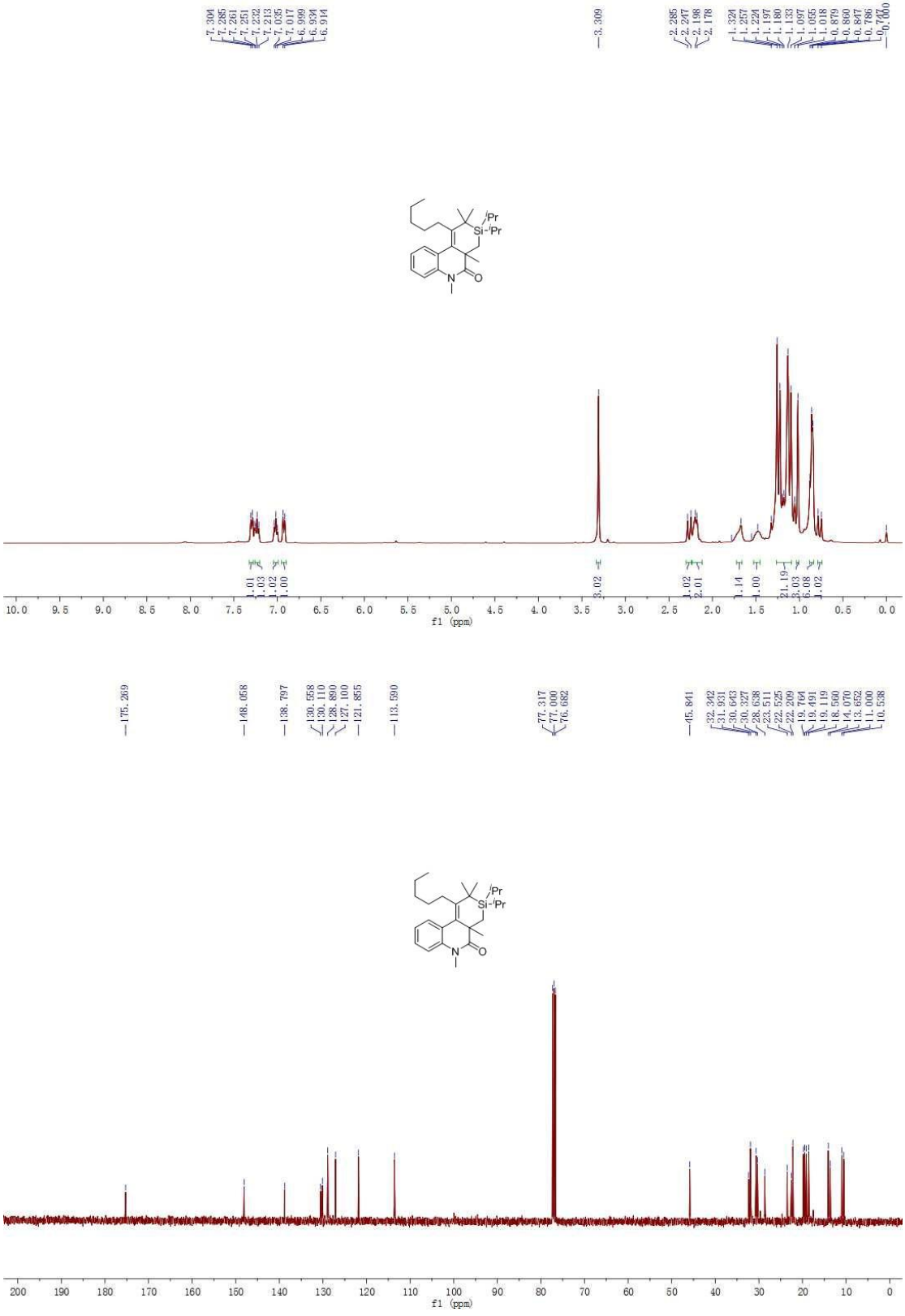


3,3-diisopropyl-2,2,4a,6-tetramethyl-1-(thiophen-2-yl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ma)

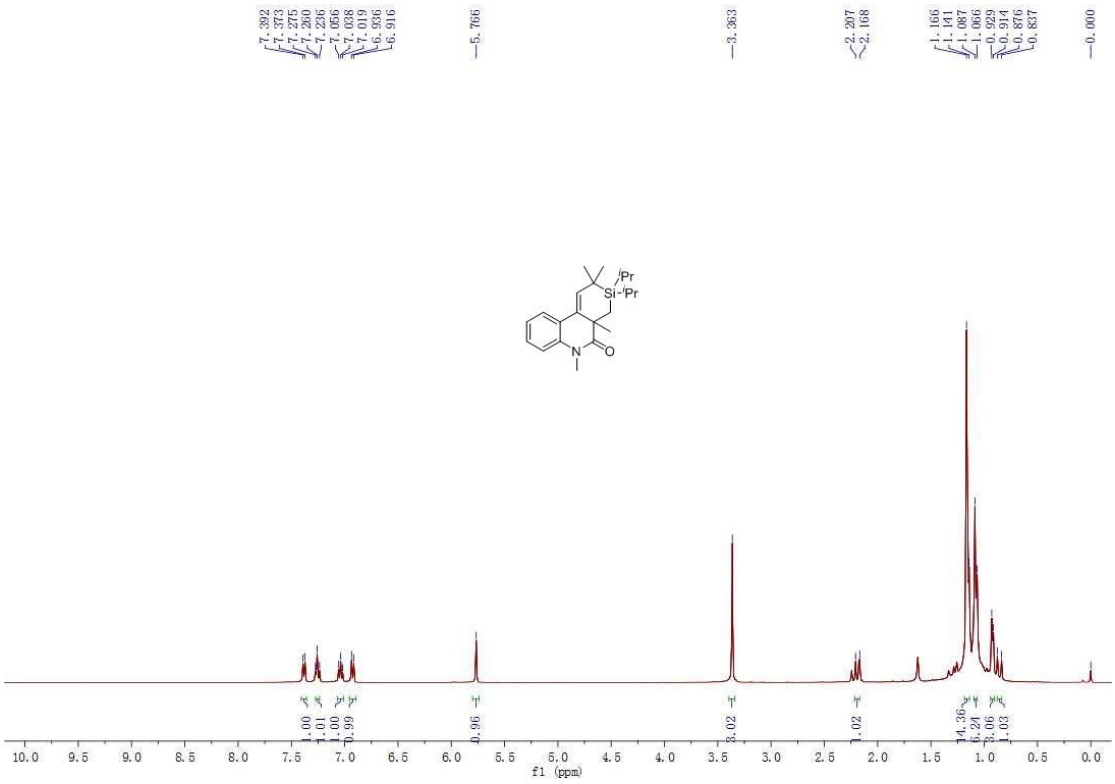


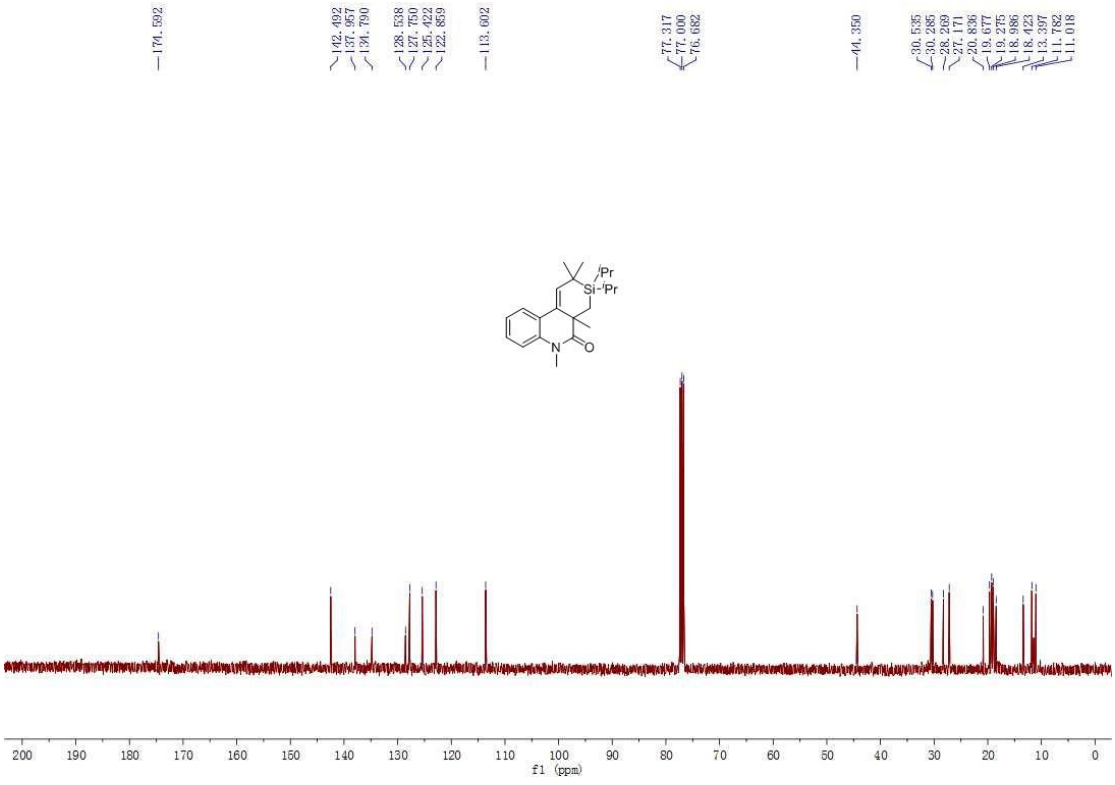


3,3-diisopropyl-2,2,4a,6-tetramethyl-1-pentyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3na)

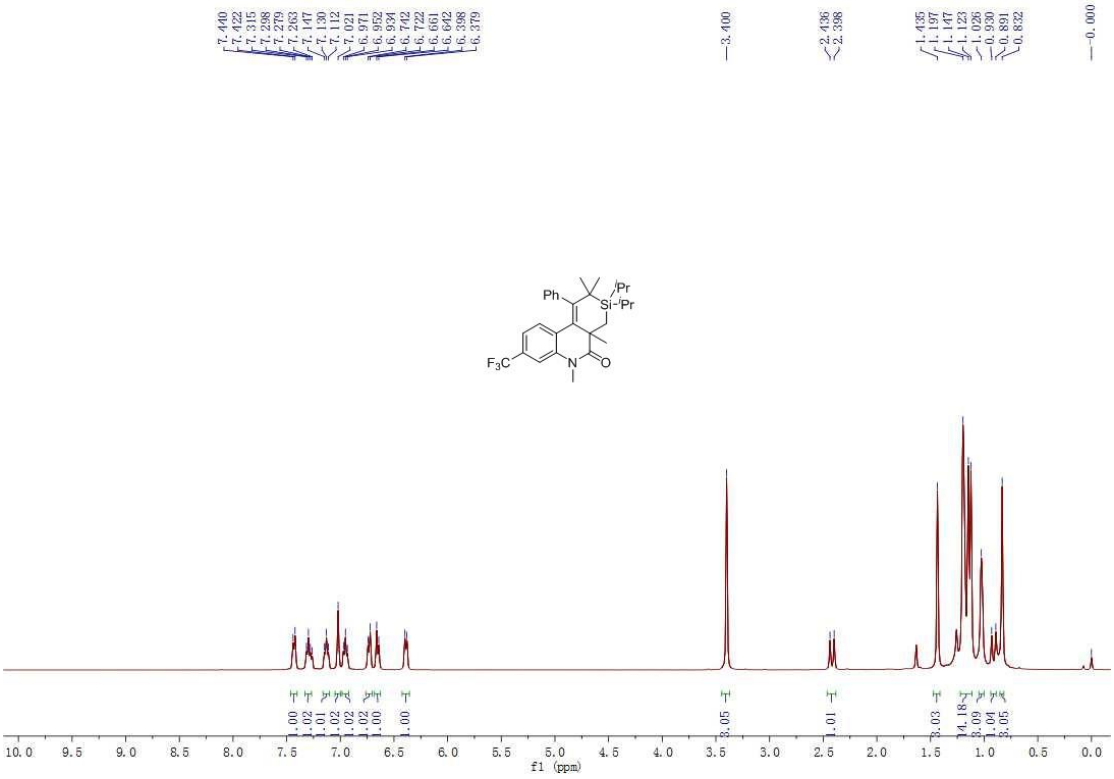


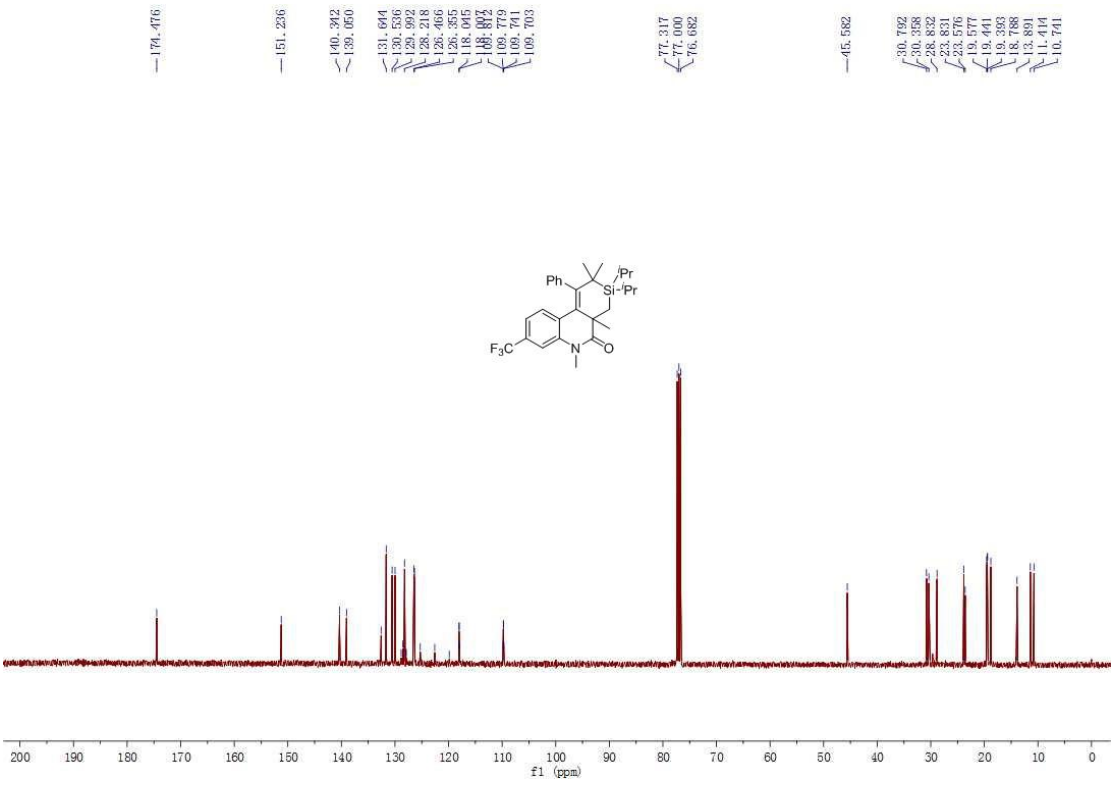
3,3-diisopropyl-2,2,4a,6-tetramethyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3oa)

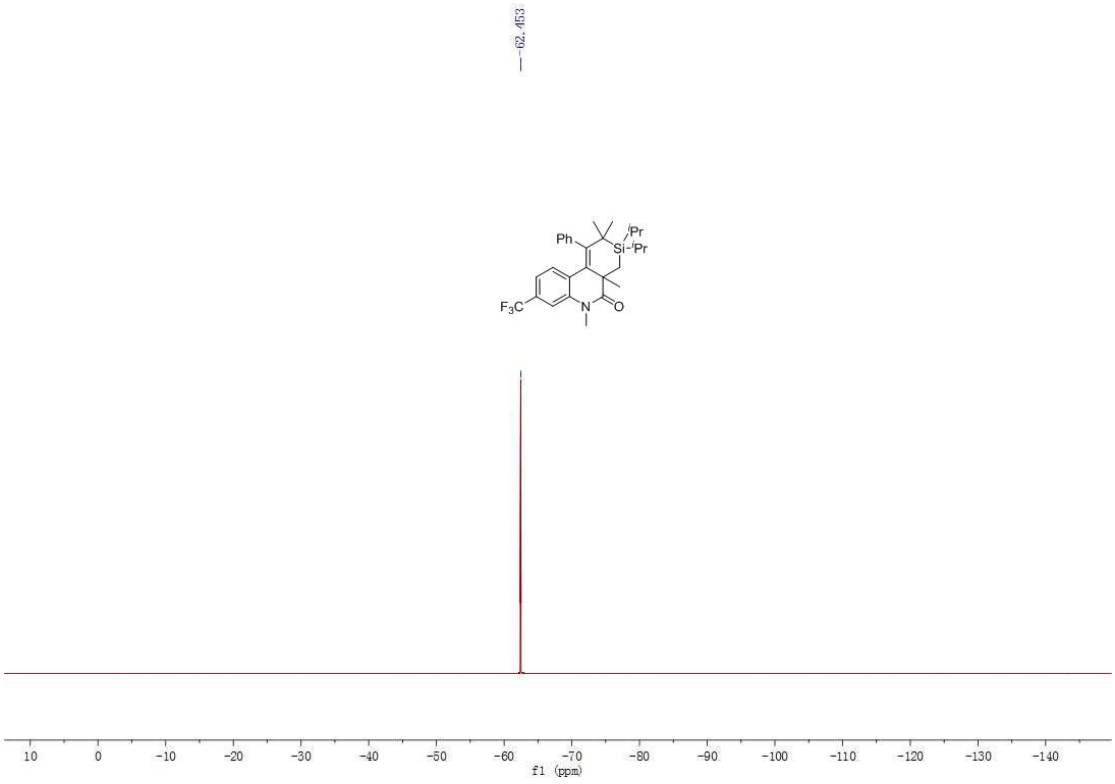




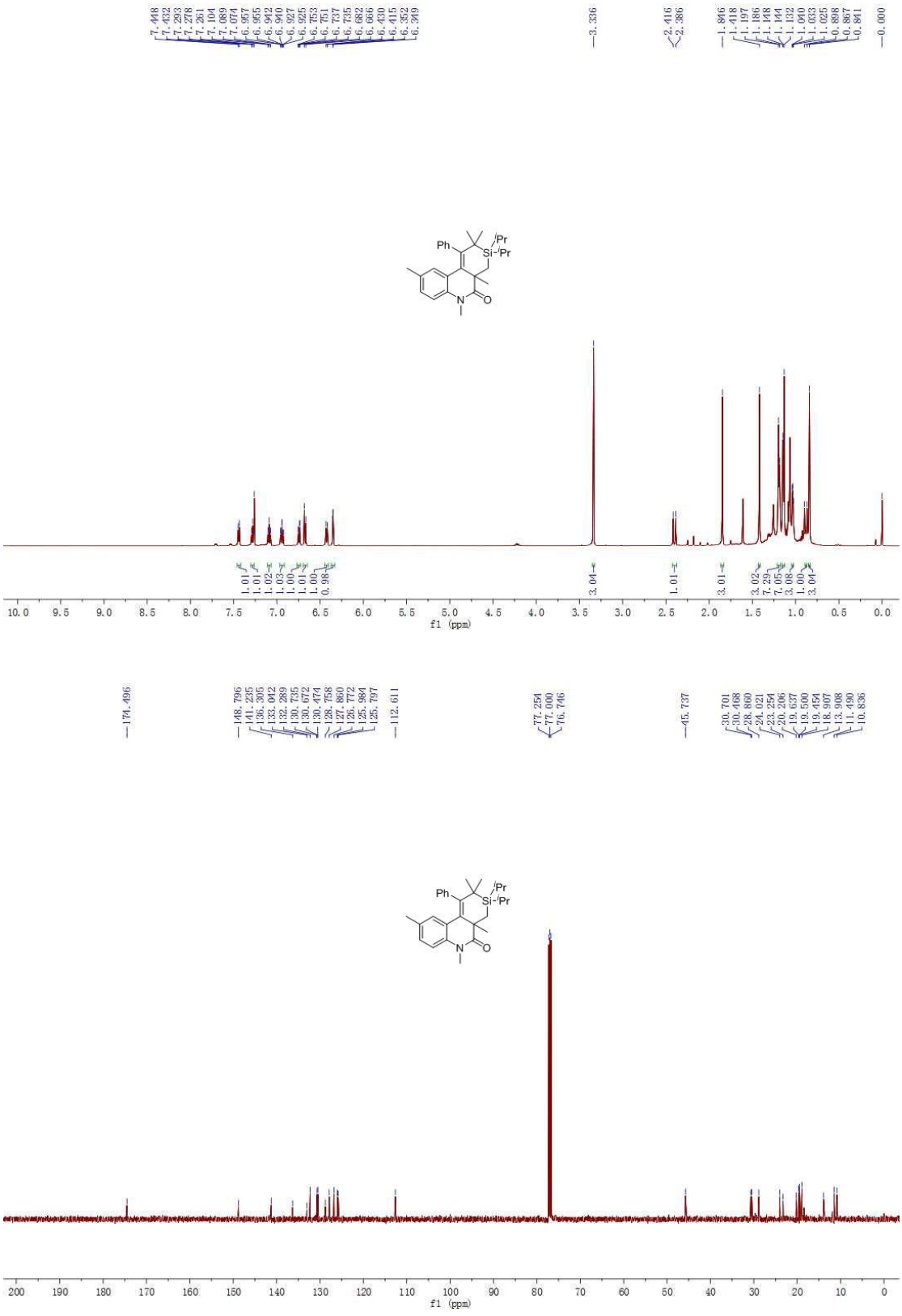
3,3-diisopropyl-2,2,4a,6-tetramethyl-1-phenyl-8-(trifluoromethyl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3pa)



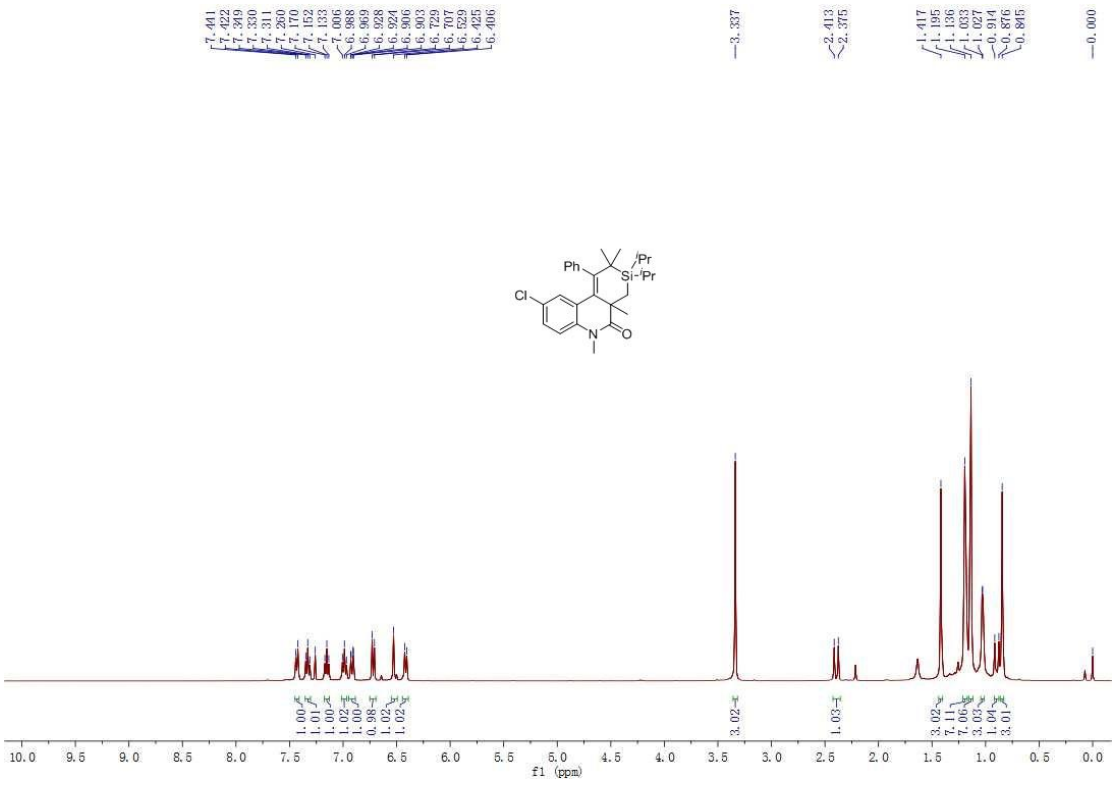


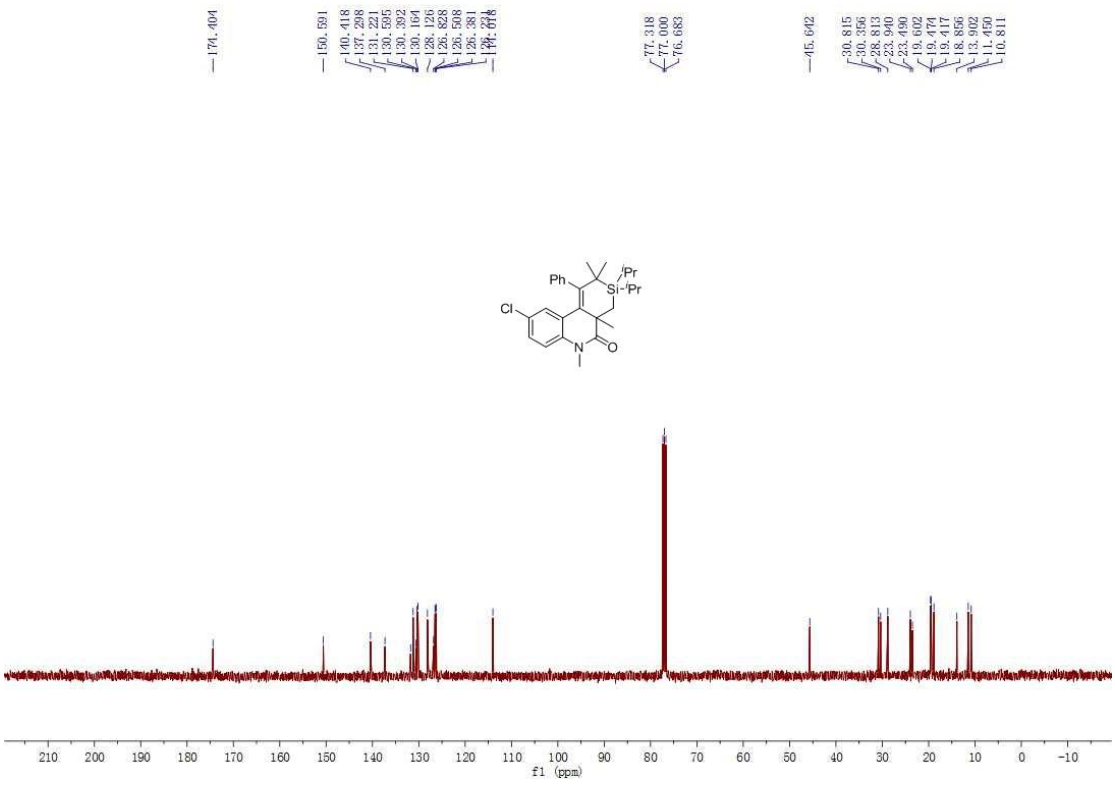

-62.453
Ph
Si
iPr
iPr
F3C
N
O
10
0
-10
-20
-30
-40
-50
-60
-70
-80
-90
-100
-110
-120
-130
-140
f1 (ppm)

3,3-diisopropyl-2,2,4a,6,9-pentamethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3qa)

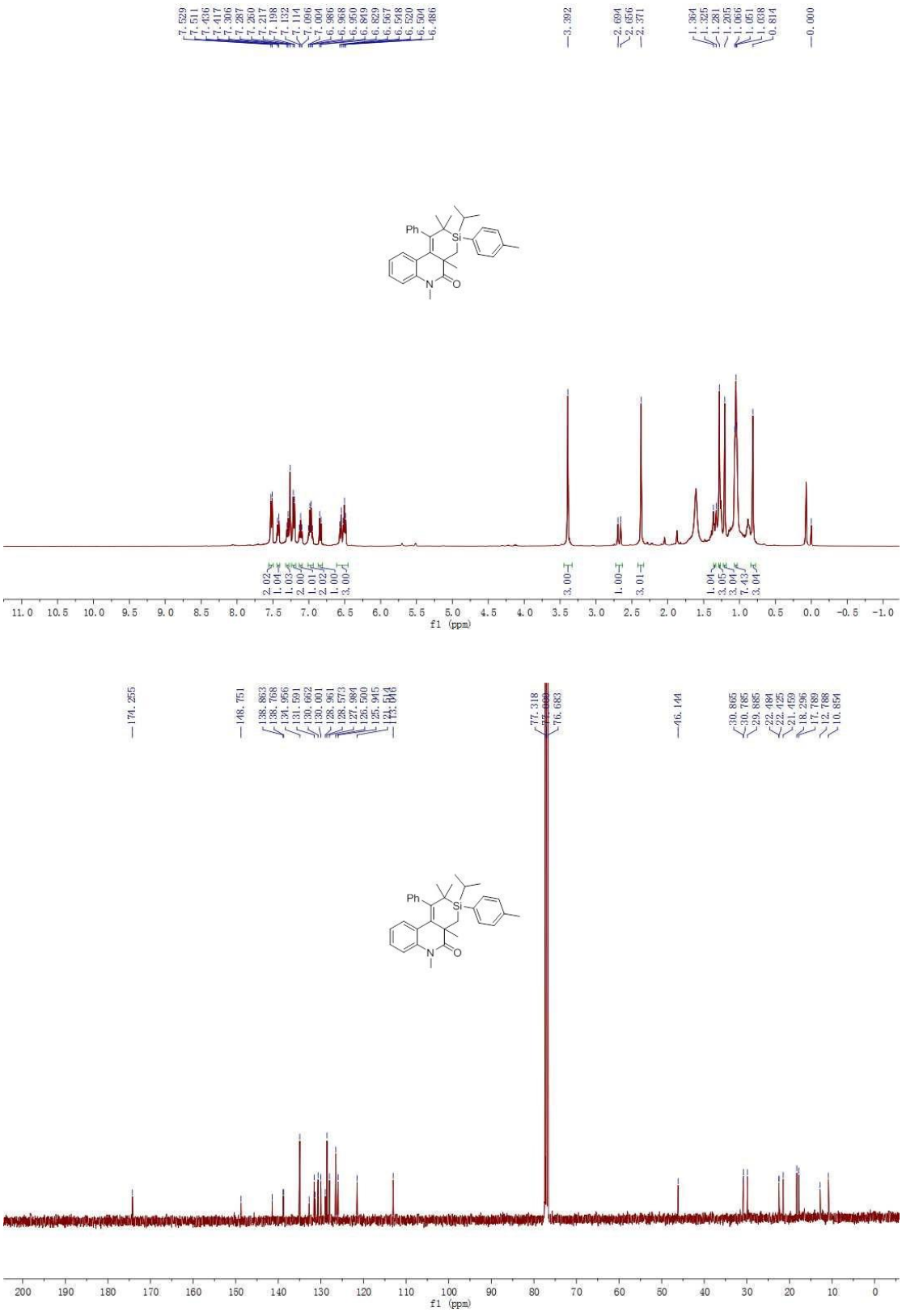


9-chloro-3,3-diisopropyl-2,2,4a,6-tetramethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ra)





3-isopropyl-2,2,4a,6-tetramethyl-1-phenyl-3-(p-tolyl)-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ab)

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7.545
7.390
7.371
7.297
7.278
7.259
7.166
7.148
7.108
7.090
7.071
6.984
6.964
6.947
6.930
6.911
6.816
6.796
6.645
6.626
6.525
6.507
6.488
6.341
6.322
3.319
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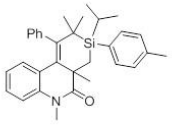
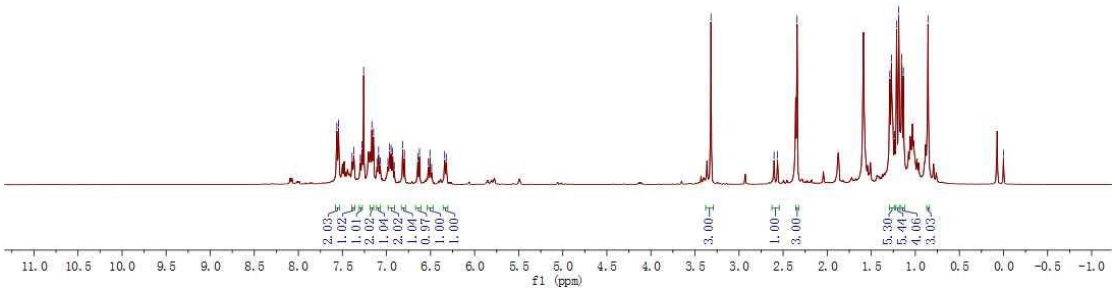
1.135
0.857
0.000


Ph
Si
N
O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1.02
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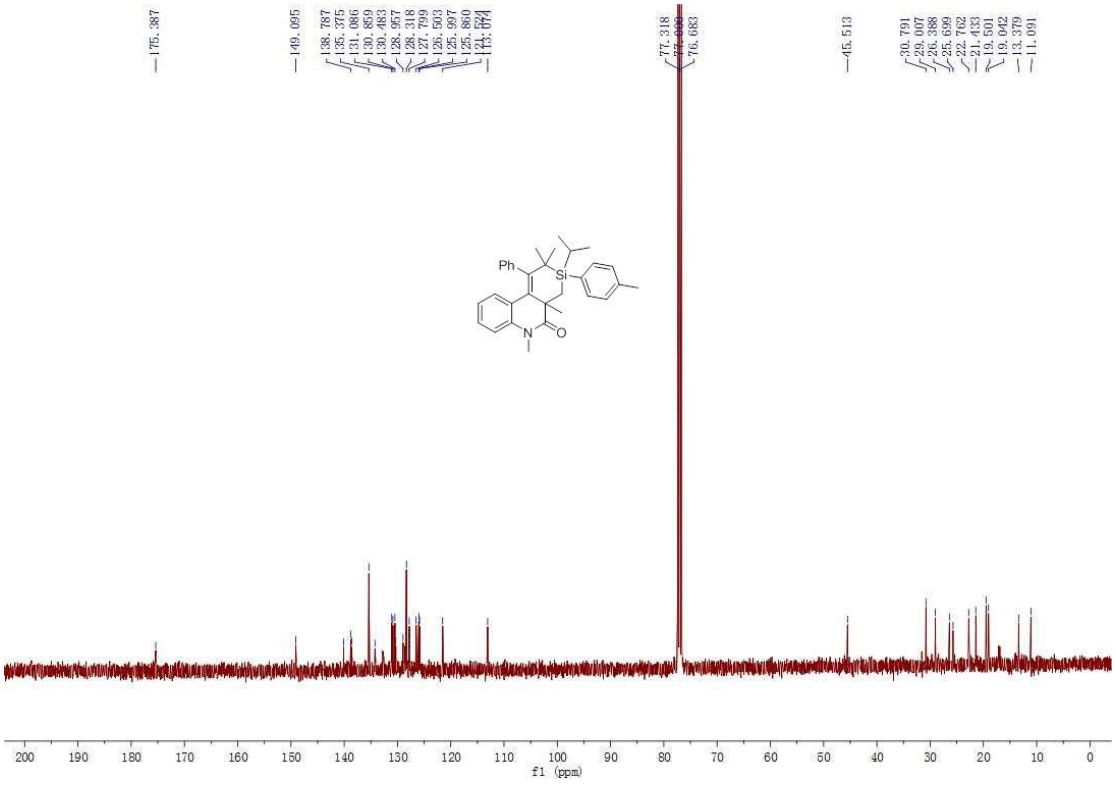
2.02
1.04
2.02
1.04
0.97
1.00
1.00
3.00
1.00
3.00
5.30
5.44
4.06
3.03
11.0 10.5 10.0 9.5 9.0 8.5 8.0 7.5 7.0 6.5 6.0 5.5 5.0 4.5 4.0 3.5 3.0 2.5 2.0 1.5 1.0 0.5 0.0 -0.5 -1.0
f1 (ppm)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135.375
131.086
130.859
130.463
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127.799
126.503
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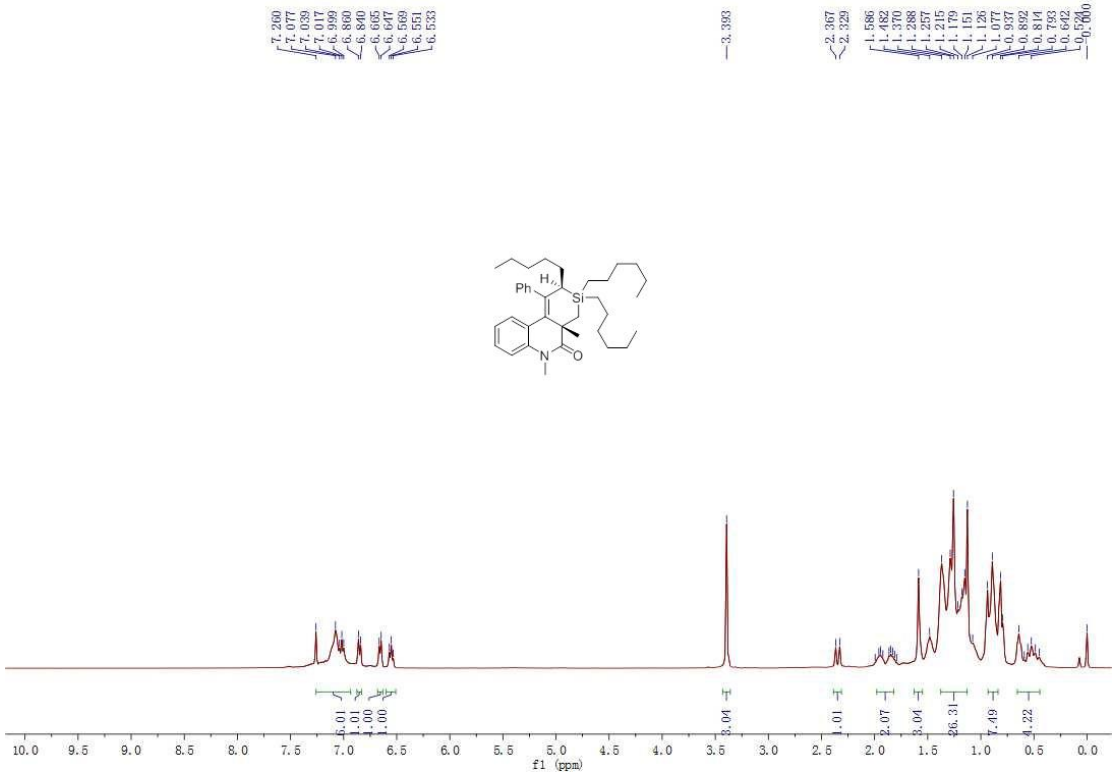
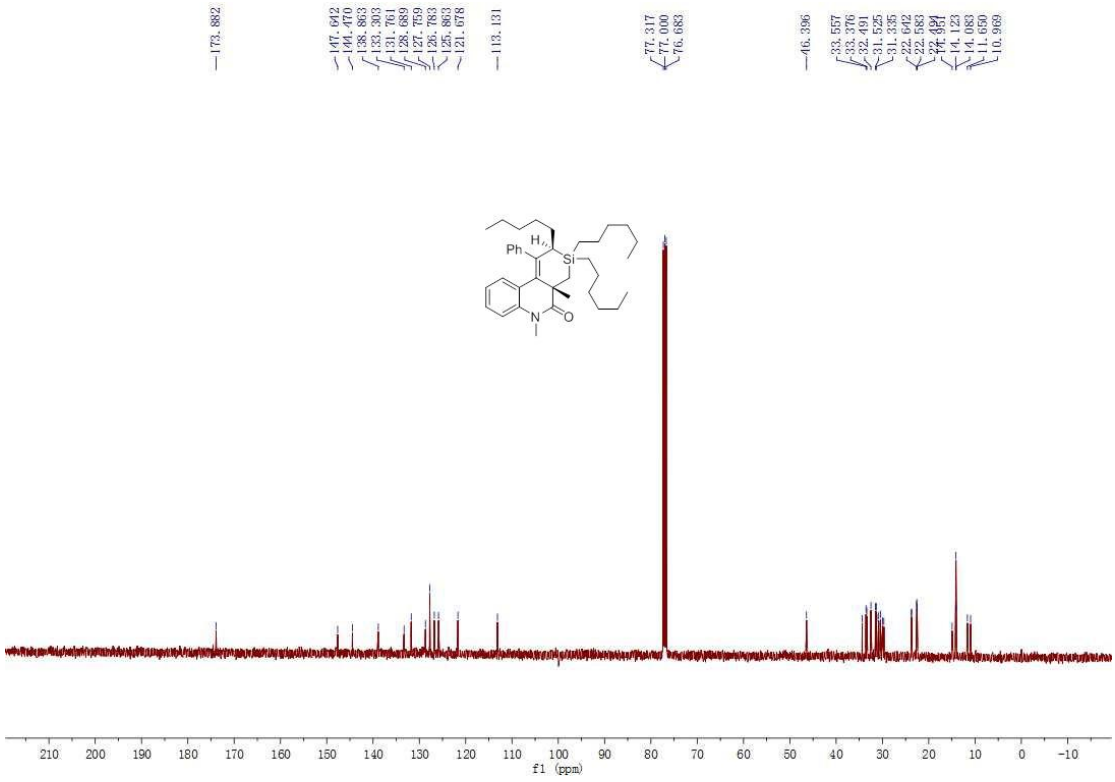
77.318
77.000
76.683
45.513
30.791
28.007
26.388
25.699
22.762
21.433
19.501
19.042
13.379
11.091
200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0
f1 (ppm)

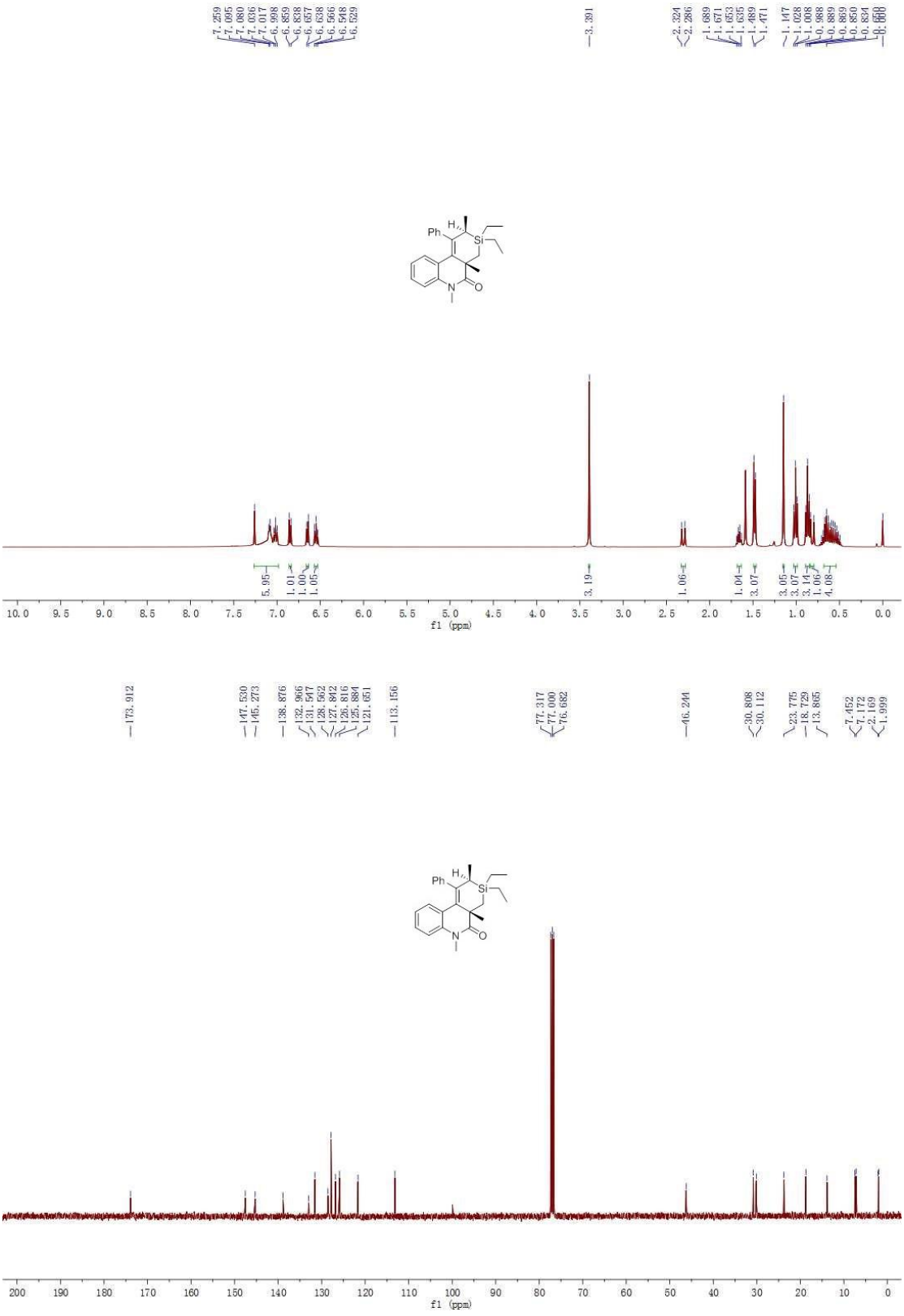
Ph
Si
N
O

(2R,4aS)-3,3-dihexyl-4a,6-dimethyl-2-pentyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ac)

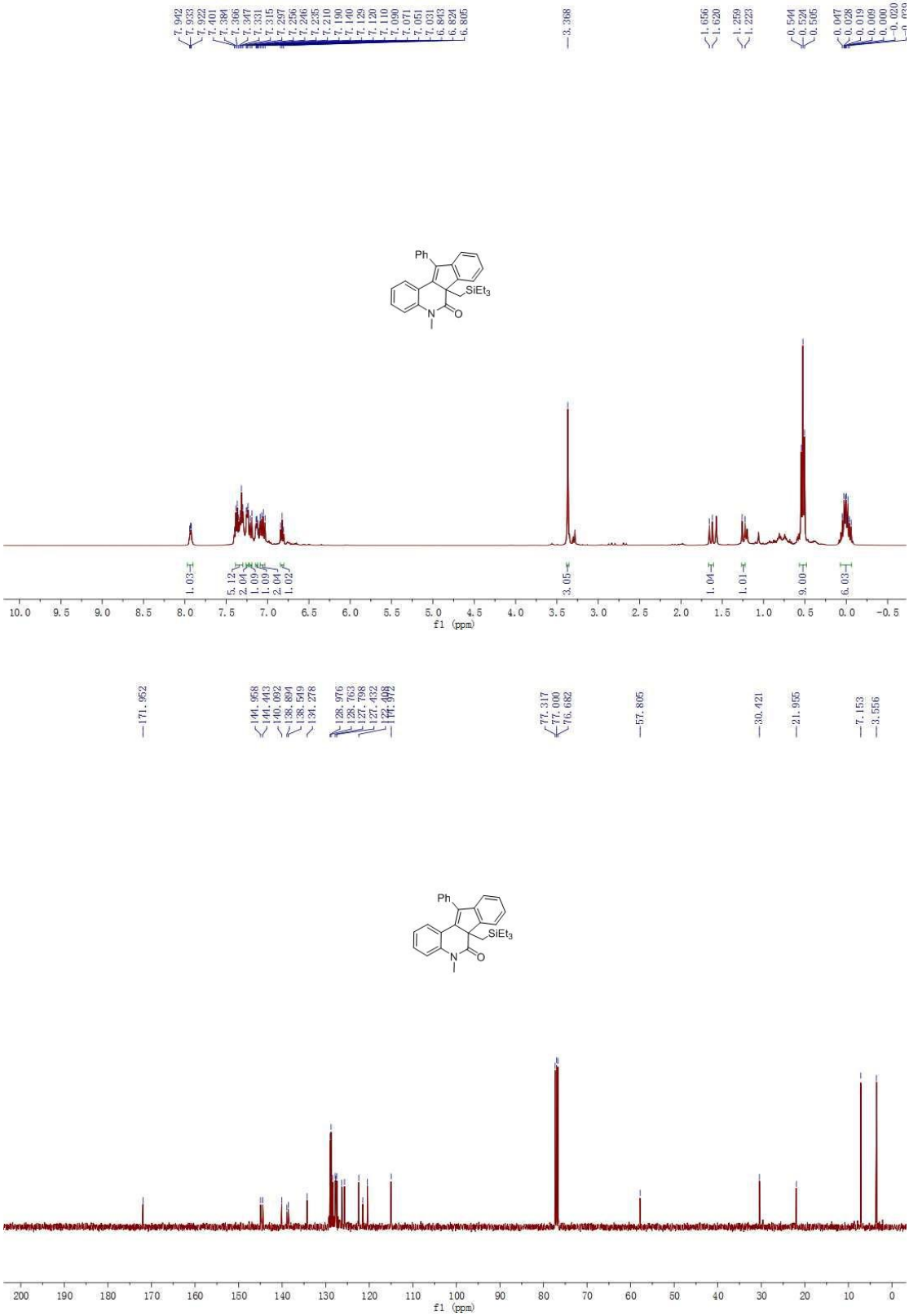




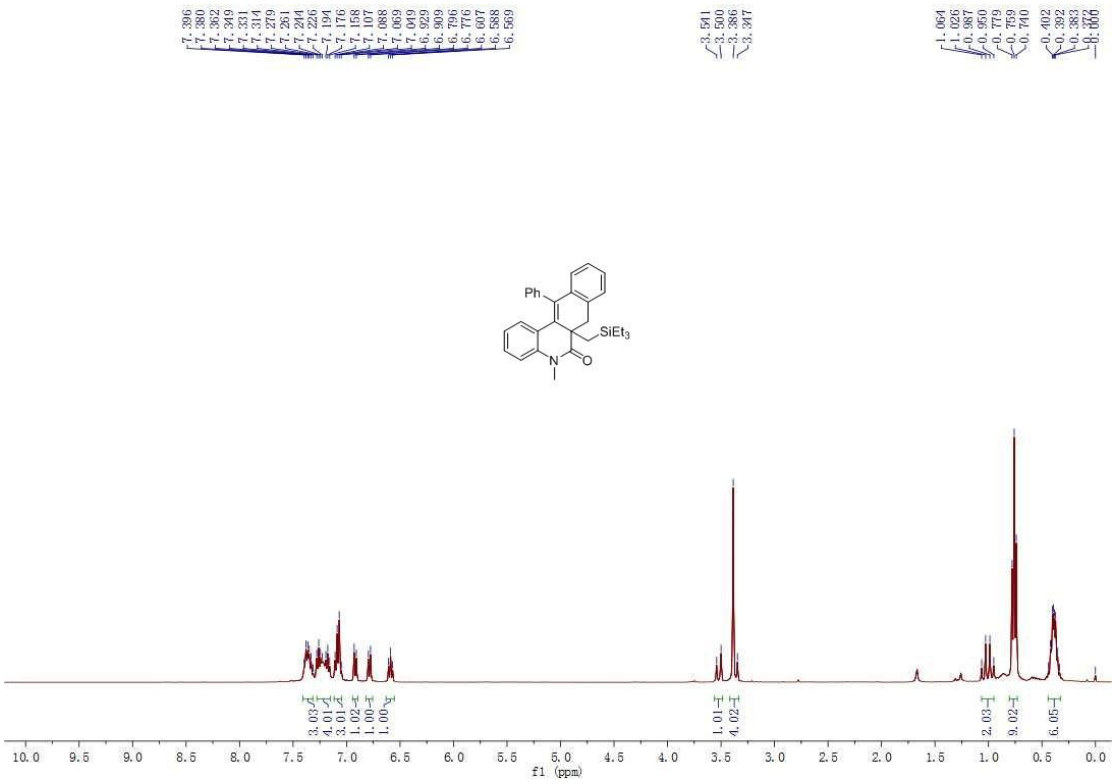
(2R,4aS)-3,3-diethyl-2,4a,6-trimethyl-1-phenyl-2,4,4a,6-tetrahydrosilino[3,4-c]quinolin-5(3*H*)-one (3ad)

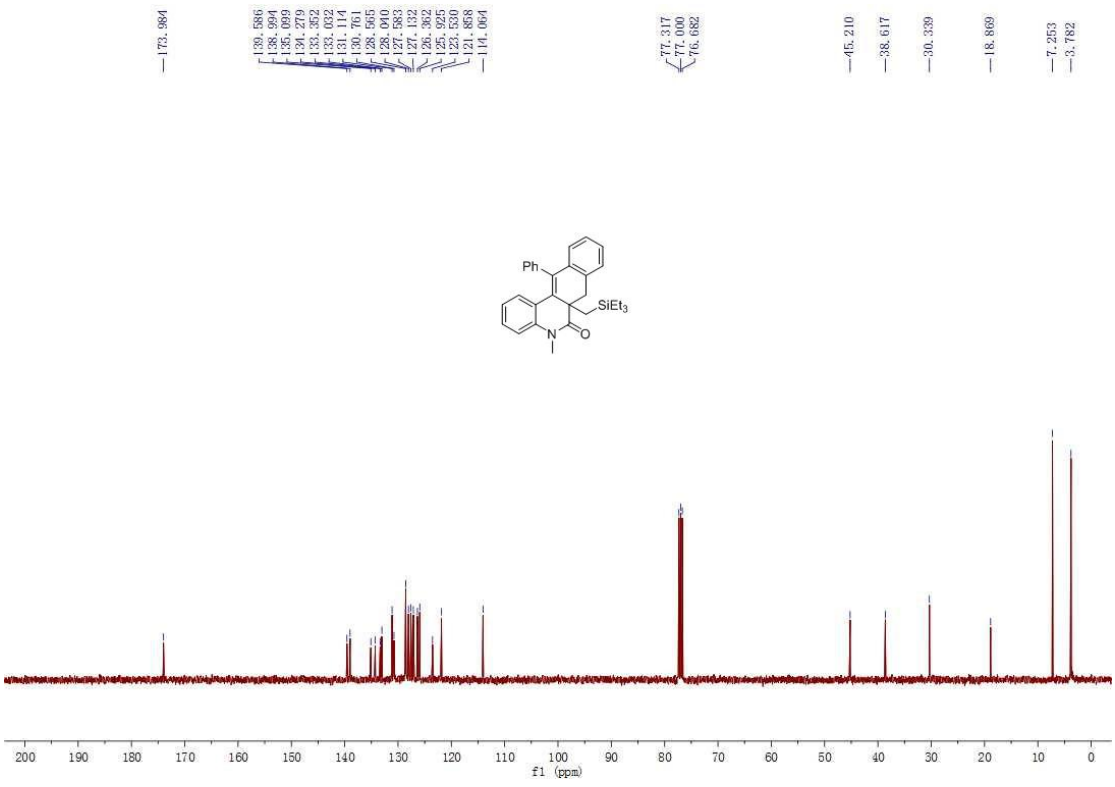


5-methyl-11-phenyl-6a-((triethylsilyl)methyl)-5,6a-dihydro-6*H*-indeno[1,2-c]quinolin-6-one (4sd)

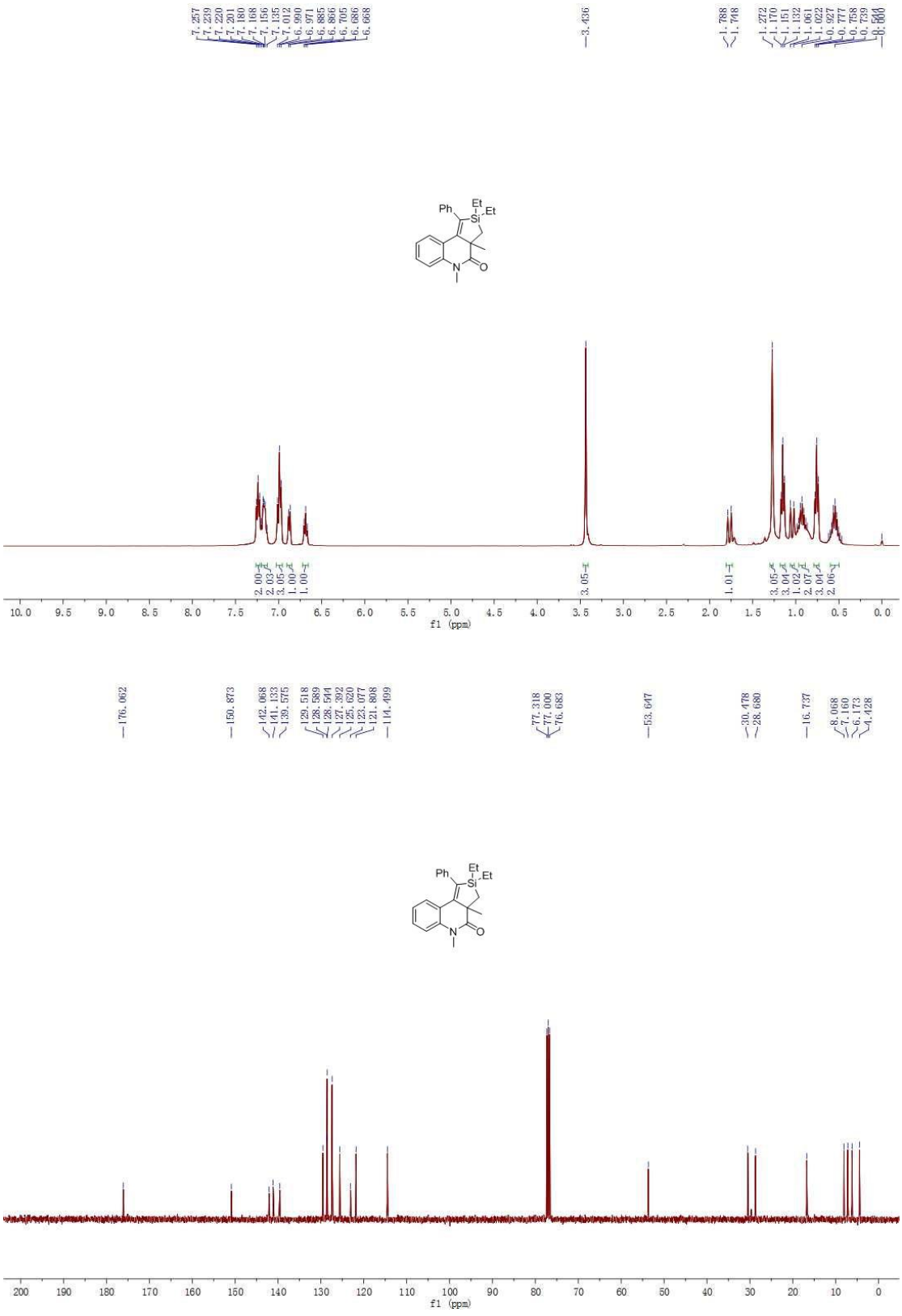


5-methyl-12-phenyl-6a-((triethylsilyl)methyl)-6a,7-dihydrobenzo[j]phenanthridin-6(5*H*)-one (4td)

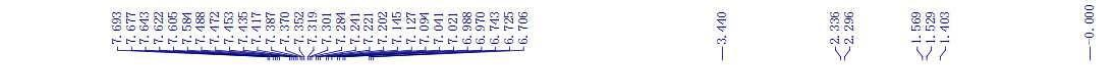


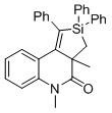


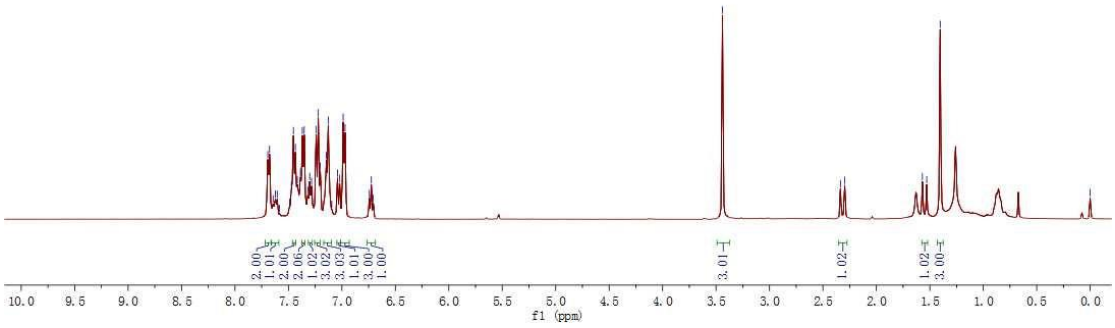
2,2-diethyl-3a,5-dimethyl-1-phenyl-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5ae)

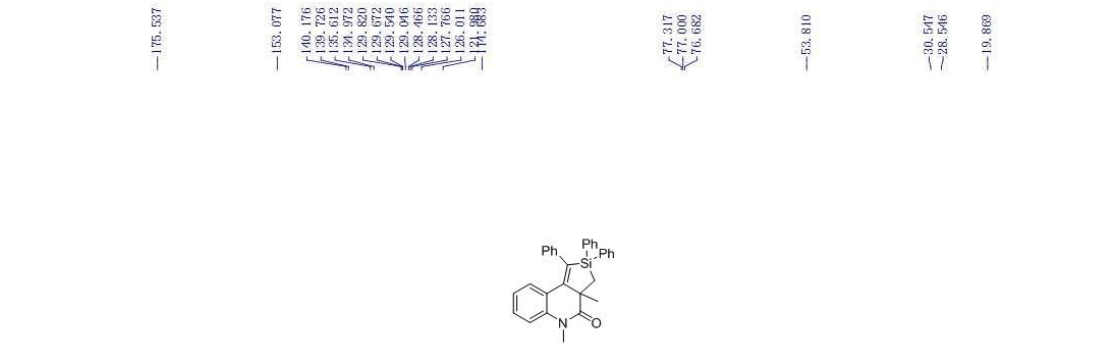


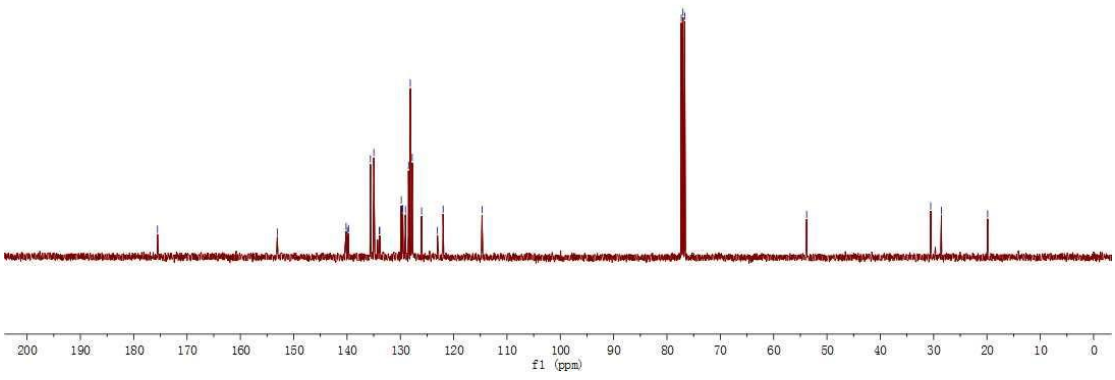
3a,5-dimethyl-1,2,2-triphenyl-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5af)



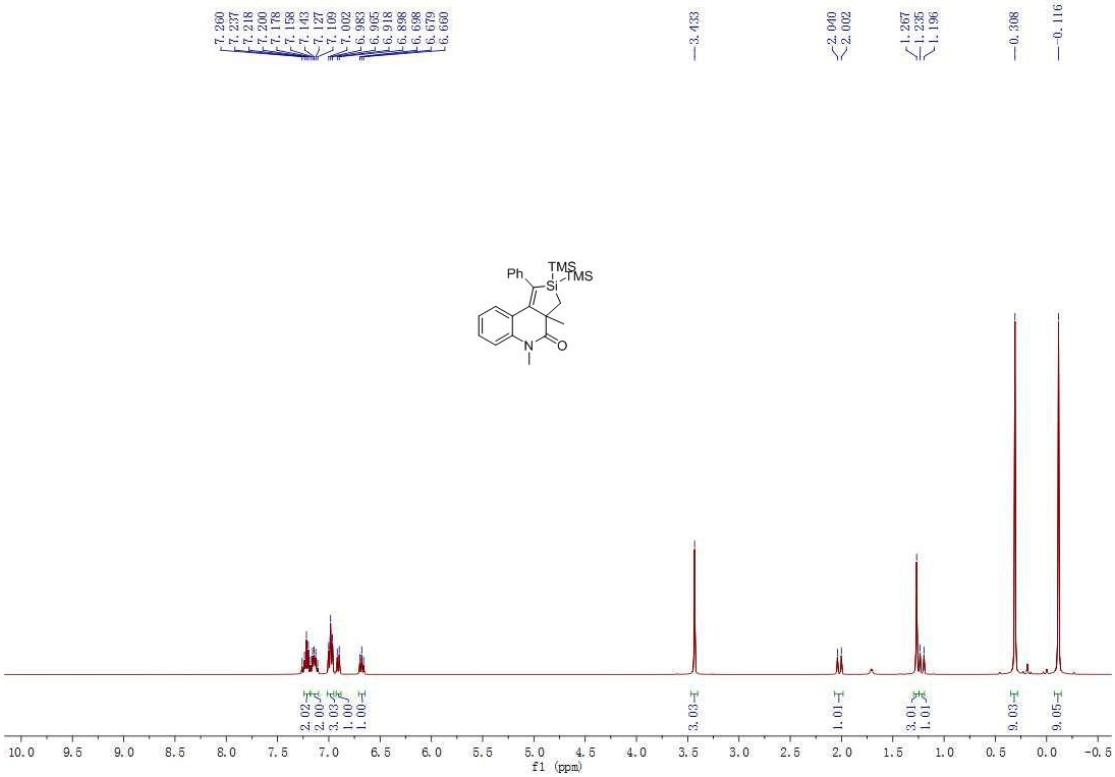


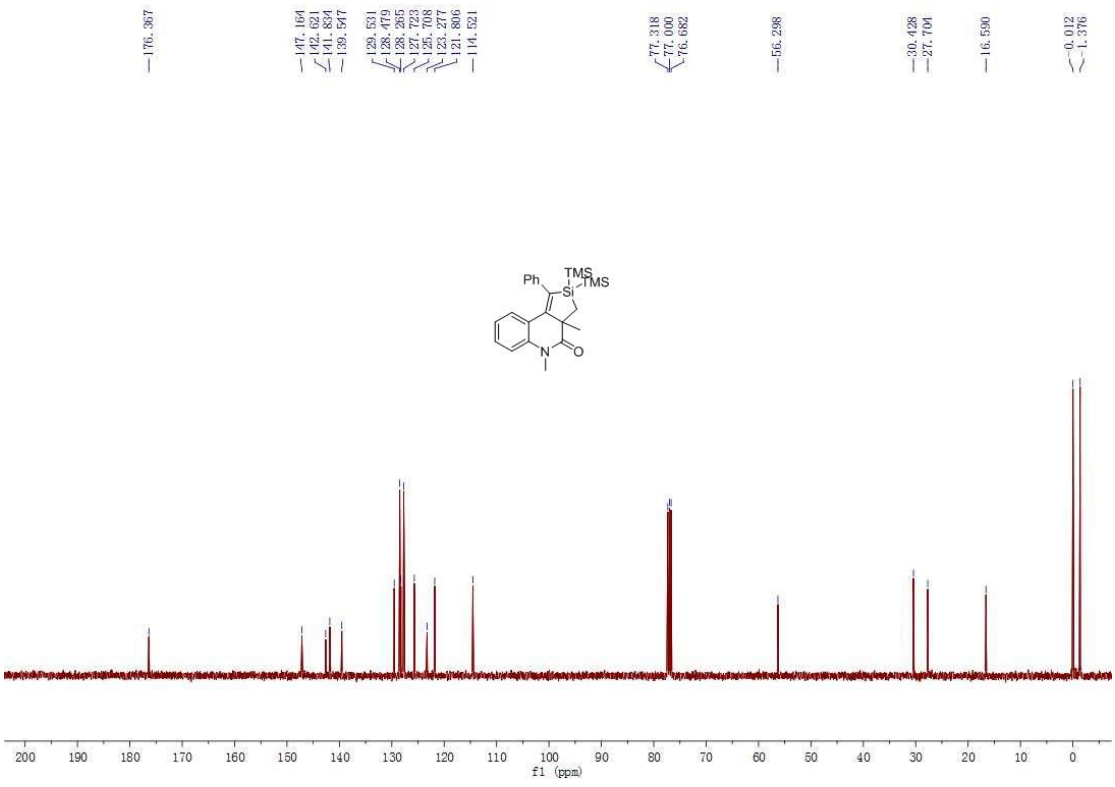




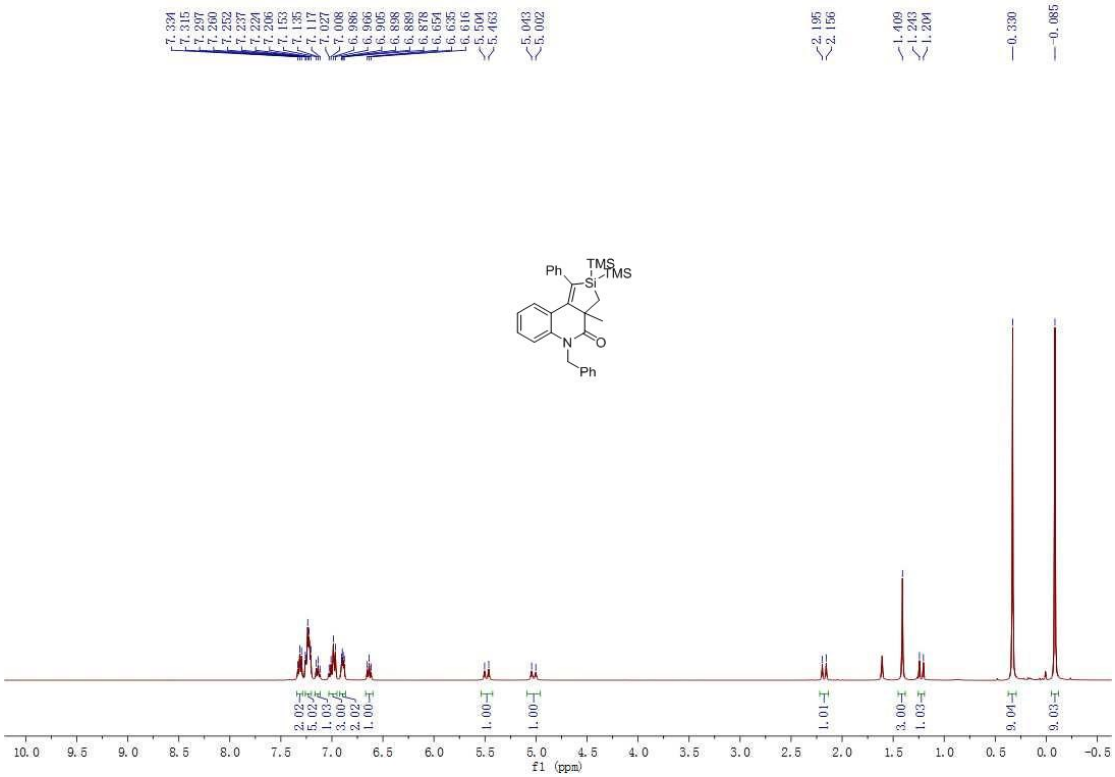


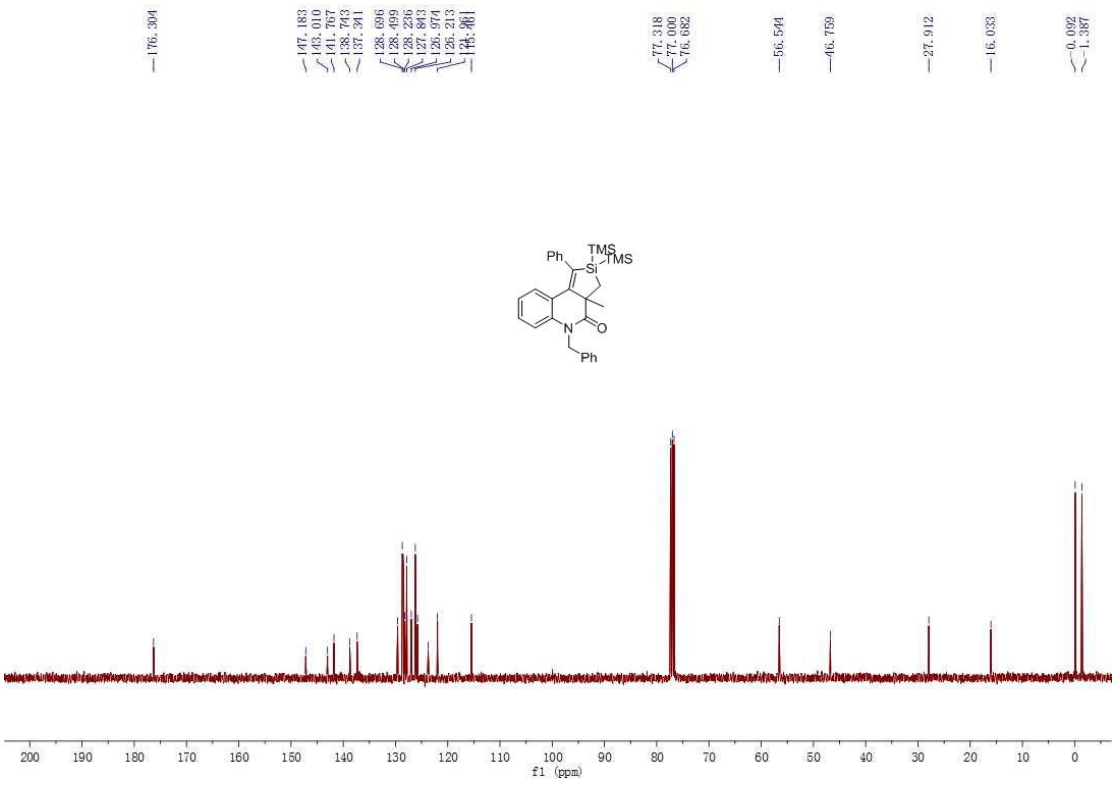
3a,5-dimethyl-1-phenyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5ag)



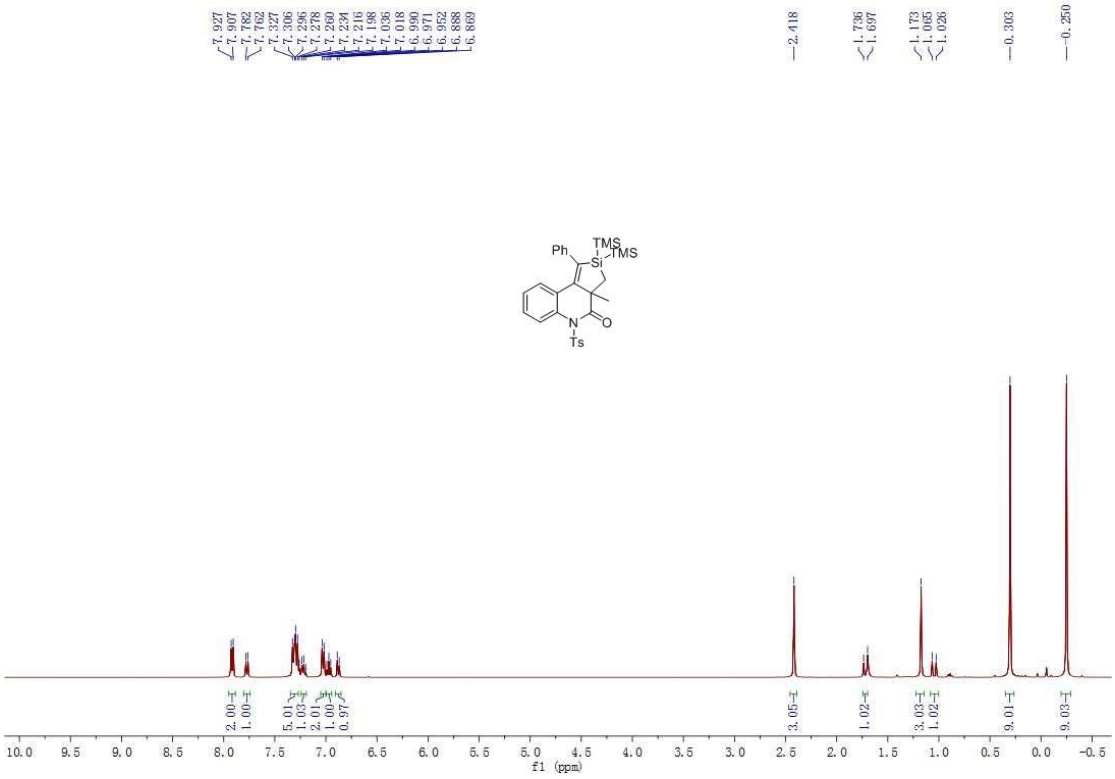


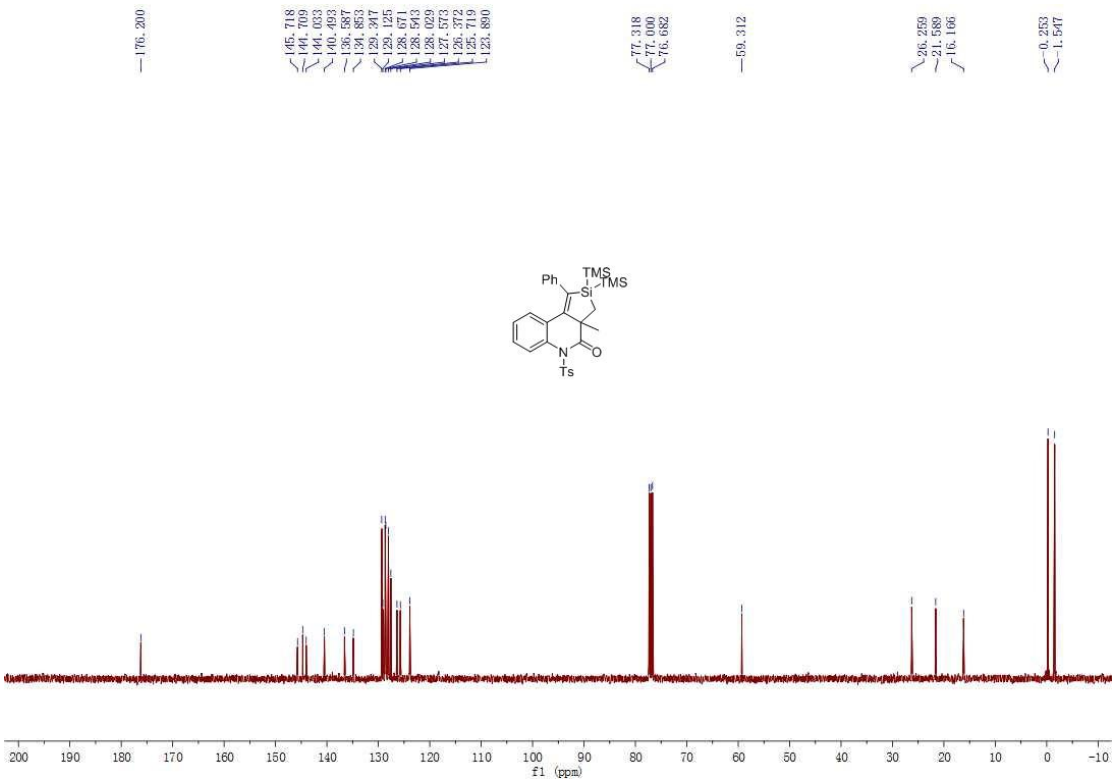
5-benzyl-3a-methyl-1-phenyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5bg)



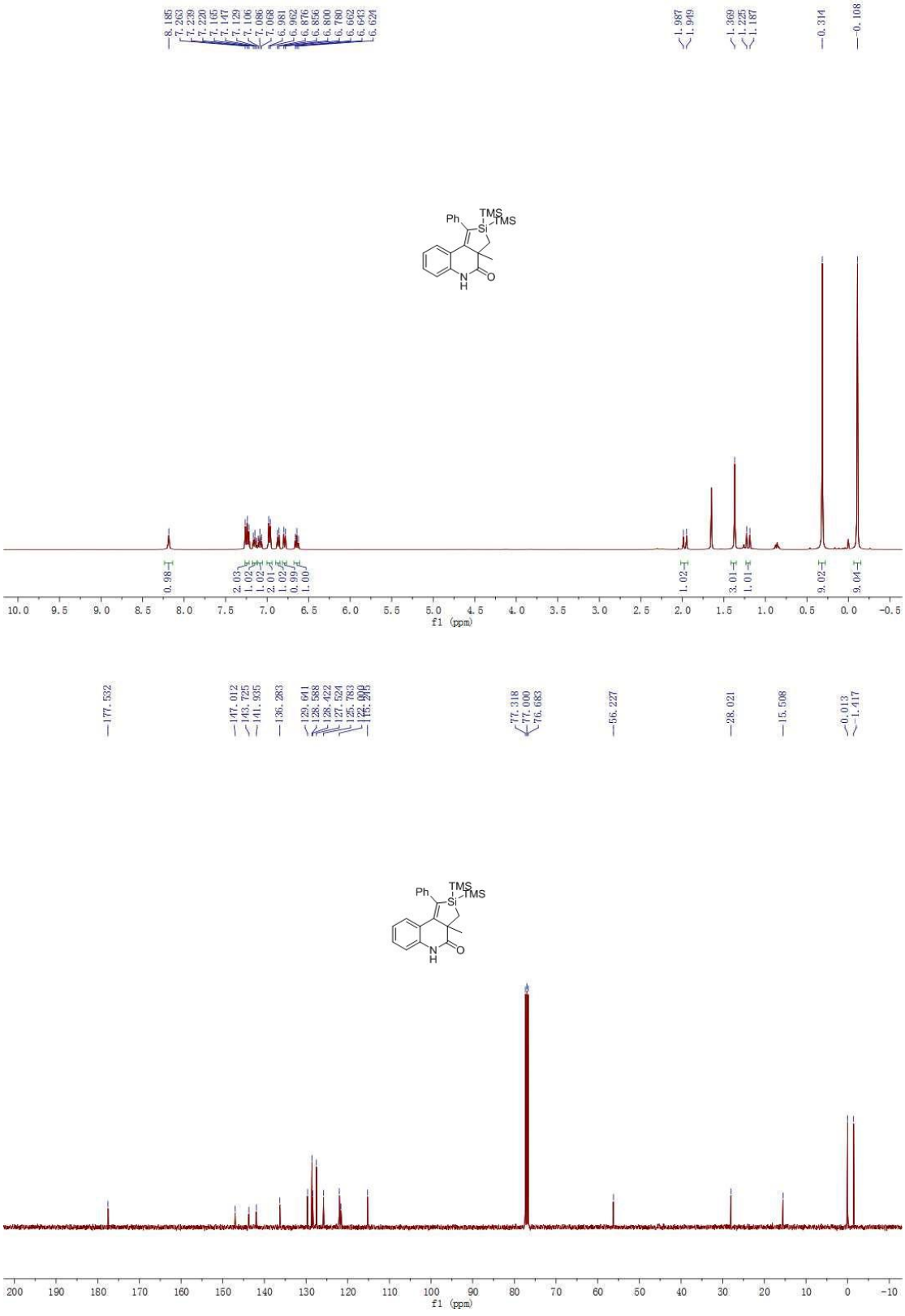


3a-methyl-1-phenyl-5-tosyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5dg)

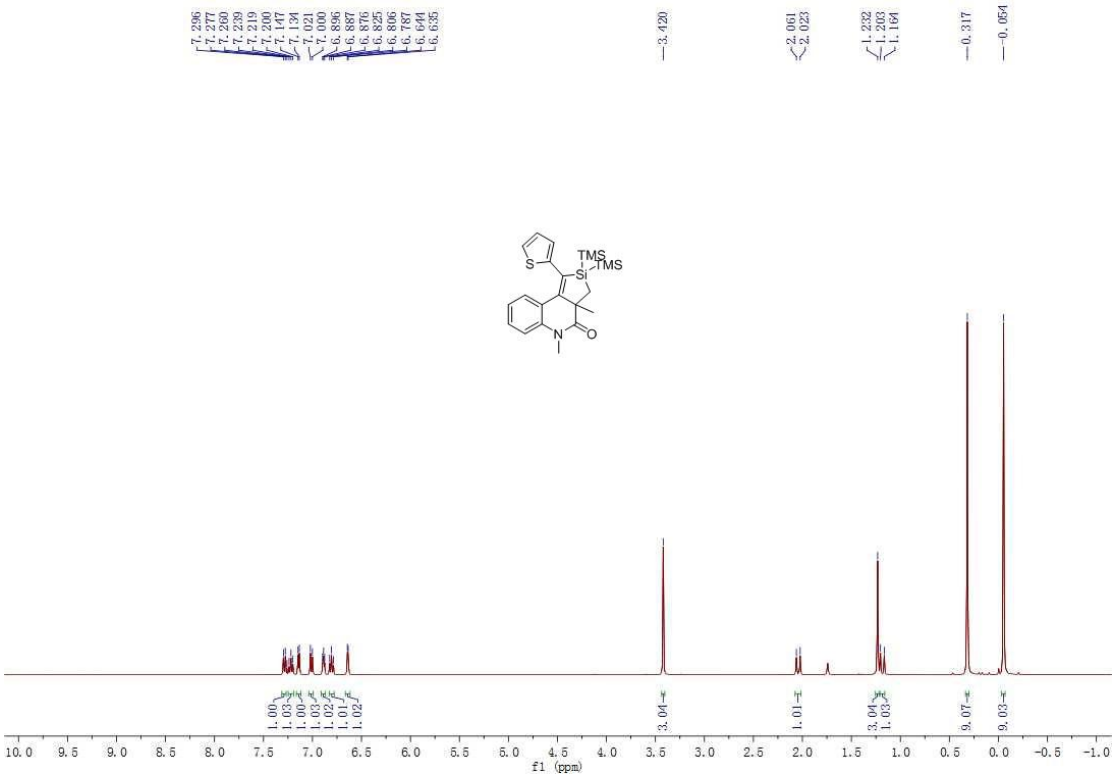


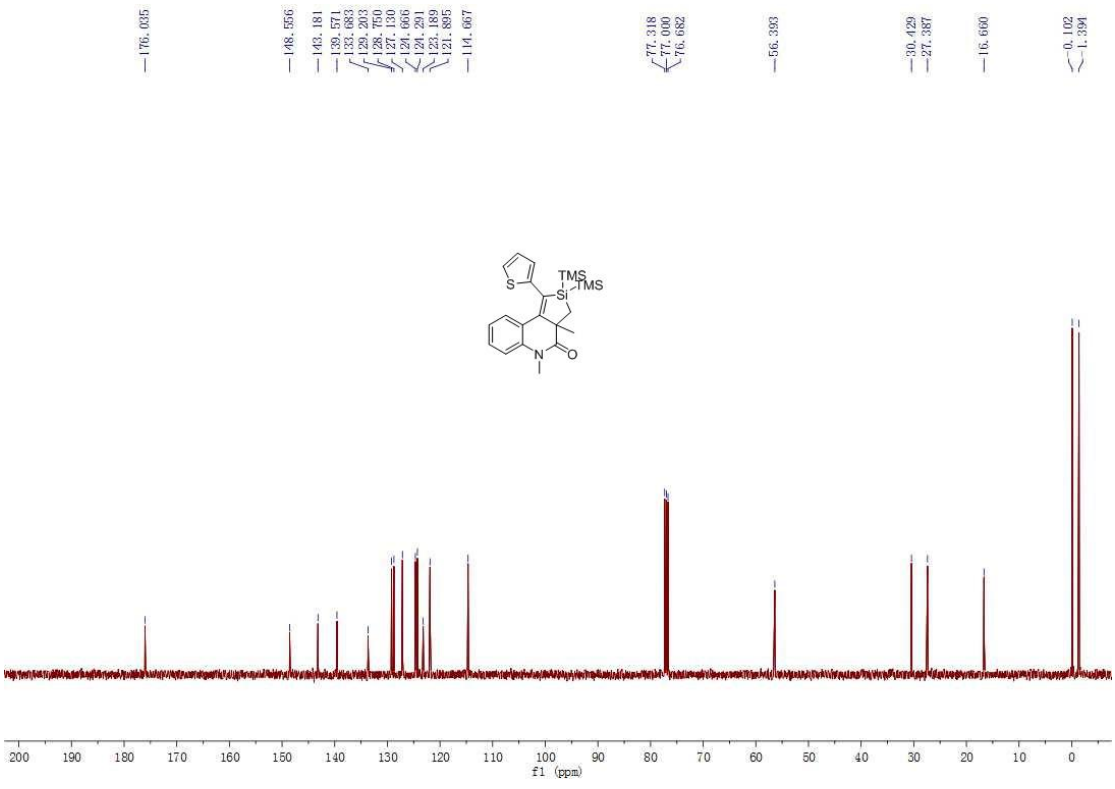


3a-methyl-1-phenyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5eg)

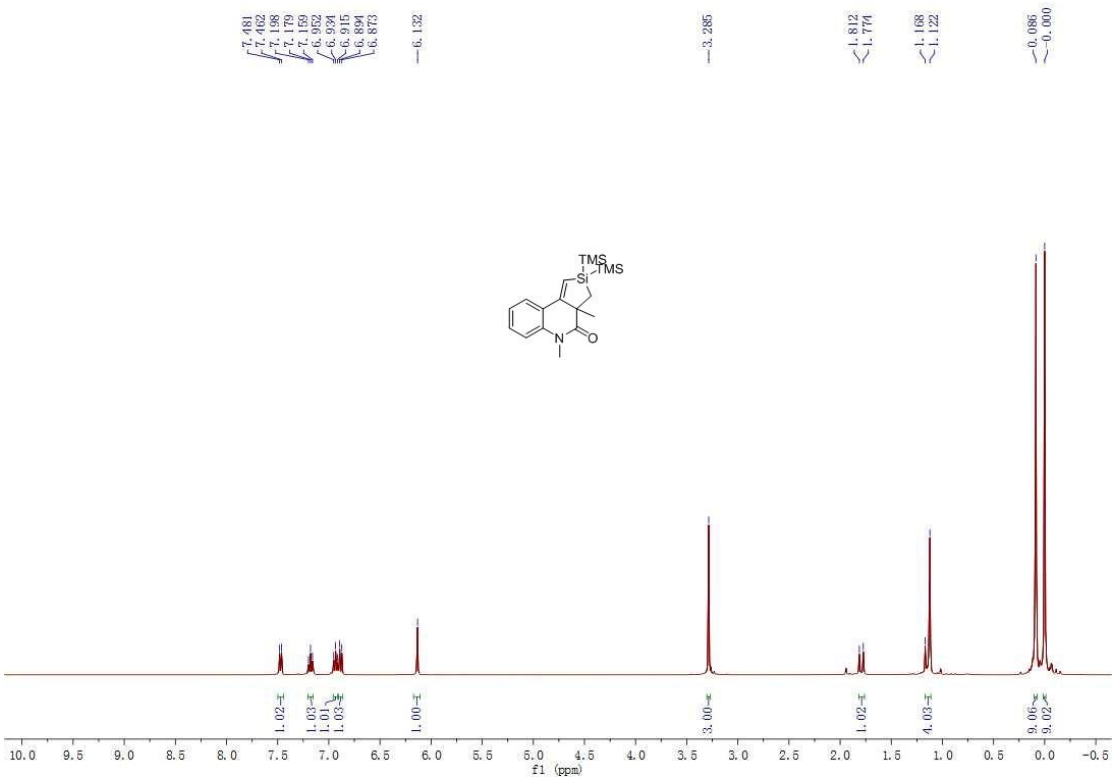


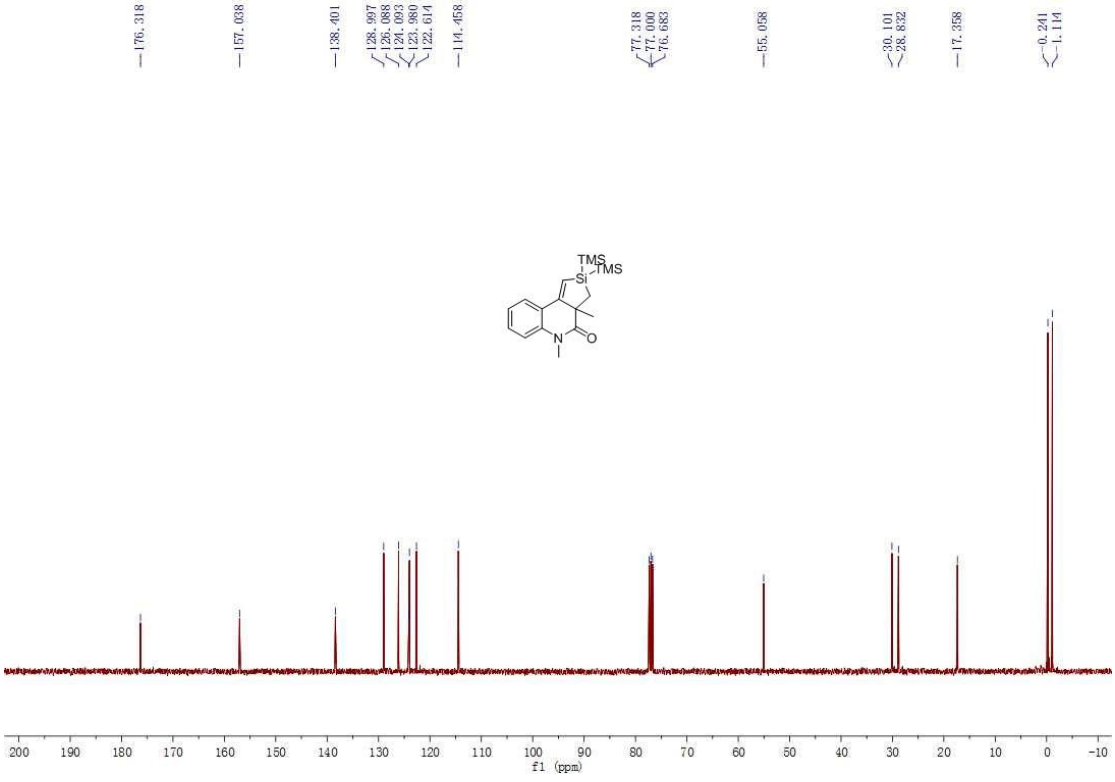
3a,5-dimethyl-1-(thiophen-2-yl)-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5mg)



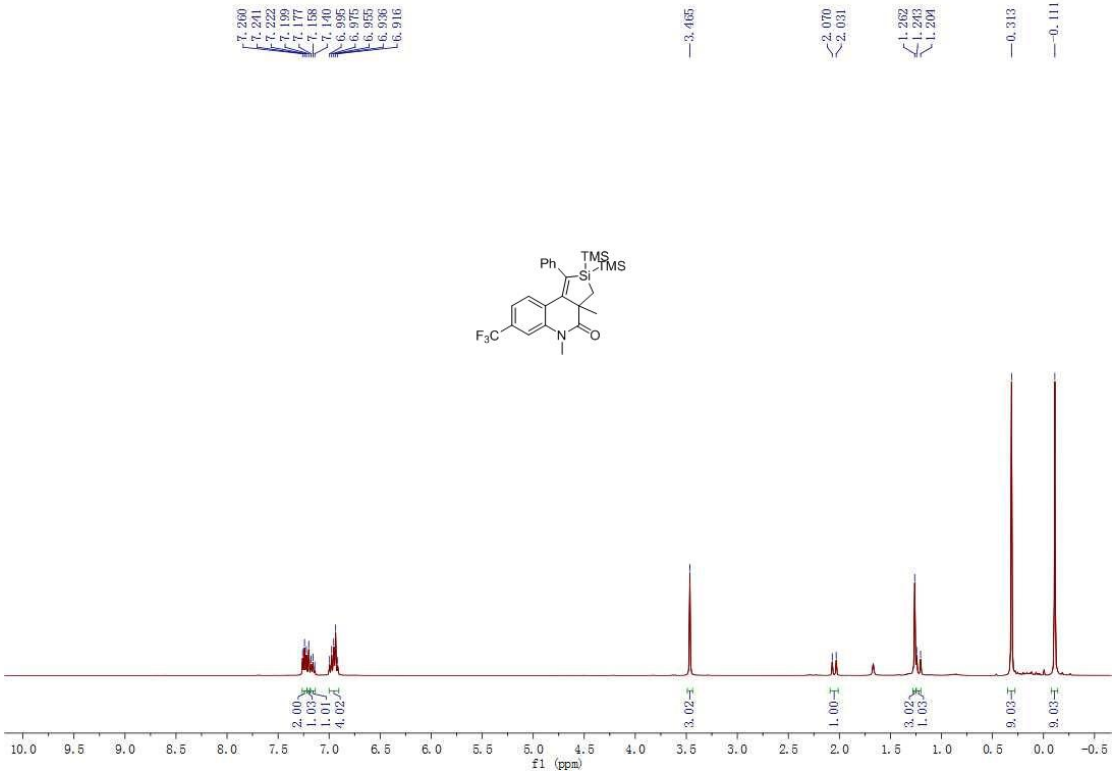


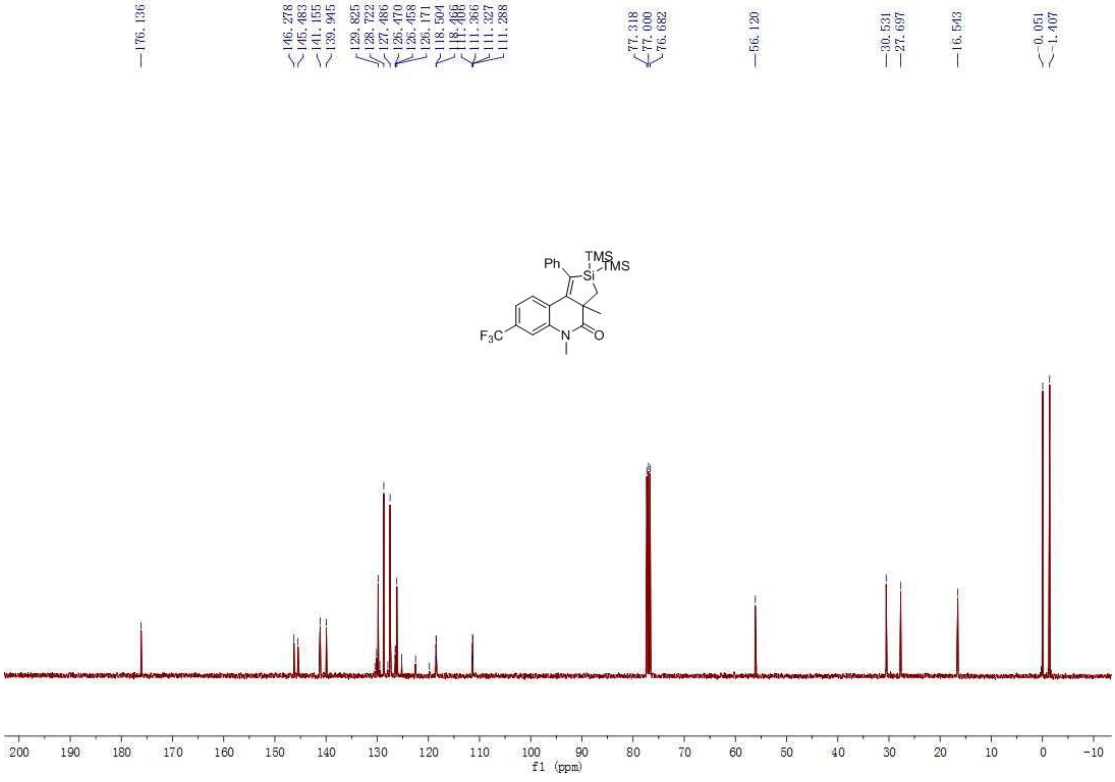
3a,5-dimethyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5og)

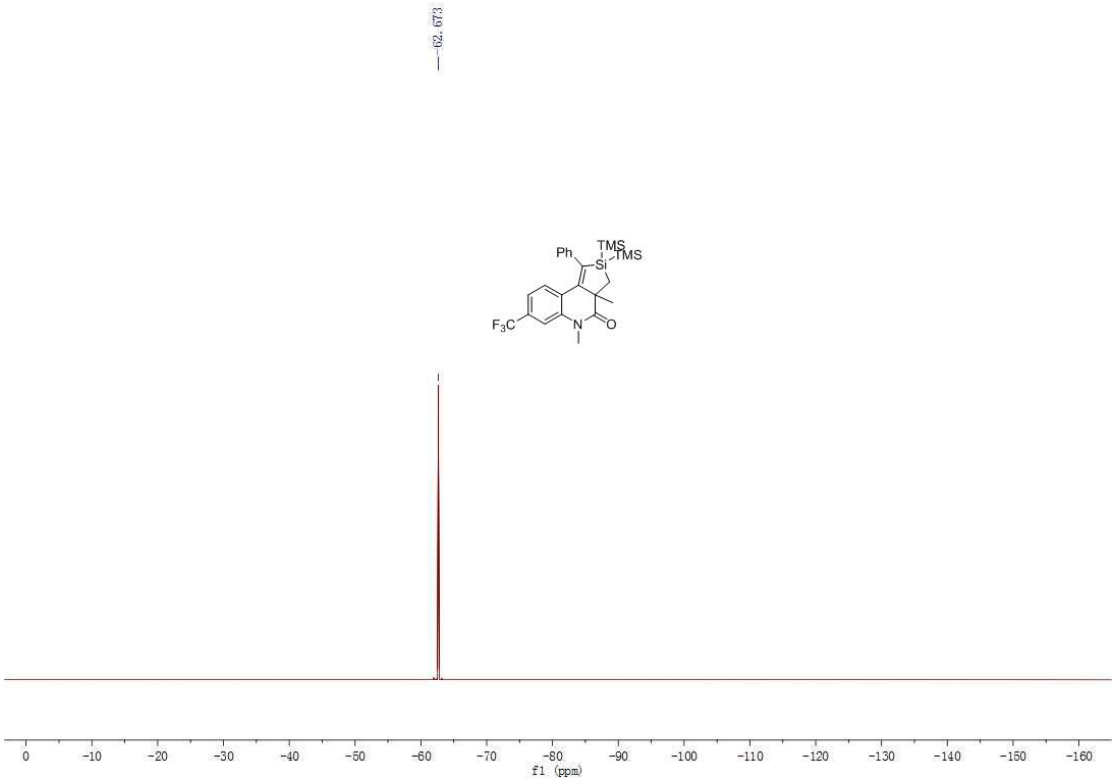




3a,5-dimethyl-1-phenyl-7-(trifluoromethyl)-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5pg)



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TMS
Si
TMS
F3C
N
O
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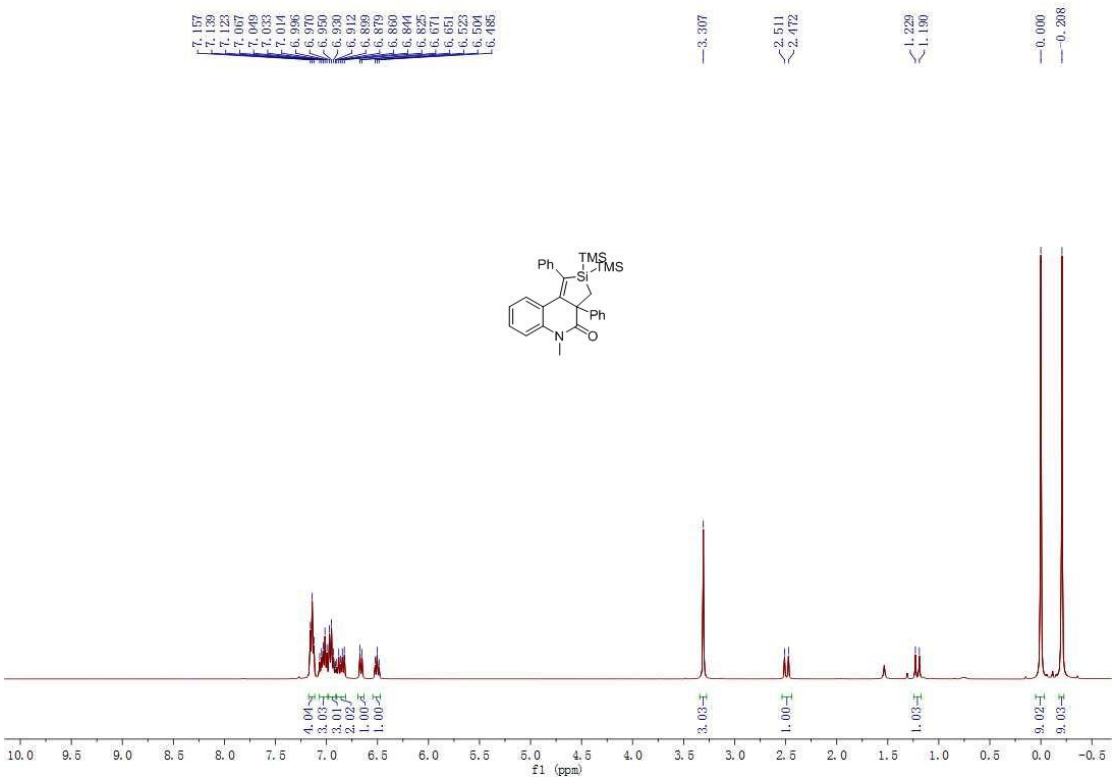
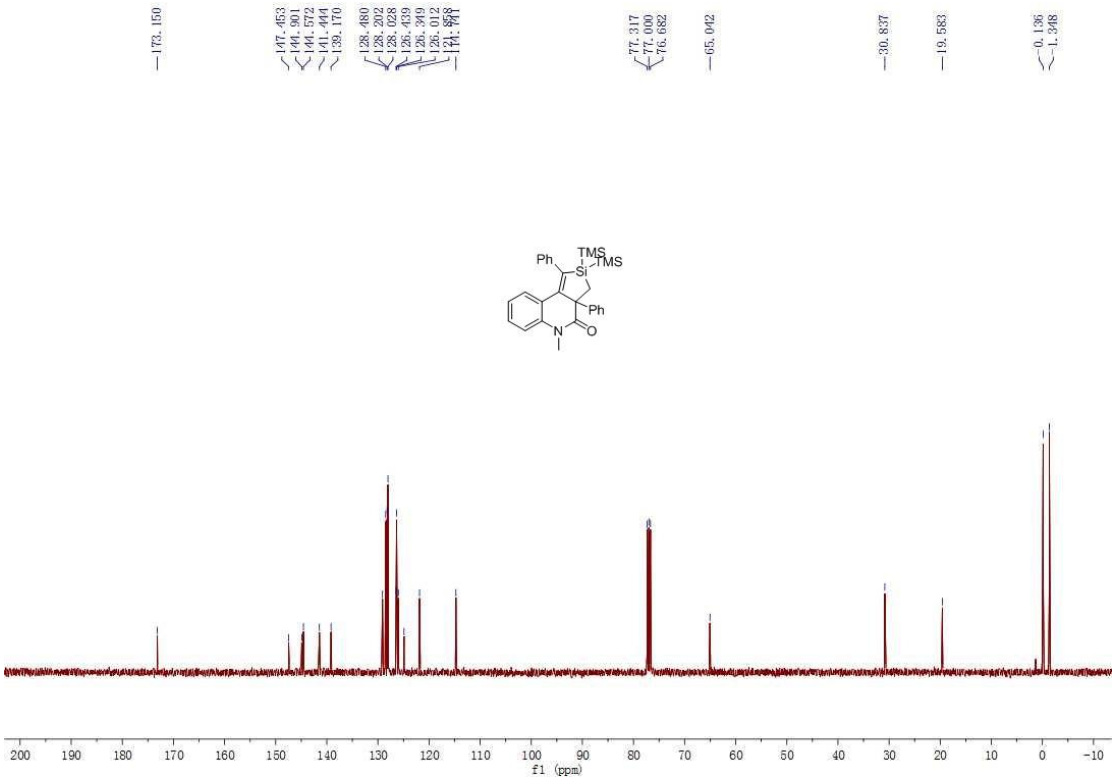
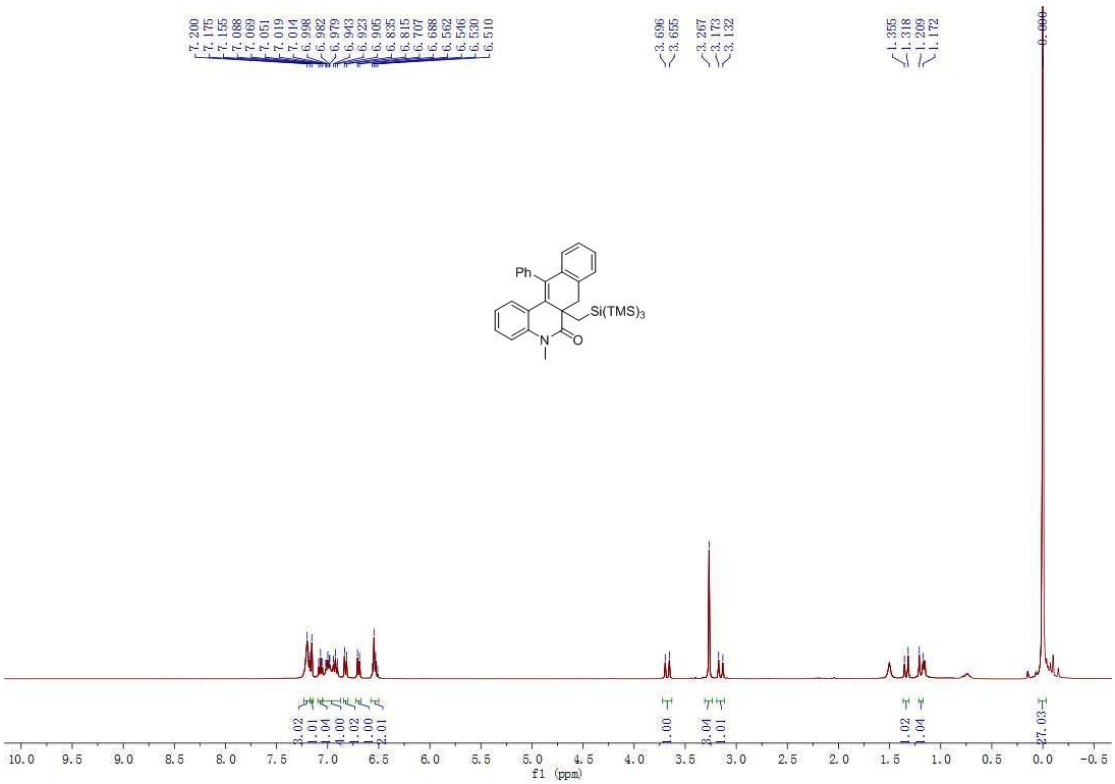
−10
−20
−30
−40
−50
−60
−70
−80
−90
−100
−110
−120
−130
−140
−150
−160
f1 (ppm)

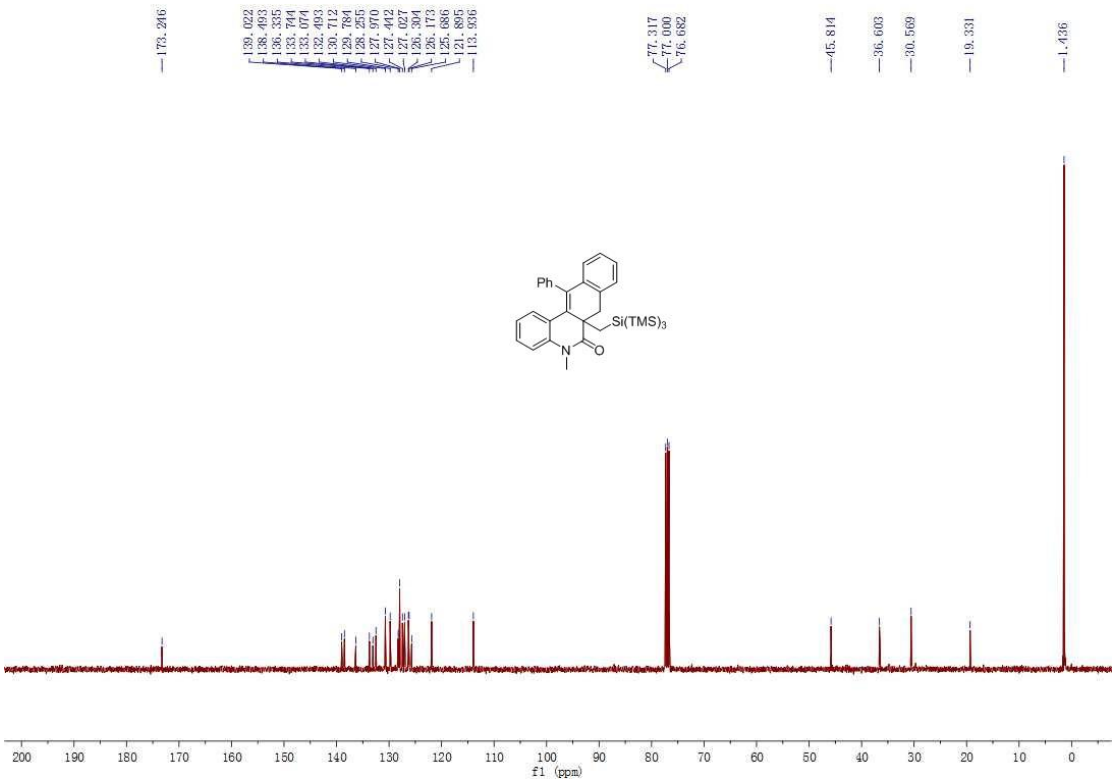
5-methyl-1,3a-diphenyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5sg)



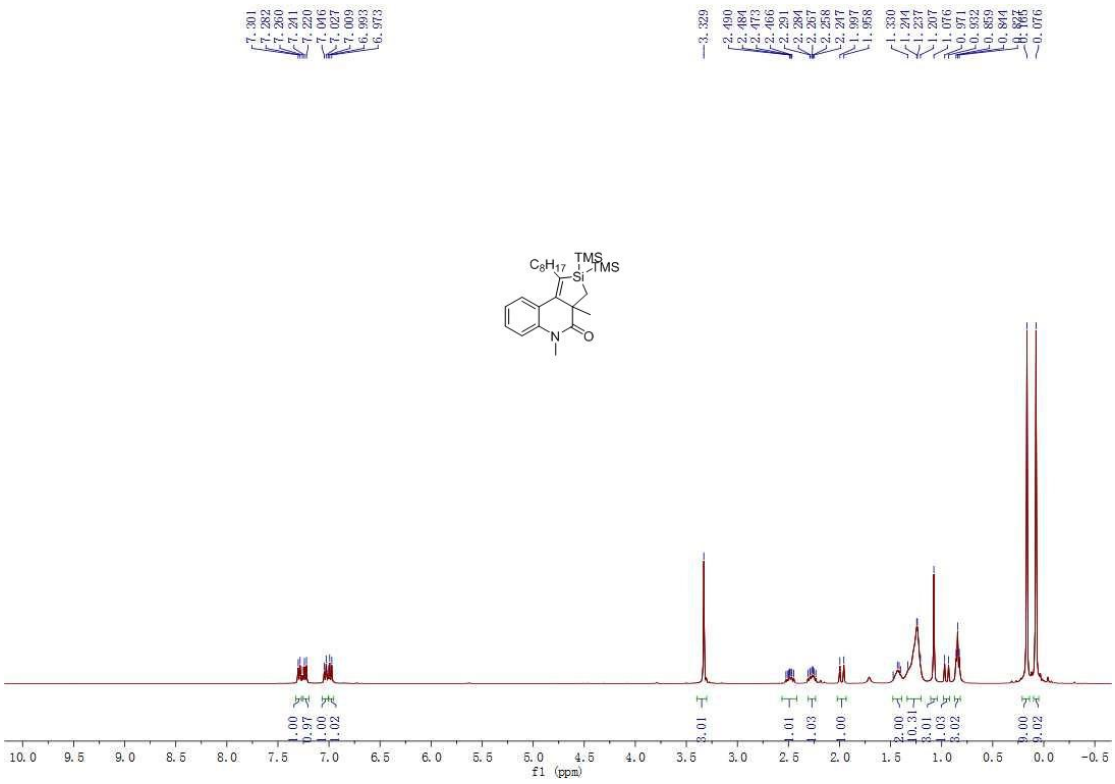


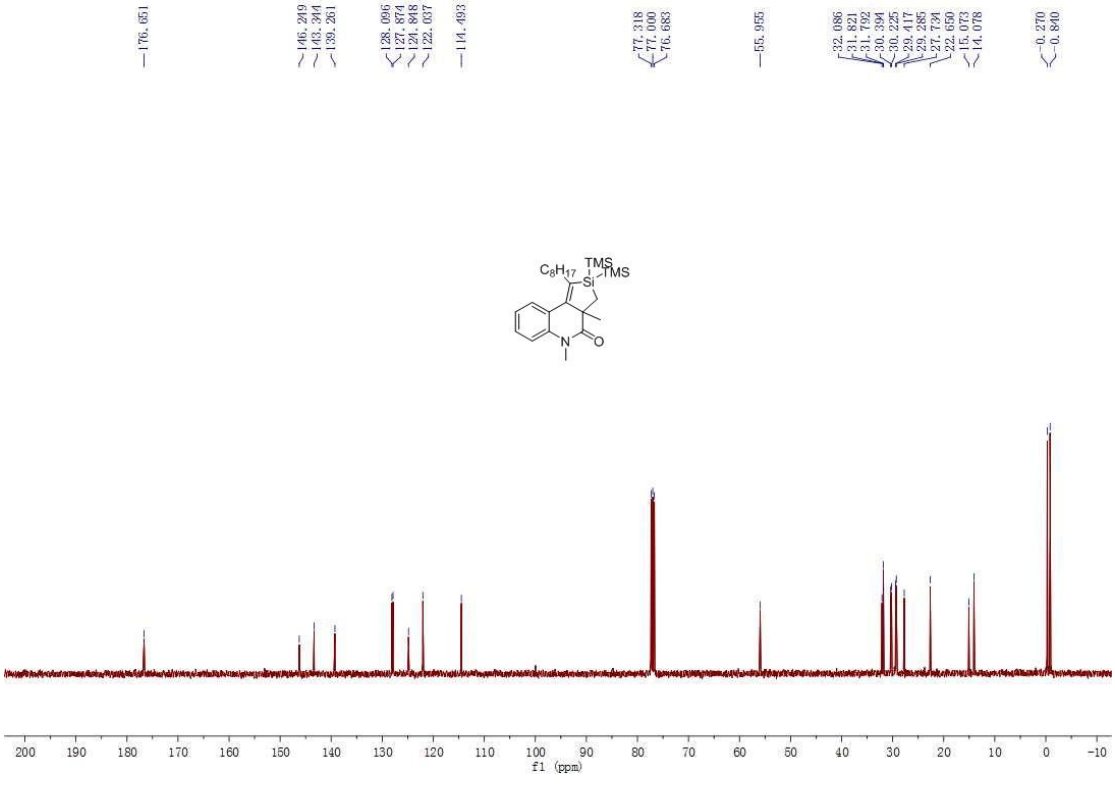
6a-((1,1,1,3,3,3-hexamethyl-2-(trimethylsilyl)trisilan-2-yl)methyl)-5-methyl-12-phenyl-6a,7-dihydrobenzo[j]phenanthridin-6(5*H*)-one (4tg)



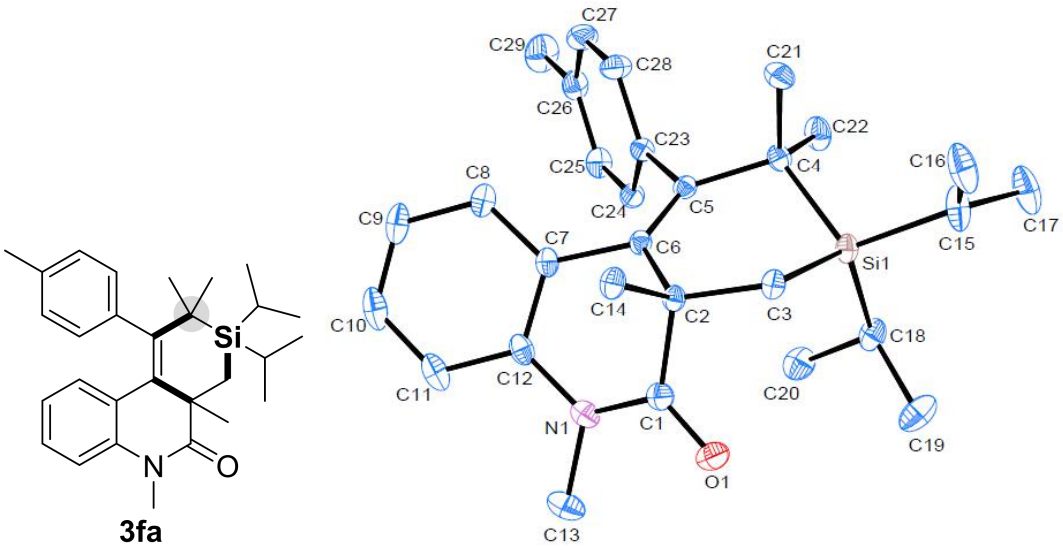


3a,5-dimethyl-1-octyl-2,2-bis(trimethylsilyl)-2,3,3a,5-tetrahydro-4*H*-silolo[3,4-c]quinolin-4-one (5ug)





(D) The X-ray Single-Crystal Diffraction Analysis of 3fa, 5ag, and 5sg



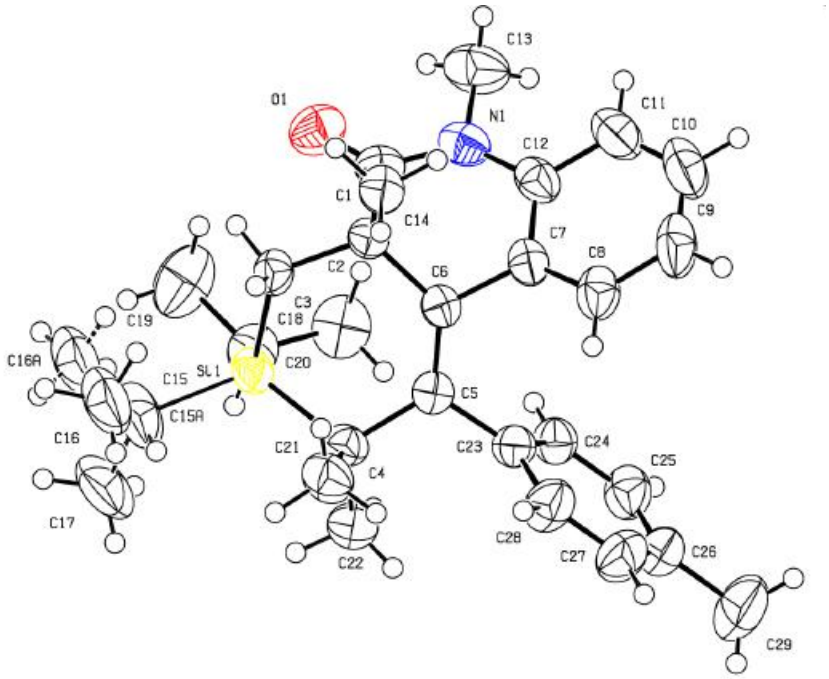
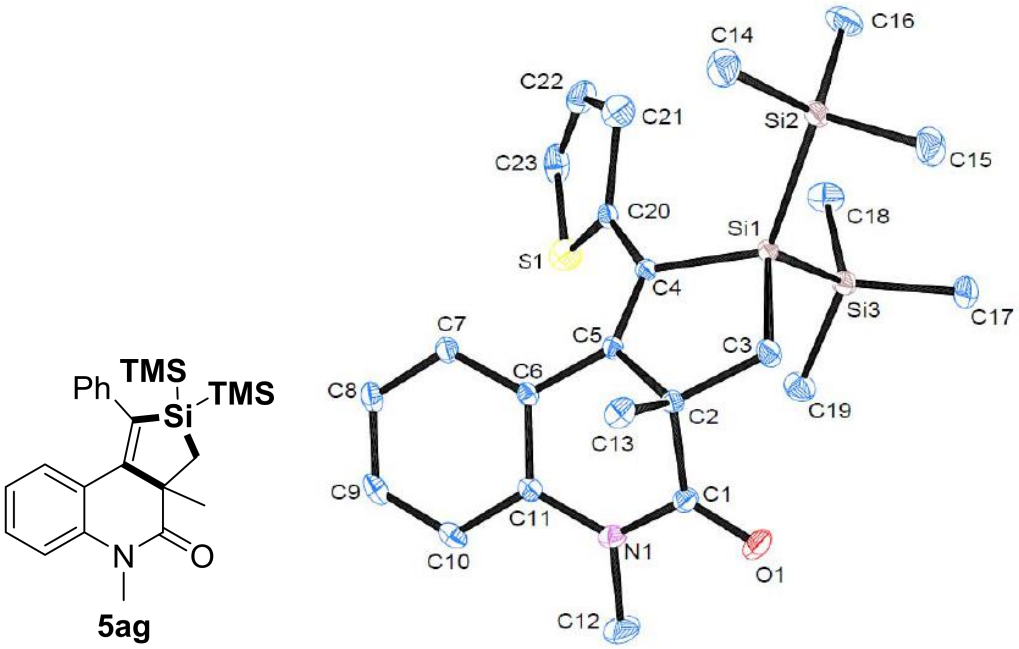


Table S2. Crystal data and structure refinement for ljh052.

Identification code	ljh052
Empirical formula	C29 H39 N O Si
Formula weight	445.70
Temperature	296(2) K
Wavelength	0.71073 A
Crystal system, space group	Triclinic, P-1
Unit cell dimensions	a = 10.342(12) A alpha = 112.290(6) deg.

	b = 10.946(6) A beta = 104.243(8) deg.
	c = 13.488(7) A gamma = 97.077(9) deg.
Volume	1328.9(18) Aˆ3
Z, Calculated density	2, 1.114 Mg/mˆ3
Absorption coefficient	0.108 mmˆ-1
F(000)	484
Crystal size	0.20 x 0.19 x 0.15 mm
Theta range for data collection	2.25 to 27.98 deg.
Limiting indices	-13<=h<=13, -14<=k<=14, -16<=l<=17
Reflections collected / unique	16176 / 6232 [R(int) = 0.0606]
Completeness to theta = 27.98	97.0 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.9839 and 0.9787
Refinement method	Full-matrix least-squares on Fˆ2
Data / restraints / parameters	6232 / 0 / 300
Goodness-of-fit on Fˆ2	1.036
Final R indices [I>2sigma(I)]	R1 = 0.0610, wR2 = 0.1592
R indices (all data)	R1 = 0.0876, wR2 = 0.1819
Largest diff. peak and hole	0.303 and -0.375 e.Aˆ-3



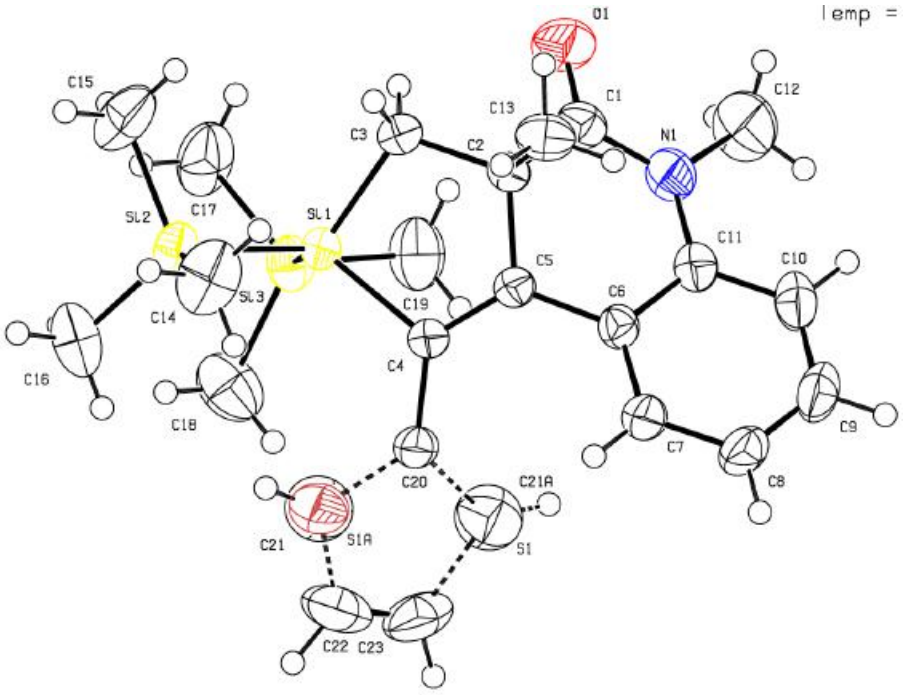
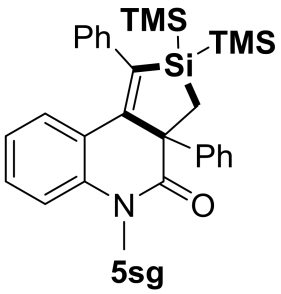


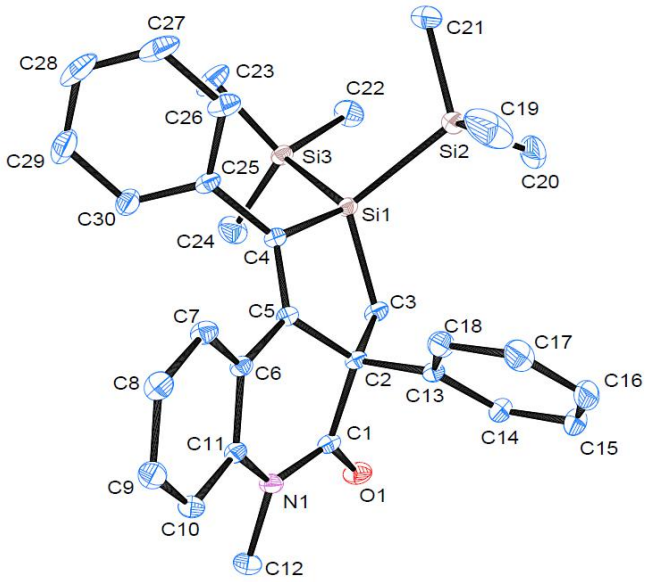
Table S3. Crystal data and structure refinement for ljh046.

Identification code	ljh046
Empirical formula	C23 H33 N O S Si3
Formula weight	455.83
Temperature	296(2) K
Wavelength	0.71073 A
Crystal system, space group	Monoclinic, P2(1)/c
Unit cell dimensions	a = 15.2467(12) A alpha = 90 deg.
	b = 12.7713(10) A beta =

111.9210(10) deg.

	c = 14.1931(11) A gamma = 90 deg.
Volume	2563.9(3) Aˆ3
Z, Calculated density	4, 1.181 Mg/mˆ3
Absorption coefficient	0.281 mmˆ-1
F(000)	976
Crystal size	0.24 x 0.23 x 0.20 mm
Theta range for data collection	1.44 to 27.63 deg.
Limiting indices	-19<=h<=19, -16<=k<=12, -16<=l<=18
Reflections collected / unique	15319 / 5887 [R(int) = 0.0173]
Completeness to theta = 27.63	98.7 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.9460 and 0.9357
Refinement method	Full-matrix least-squares on Fˆ2
Data / restraints / parameters	5887 / 12 / 263
Goodness-of-fit on Fˆ2	1.053
Final R indices [I>2sigma(I)]	R1 = 0.0555, wR2 = 0.1431
R indices (all data)	R1 = 0.0650, wR2 = 0.1519
Largest diff. peak and hole	1.244 and -0.960 e.Aˆ-3





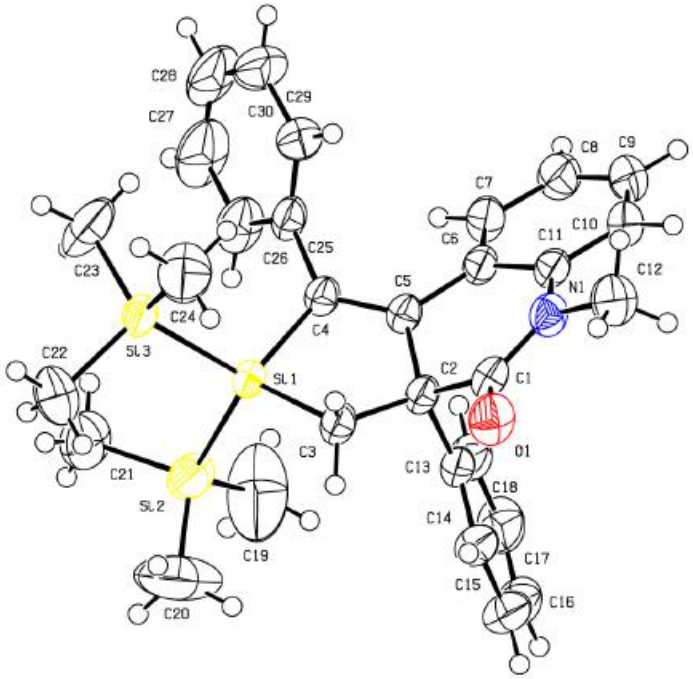


Table S4. Crystal data and structure refinement for 1jh047_0m.

Identification code	1jh047_0m
Empirical formula	C30 H37 N O Si3
Formula weight	511.88
Temperature	296(2) K
Wavelength	0.71073 A
Crystal system, space group	Triclinic, P-1
Unit cell dimensions	a = 10.4692(7) A alpha = 109.3200(10) deg.
	b = 11.8609(8) A beta =

90.0710(10) deg.

c = 12.6888(9) A gamma =

92.8340(10) deg.

Volume	1484.81(18) A^3
Z, Calculated density	2, 1.145 Mg/m^3
Absorption coefficient	0.182 mm^-1
F(000)	548
Crystal size	0.23 x 0.21 x 0.20 mm
Theta range for data collection	2.56 to 27.49 deg.
Limiting indices	-13<=h<=13, -15<=k<=15, -16<=l<=16
Reflections collected / unique	18340 / 6738 [R(int) = 0.0145]
Completeness to theta = 27.49	98.8 %
Absorption correction	Semi-empirical from equivalents
Max. and min. transmission	0.9645 and 0.9594
Refinement method	Full-matrix least-squares on F^2
Data / restraints / parameters	6738 / 24 / 323
Goodness-of-fit on F^2	1.039
Final R indices [I>2sigma(I)]	R1 = 0.0424, wR2 = 0.1141
R indices (all data)	R1 = 0.0501, wR2 = 0.1212
Largest diff. peak and hole	0.527 and -0.694 e.A^-3