

## *Supporting Information*

# **Cs<sub>2</sub>CO<sub>3</sub>–Initiated Trifluoromethylation of Chalcones and Ketones for Practical Synthesis of Trifluoromethylated Tertiary Silyl Ethers**

Cheng Dong, Xing-Feng Bai, Ji-Yuan Lv, Yu-Ming Cui, Jian Cao, Zhan-Jiang

Zheng\*, Li-Wen Xu\*

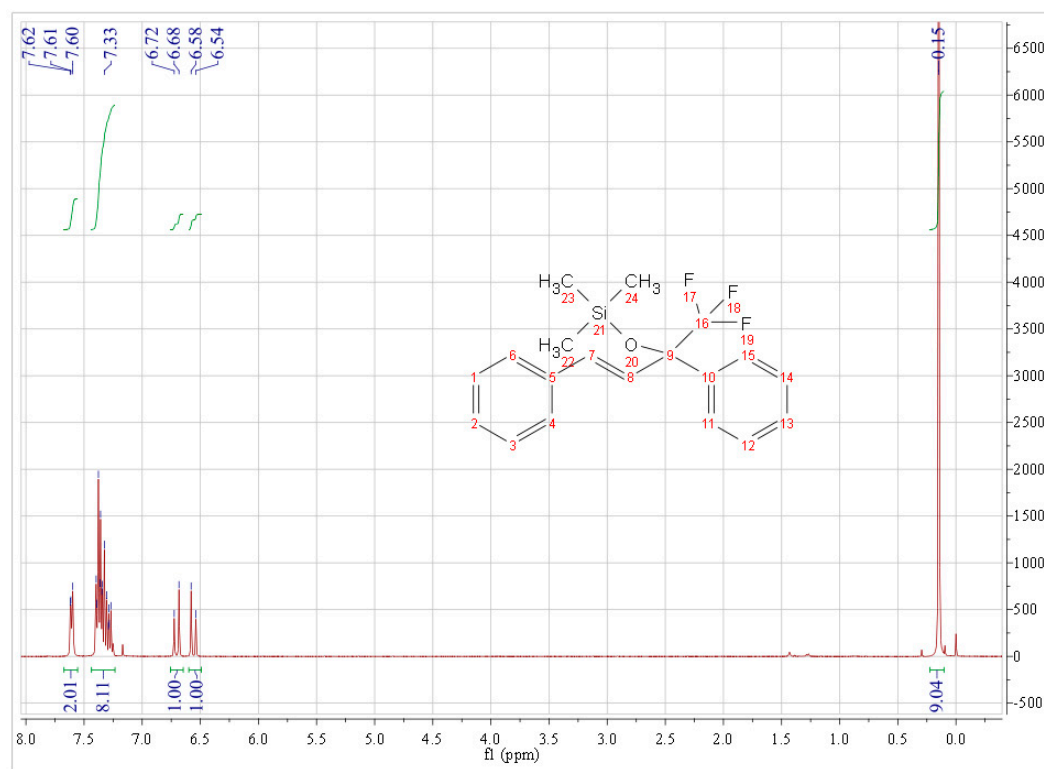
---

*Key Laboratory of Organosilicon Chemistry and Material Technology of Ministry of Education, Hangzhou Normal University, Hangzhou 311121, P. R. China. Fax: +86-571-28865135; Tel: +86-571-28865135; E-mail: zzjiang78@hznu.edu.cn, liwenxu@hznu.edu.cn.*

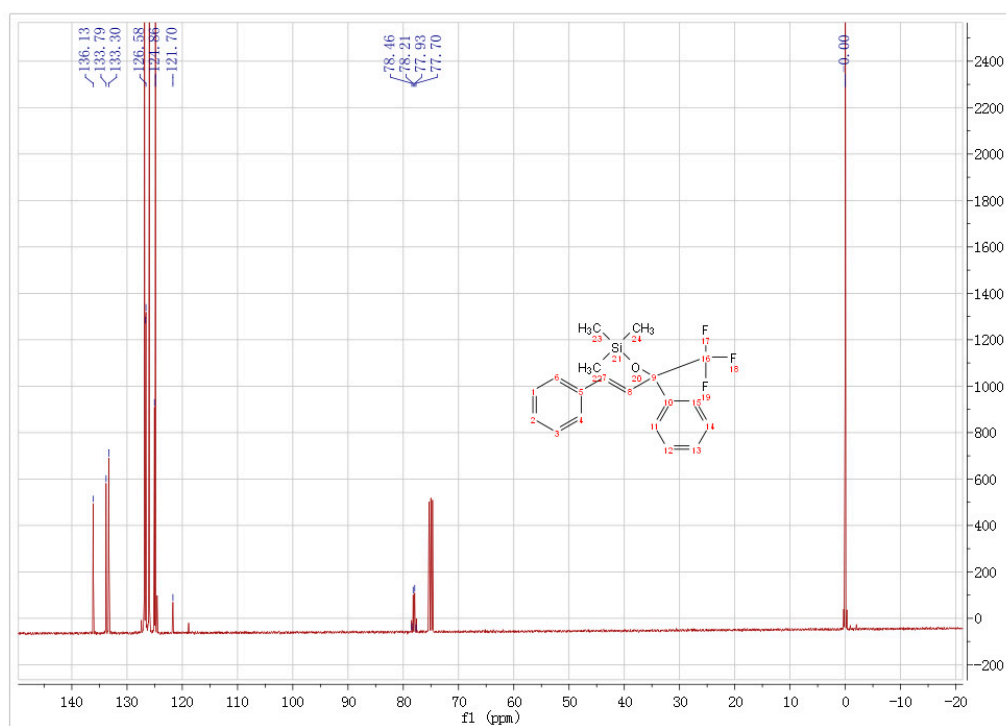
### **Table of Contents**

<sup>1</sup> H NMR and <sup>13</sup> C NMR spectra for compound 2a-2w.....	S2
<sup>1</sup> H NMR and <sup>13</sup> C NMR spectra for compound 5a-5k.....	S25

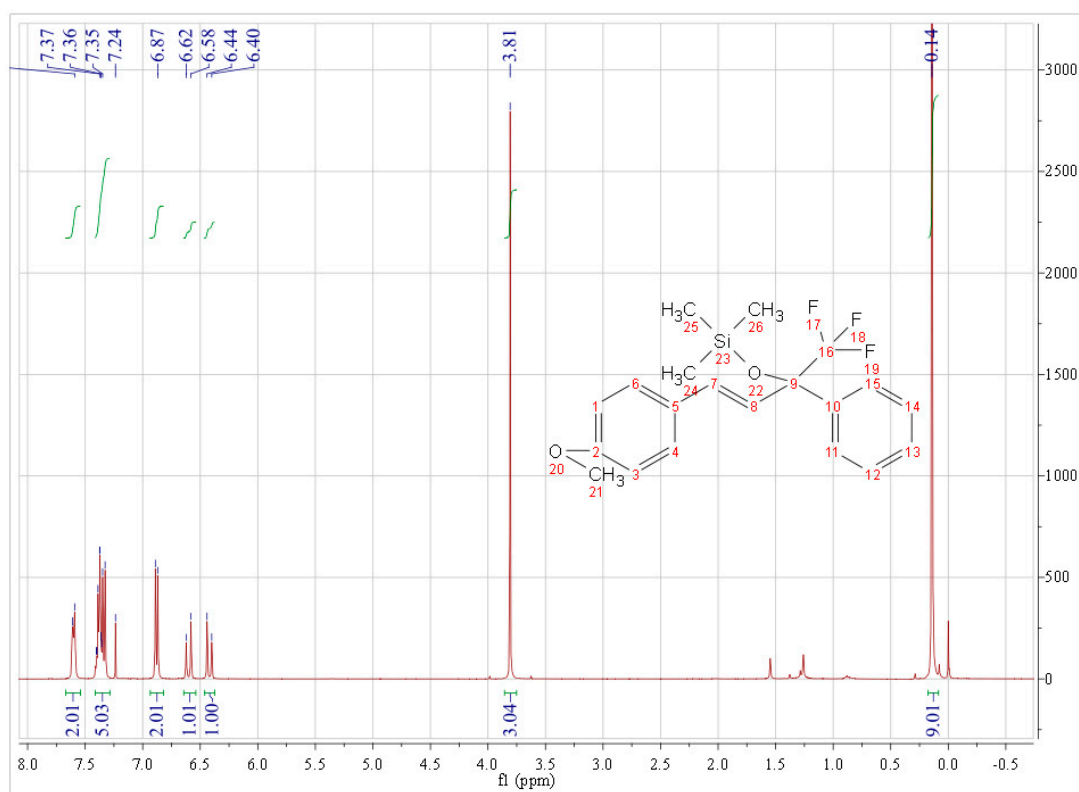
**Figure S1  $^1\text{H}$  NMR spectra for compound 2a**



**Figure S2  $^{13}\text{C}$  NMR spectra for compound 2a**



**Figure S3  $^1\text{H}$  NMR spectra for compound 2b**



**Figure S4  $^{13}\text{C}$  NMR spectra for compound 2b**

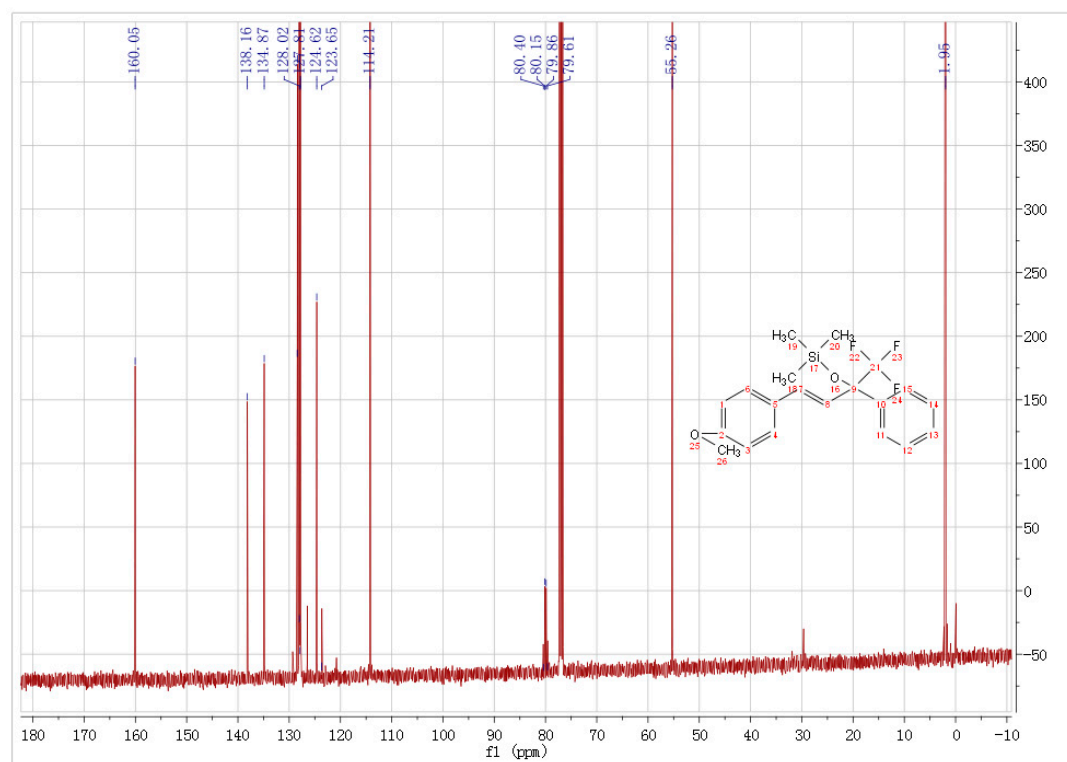


Figure S5  $^1\text{H}$  NMR spectra for compound 2c

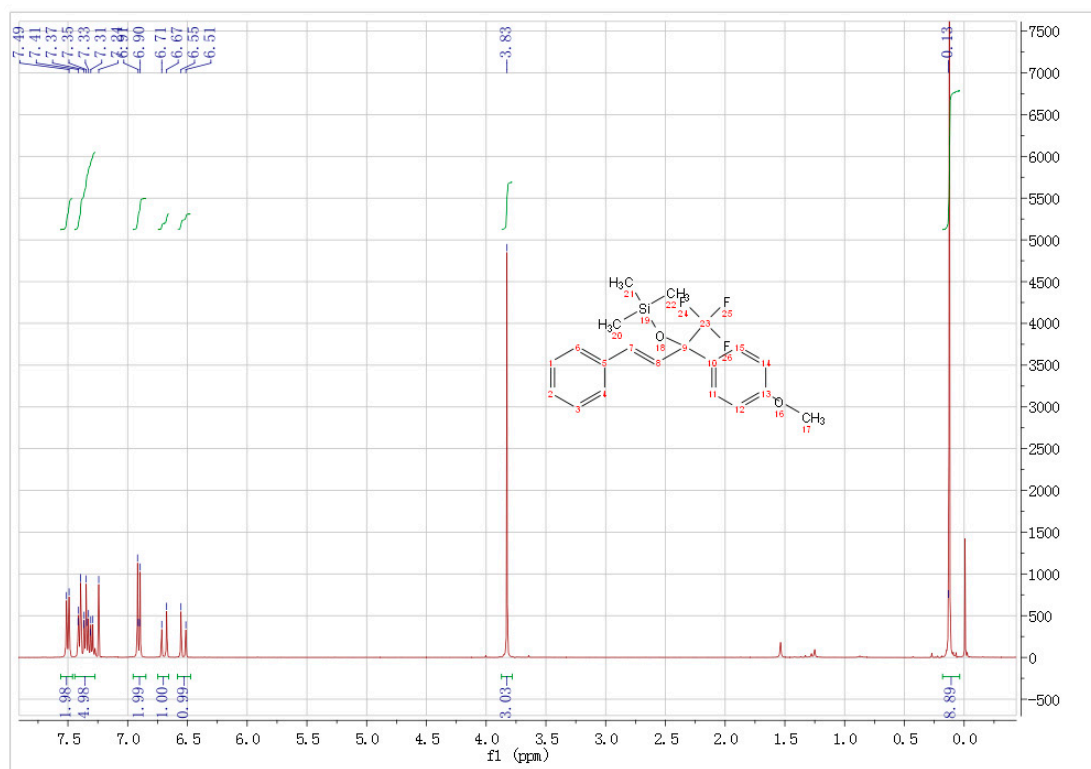
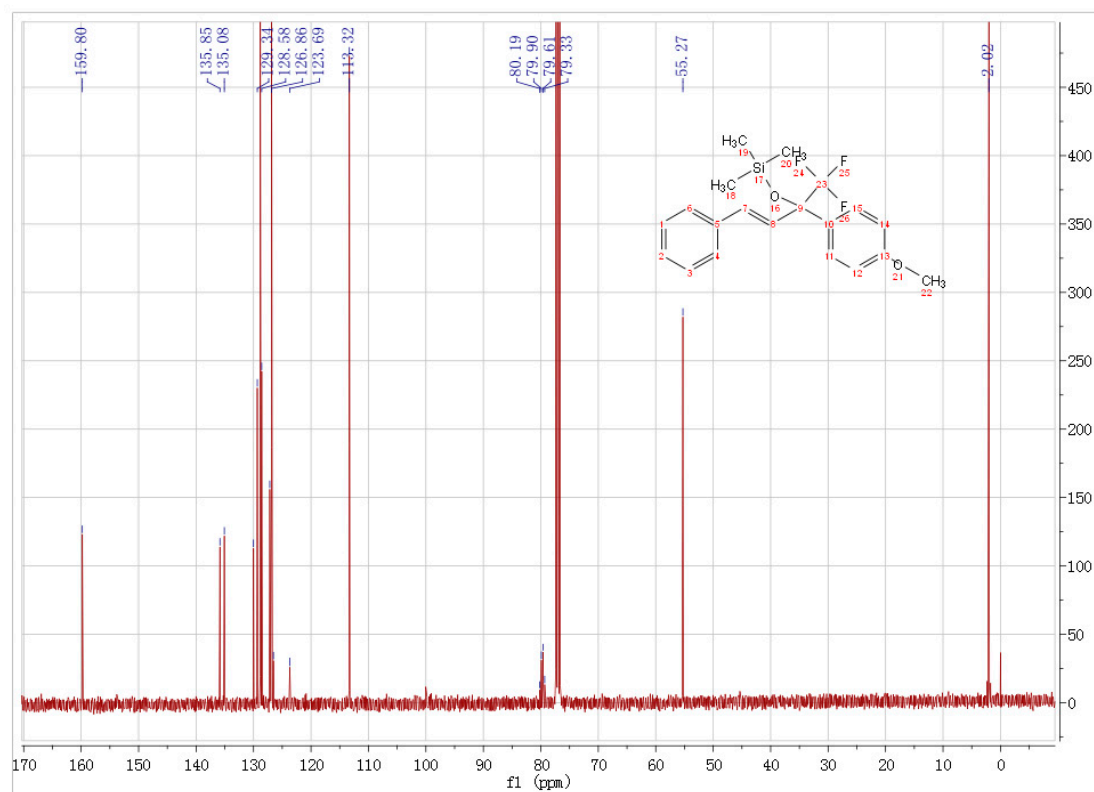
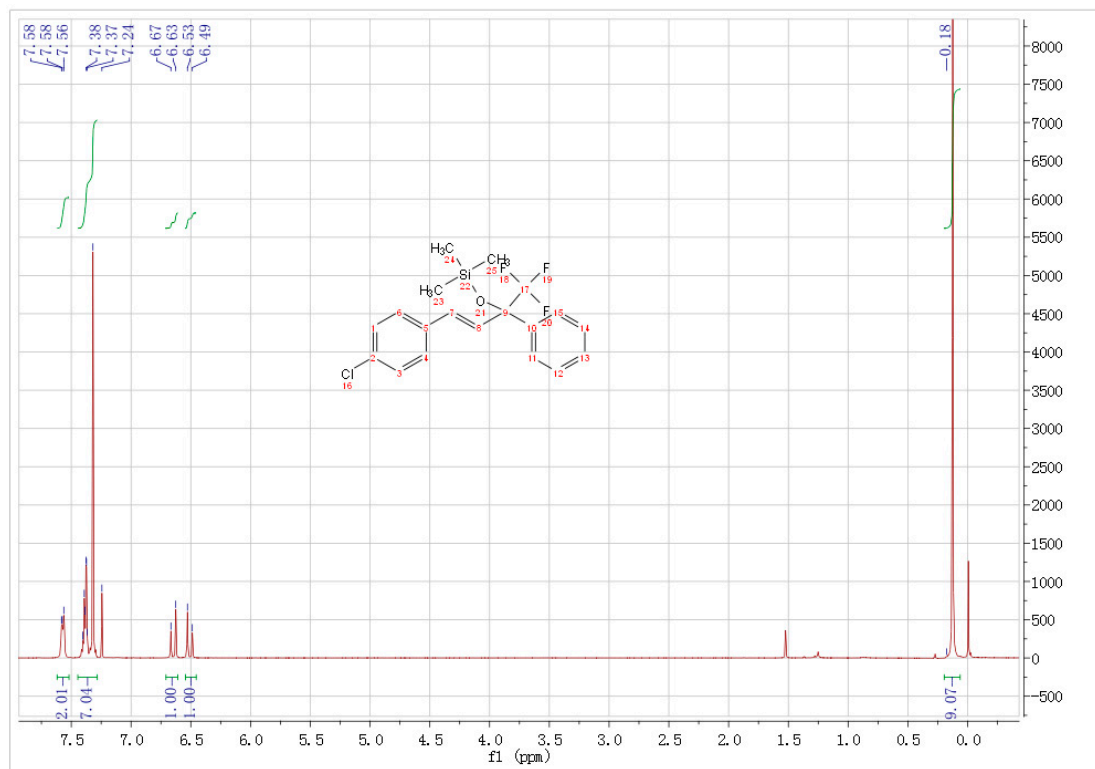


Figure S6  $^{13}\text{C}$  NMR spectra for compound 2c





**Figure S7  $^1\text{H}$  NMR spectra for compound 2d**



**Figure S8  $^{13}\text{C}$  NMR spectra for compound 2d**

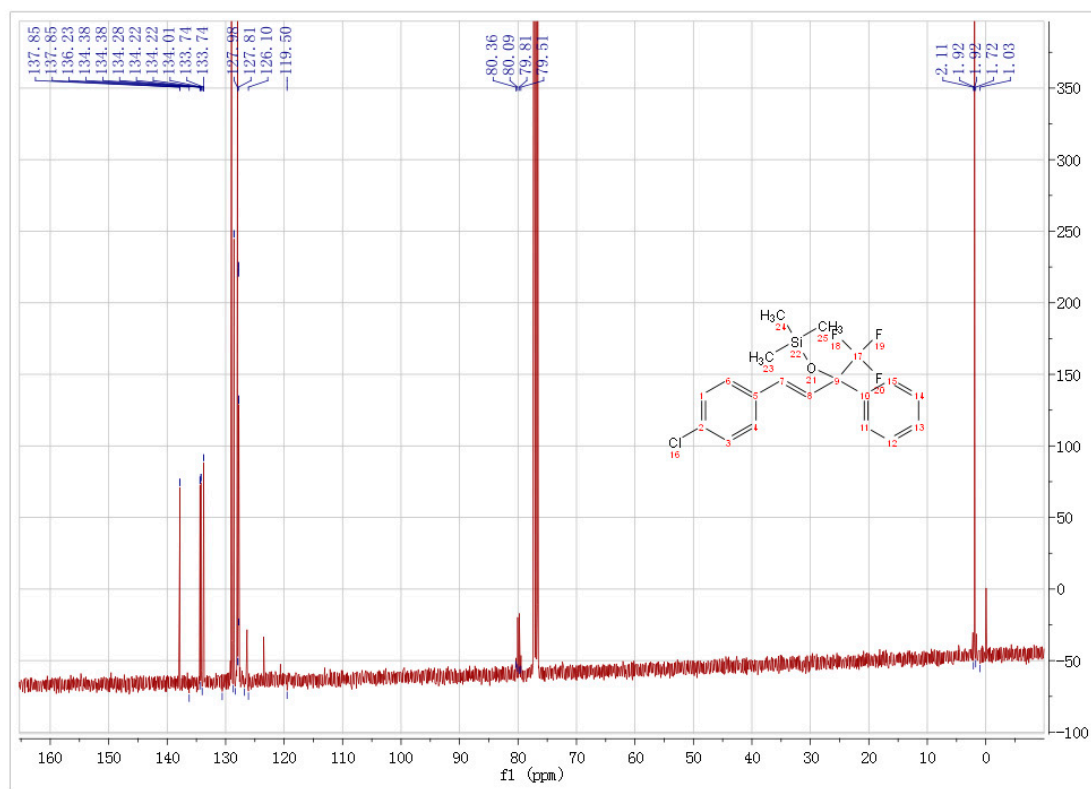


Figure S9  $^1\text{H}$  NMR spectra for compound 2e

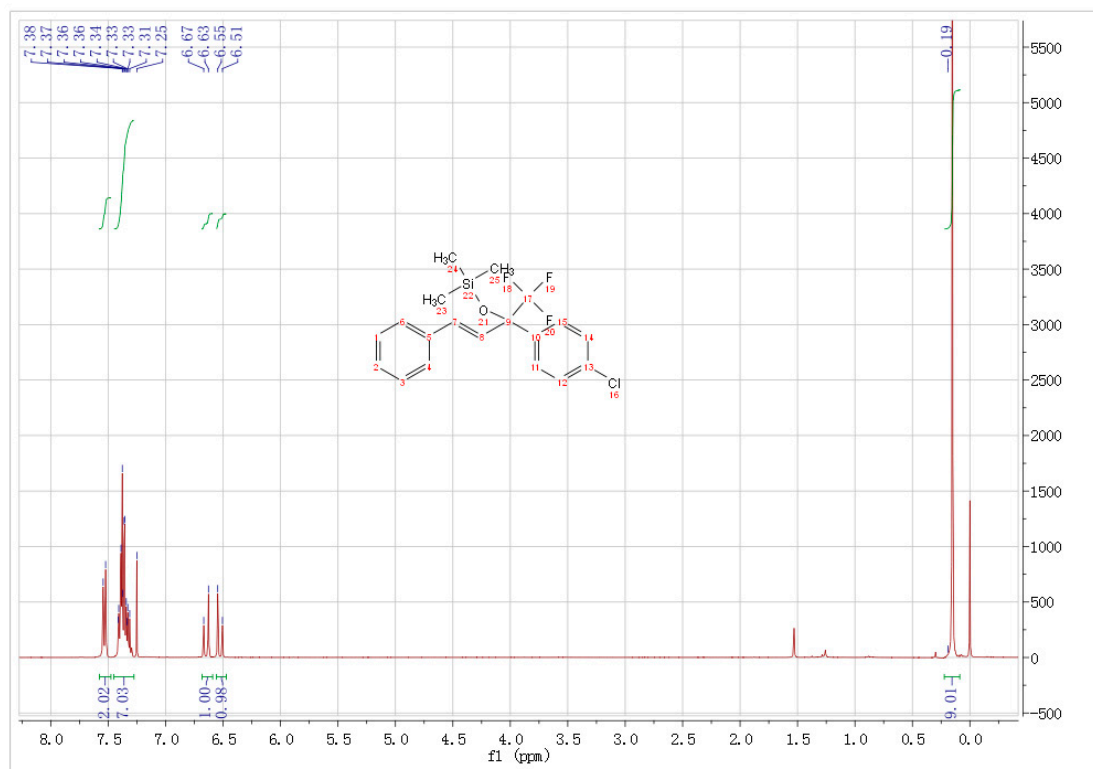


Figure S10  $^{13}\text{C}$  NMR spectra for compound 2e

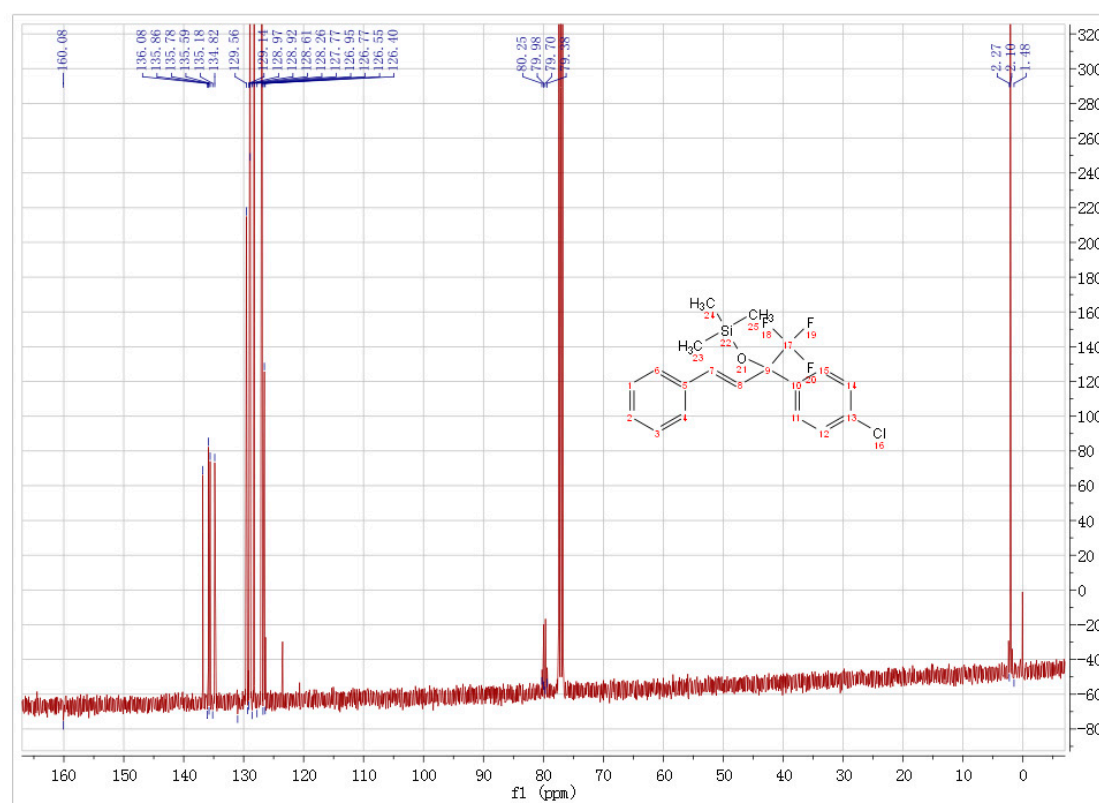


Figure S11  $^1\text{H}$  NMR spectra for compound 2f

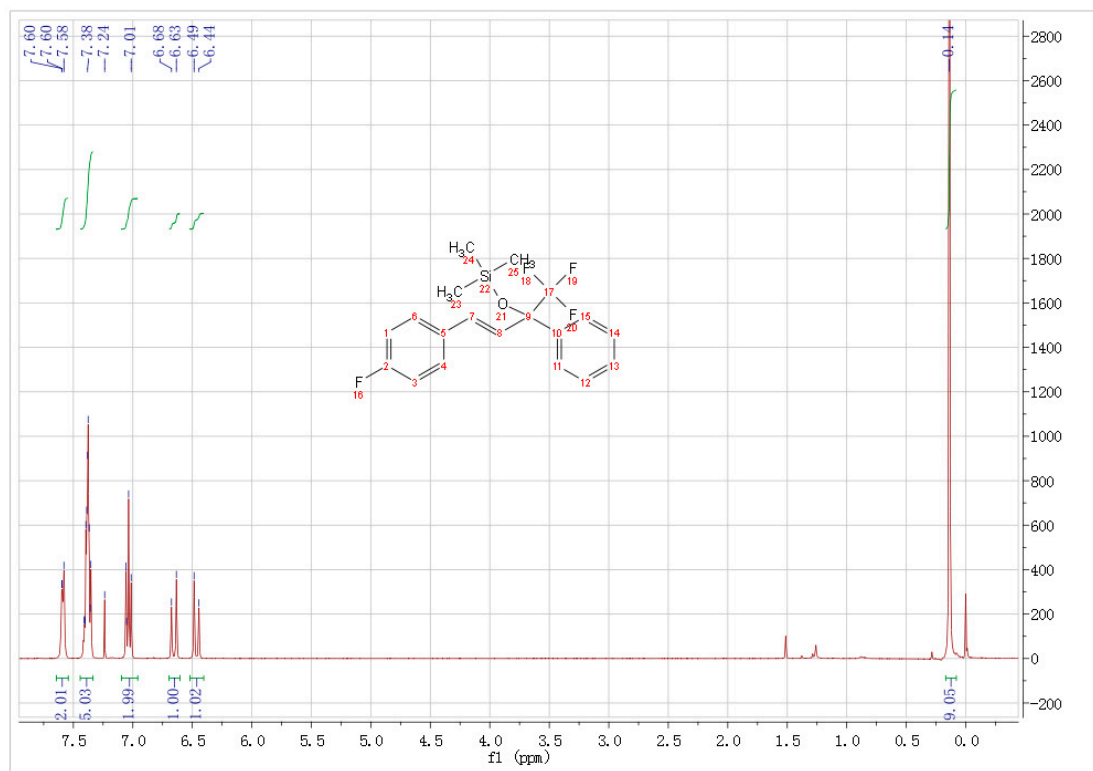


Figure S12  $^{13}\text{C}$  NMR spectra for compound 2f

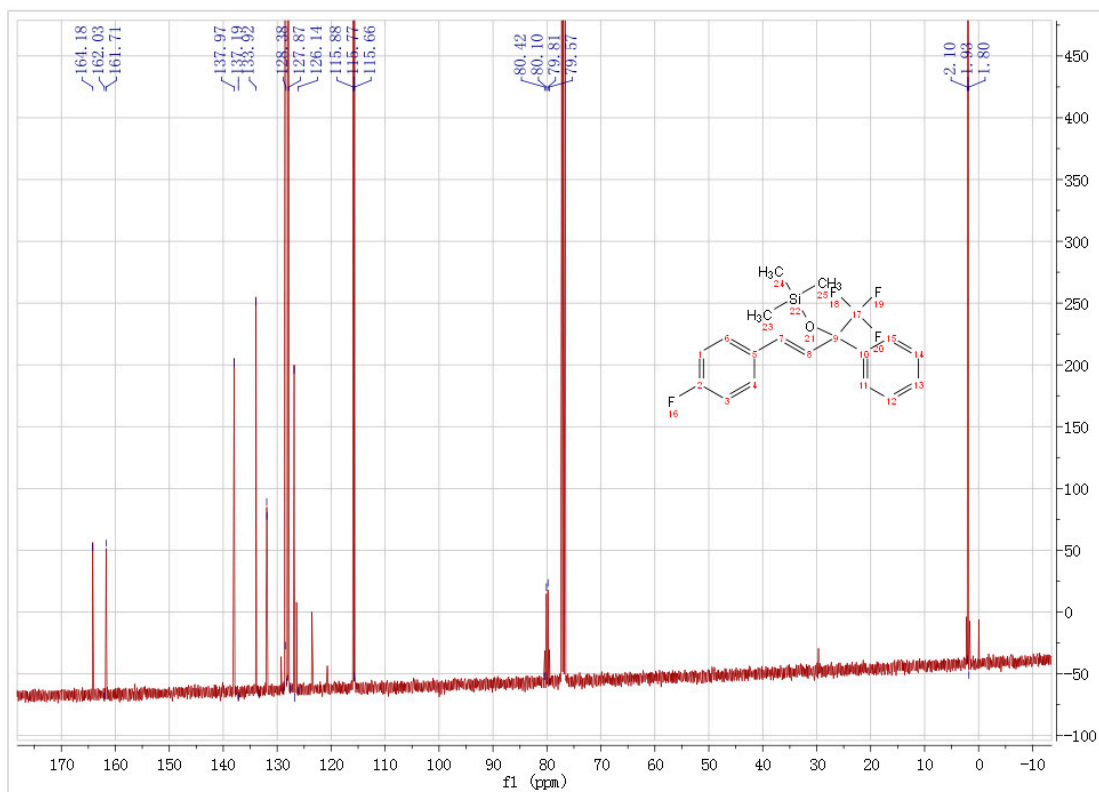


Figure S13  $^{13}\text{C}$  NMR spectra for compound 2g

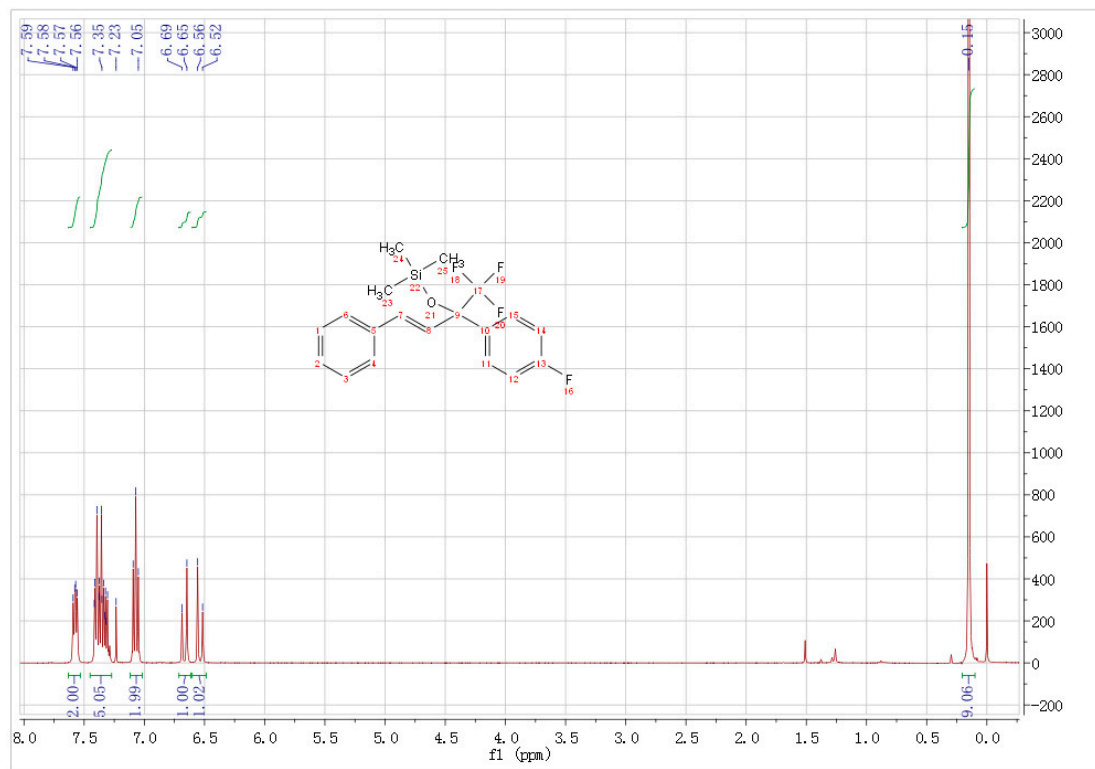


Figure S14  $^{13}\text{C}$  NMR spectra for compound 2g

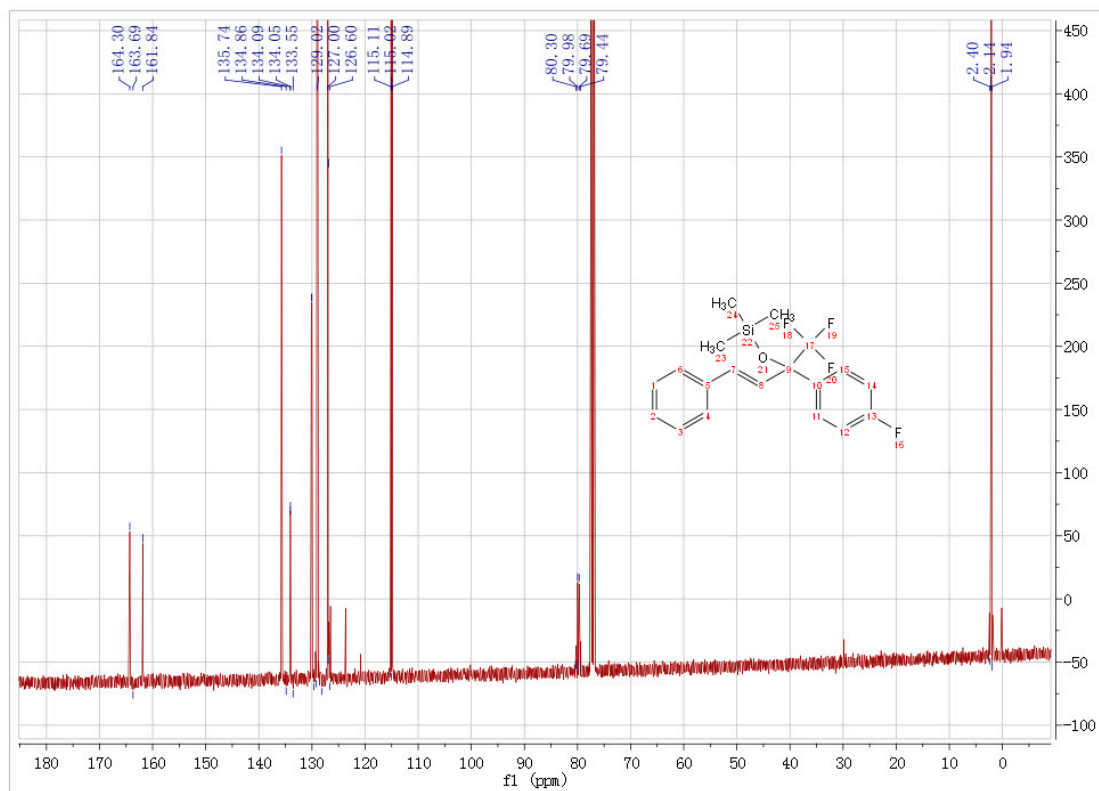


Figure S15  $^1\text{H}$  NMR spectra for compound 2h

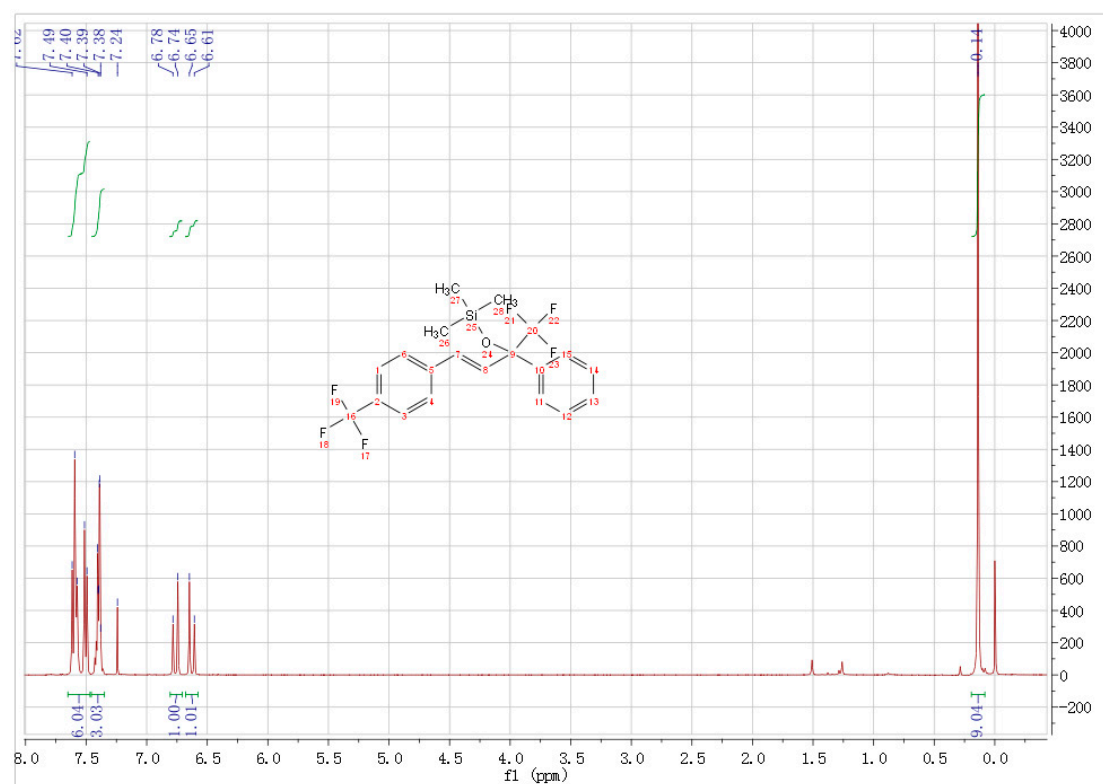
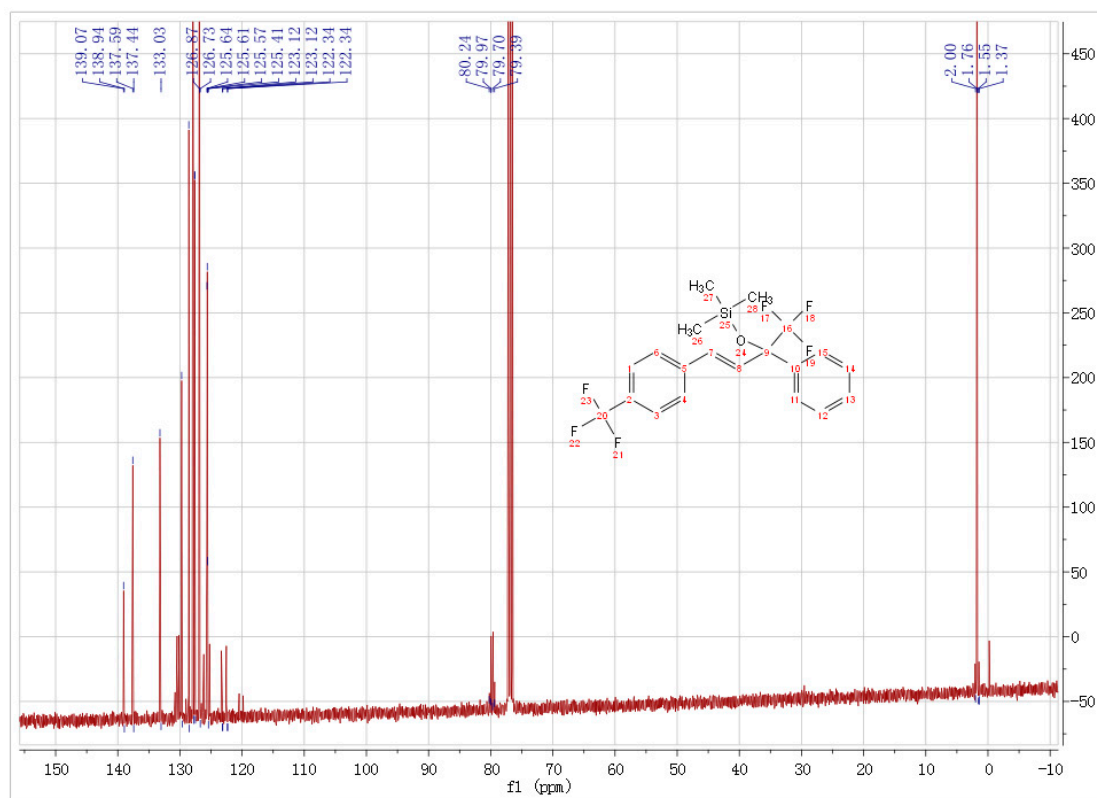


Figure S16  $^{13}\text{C}$  NMR spectra for compound 2h



**Chemical structure of 10a:** CC1(C)C(=C2C(=CC=C2)C(=C3C(=C(C=C3)C(F)(F)F)C(F)(F)F)O1)C(F)(F)F

**<sup>1</sup>H NMR spectrum (CDCl<sub>3</sub>):**

Chemical Shift (ppm)	Integration
7.73, 7.67, 7.65	1.99, 1.97, 5.00
7.25	1.00
6.66, 6.61, 6.57, 6.53	1.01
1.5	9.10
0.17	9.10

The <sup>13</sup>C NMR spectrum shows peaks at 142.18, 142.18, 135.90, 135.98, 128.33, 126.91, 126.77, 126.24, 126.10, 125.00, 124.96, 124.94, 124.85, 80.35, 80.05, 79.77, 79.47, -2.05, and -1.81 ppm. The chemical structure of compound 10 is overlaid on the spectrum, with carbon atoms numbered 1 through 28. The structure is a complex organic molecule containing a silicon atom, a fluorine atom, and a trifluoromethyl group.

Figure S19  $^1\text{H}$  NMR spectra for compound 2j

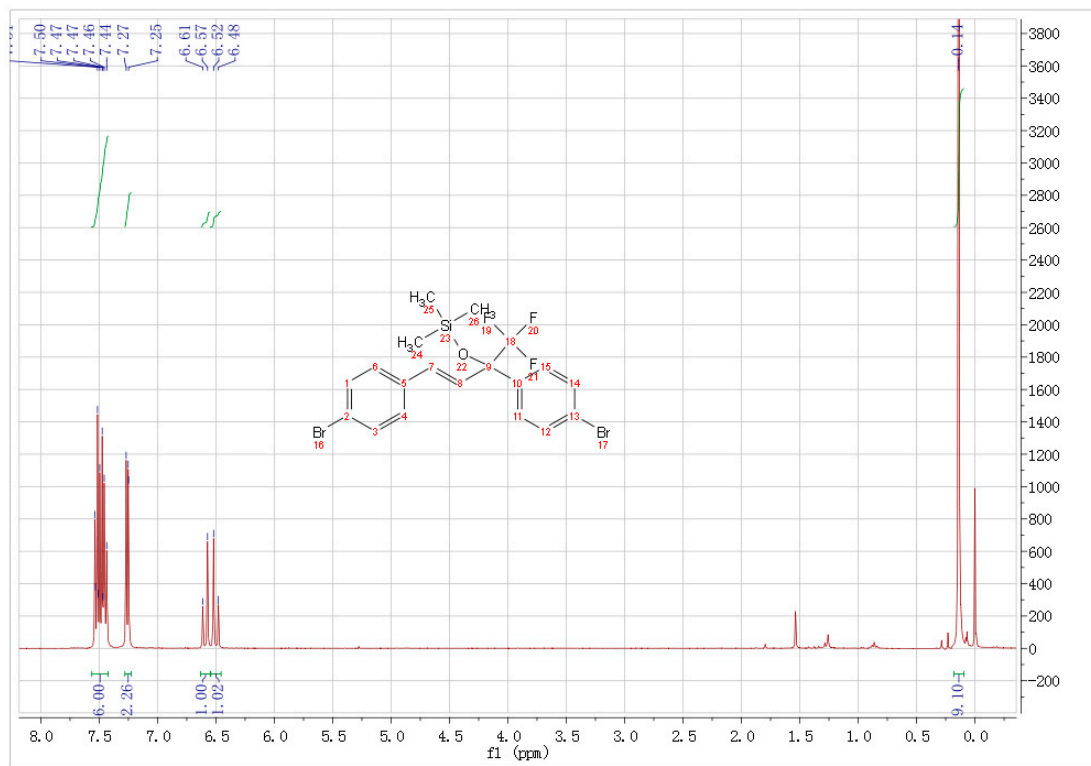


Figure S20  $^{13}\text{C}$  NMR spectra for compound 2j

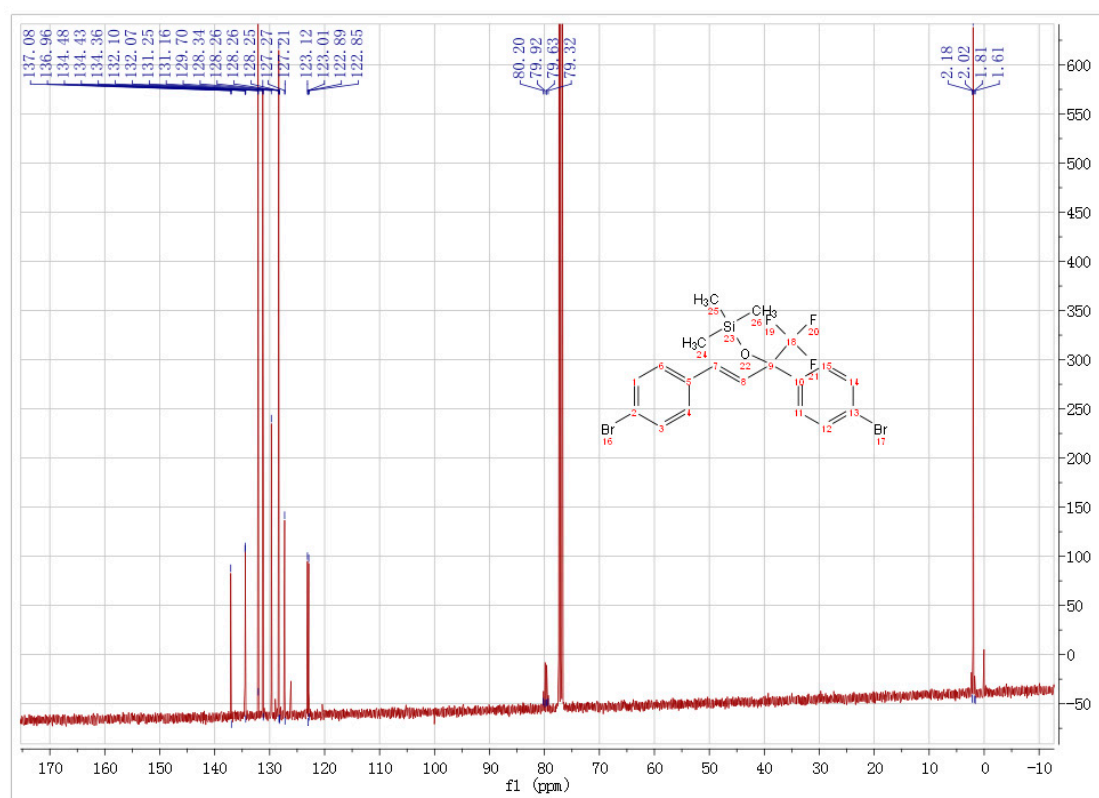


Figure S21  $^1\text{H}$  NMR spectra for compound 2k

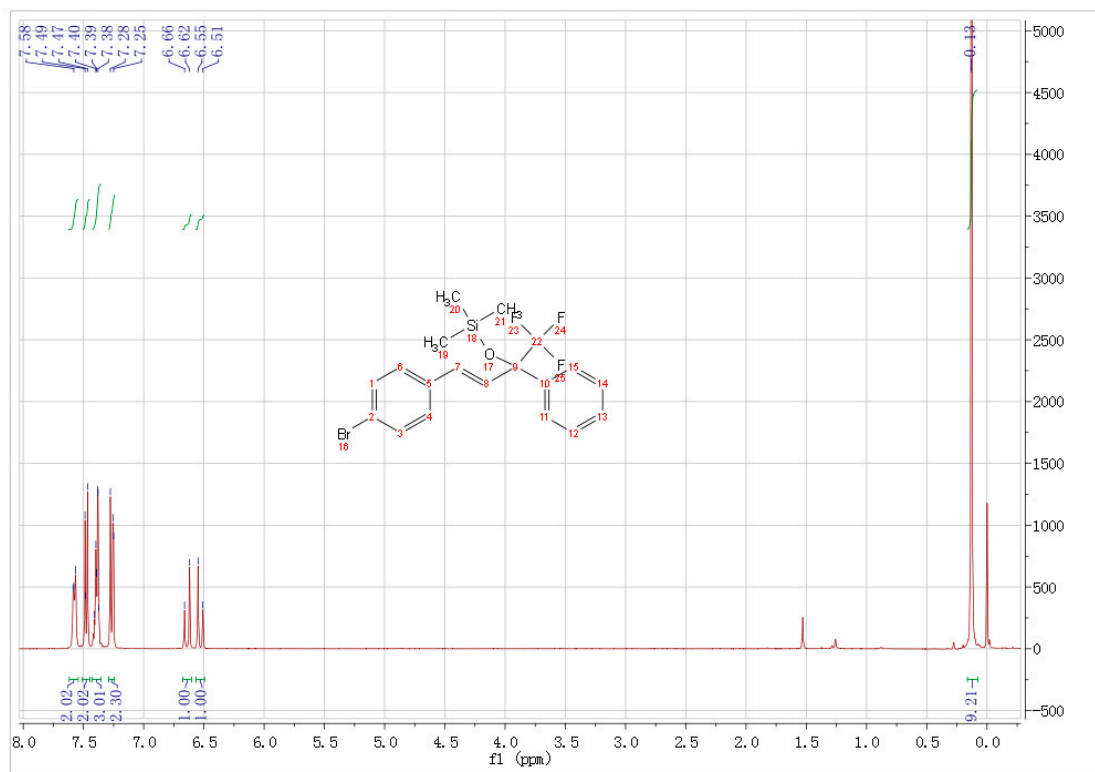


Figure S22  $^{13}\text{C}$  NMR spectra for compound 2k

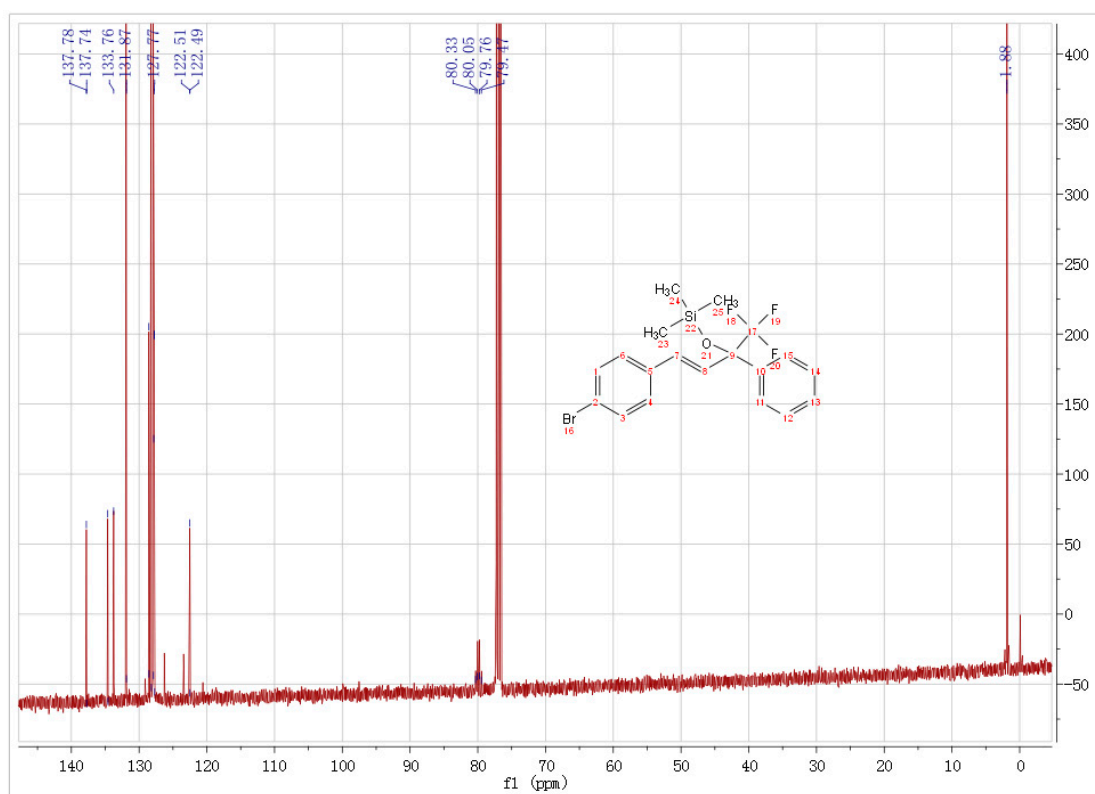




Figure S23  $^1\text{H}$  NMR spectra for compound 2l

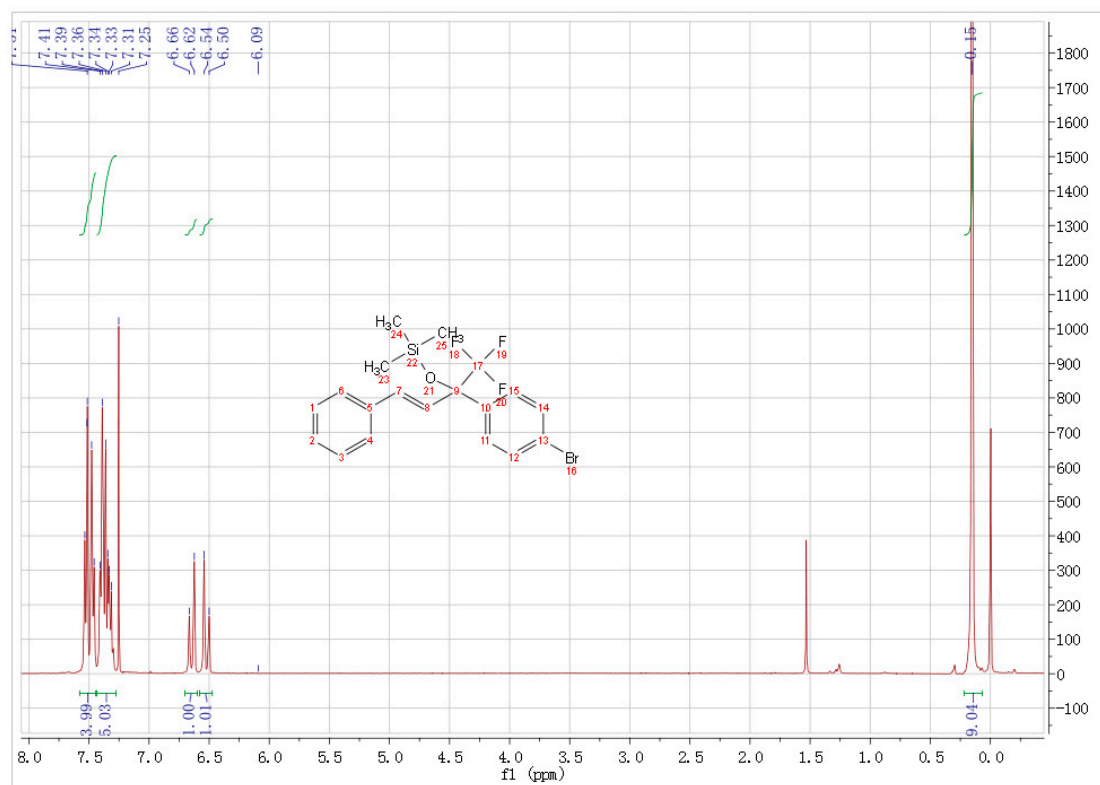
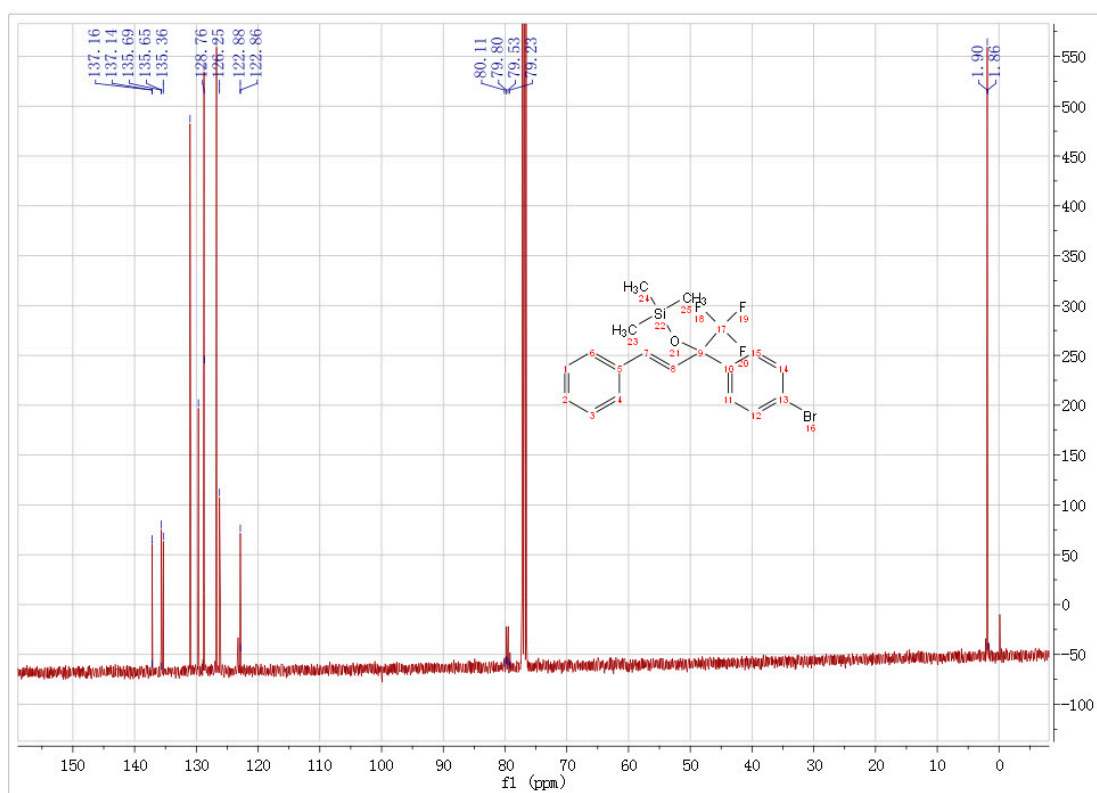


Figure S24  $^{13}\text{C}$  NMR spectra for compound 2l



The figure displays the  $^1\text{H}$  NMR spectrum of compound 10, which is a bis-siloxane derivative. The chemical structure of compound 10 is shown above the spectrum, with atoms numbered 1 through 30. The spectrum is recorded in  $\text{CDCl}_3$ , with the solvent peak (triplet) visible at approximately 7.26 ppm. The x-axis represents the chemical shift in ppm, ranging from 0.0 to 8.0. The y-axis represents the intensity in arbitrary units, ranging from 0 to 2100. The spectrum shows several multiplets in the aromatic region (6.5-7.5 ppm) and a large singlet at 0.12 ppm corresponding to the methyl groups. Integration values are provided for the main peaks: 6.01, 8.04, 1.00, 1.01, and 8.99.

Chemical structure of compound 10 (Bis-siloxane derivative) is shown above the spectrum. The structure includes a central silicon atom (Si) bonded to two methyl groups (CH<sub>3</sub>) and two oxygen atoms (O). The oxygen atoms are part of a cyclic siloxane structure. The structure also includes a phenyl ring (C<sub>6</sub>H<sub>5</sub>) and a fluorinated phenyl ring (C<sub>6</sub>H<sub>4</sub>F<sub>2</sub>). The atoms are numbered 1 through 30.

Key peaks and integrations:

- Aromatic region (6.5-7.5 ppm): Multiplets with integrations of 6.01, 8.04, 1.00, and 1.01.
- Solvent peak (7.26 ppm): Triplet, integration of 8.99.
- Methyl groups (0.12 ppm): Large singlet, integration of 8.99.

138.44  
138.44  
136.03  
136.03  
136.81  
136.49  
125.92  
125.52  
125.50  
125.47  
125.43  
125.26  
125.21  
124.97  
124.94

78.44  
78.13  
77.91  
77.65

0.00  
0.20

Chemical structure of 10a is shown in the upper right, with atoms numbered 1 through 29.

Figure S27  $^1\text{H}$  NMR spectra for compound 2n

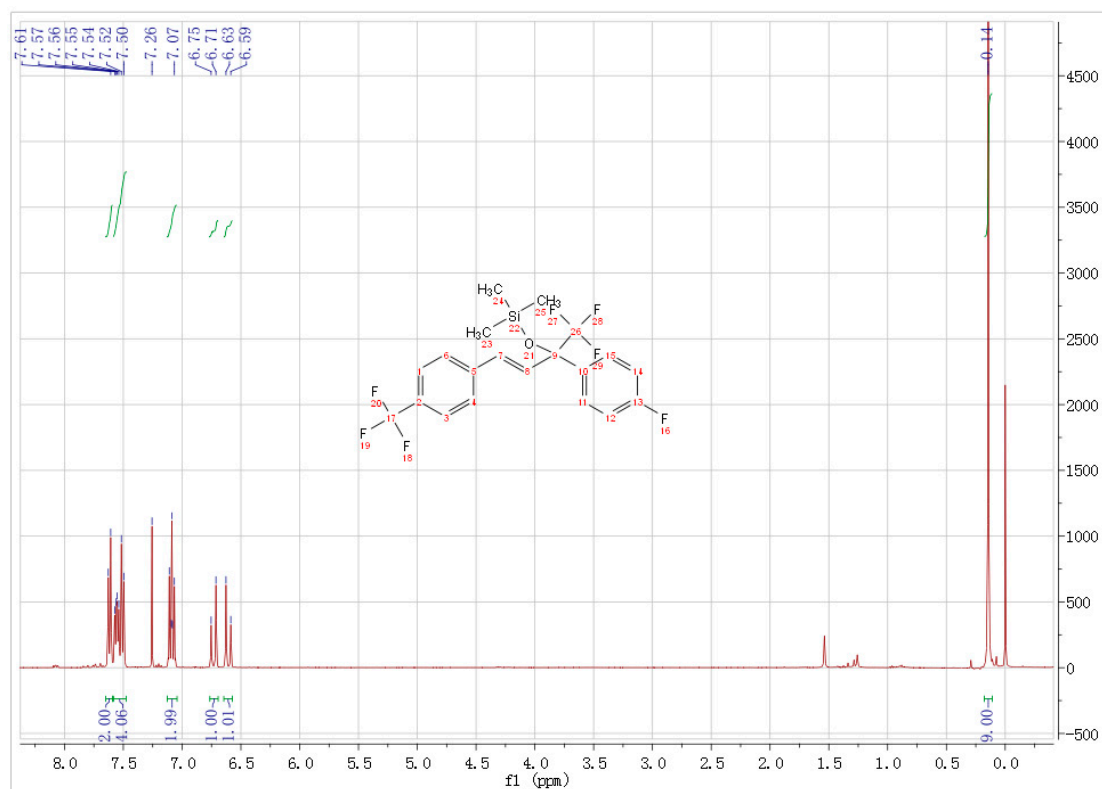


Figure S28  $^{13}\text{C}$  NMR spectra for compound 2n

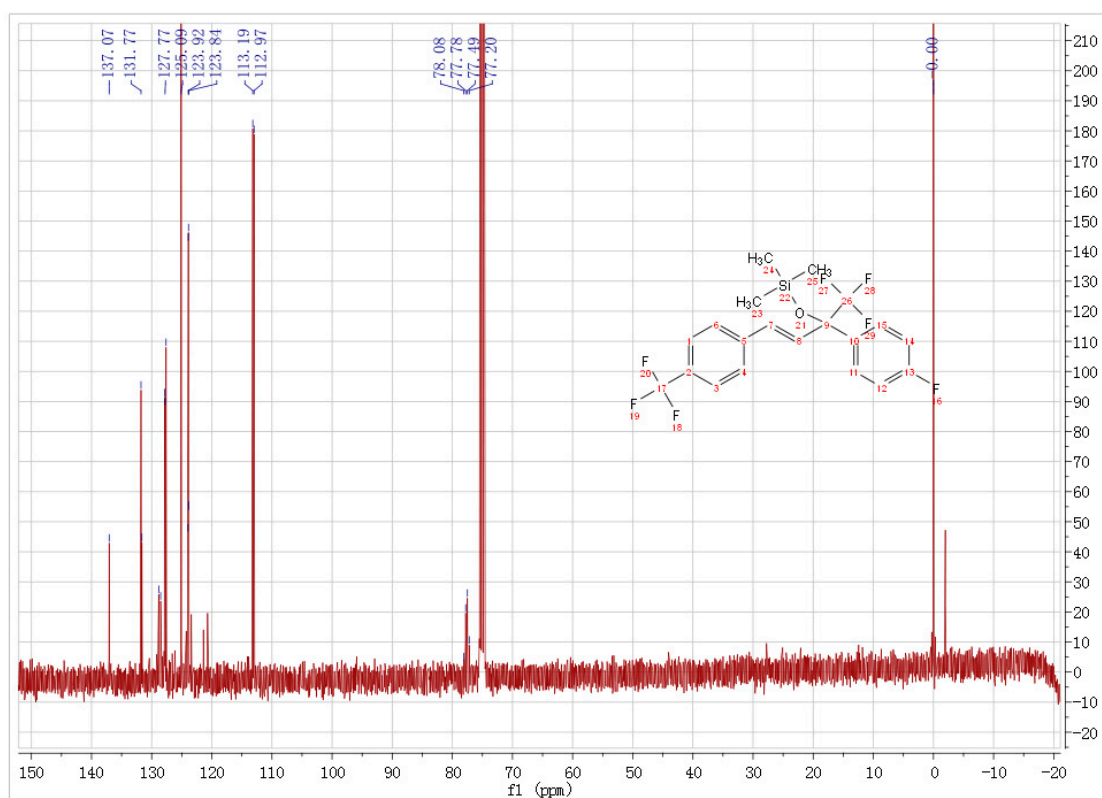


Figure S29  $^1\text{H}$  NMR spectra for compound 2o

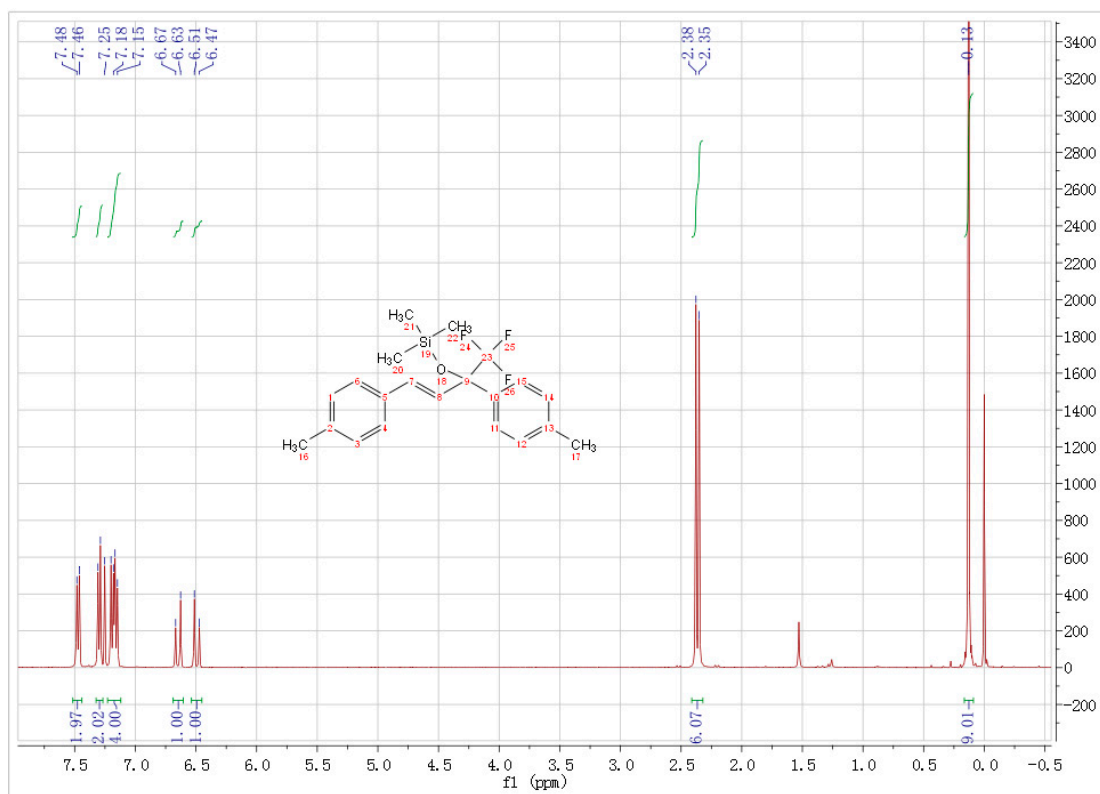


Figure S30  $^{13}\text{C}$  NMR spectra for compound 2o

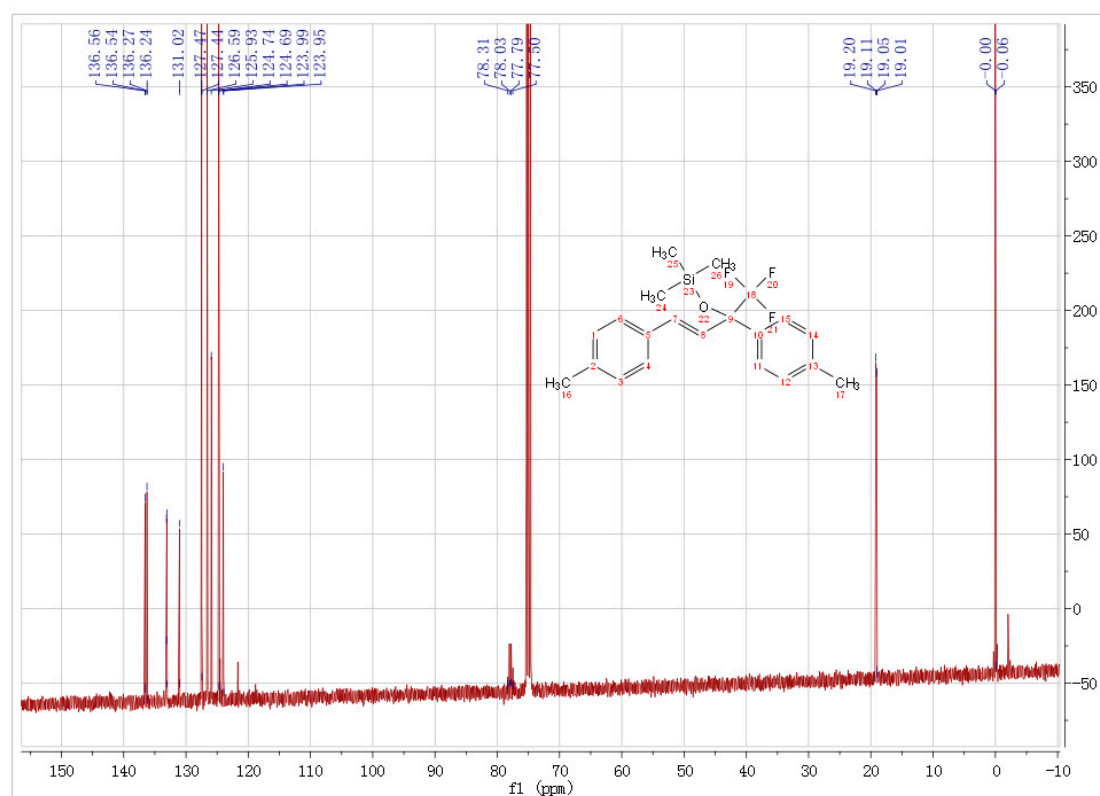


Figure S31  $^1\text{H}$  NMR spectra for compound 2p

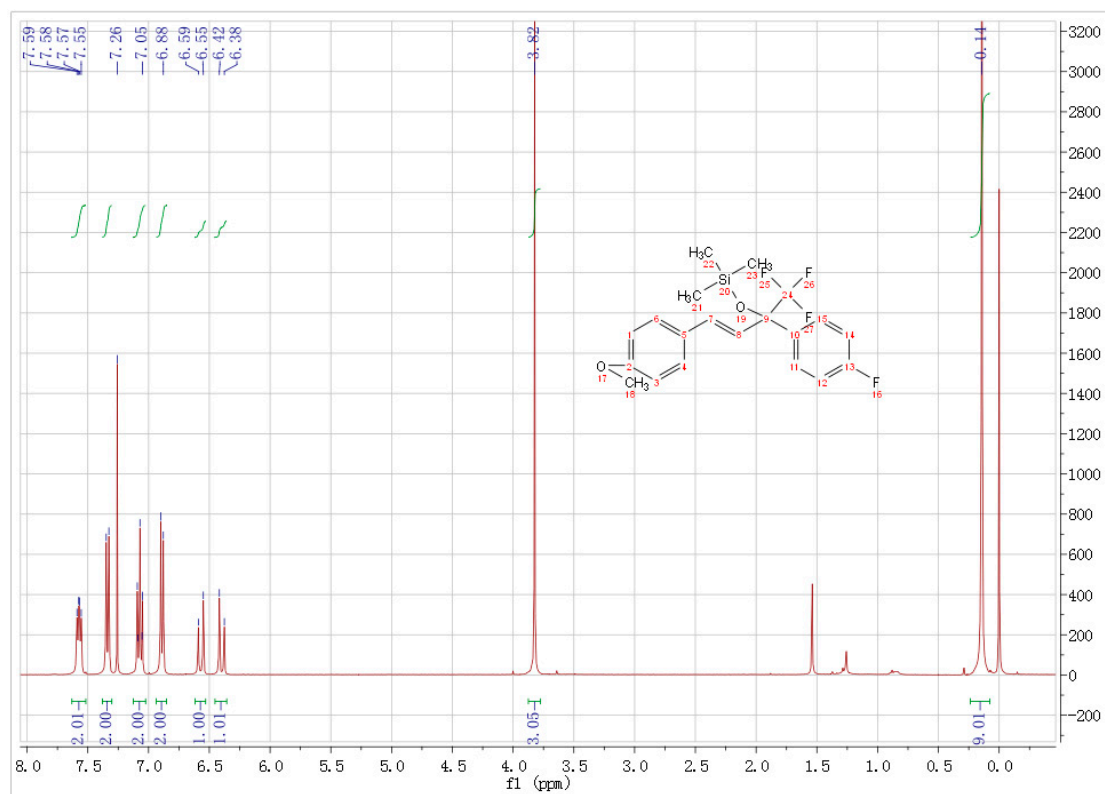


Figure S32  $^{13}\text{C}$  NMR spectra for compound 2p

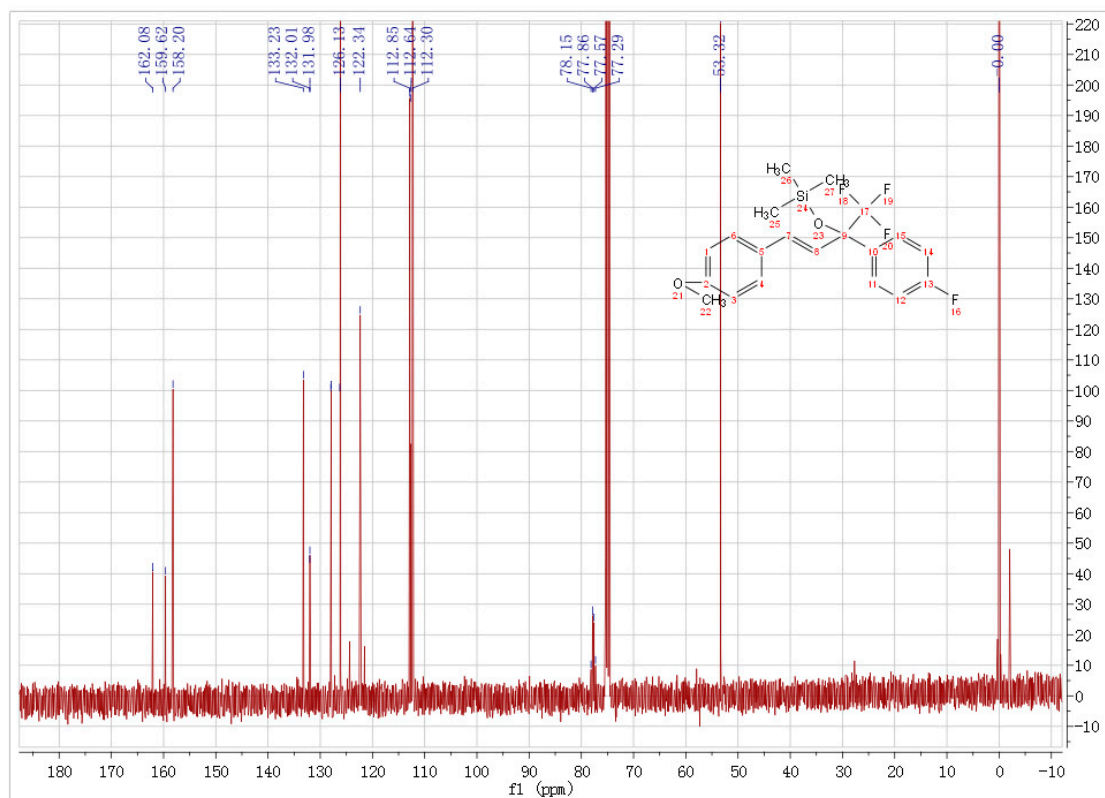


Figure S33  $^1\text{H}$  NMR spectra for compound 2q

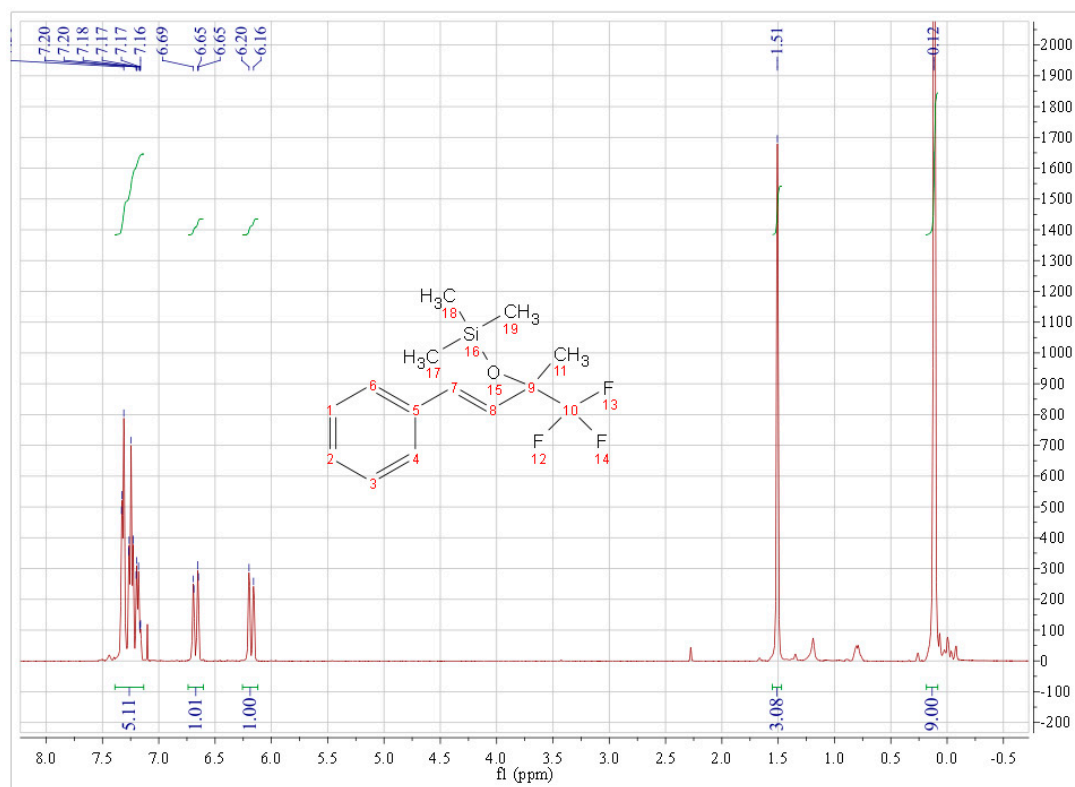


Figure S34  $^{13}\text{C}$  NMR spectra for compound 2q

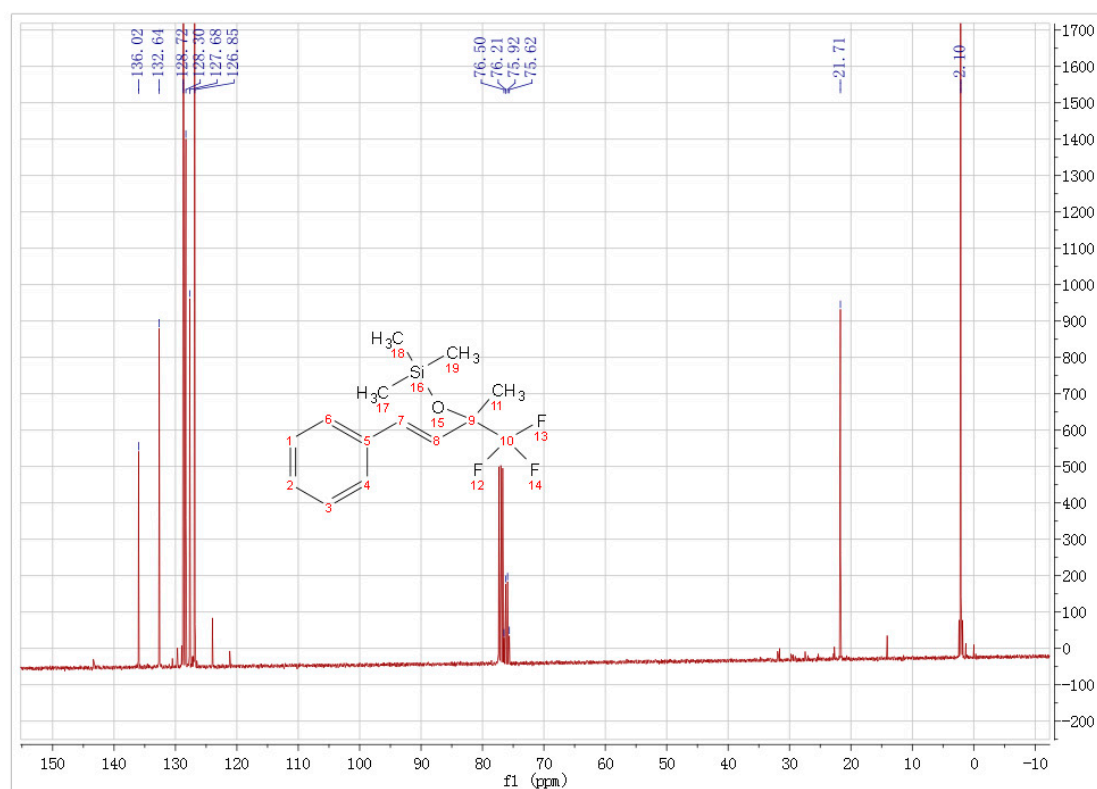


Figure S35  $^1\text{H}$  NMR spectra for compound 2r

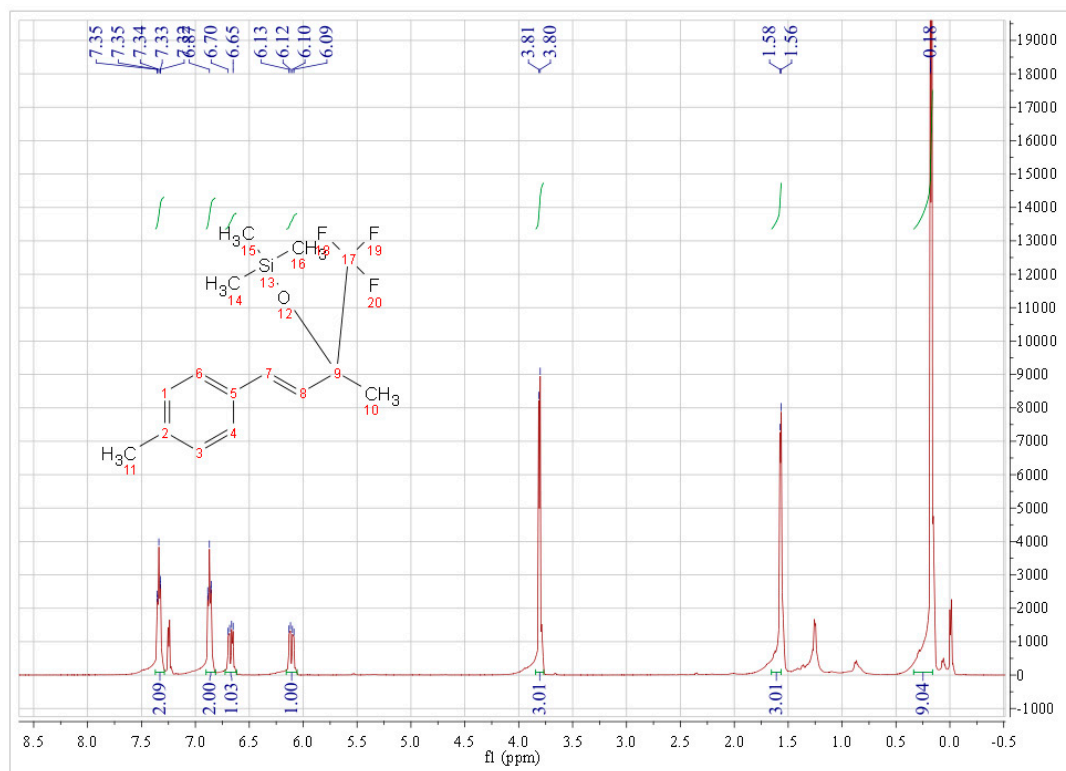


Figure S36  $^{13}\text{C}$  NMR spectra for compound 2r

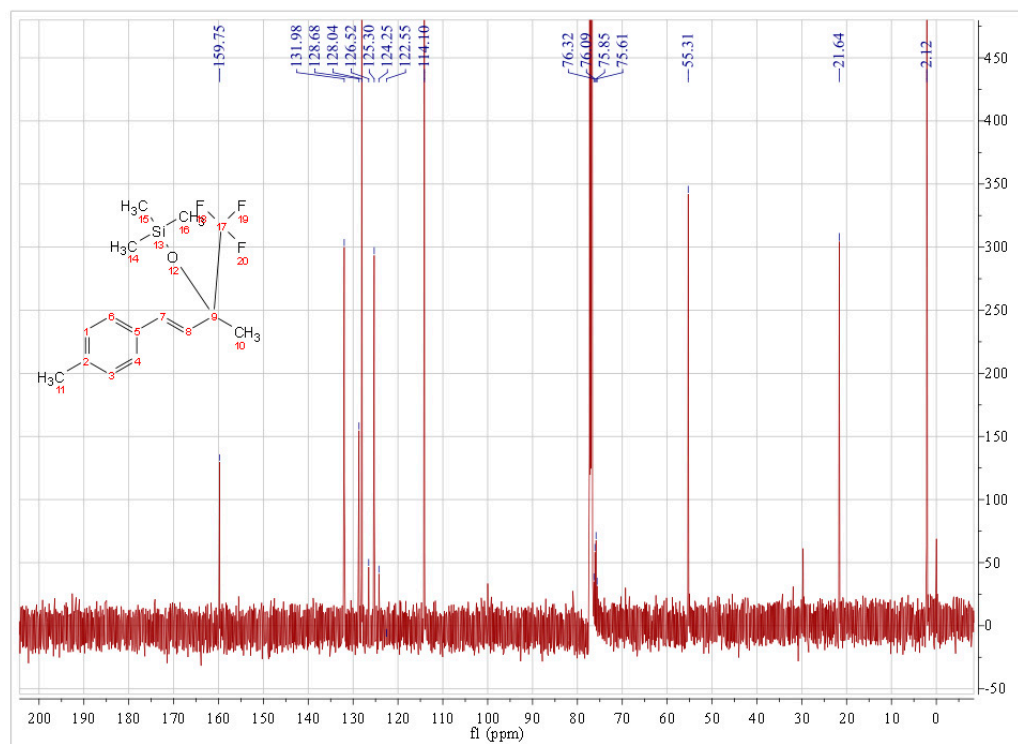




Figure S37  $^1\text{H}$  NMR spectra for compound 2s

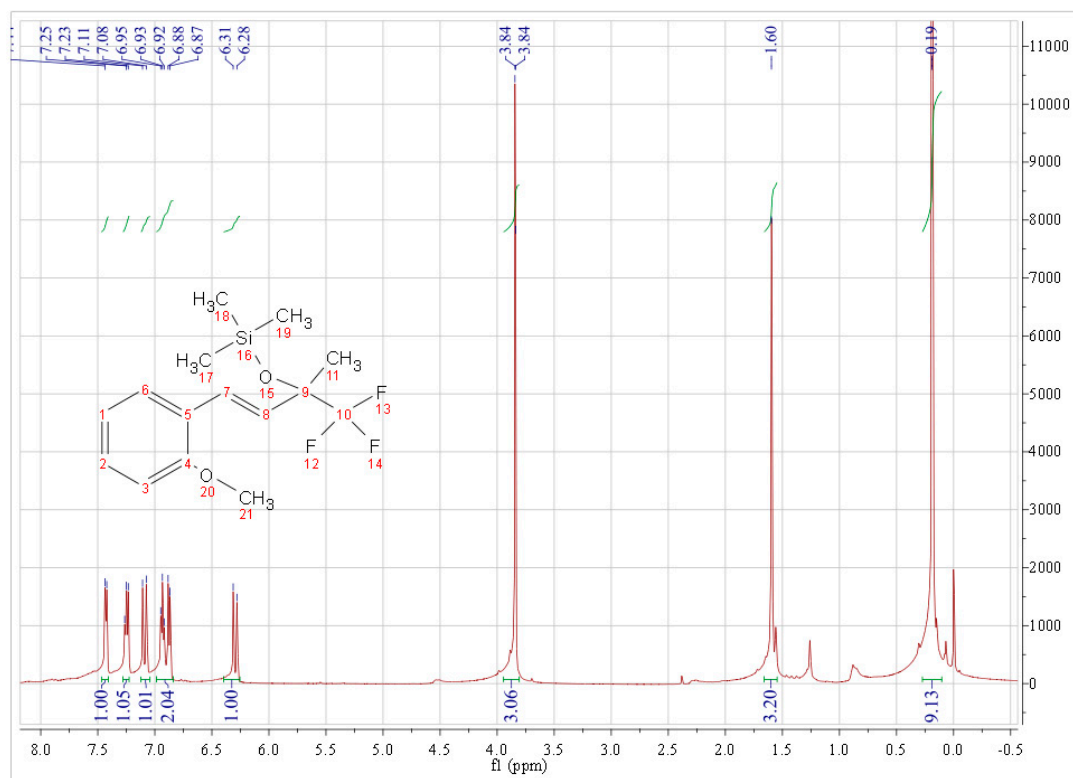


Figure S38  $^{13}\text{C}$  NMR spectra for compound 2s

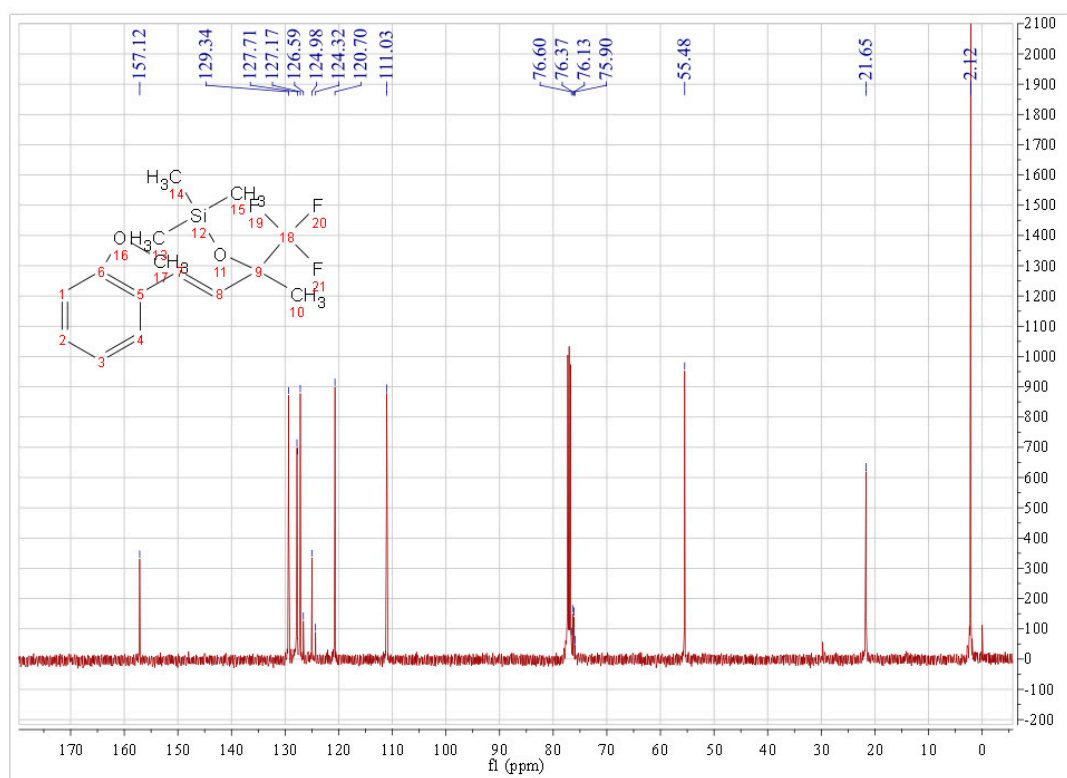




Figure S39  $^1\text{H}$  NMR spectra for compound 2t

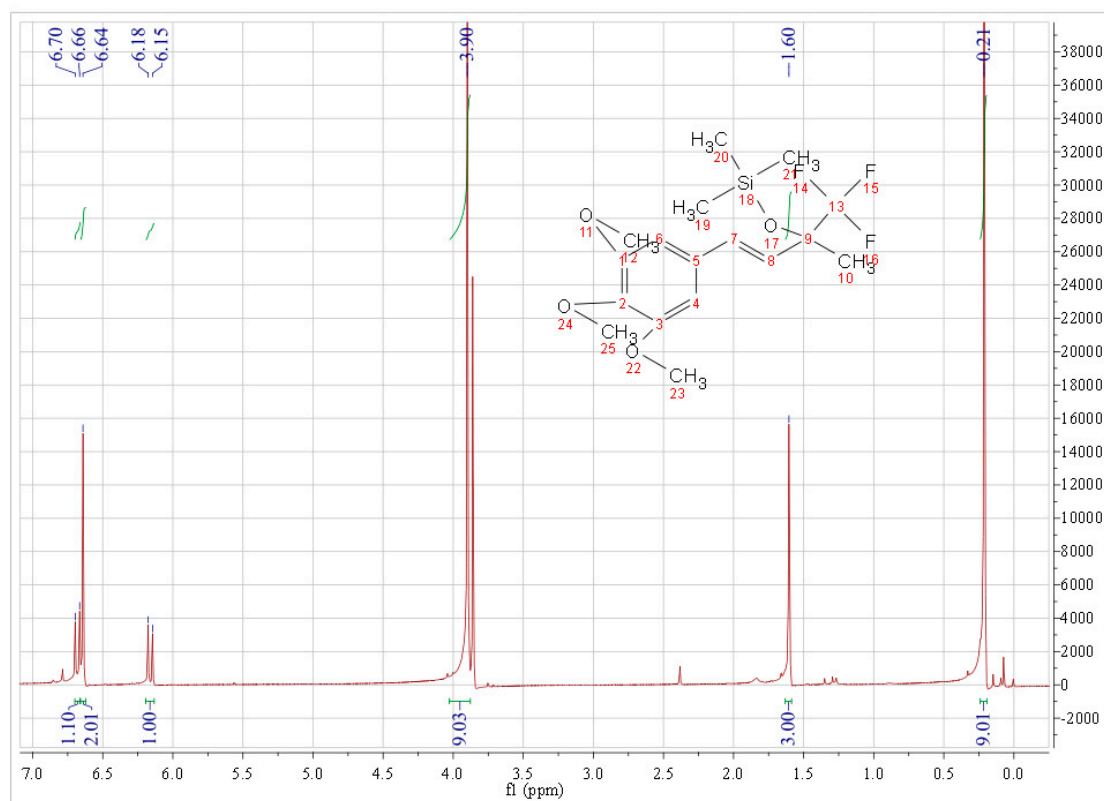


Figure S40  $^{13}\text{C}$  NMR spectra for compound 2t

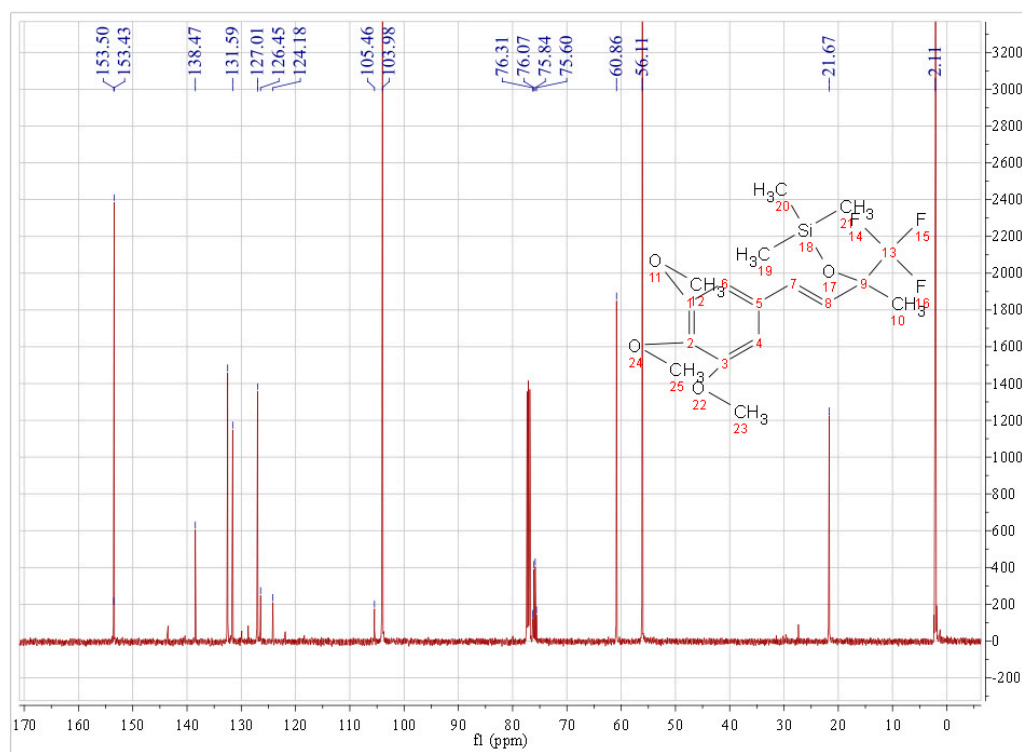


Figure S41  $^1\text{H}$  NMR spectra for compound 2u

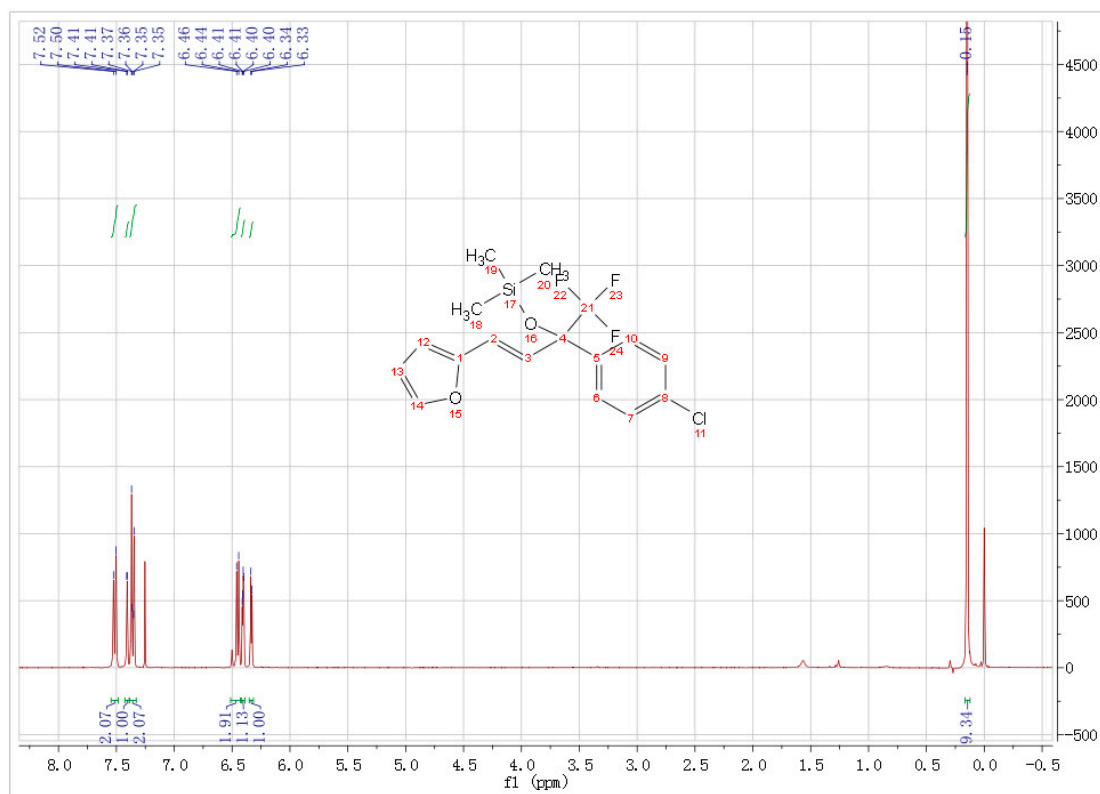


Figure S42  $^{13}\text{C}$  NMR spectra for compound 2u

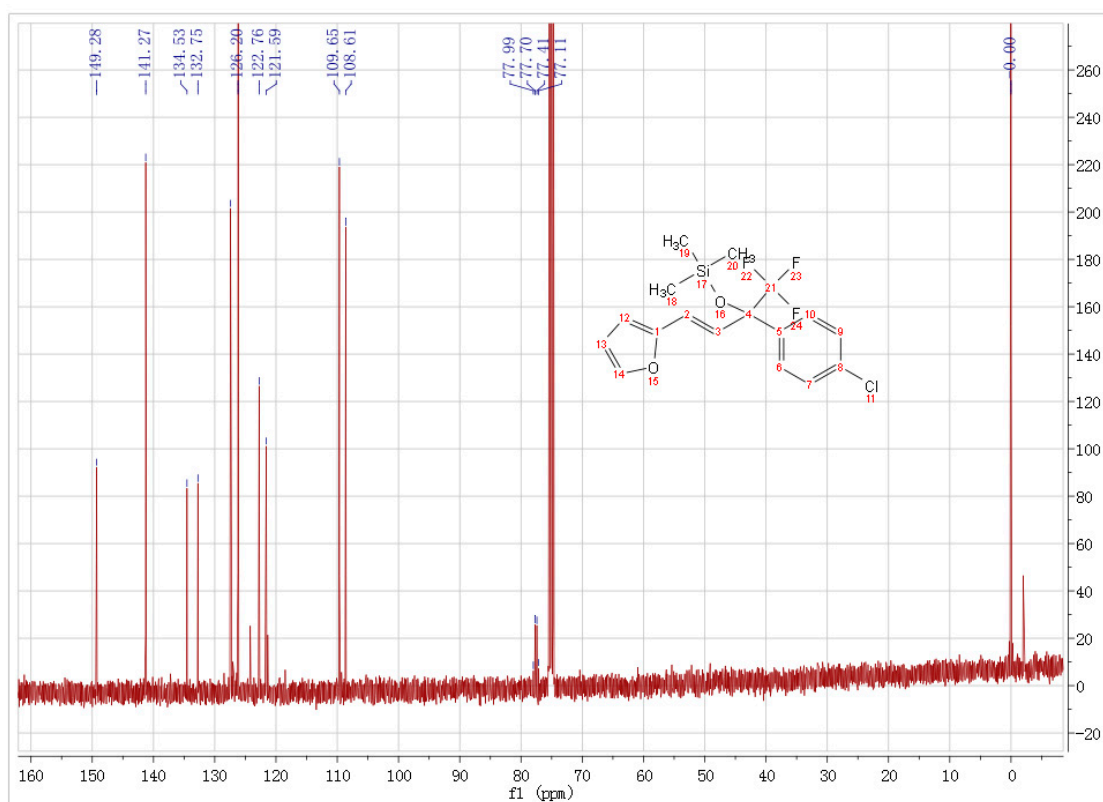


Figure S43  $^1\text{H}$  NMR spectra for compound 2v

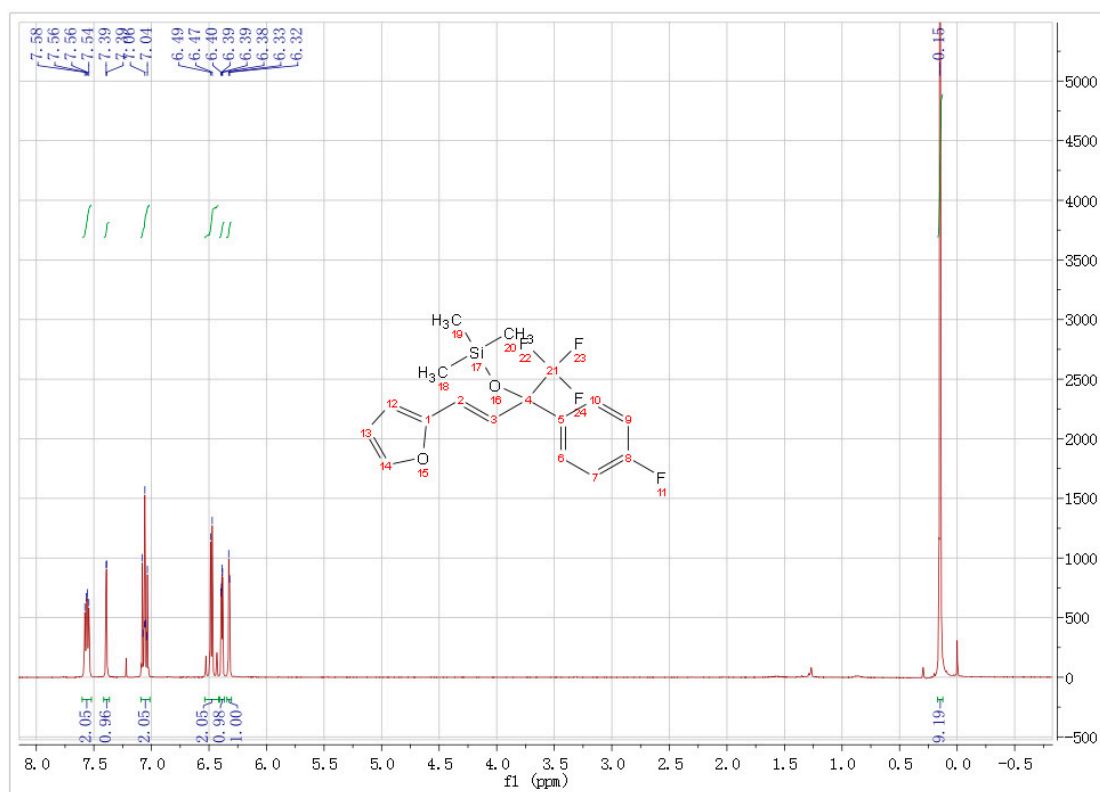


Figure S44  $^{13}\text{C}$  NMR spectra for compound 2v

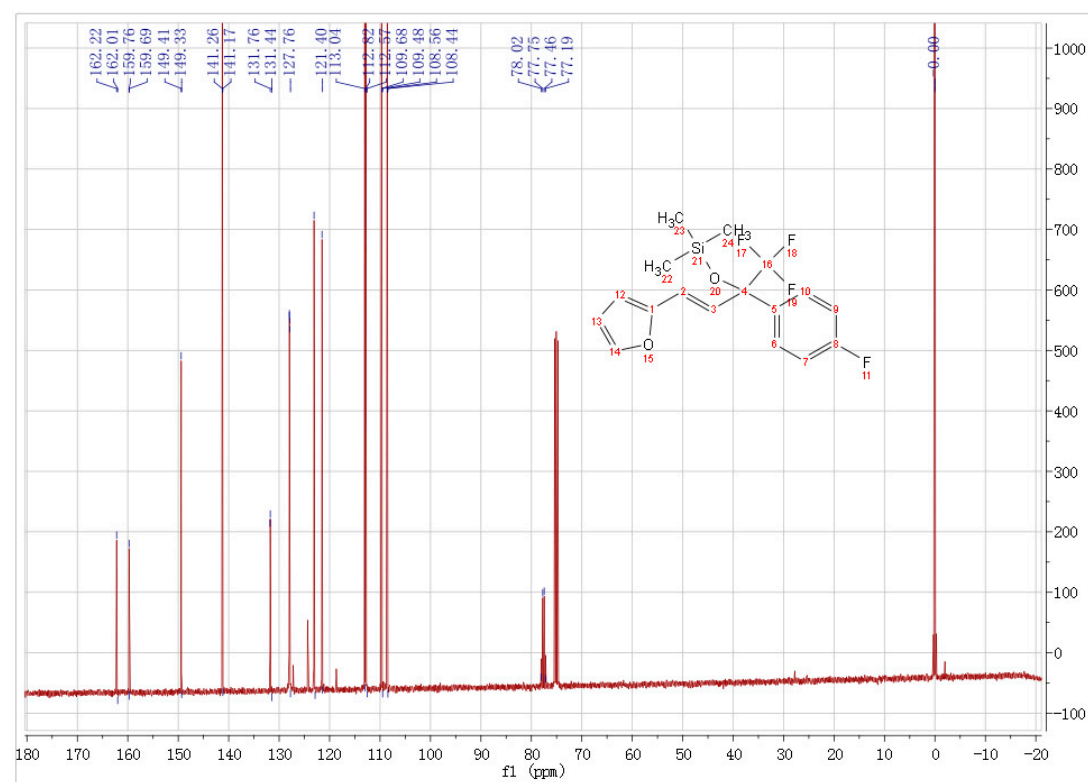


Figure S45  $^1\text{H}$  NMR spectra for compound 2w

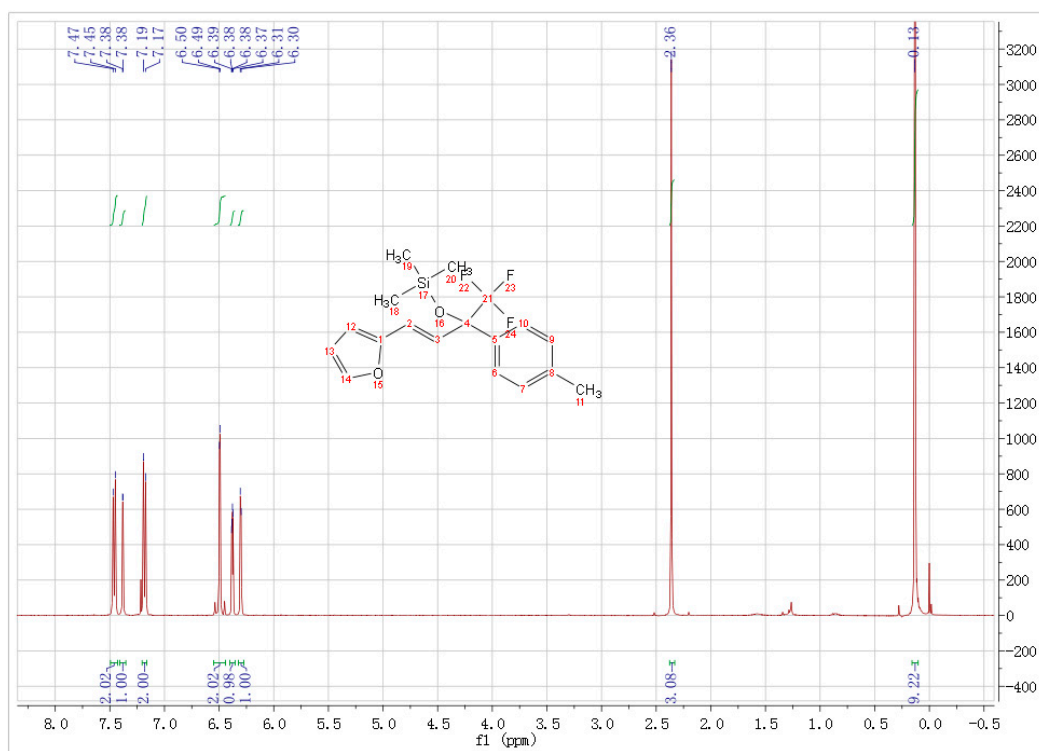


Figure S46  $^{13}\text{C}$  NMR spectra for compound 2w

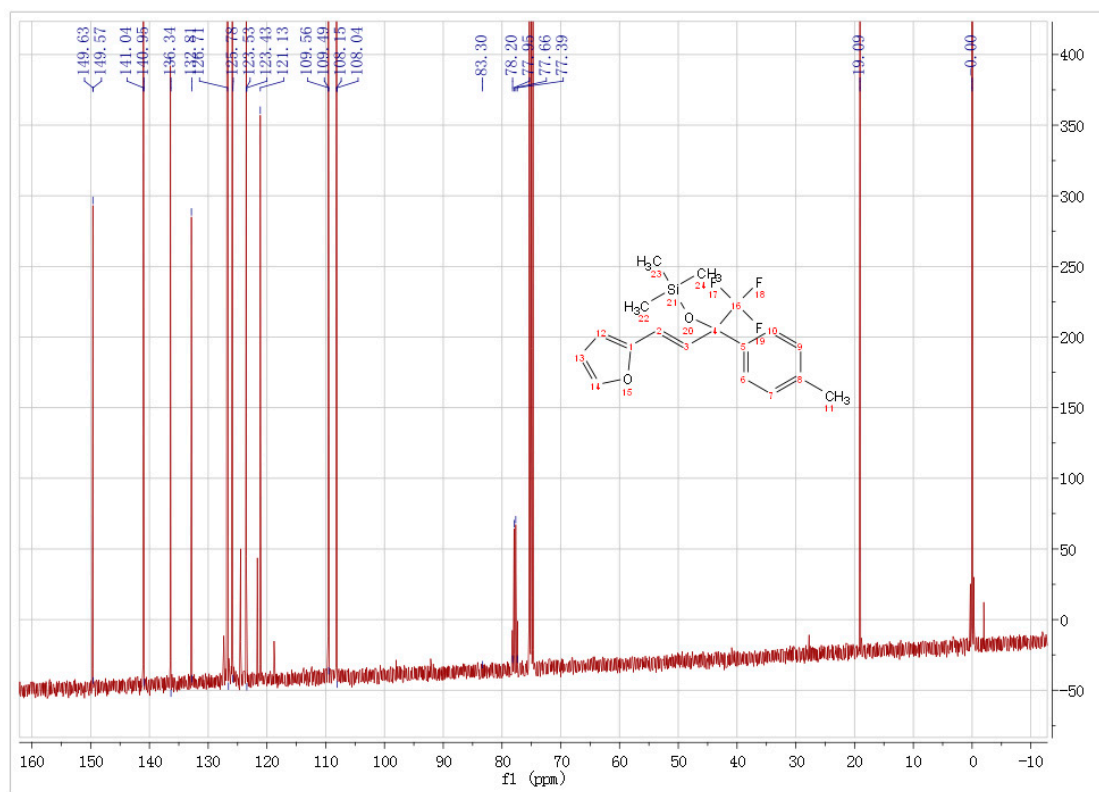


Figure S47  $^1\text{H}$  NMR spectra for compound 5a

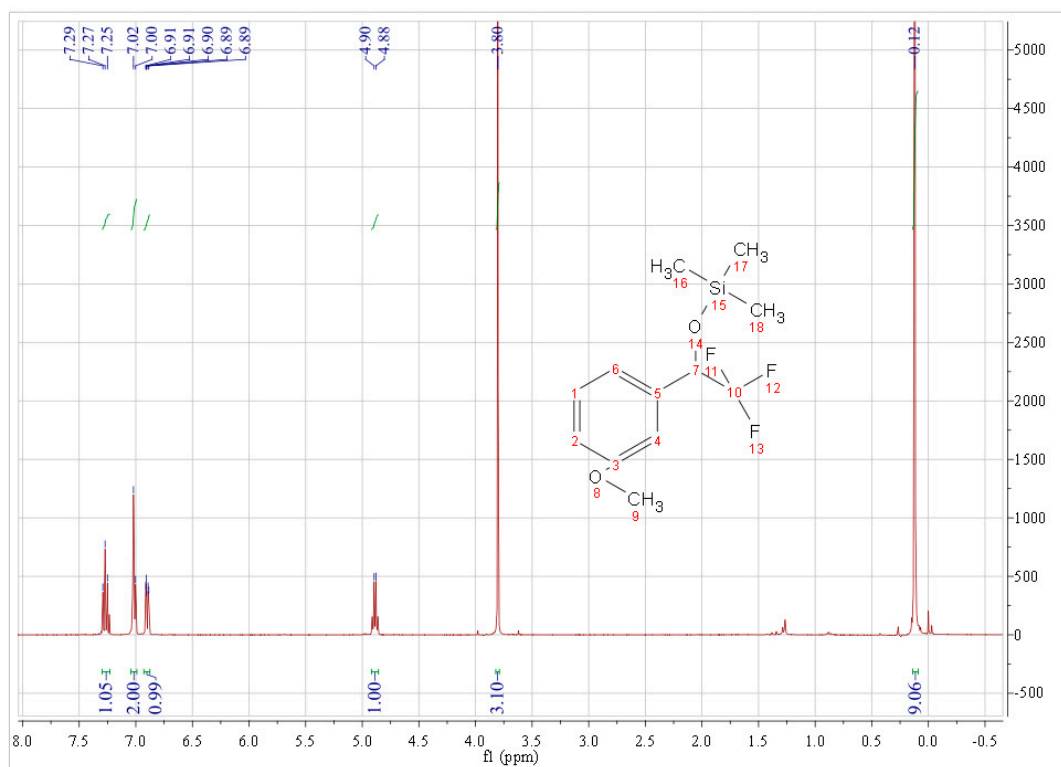


Figure S48  $^{13}\text{C}$  NMR spectra for compound 5a

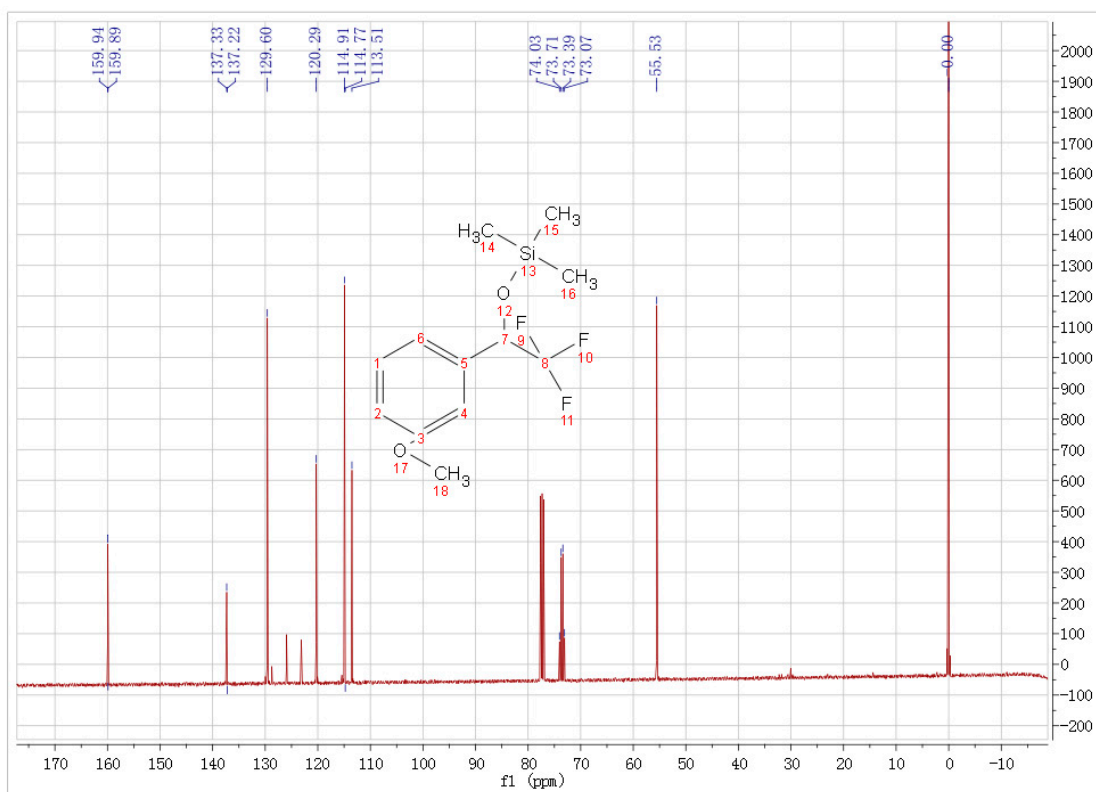


Figure S49  $^1\text{H}$  NMR spectra for compound 5b

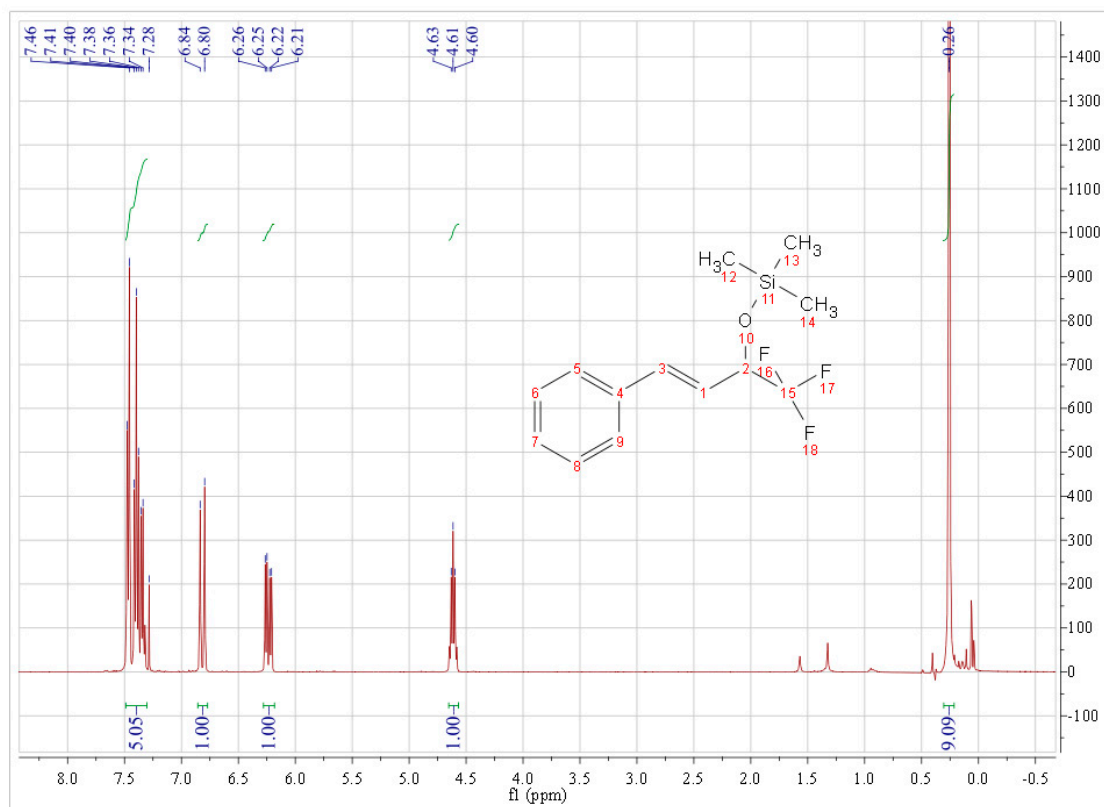


Figure S50  $^{13}\text{C}$  NMR spectra for compound 5b

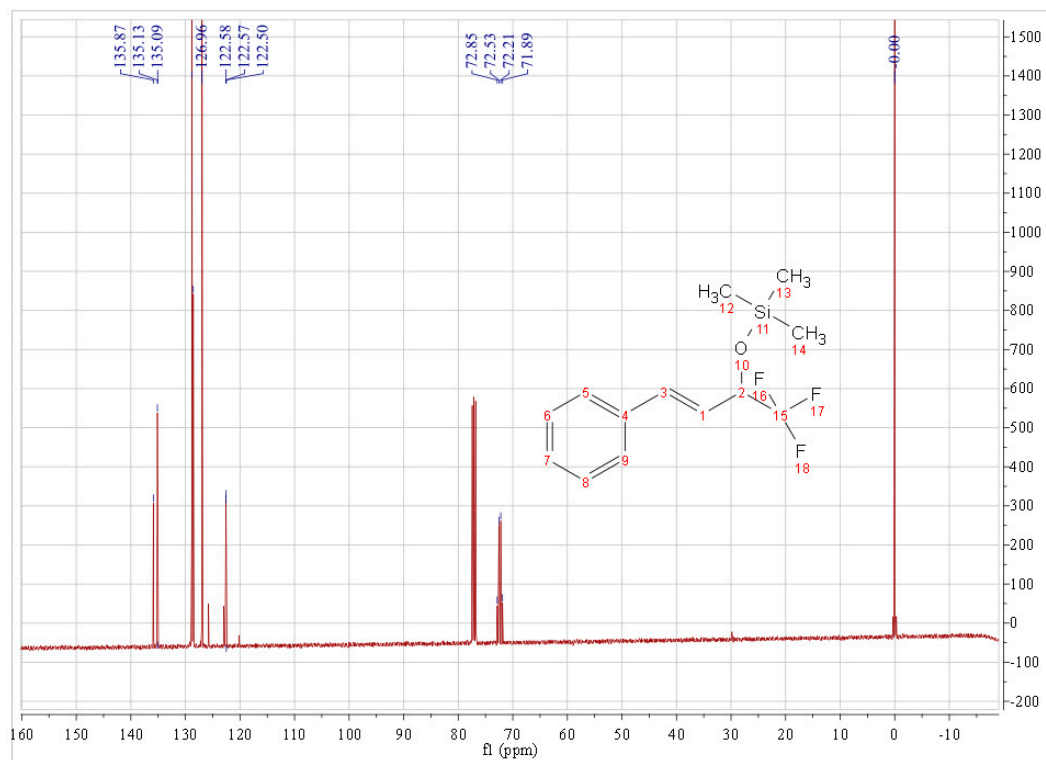


Figure S51  $^1\text{H}$  NMR spectra for compound 5c

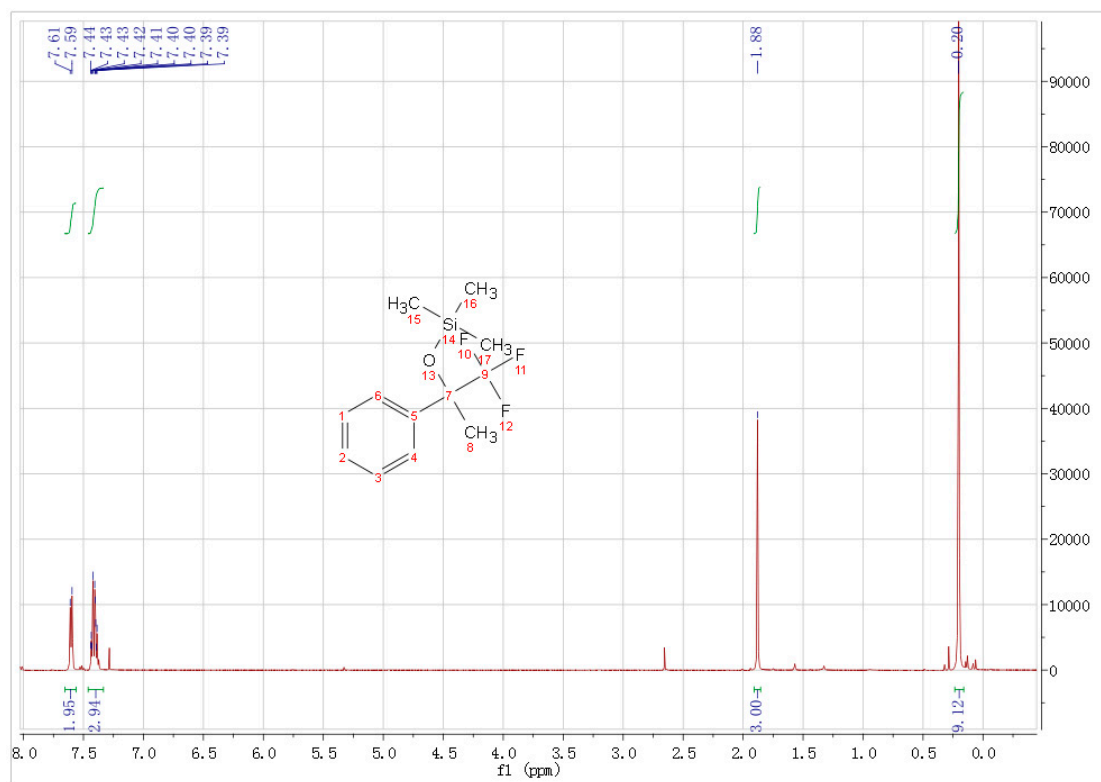


Figure S52  $^{13}\text{C}$  NMR spectra for compound 5c

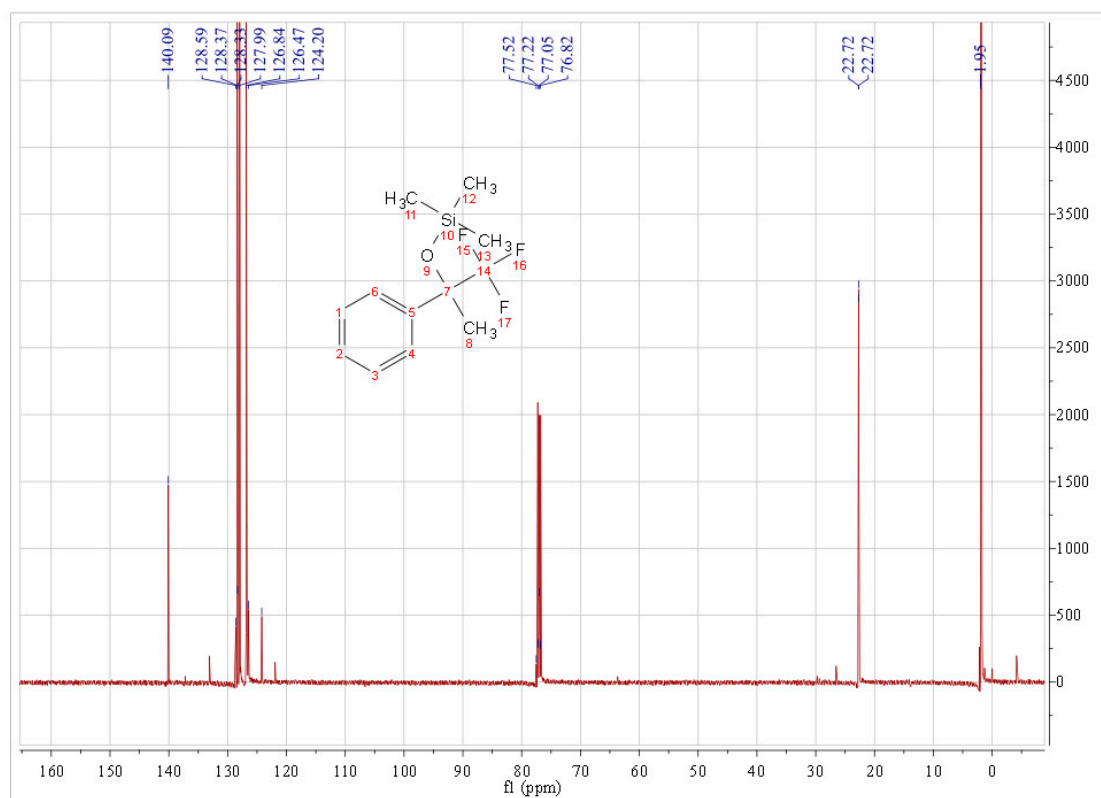


Figure S53  $^1\text{H}$  NMR spectra for compound 5d

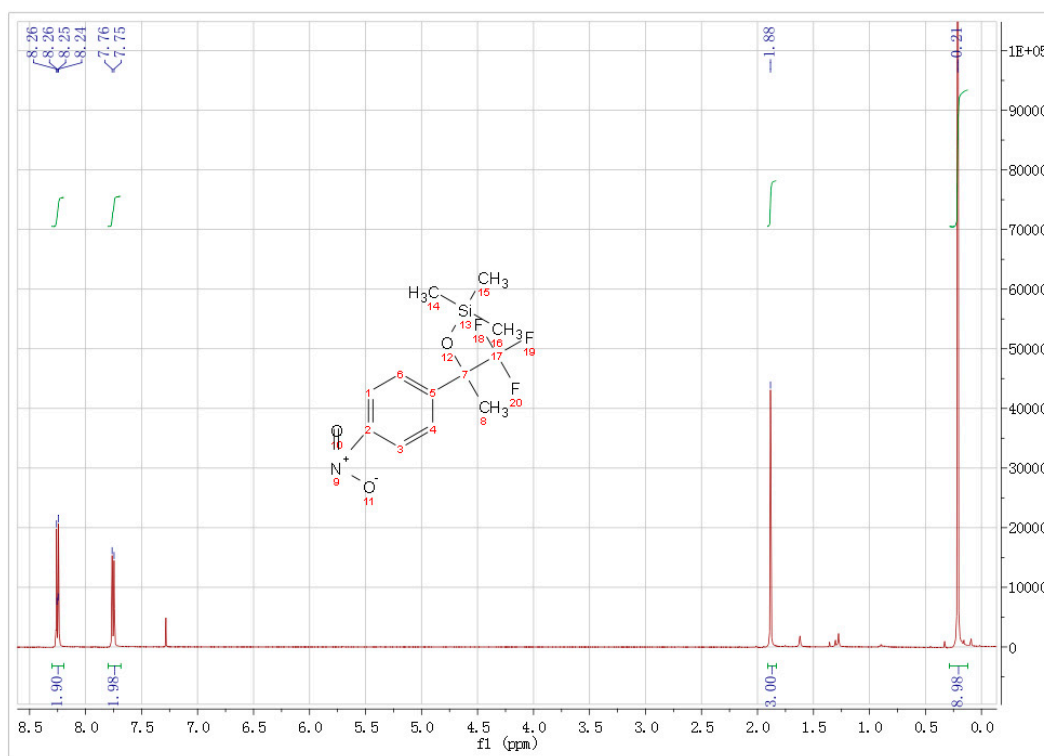


Figure S54  $^{13}\text{C}$  NMR spectra for compound 5d

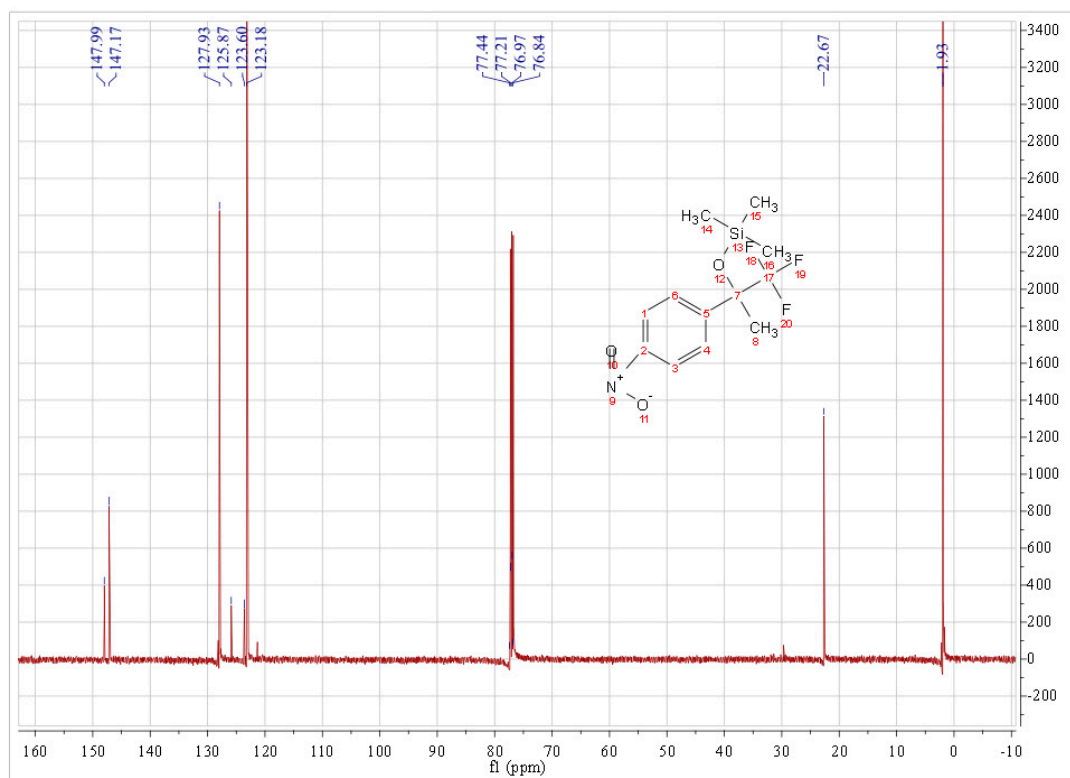




Figure S55  $^1\text{H}$  NMR spectra for compound 5e

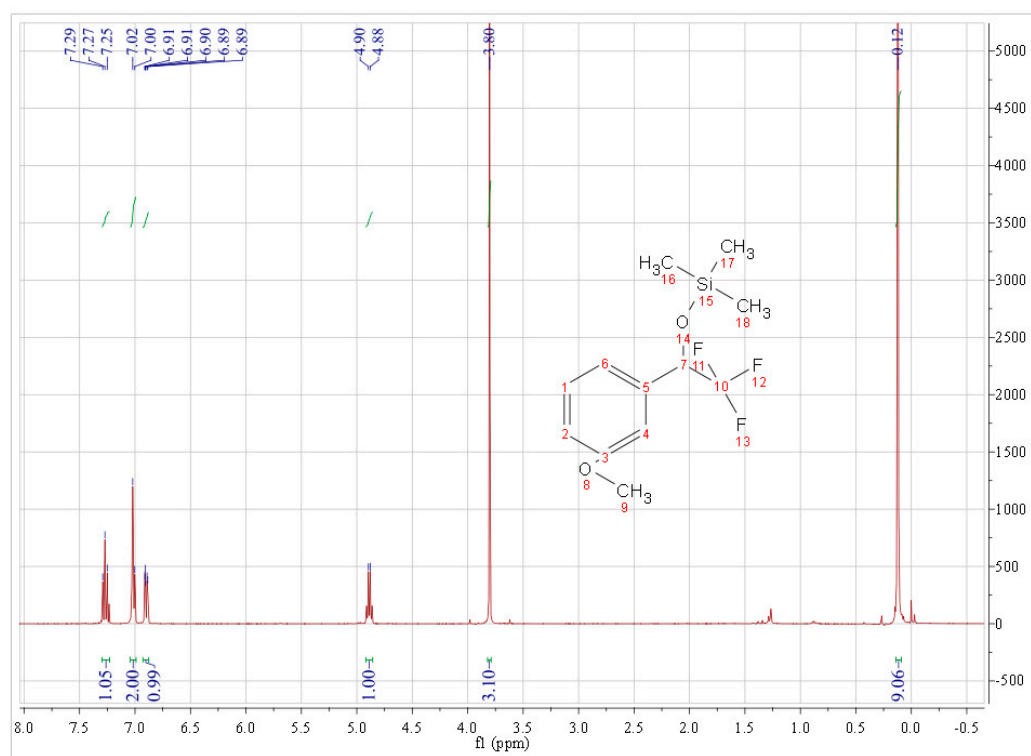
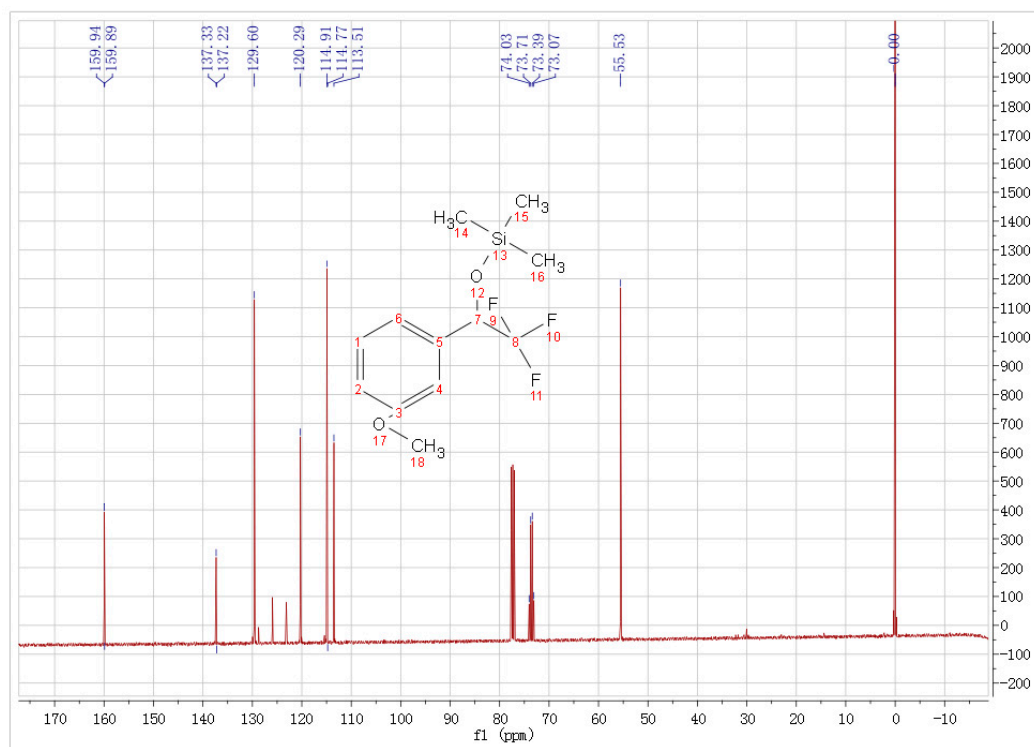
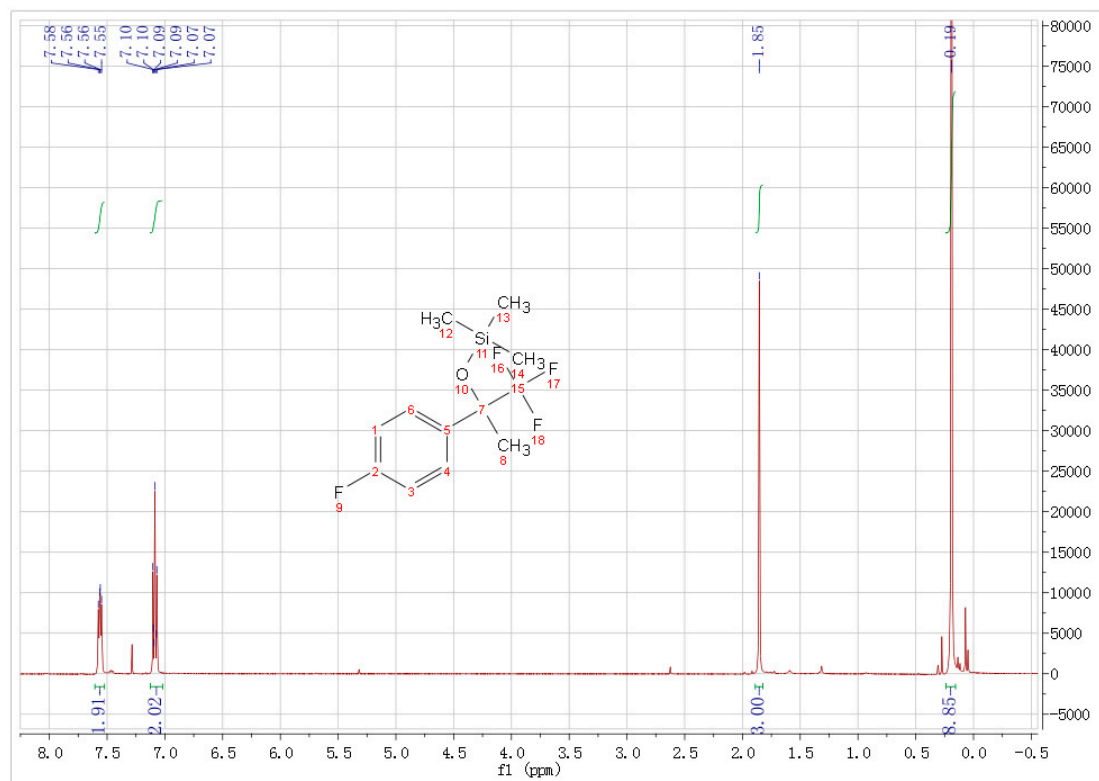


Figure S56  $^{13}\text{C}$  NMR spectra for compound 5e



**Figure S57  $^1\text{H}$  NMR spectra for compound 5f**



**Figure S58  $^{13}\text{C}$  NMR spectra for compound 5f**

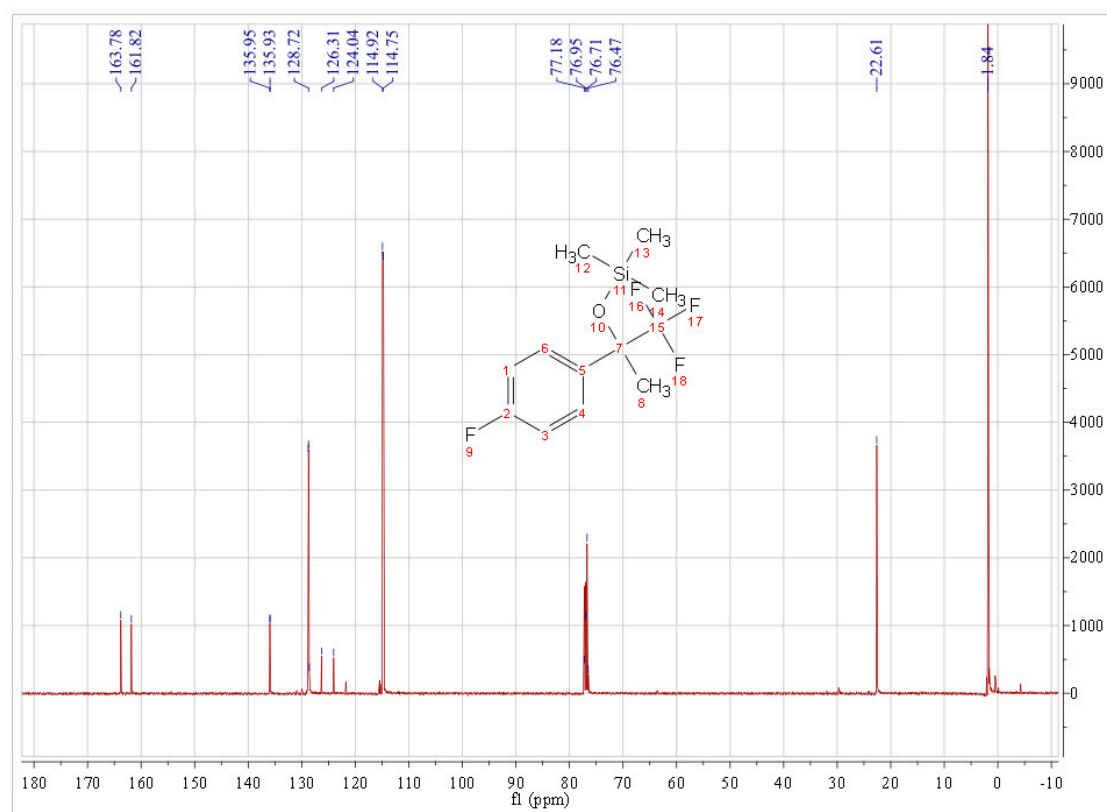


Figure S59  $^1\text{H}$  NMR spectra for compound 5g

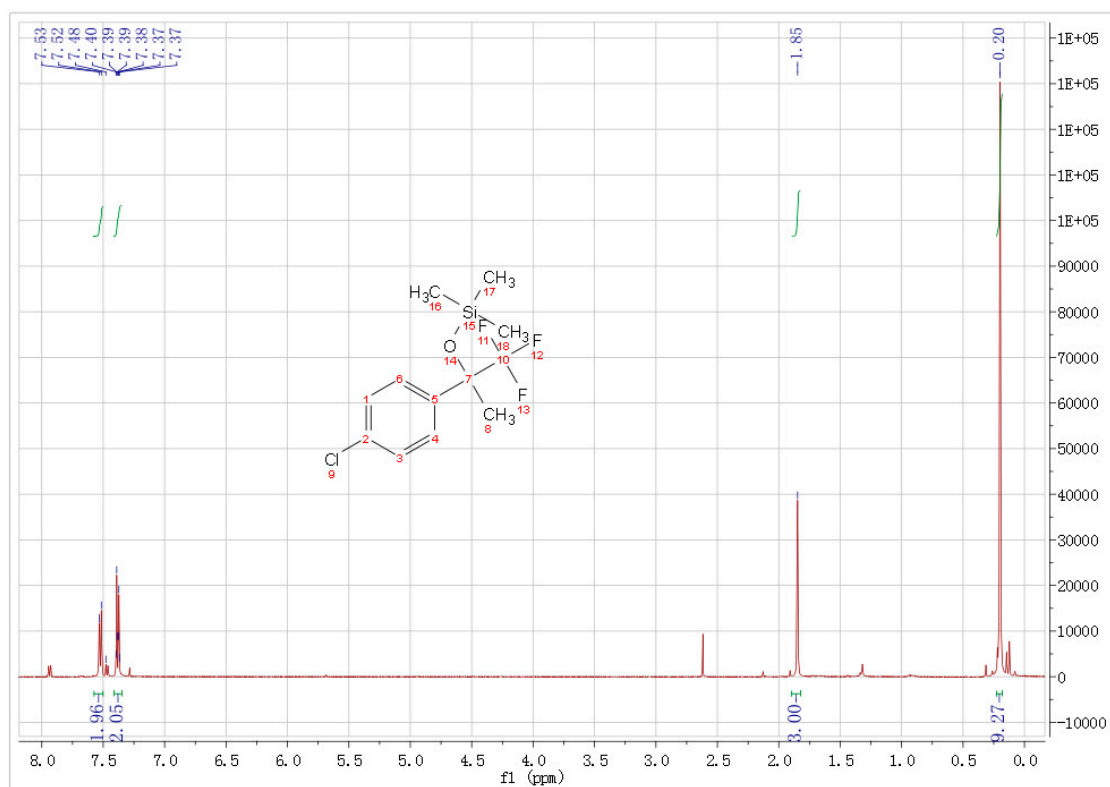


Figure S60  $^{13}\text{C}$  NMR spectra for compound 5g

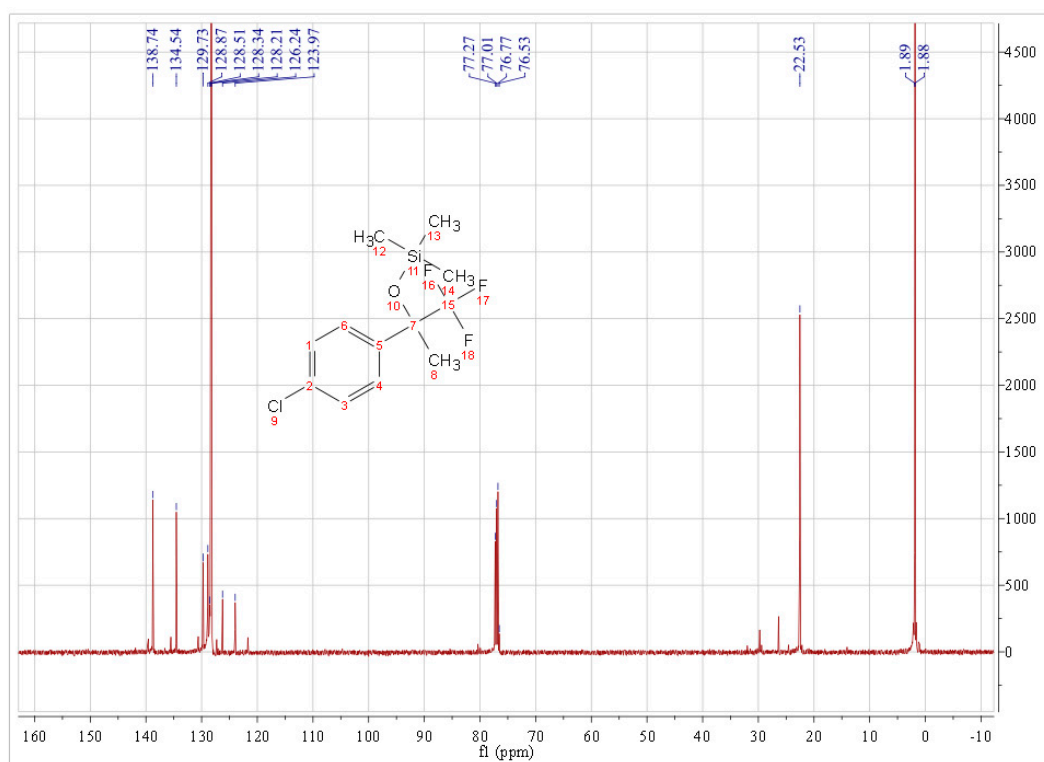


Figure S61  $^1\text{H}$  NMR spectra for compound 5h

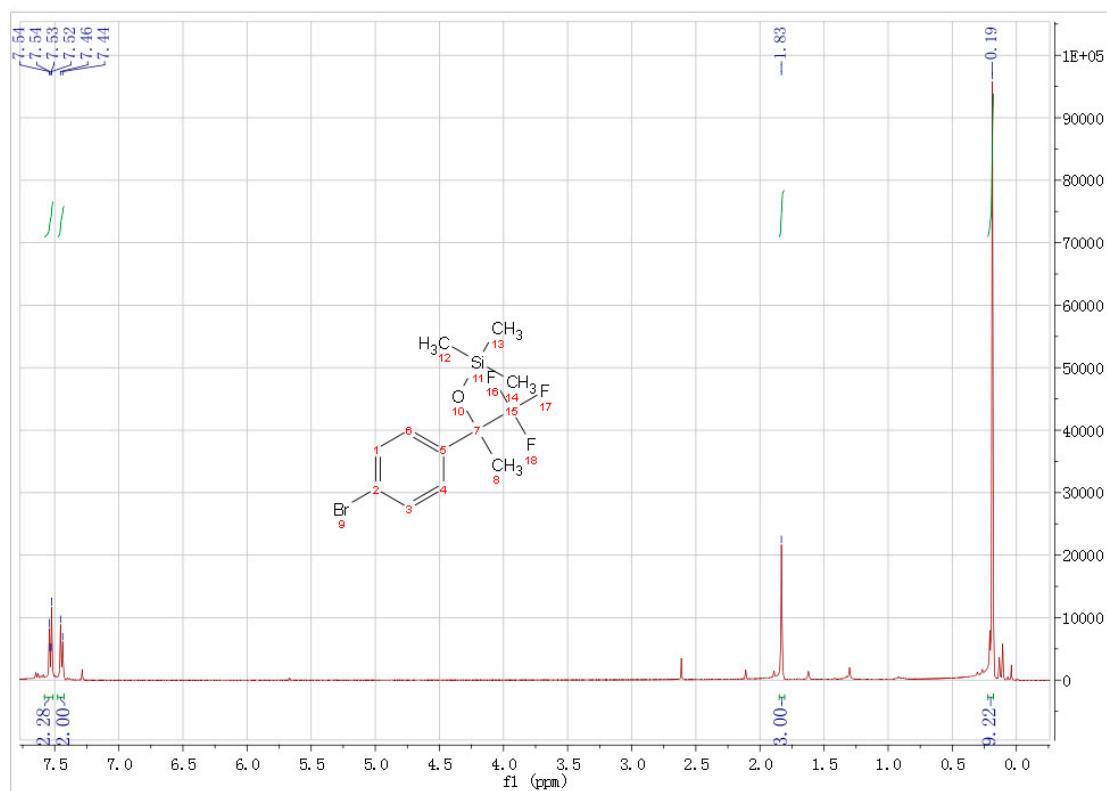


Figure S62  $^{13}\text{C}$  NMR spectra for compound 5h

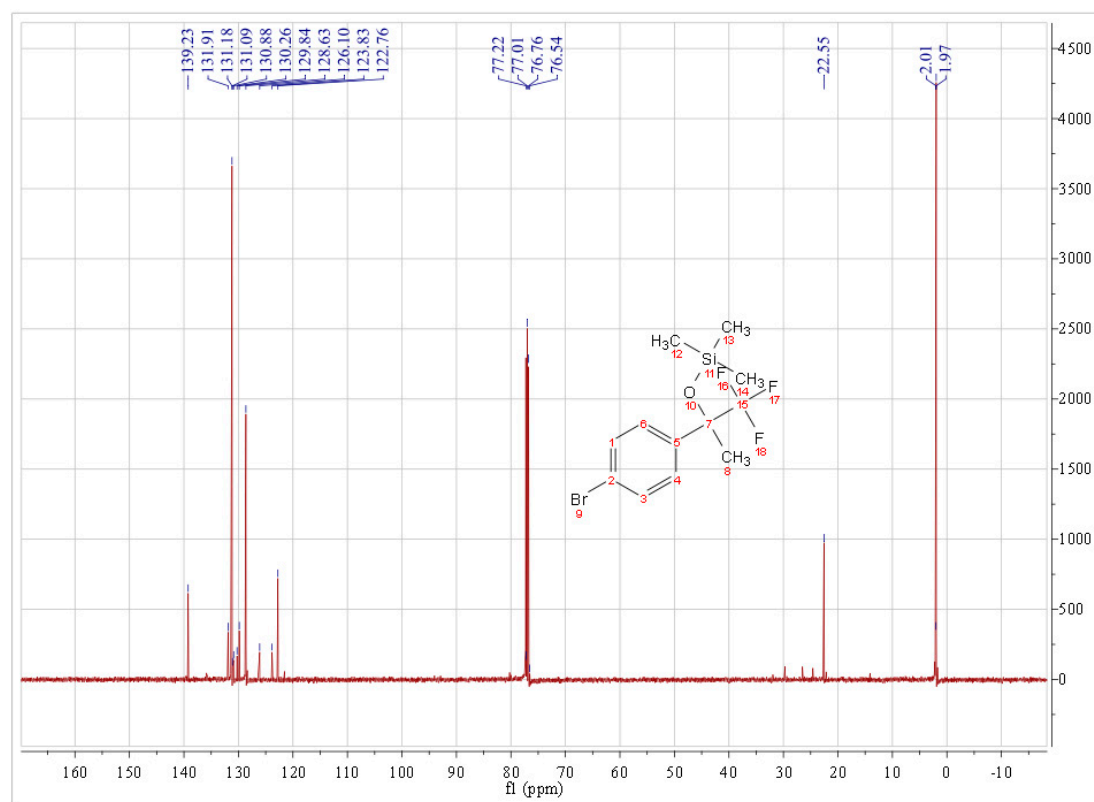


Figure S63  $^1\text{H}$  NMR spectra for compound 5i

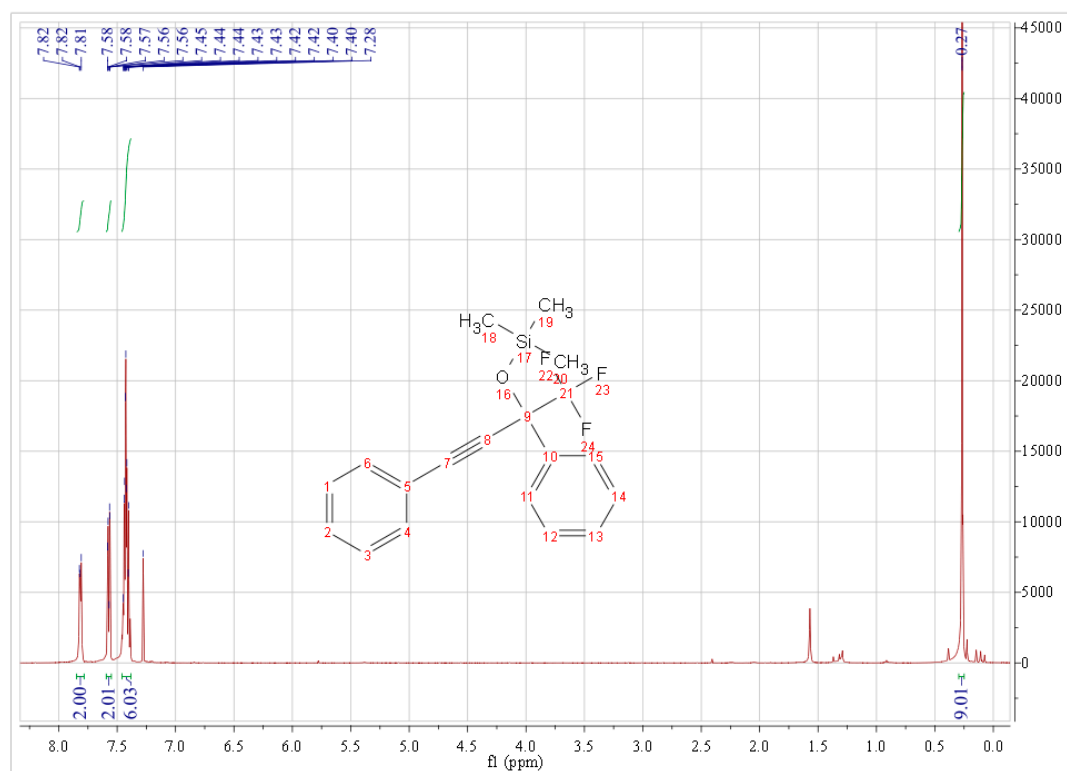


Figure S64  $^{13}\text{C}$  NMR spectra for compound 5i

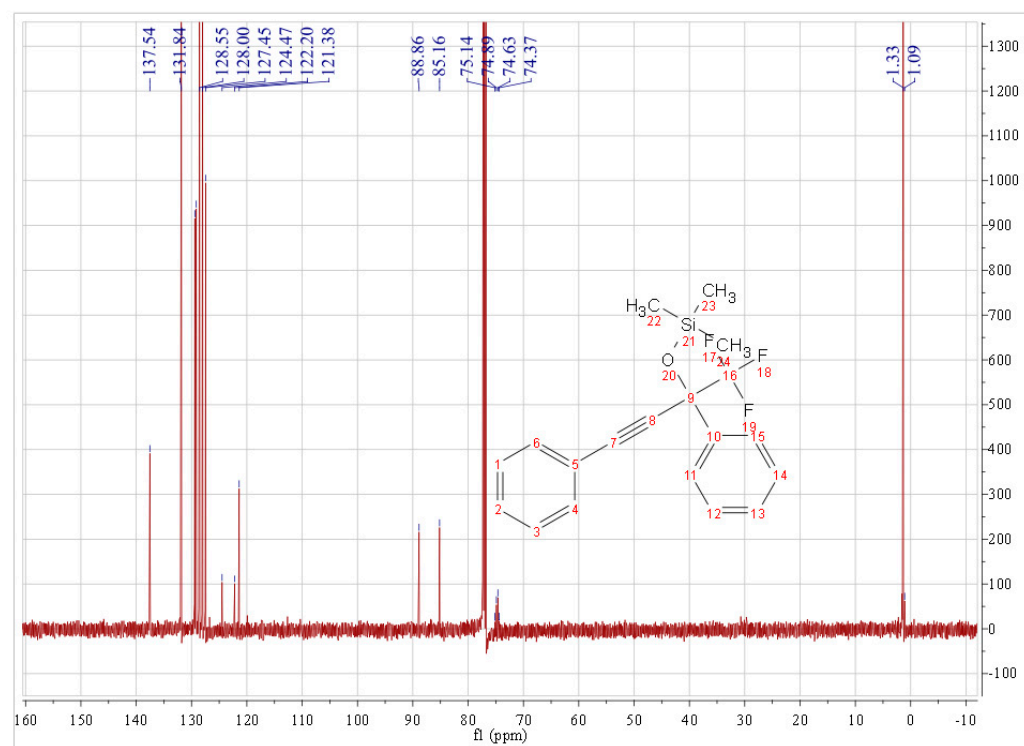


Figure S65  $^1\text{H}$  NMR spectra for compound 5j

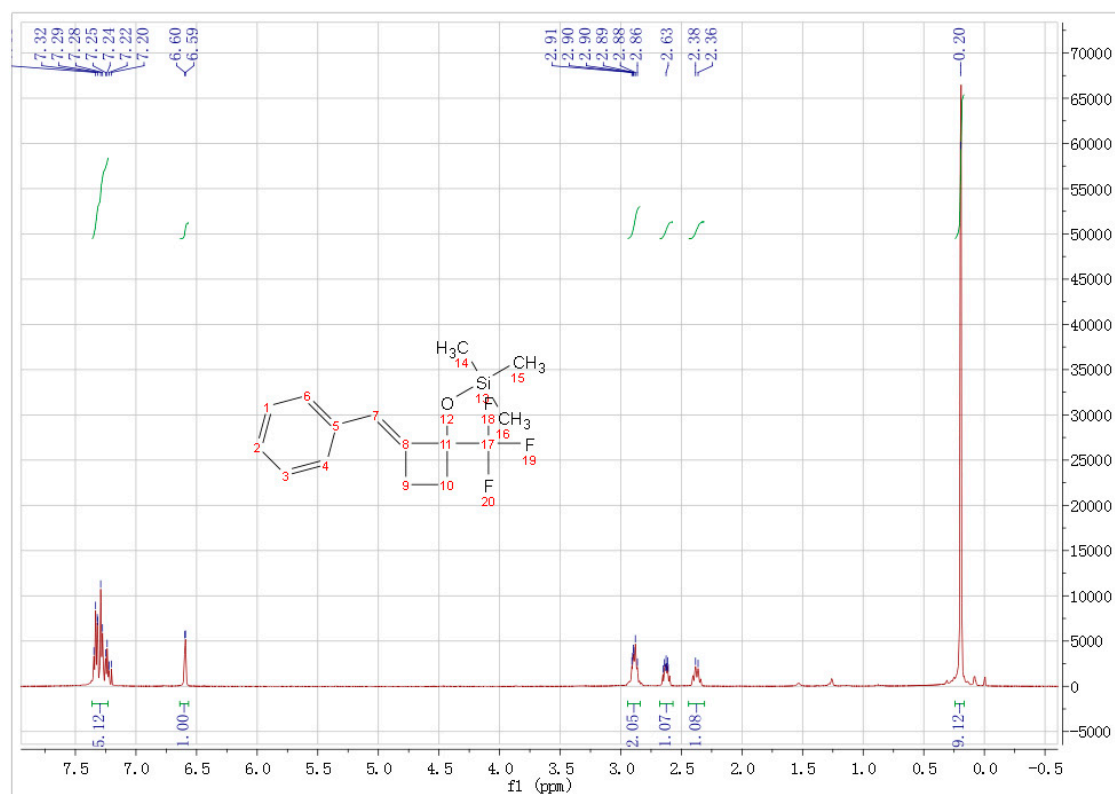


Figure S66  $^{13}\text{C}$  NMR spectra for compound 5j

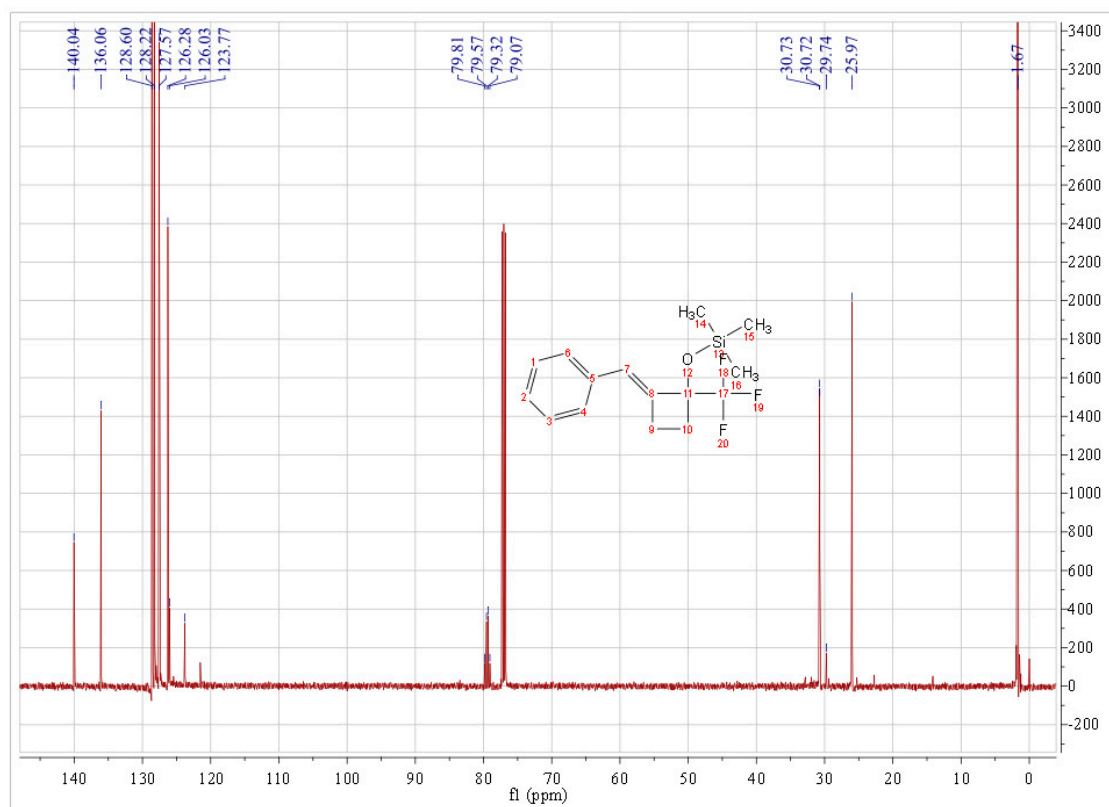


Figure S67  $^1\text{H}$  NMR spectra for compound 5k

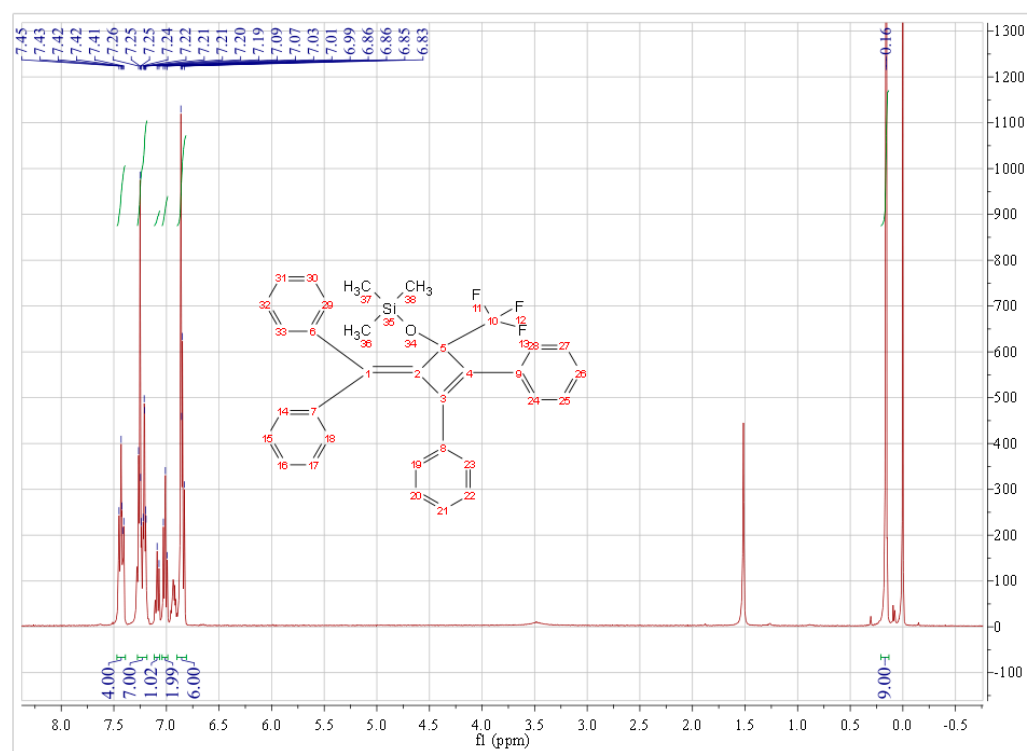


Figure S68  $^{13}\text{C}$  NMR spectra for compound 5k

