

Supporting Information

A Simple and Versatile Method for the Formation of Acetals/ketals Using Trace Conventional Acids

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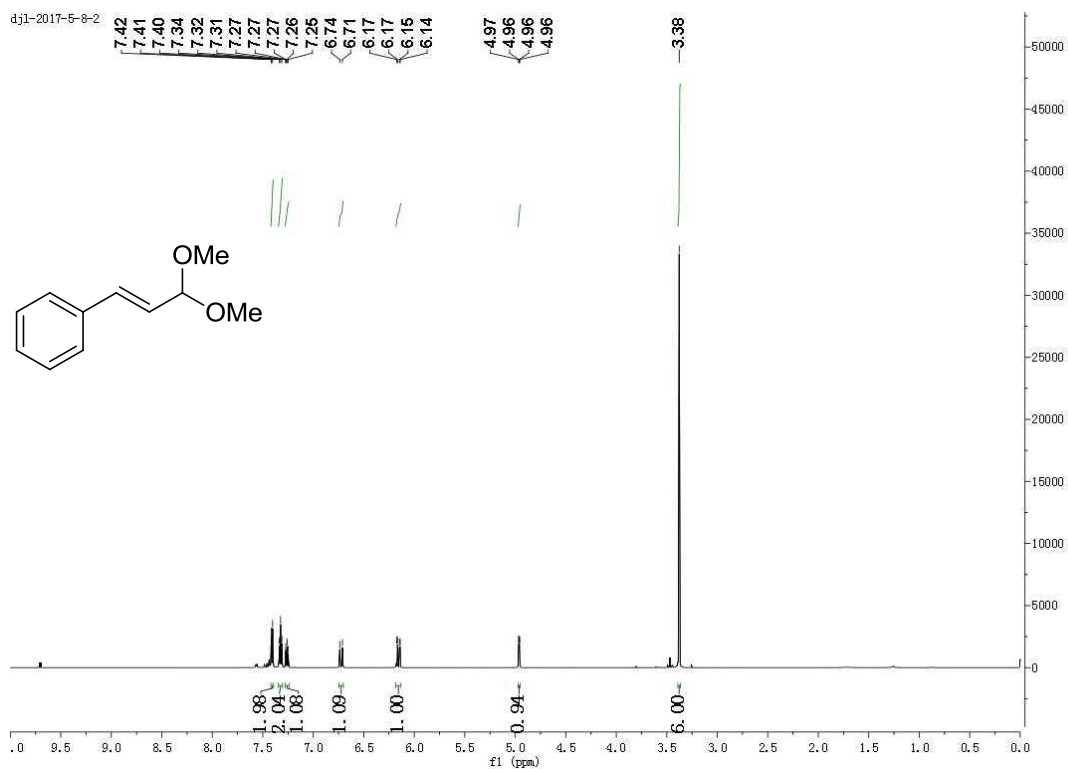


Figure S1: ^1H NMR (600 MHz, CDCl_3) of compound **2a**

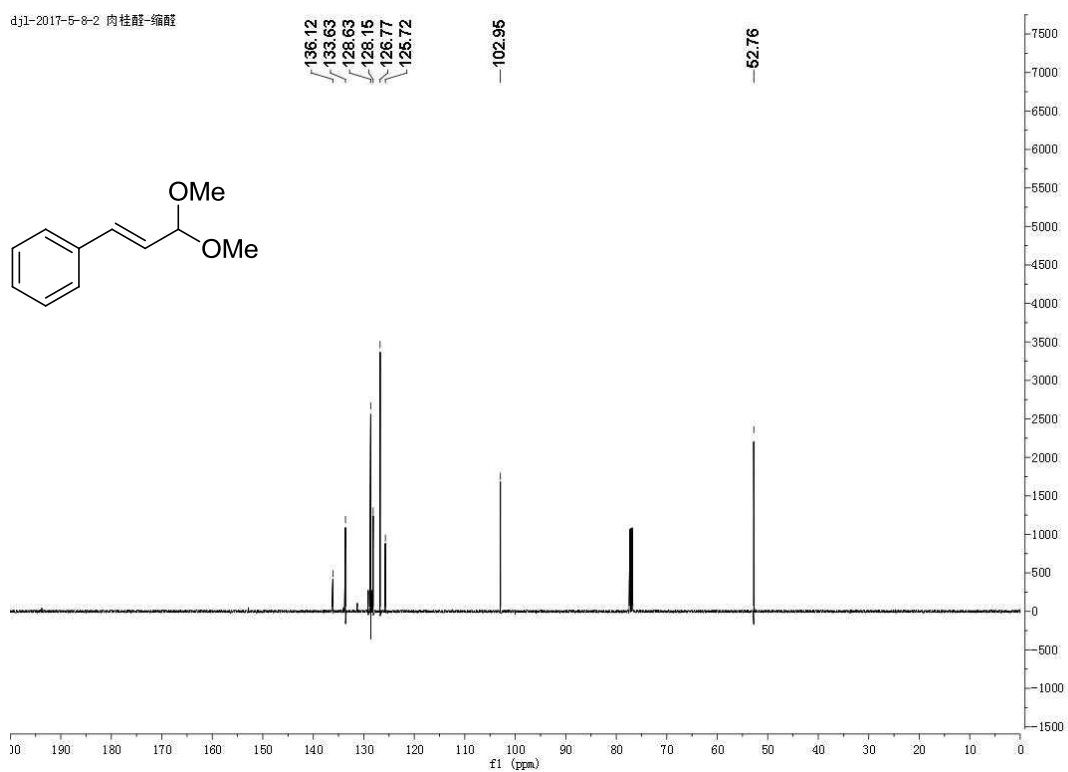


Figure S2: ^{13}C NMR (151 MHz, CDCl_3) of compound **2a**

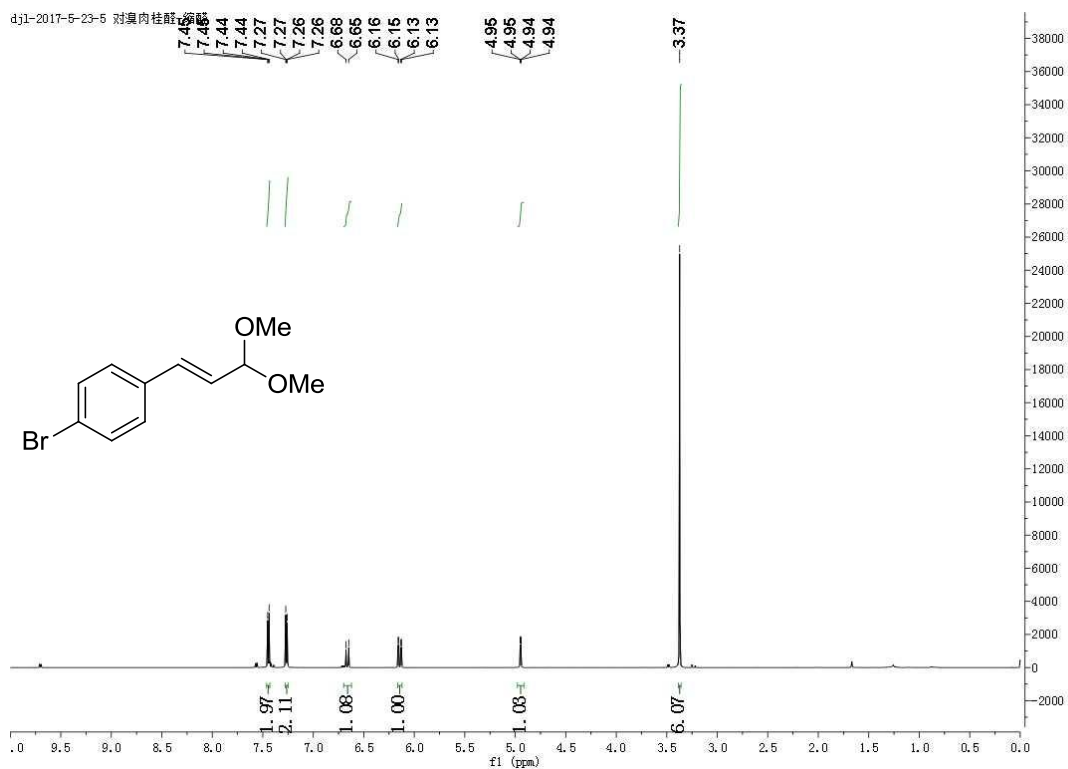


Figure S3: ^1H NMR (600 MHz, CDCl_3) of compound **2b**

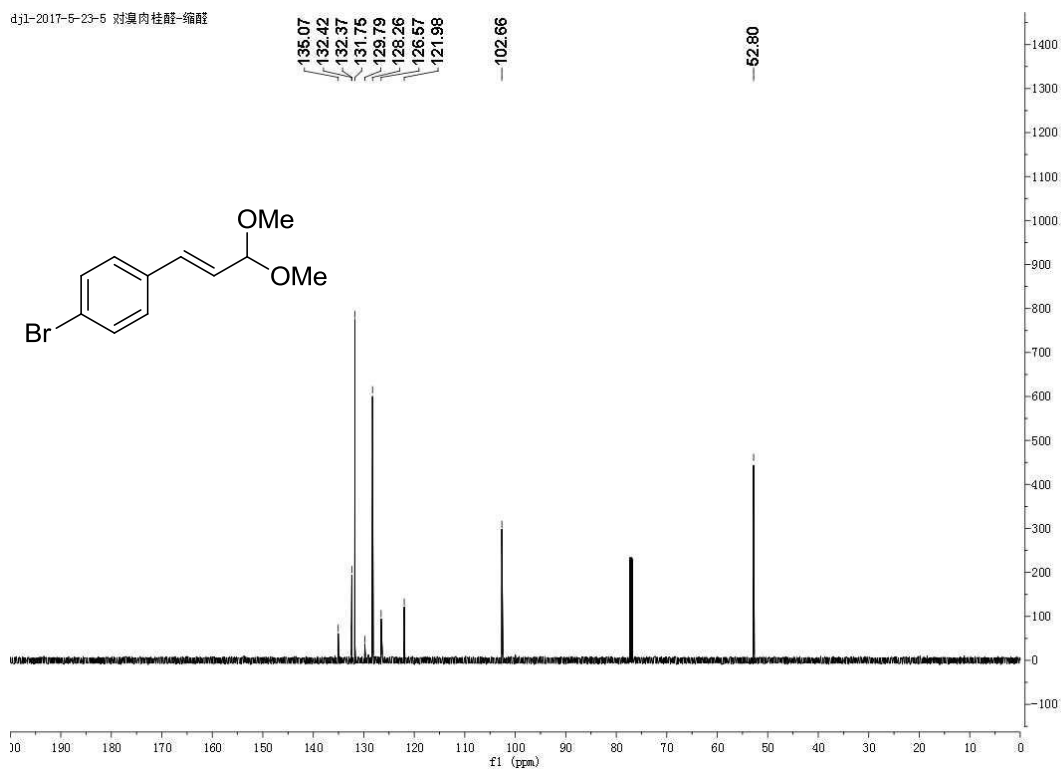


Figure S4: ^{13}C NMR (151 MHz, CDCl_3) of compound **2b**

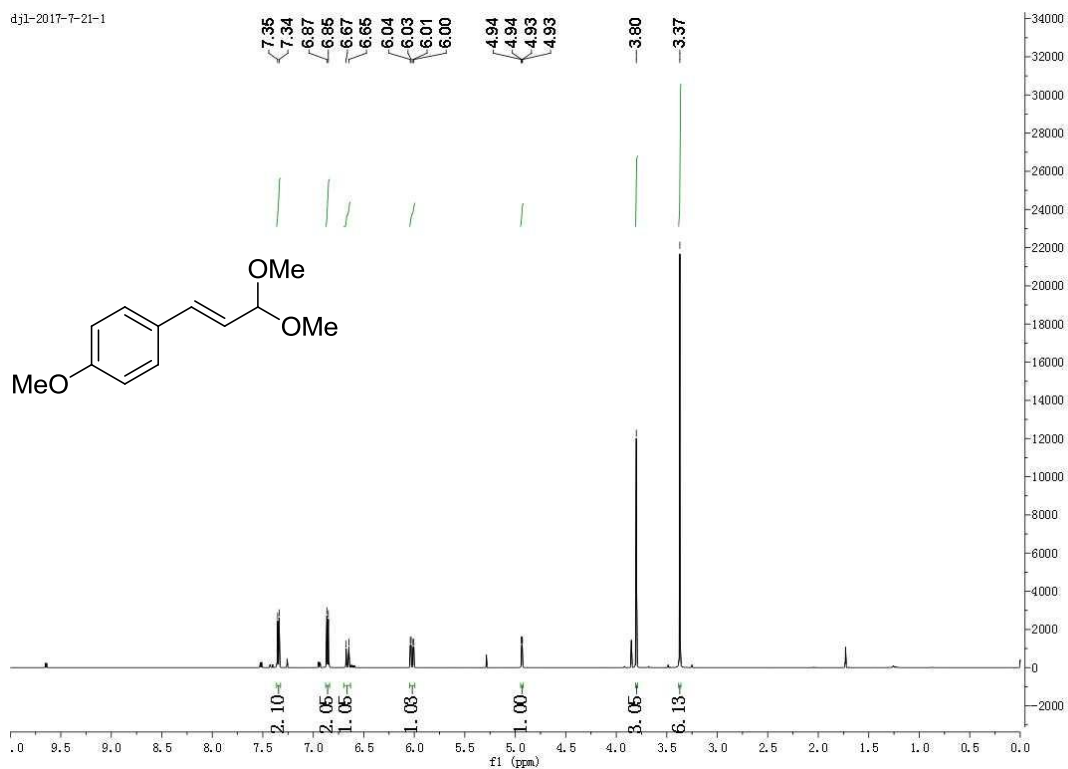


Figure S5: ^1H NMR (600 MHz, CDCl_3) of compound **2c**

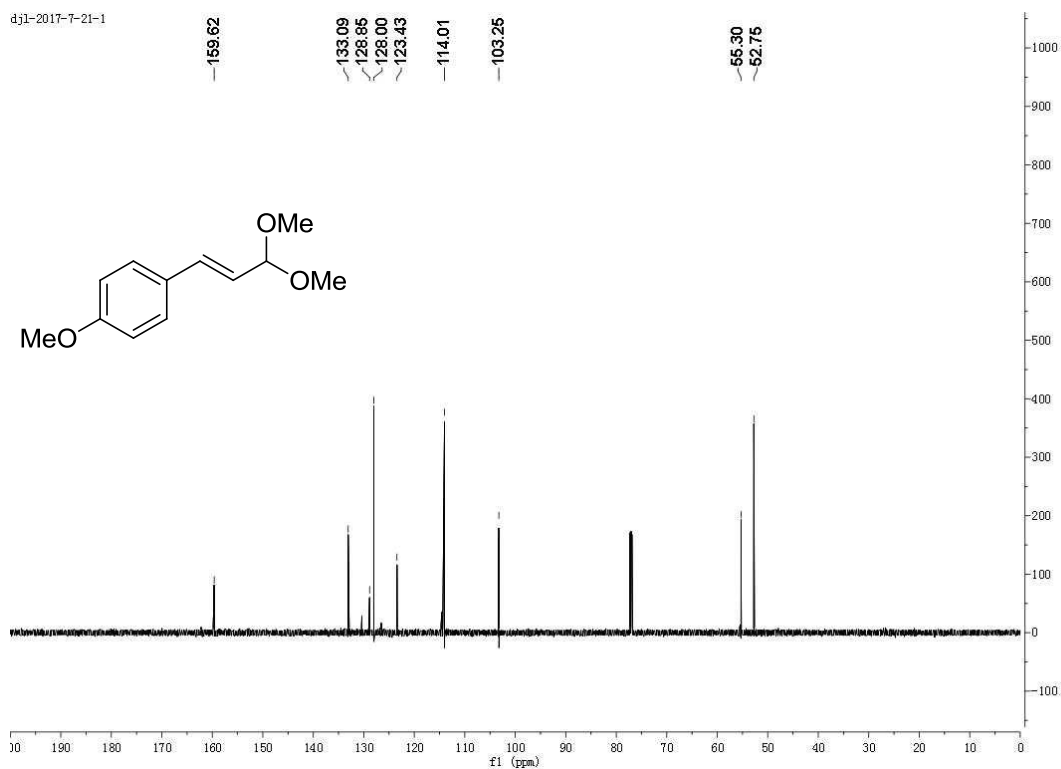


Figure S6: ^{13}C NMR (151 MHz, CDCl_3) of compound **2c**

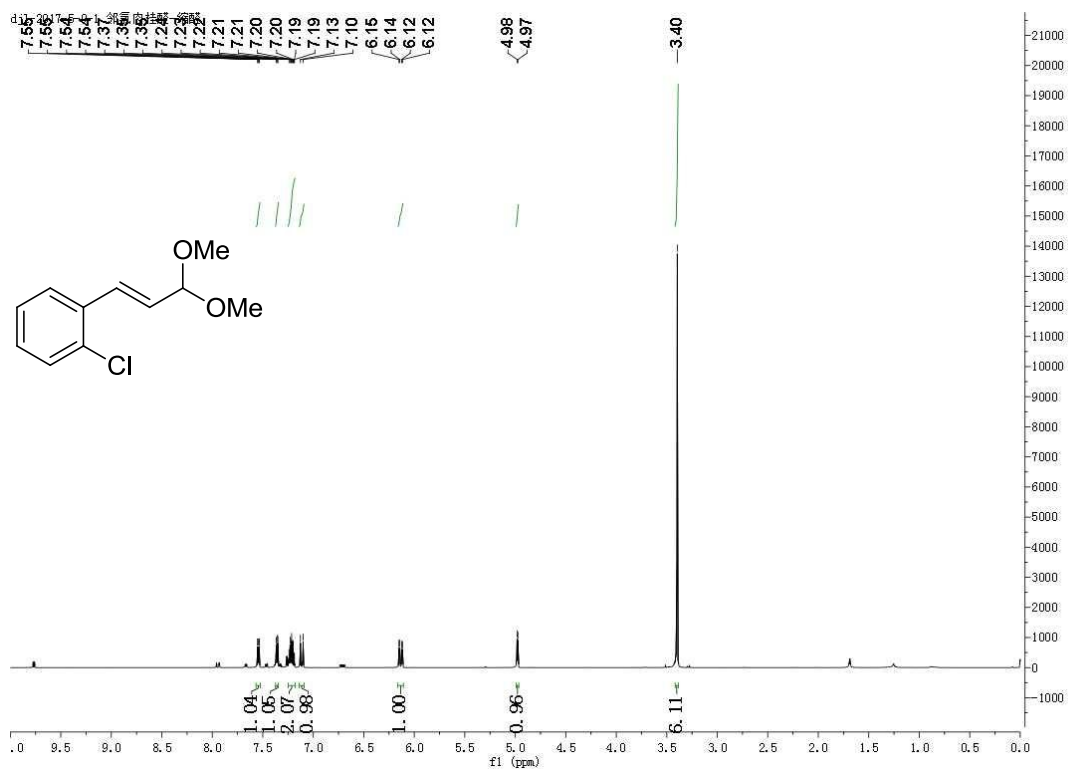


Figure S7: ^1H NMR (600 MHz, CDCl_3) of compound 2d

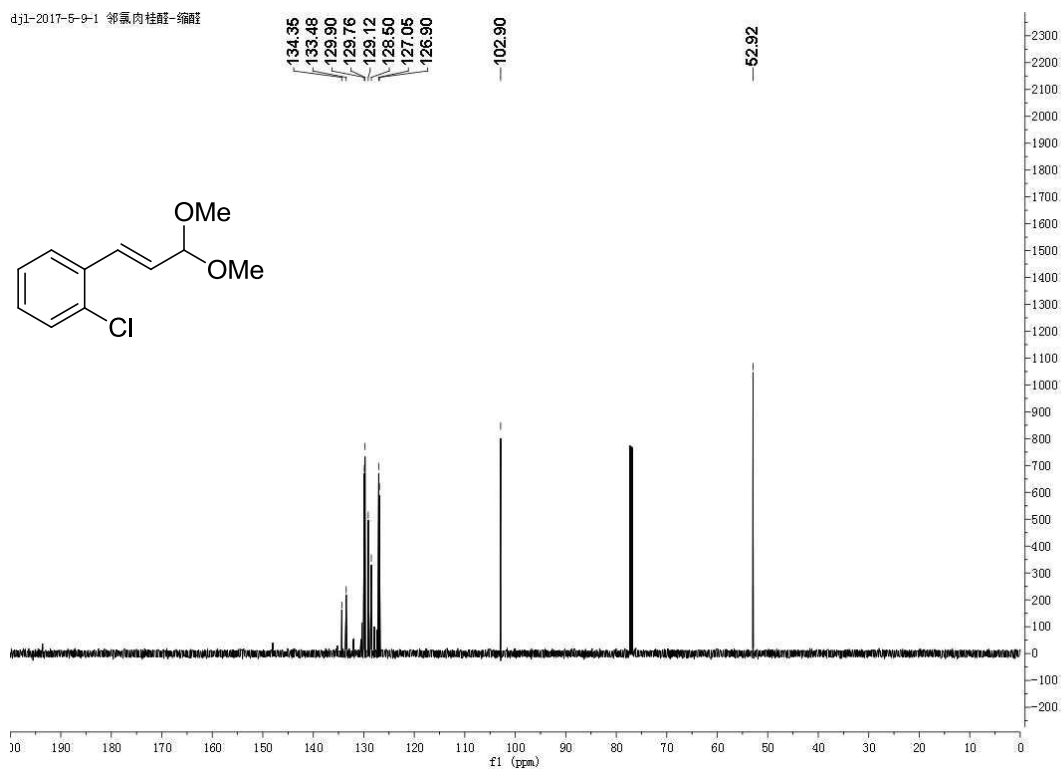


Figure S8: ^{13}C NMR (151 MHz, CDCl_3) of compound 2d

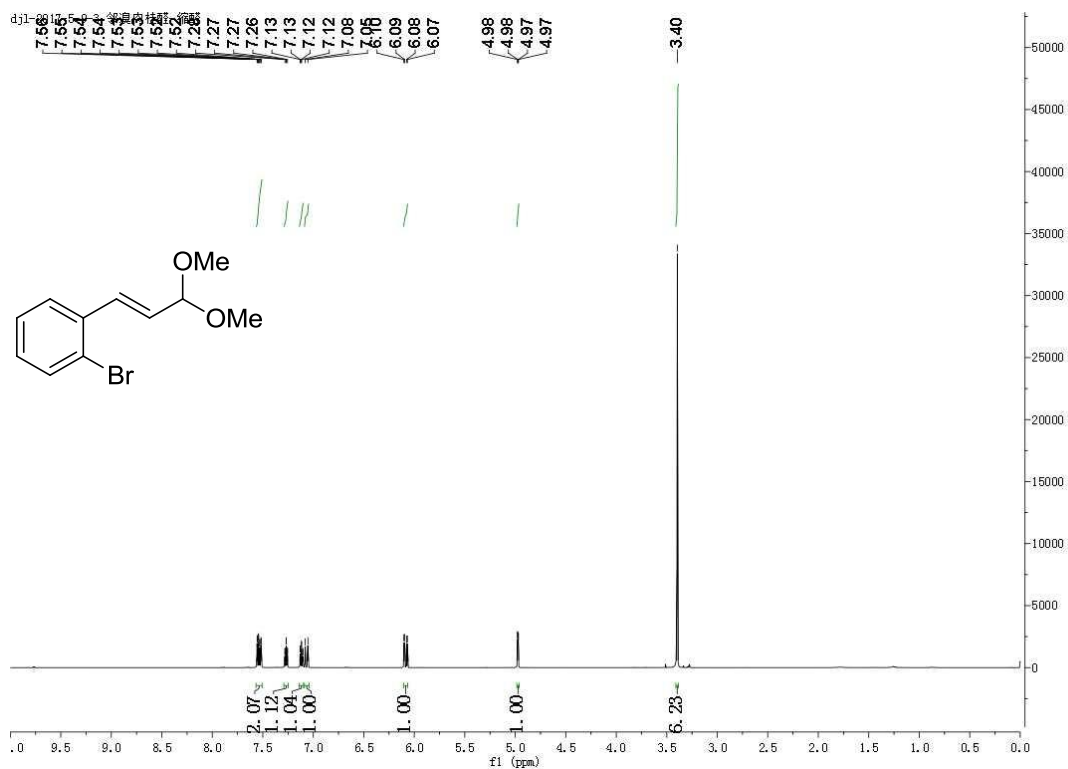


Figure S9: ¹H NMR (600 MHz, CDCl₃) of compound 2e

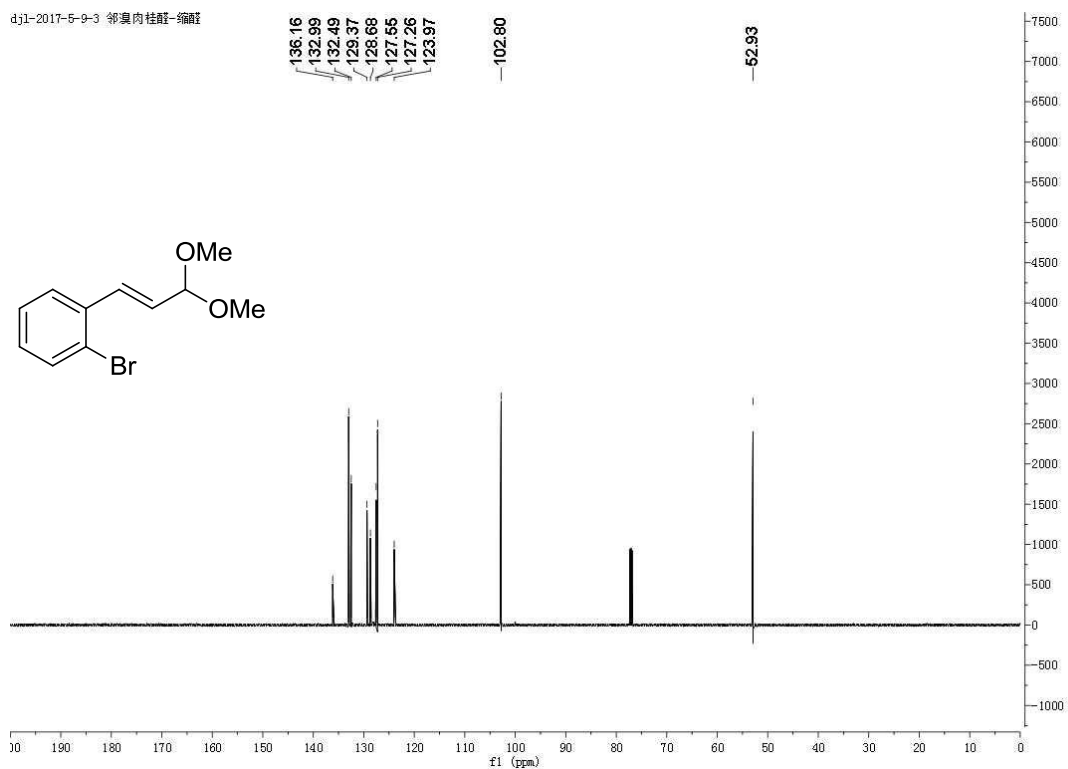
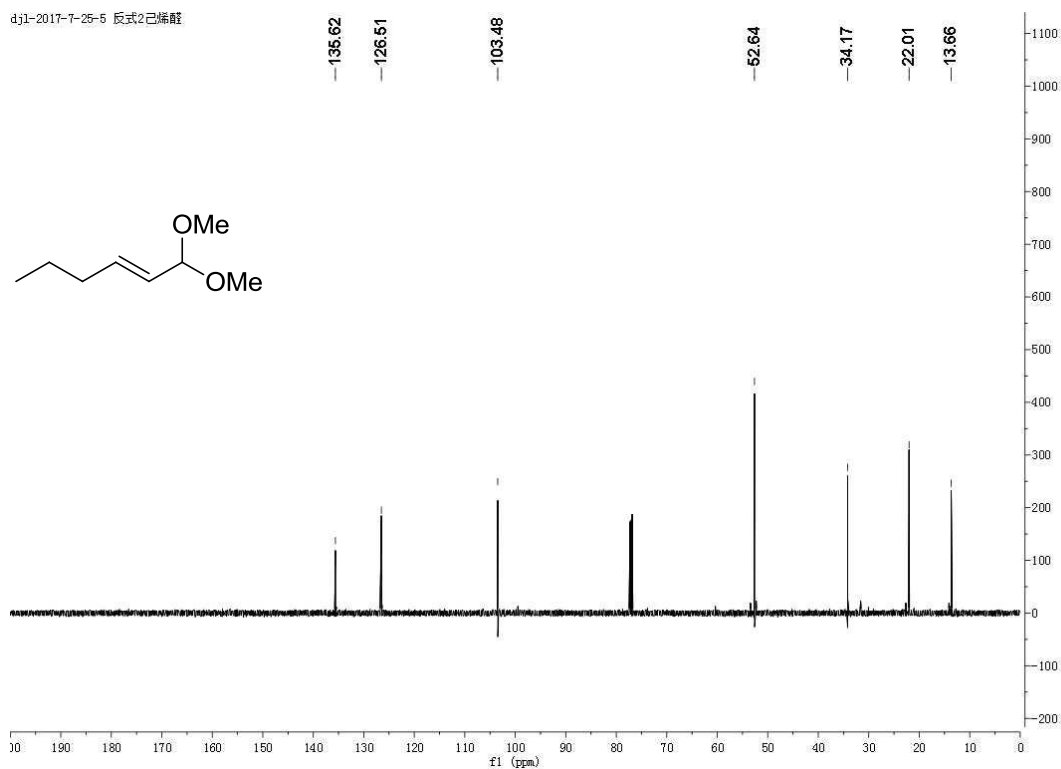
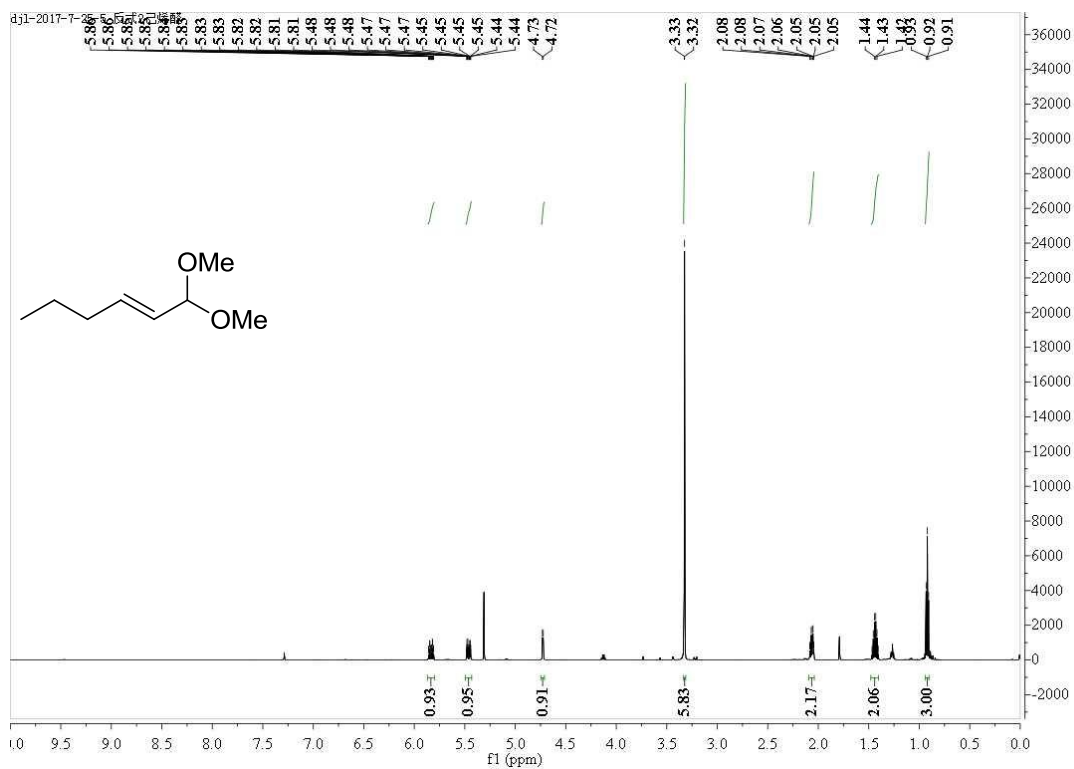


Figure S10: ¹³C NMR (151 MHz, CDCl₃) of compound 2e



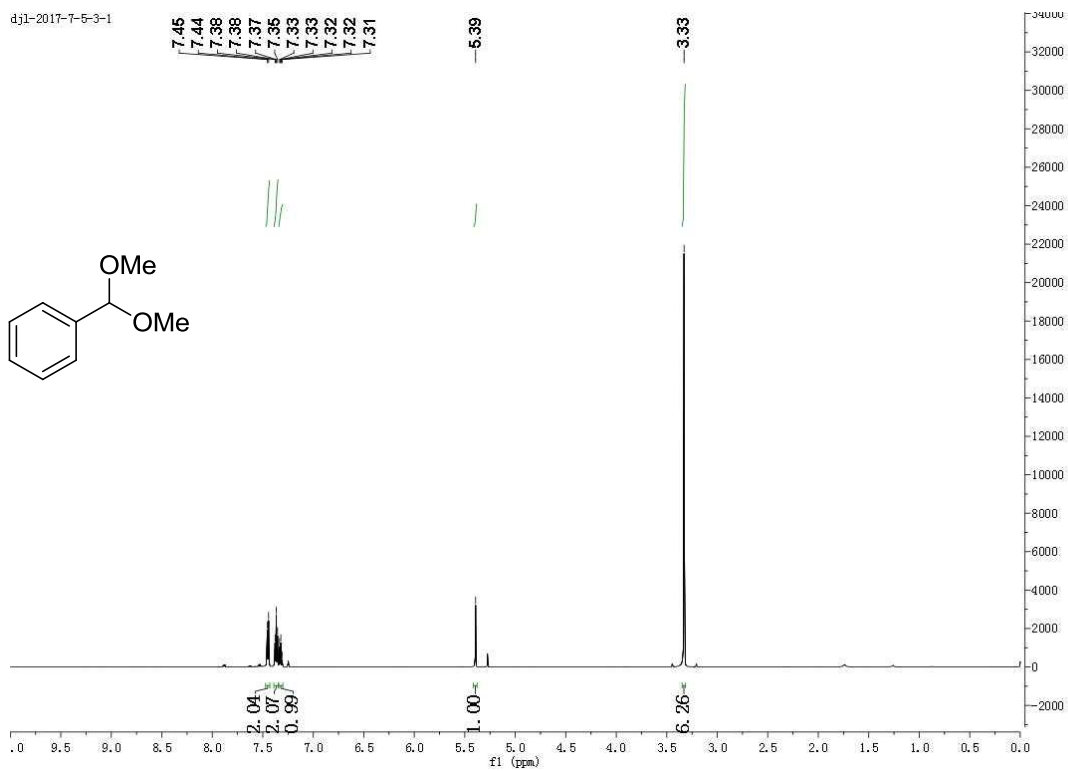


Figure S13: ^1H NMR (600 MHz, CDCl_3) of compound **2g**

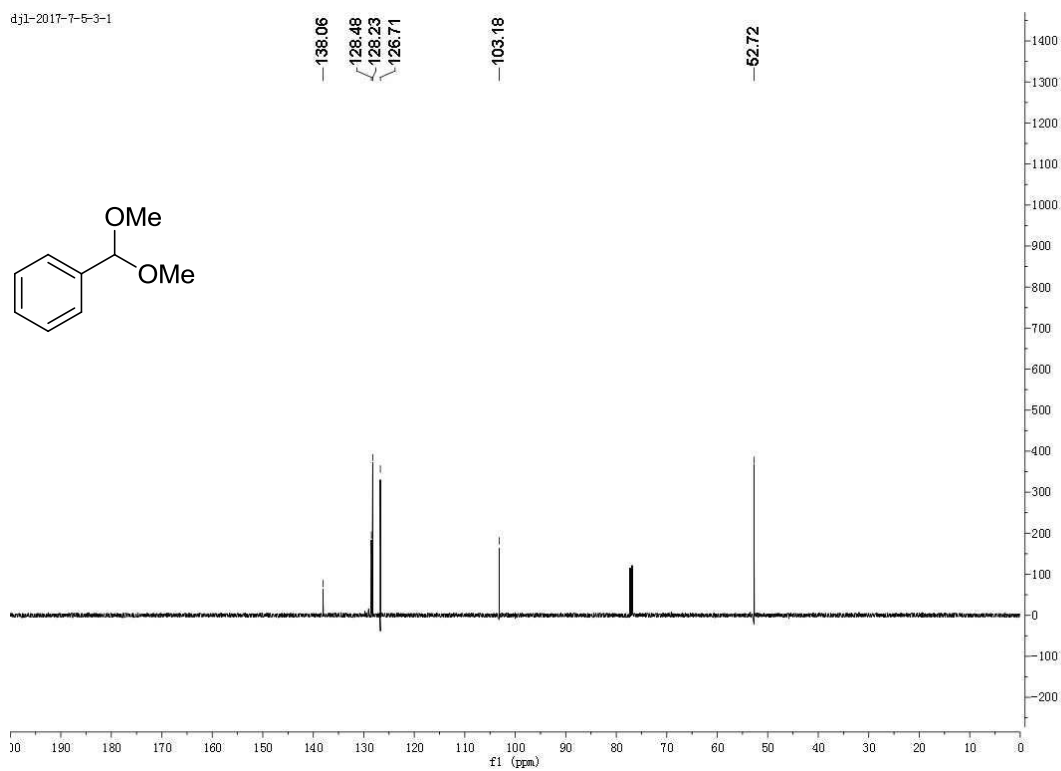


Figure S14: ^{13}C NMR (151 MHz, CDCl_3) of compound **2g**

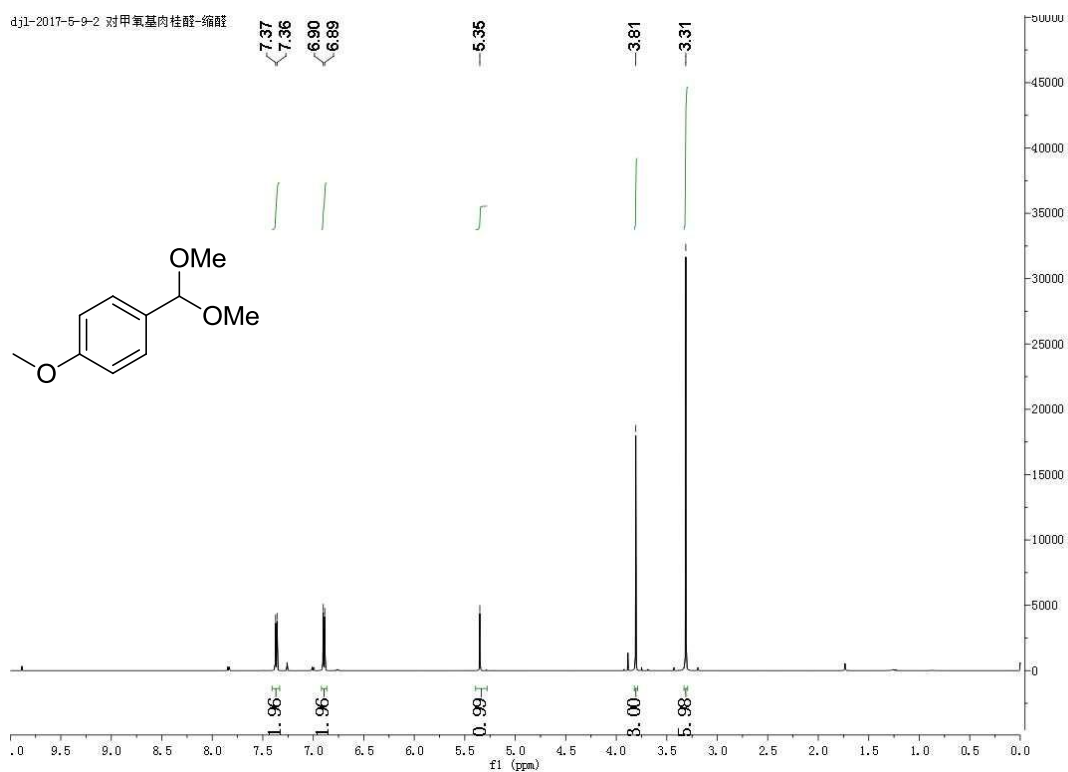


Figure S15: ^1H NMR (600 MHz, CDCl_3) of compound **2h**

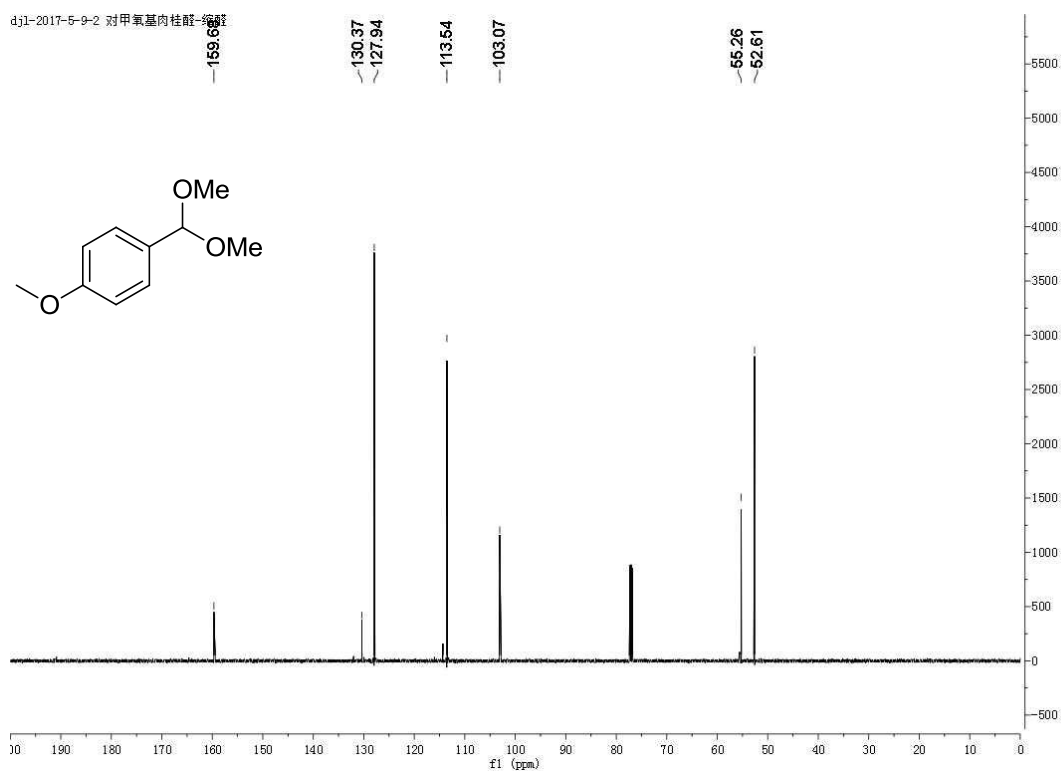


Figure S16: ^{13}C NMR (151 MHz, CDCl_3) of compound **2h**

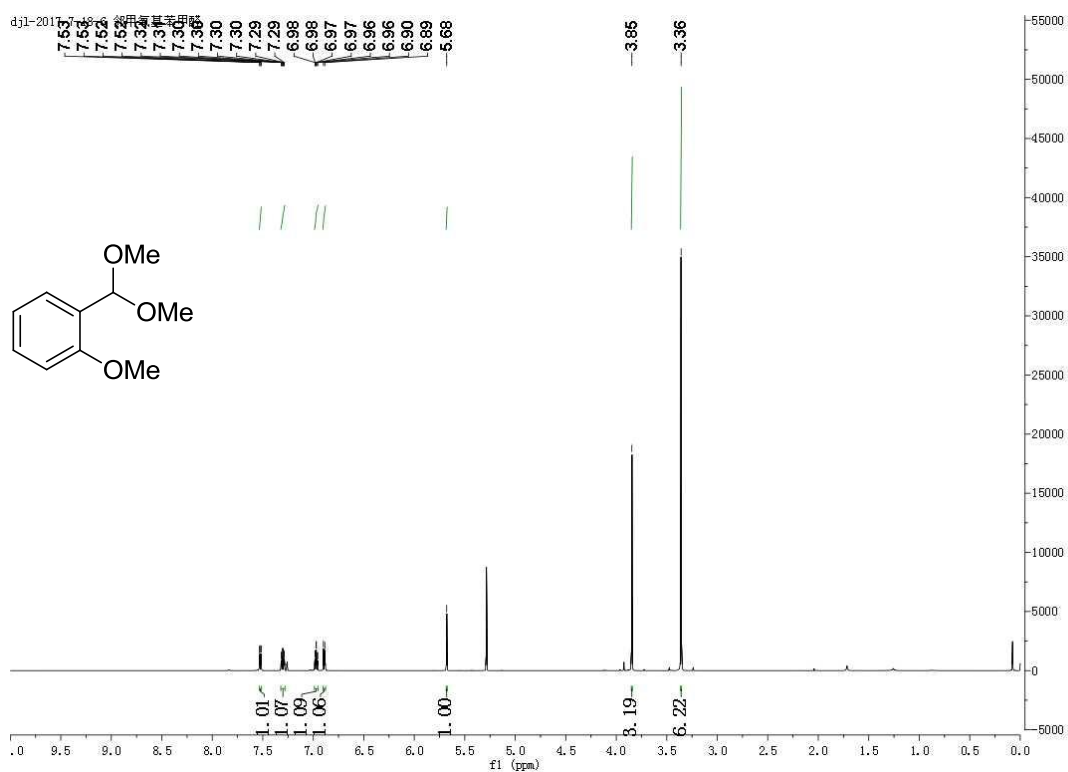


Figure S17: ^1H NMR (600 MHz, CDCl_3) of compound **2i**

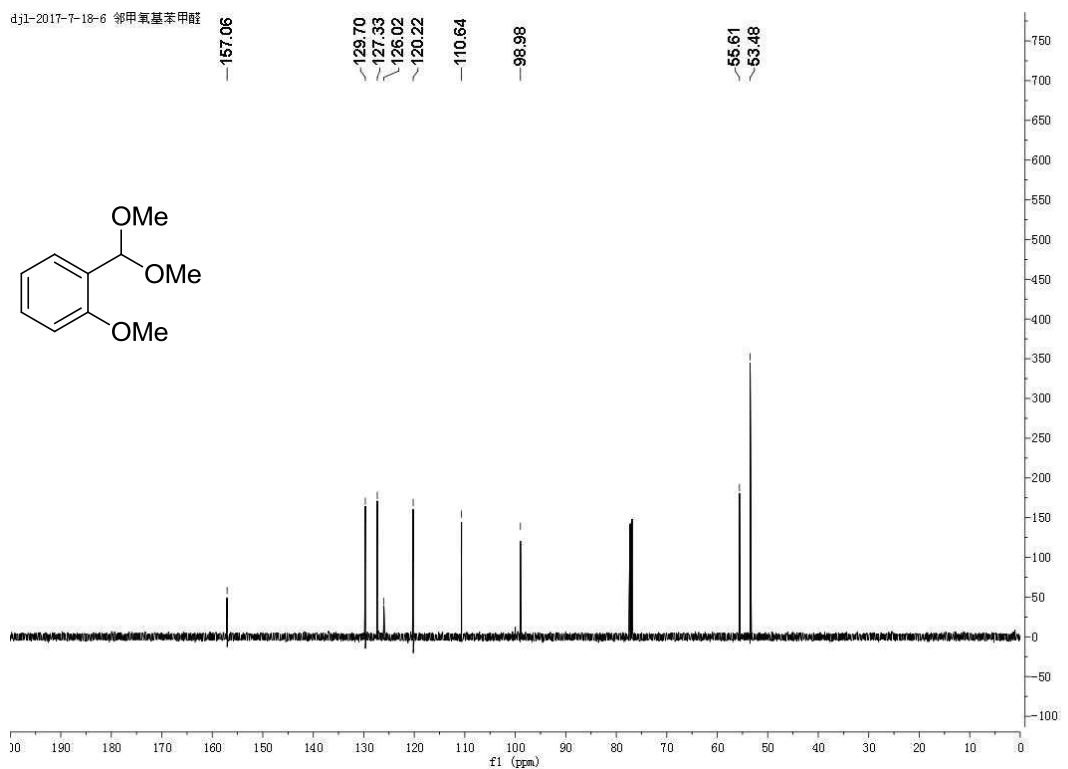


Figure S18: ^{13}C NMR (151 MHz, CDCl_3) of compound **2i**

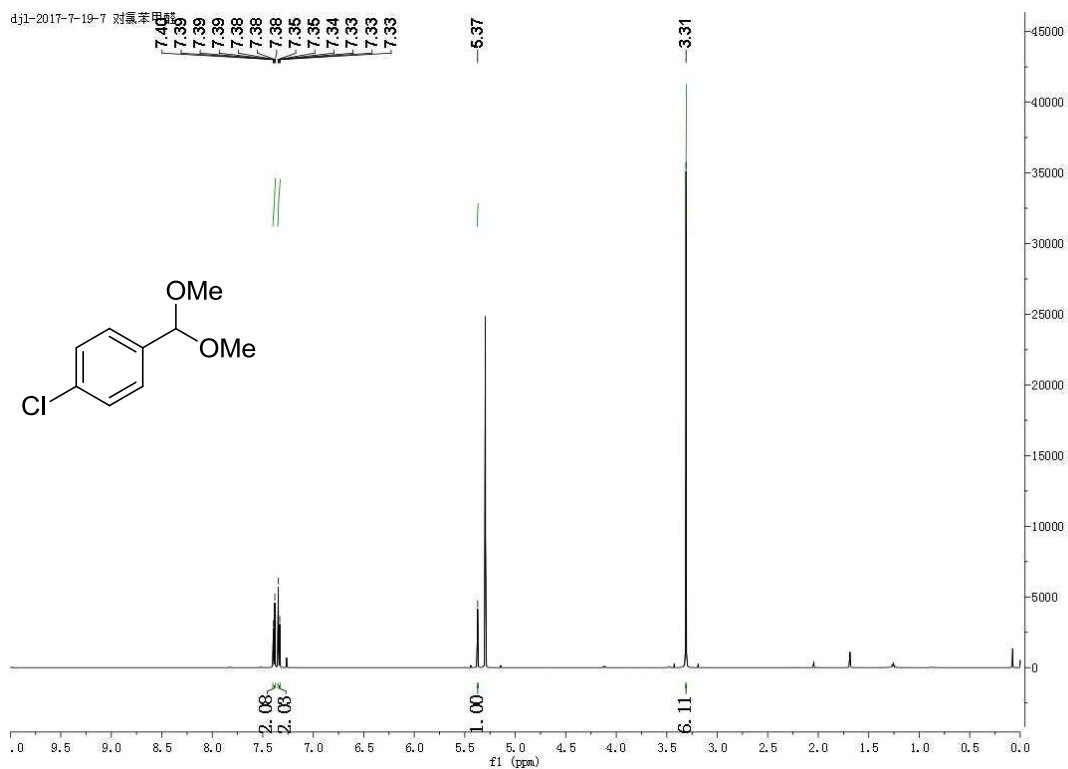


Figure S19: ^1H NMR (600 MHz, CDCl_3) of compound **2j**

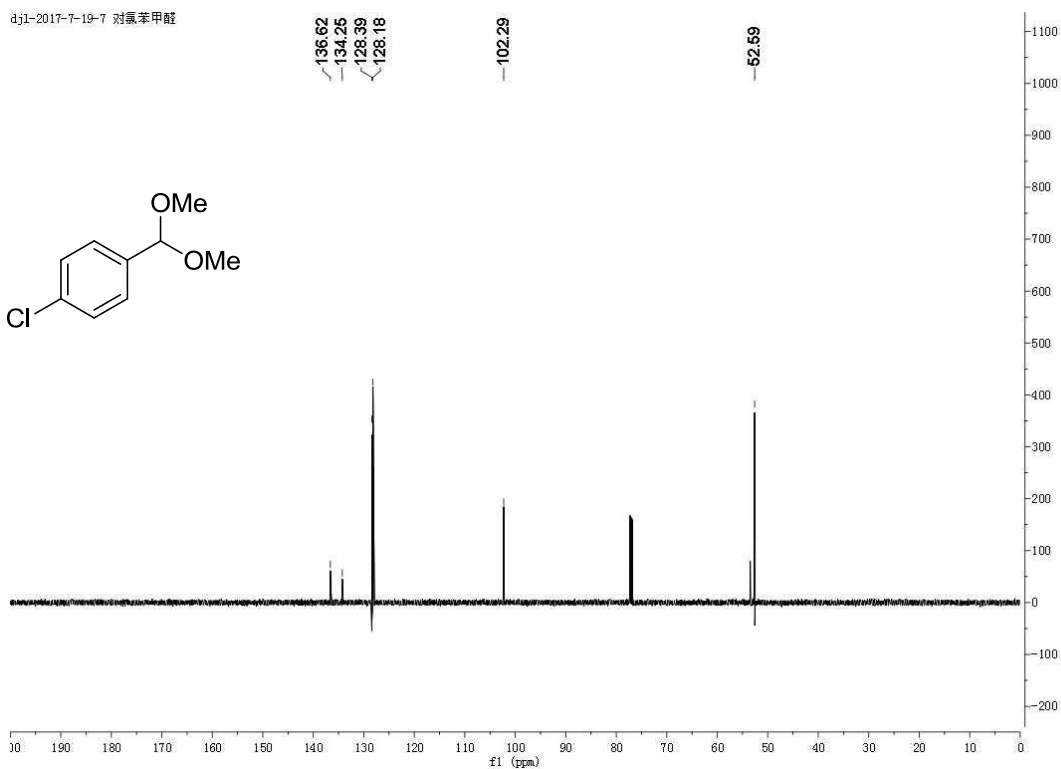


Figure S20: ^{13}C NMR (151 MHz, CDCl_3) of compound **2j**

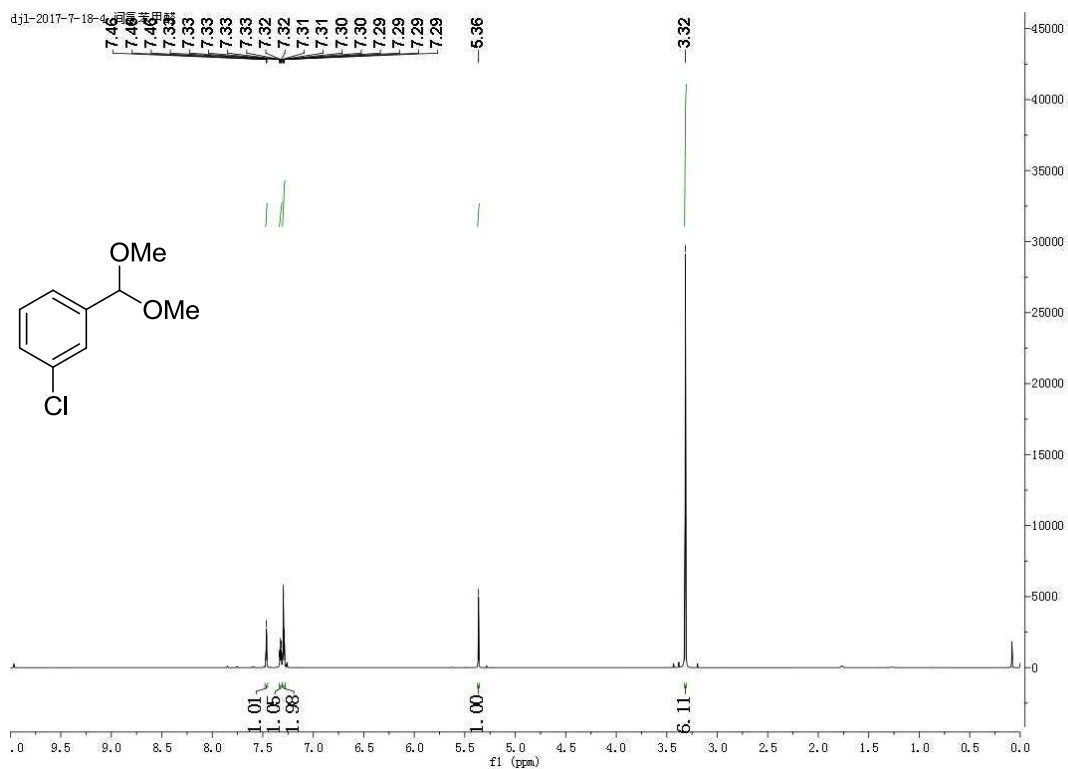


Figure S21: $^1\text{H NMR}$ (600 MHz, CDCl_3) of compound **2k**

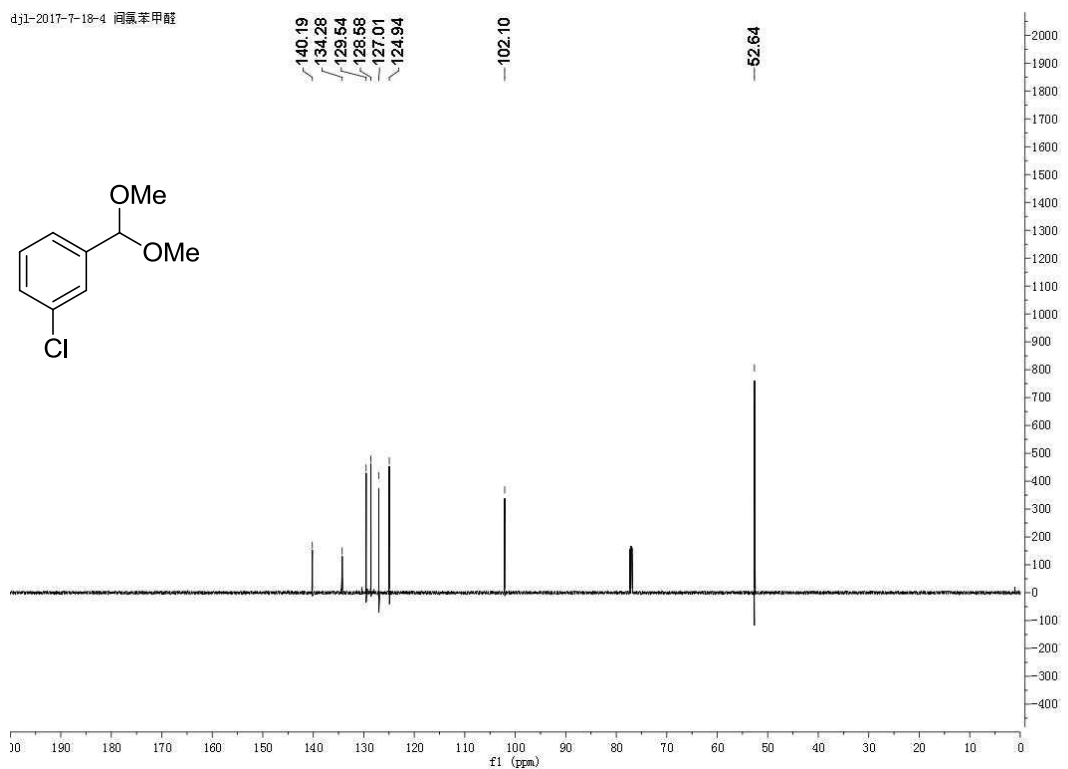


Figure S22: $^{13}\text{C NMR}$ (151 MHz, CDCl_3) of compound **2k**

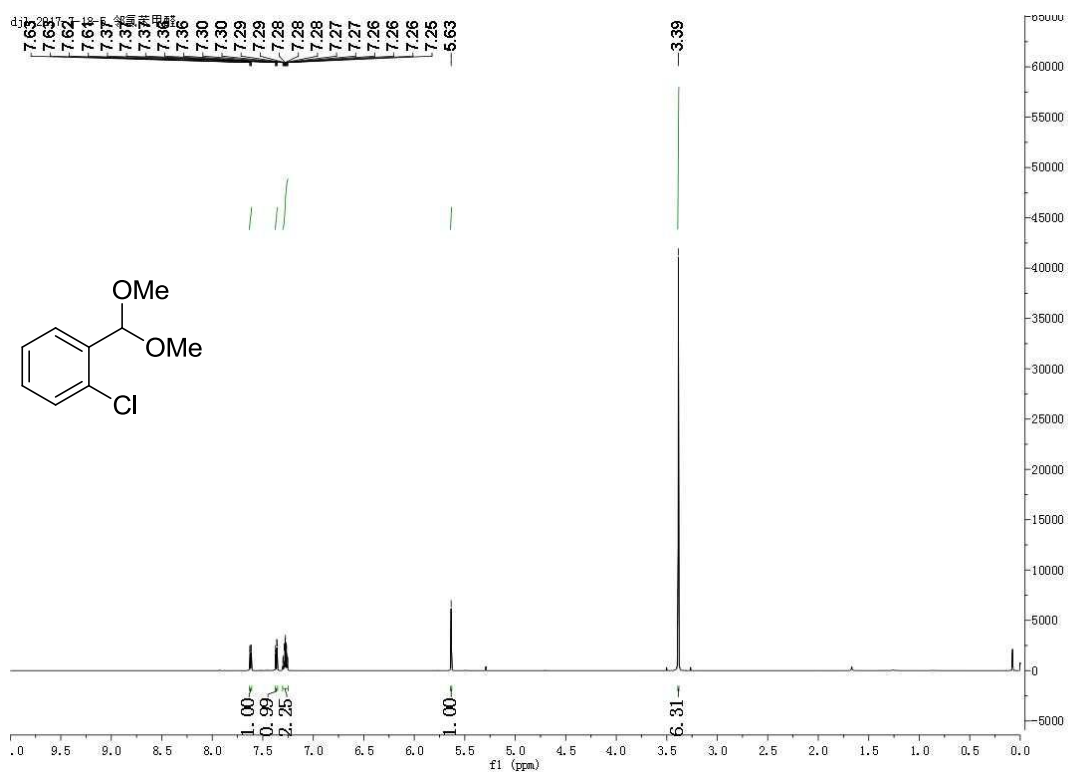


Figure S23: $^1\text{H NMR}$ (600 MHz, CDCl_3) of compound **2I**

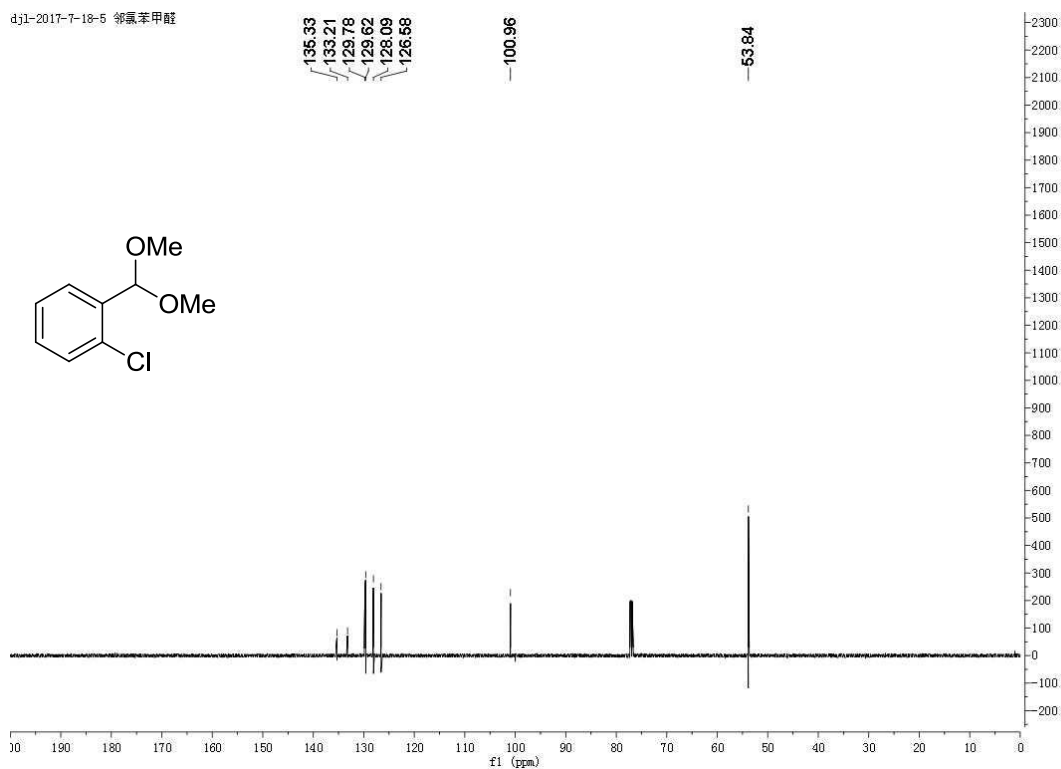


Figure S24: $^{13}\text{C NMR}$ (151 MHz, CDCl_3) of compound **2I**

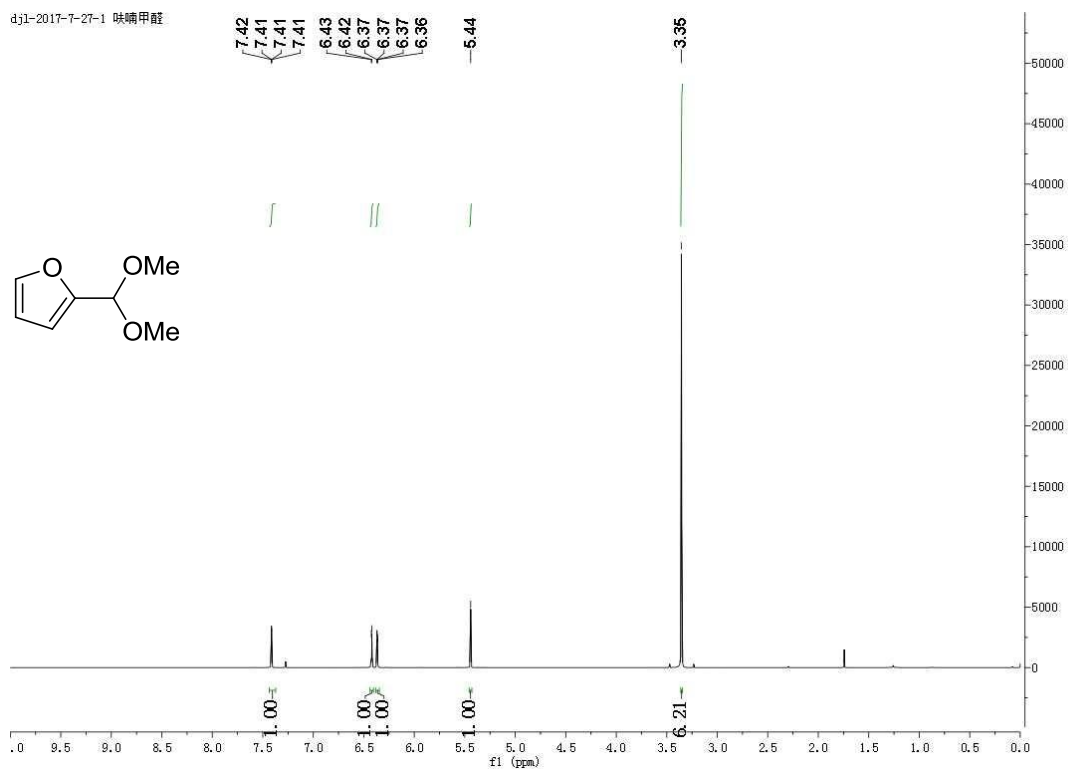


Figure S25: ^1H NMR (600 MHz, CDCl_3) of compound **2m**

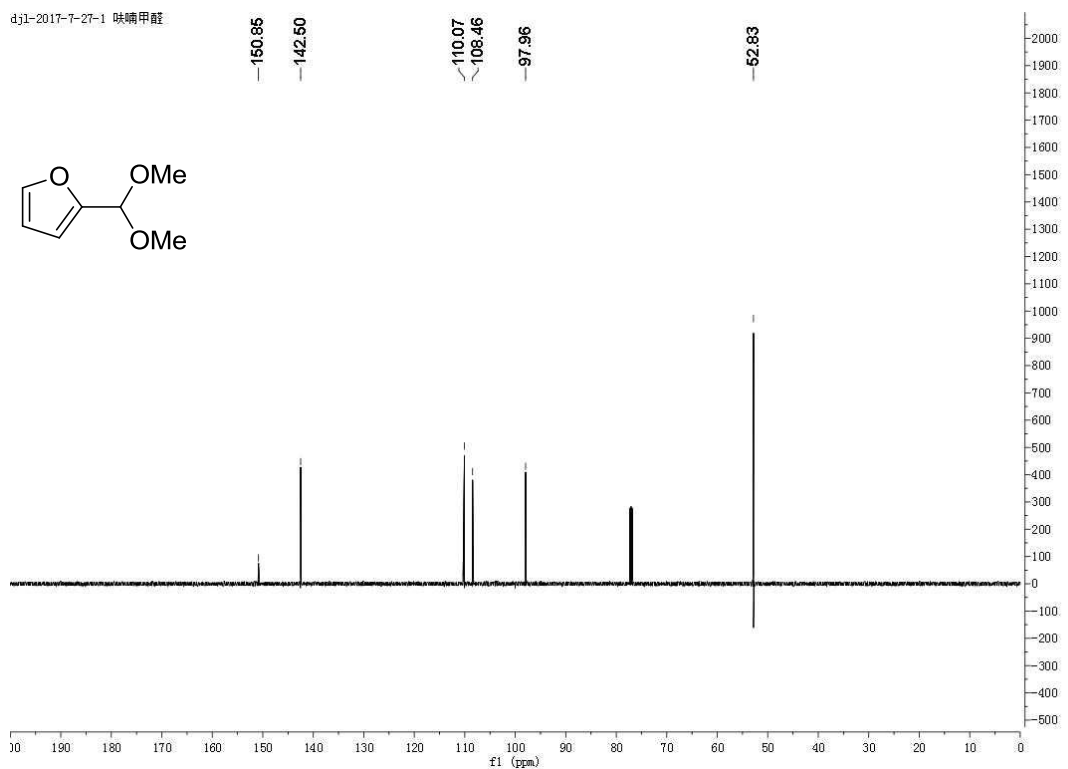


Figure S26: ^{13}C NMR (151 MHz, CDCl_3) of compound **2m**

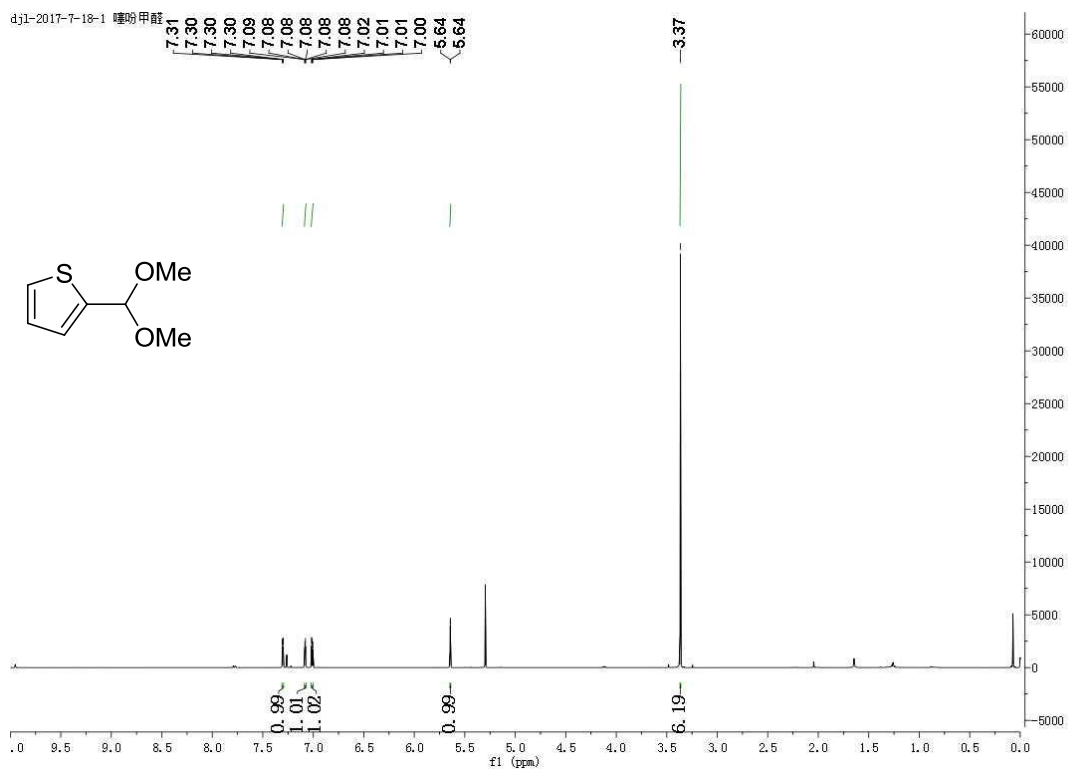


Figure S27: ^1H NMR (600 MHz, CDCl_3) of compound **2n**

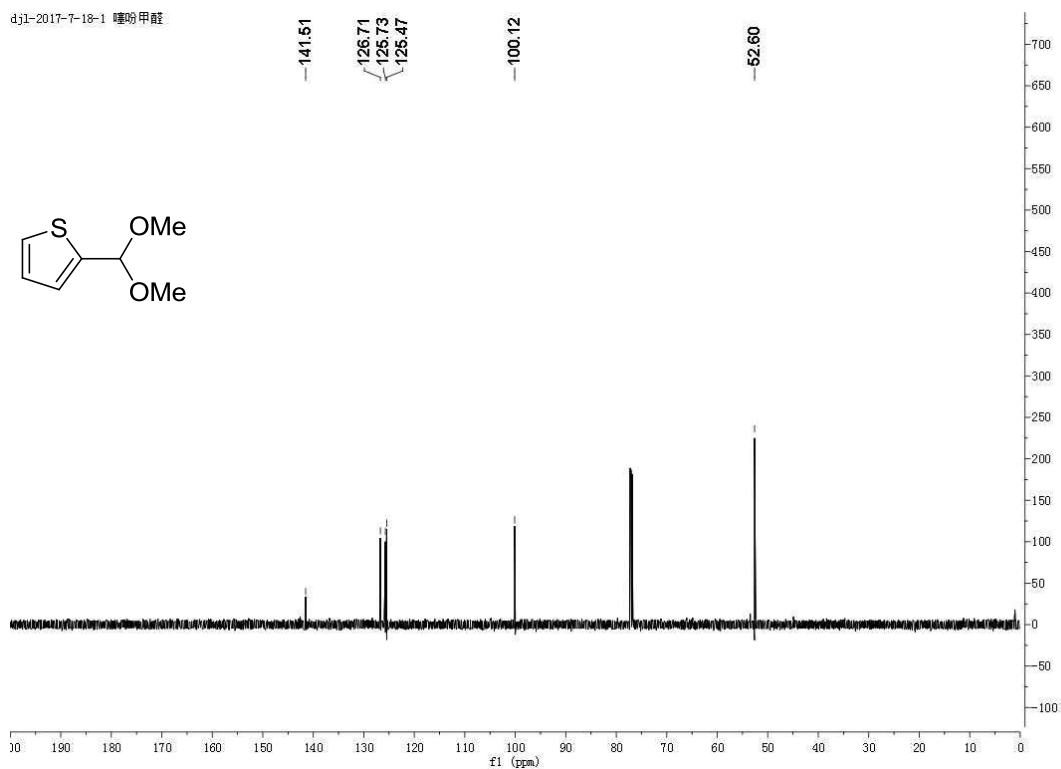


Figure S28: ^{13}C NMR (151 MHz, CDCl_3) of compound **2n**

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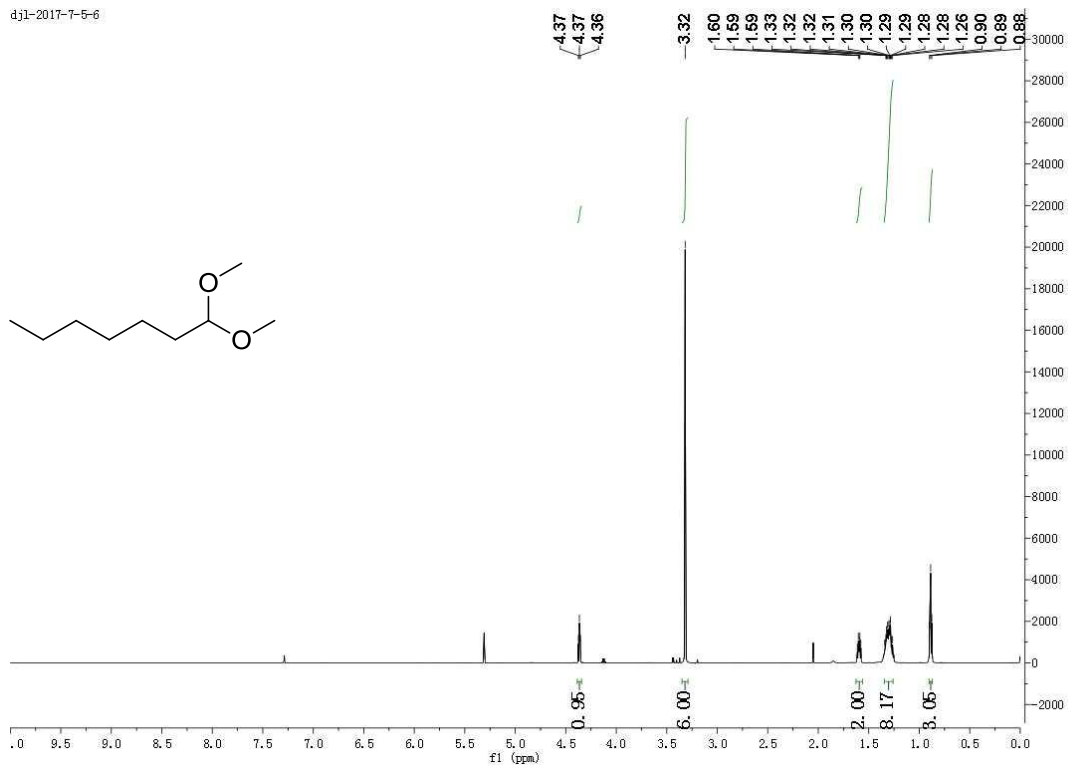


Figure S29: ^1H NMR (600 MHz, CDCl_3) of compound **2o**

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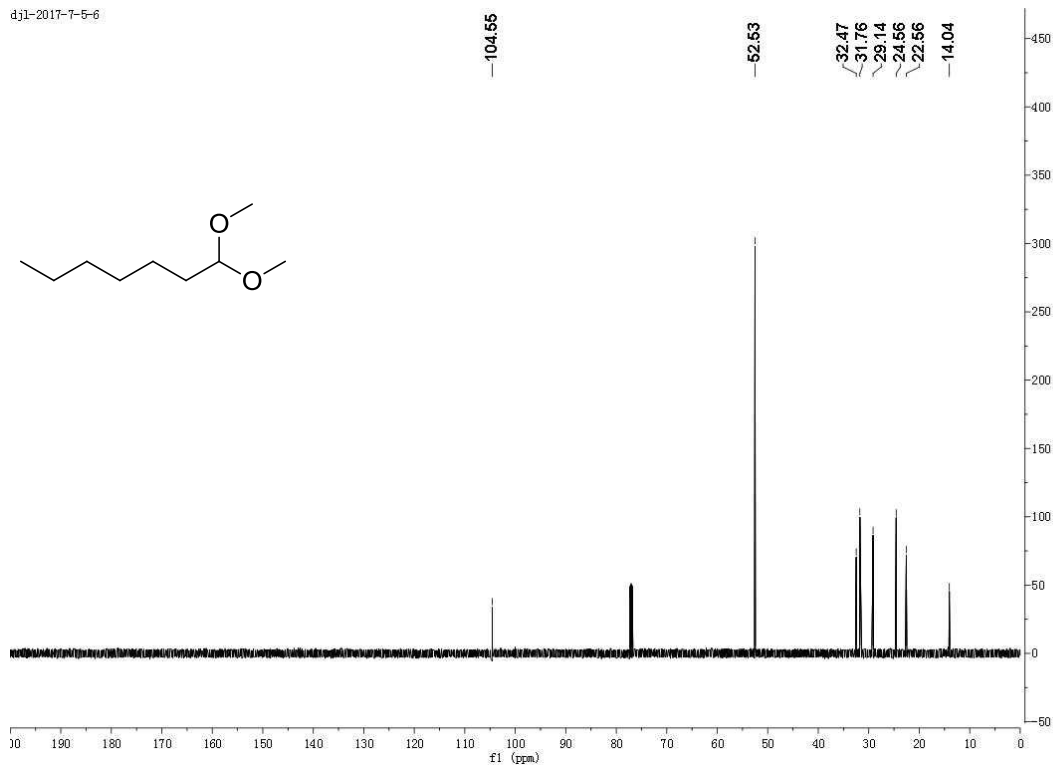


Figure S30: ^{13}C NMR (151 MHz, CDCl_3) of compound **2o**

djl-2017-5-26-2 正壬醛-缩醛

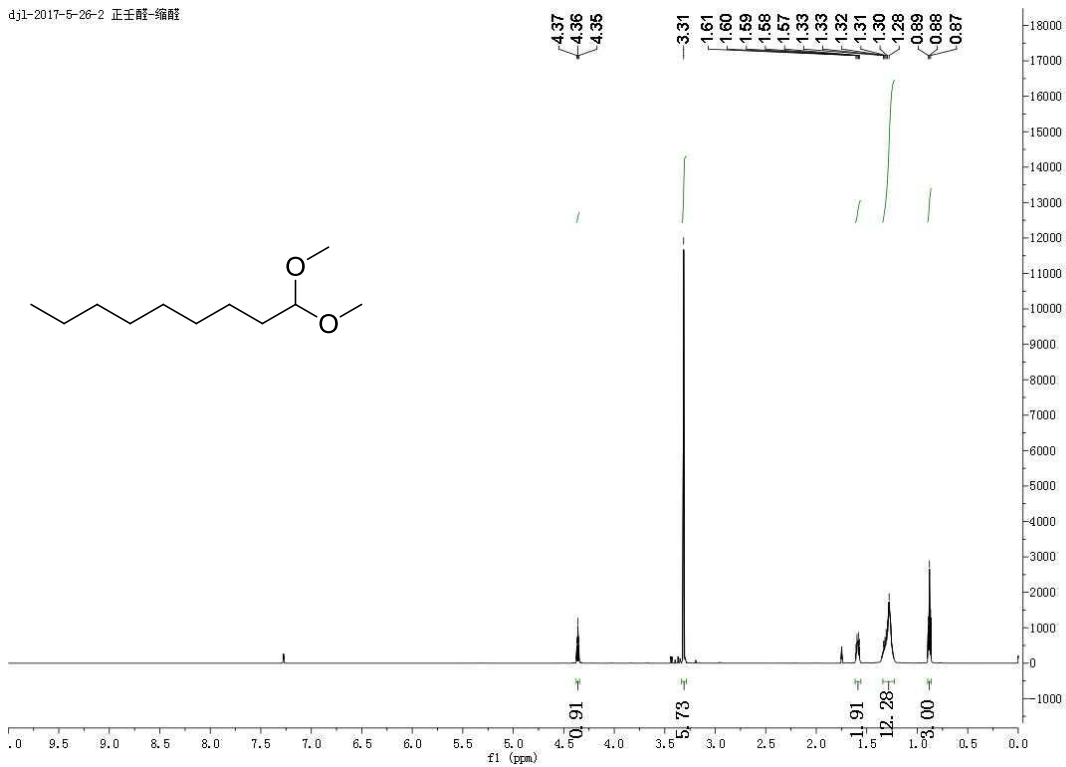


Figure S31: ^1H NMR (600 MHz, CDCl_3) of compound 2p

djl-2017-5-26-2 正壬醛-缩醛

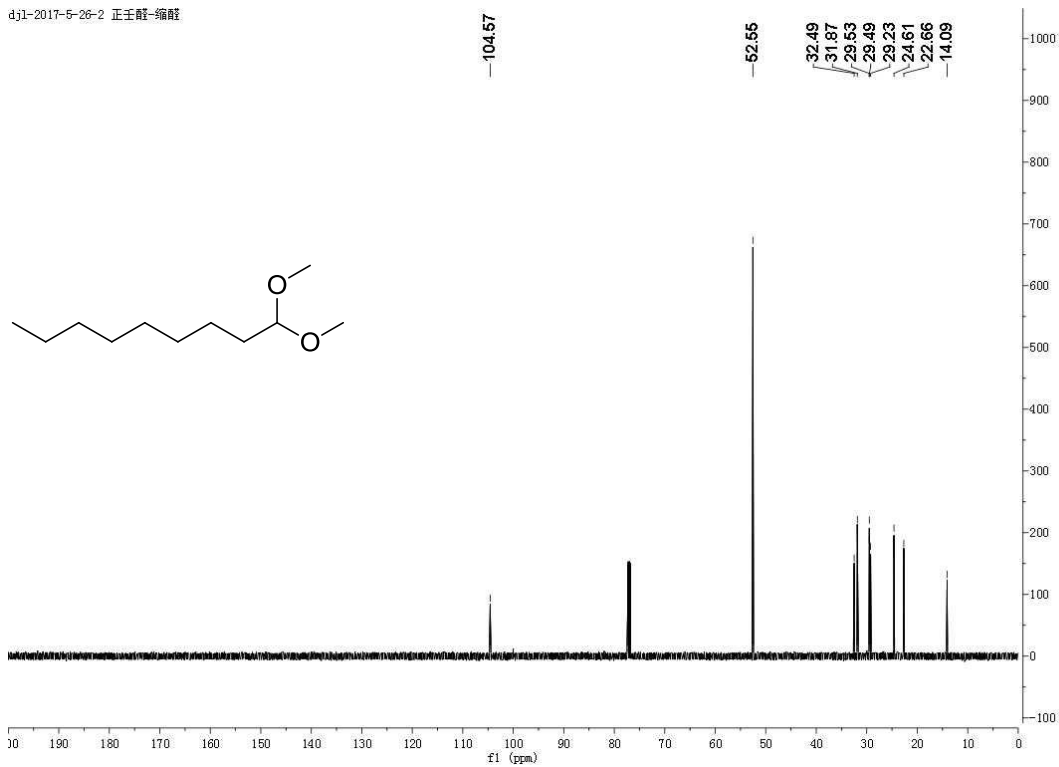


Figure S32: ^{13}C NMR (151 MHz, CDCl_3) of compound 2p

djl-2017-7-19-9 环己烷甲醛

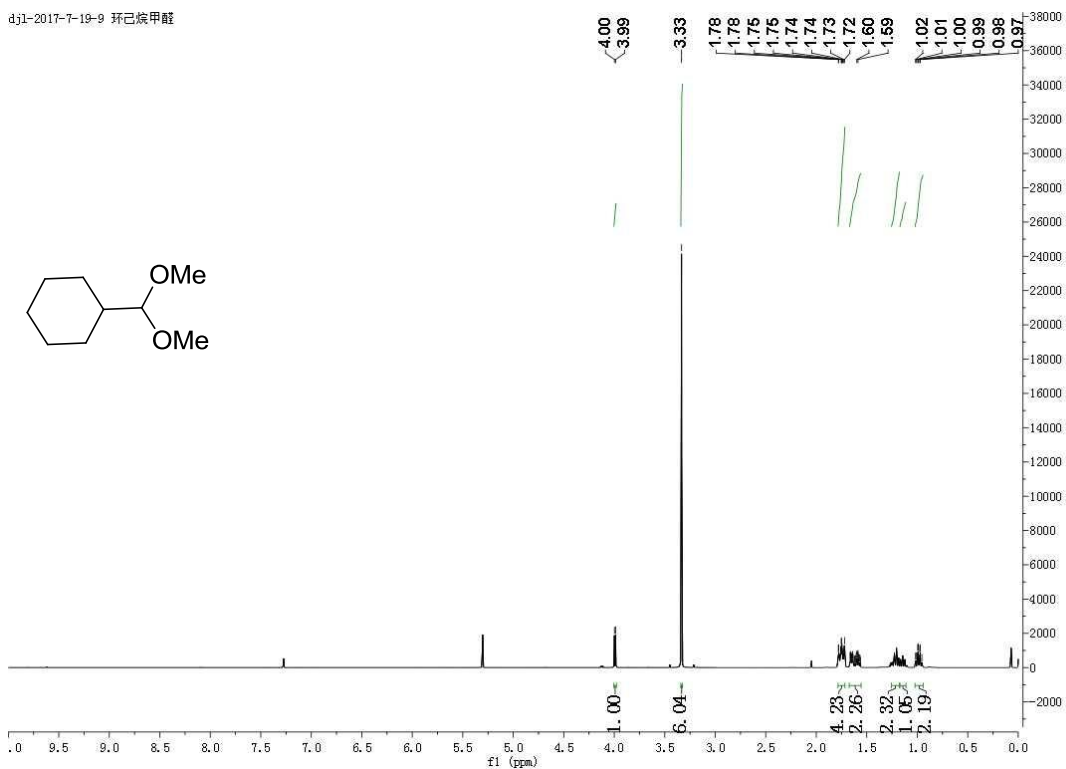


Figure S33: ¹H NMR (600 MHz, CDCl₃) of compound 2q

djl-2017-7-19-9 环己烷甲醛

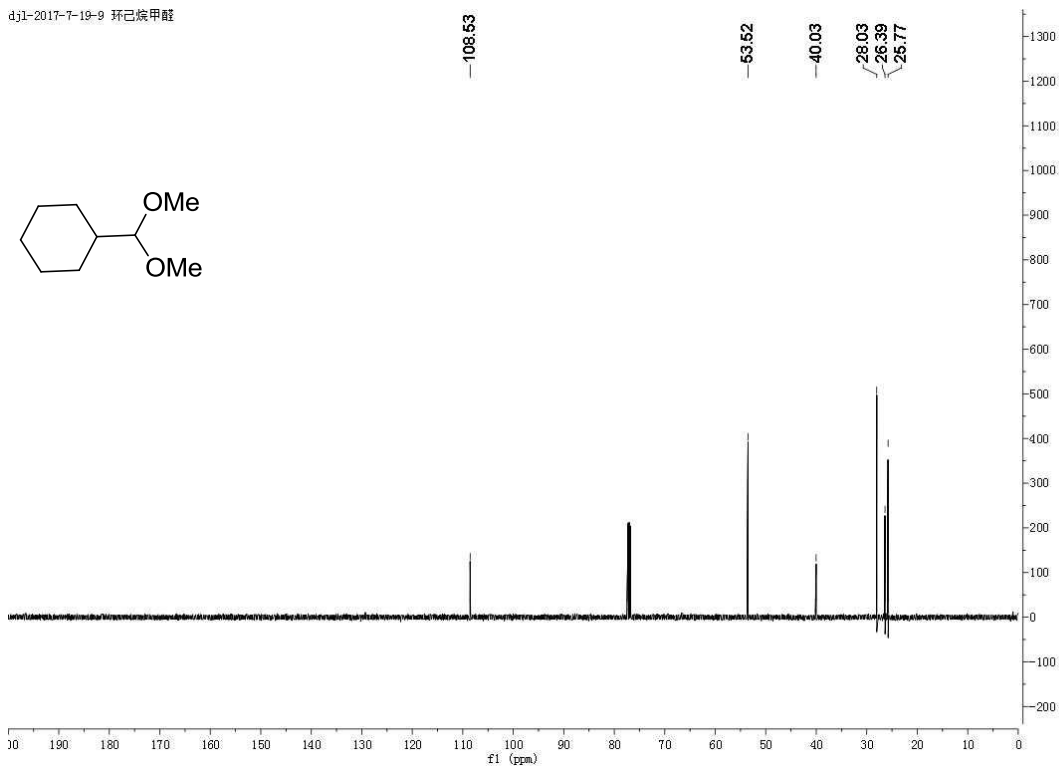


Figure S34: ¹³C NMR (151 MHz, CDCl₃) of compound 2q

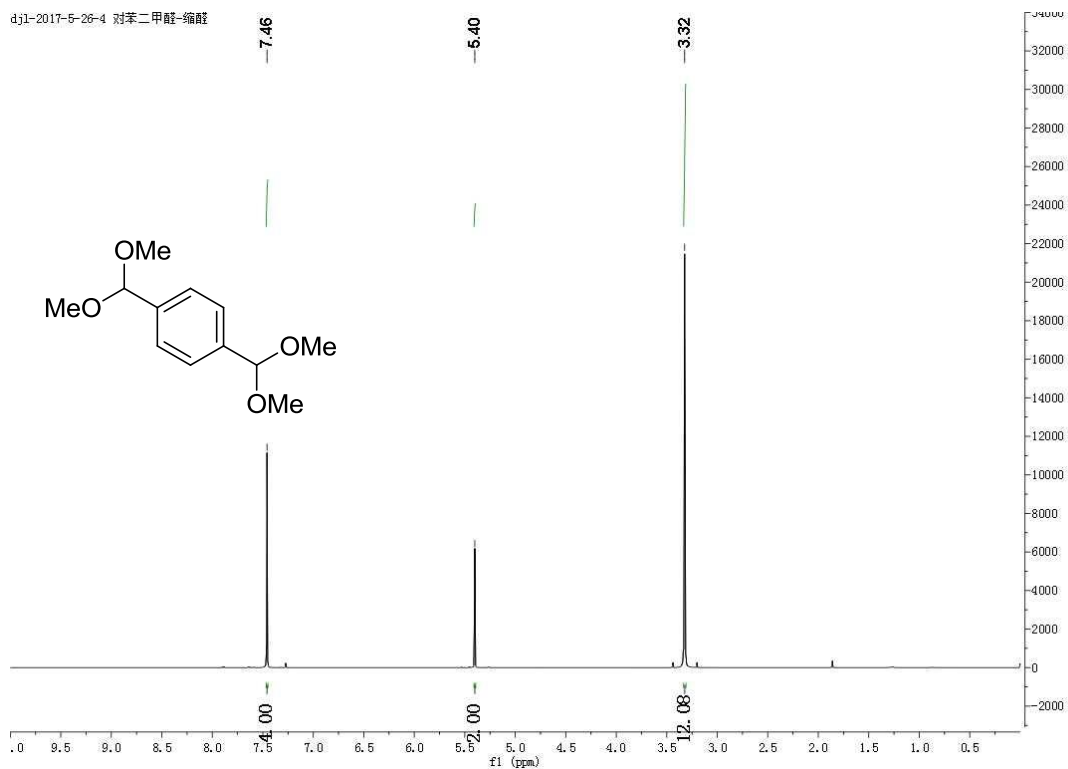


Figure S35: ^1H NMR (600 MHz, CDCl_3) of compound **2r**

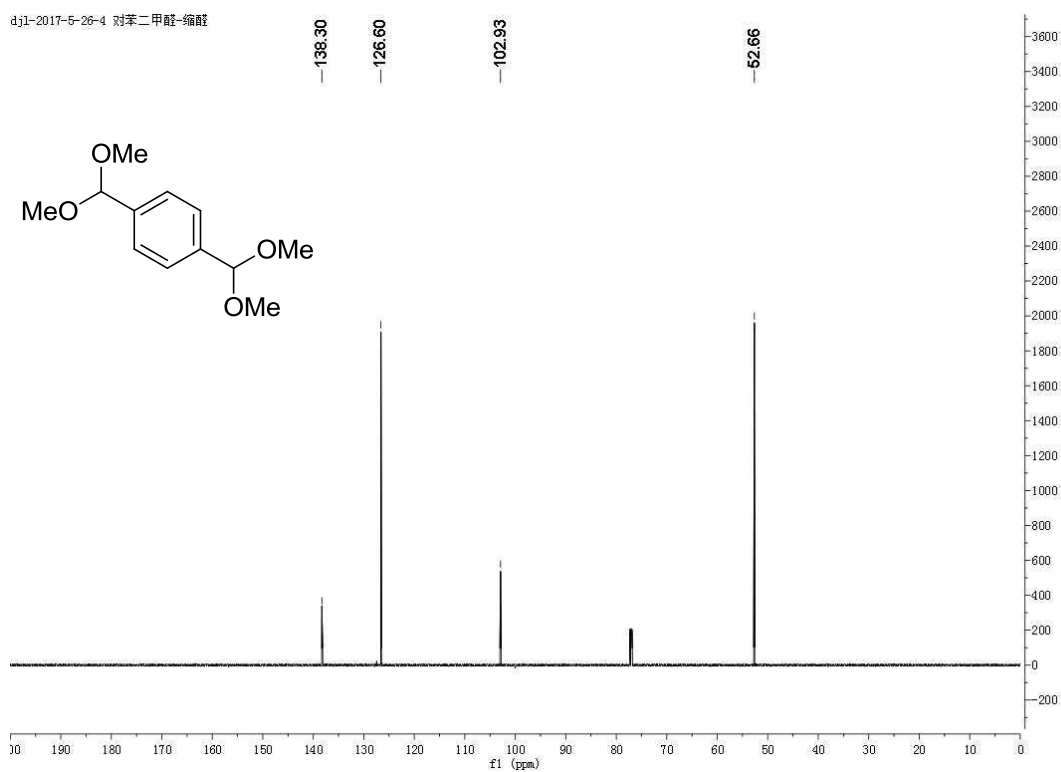


Figure S36: ^{13}C NMR (151 MHz, CDCl_3) of compound **2r**

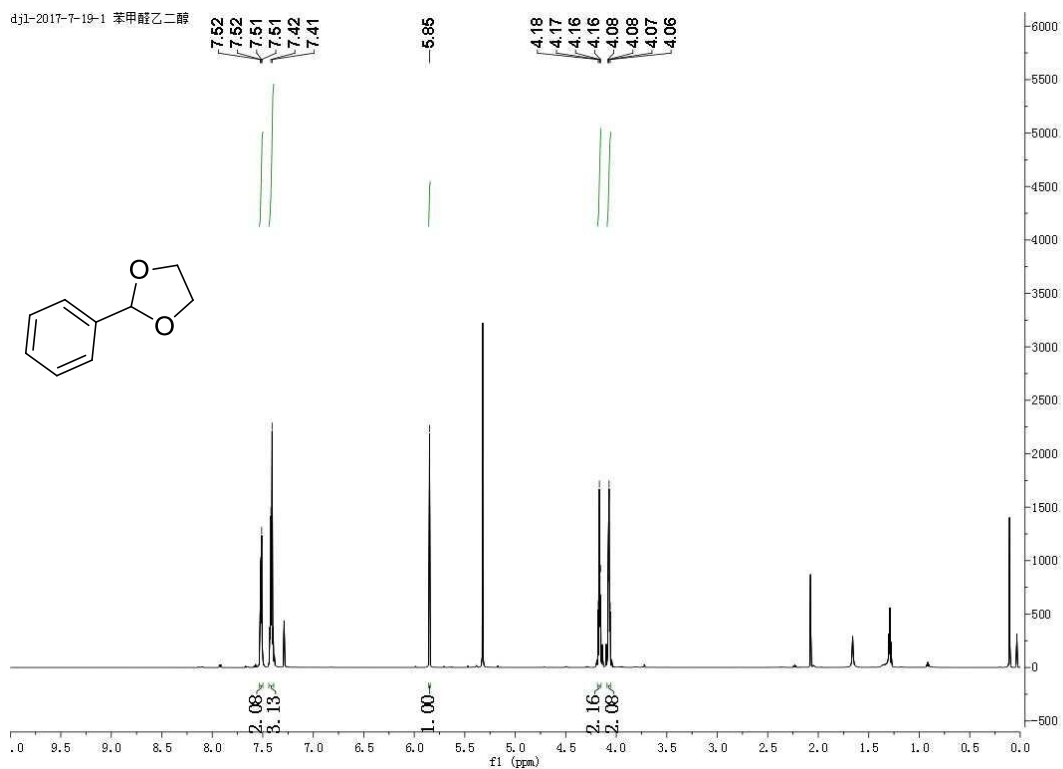


Figure S37: ^1H NMR (600 MHz, CDCl_3) of compound **2s**

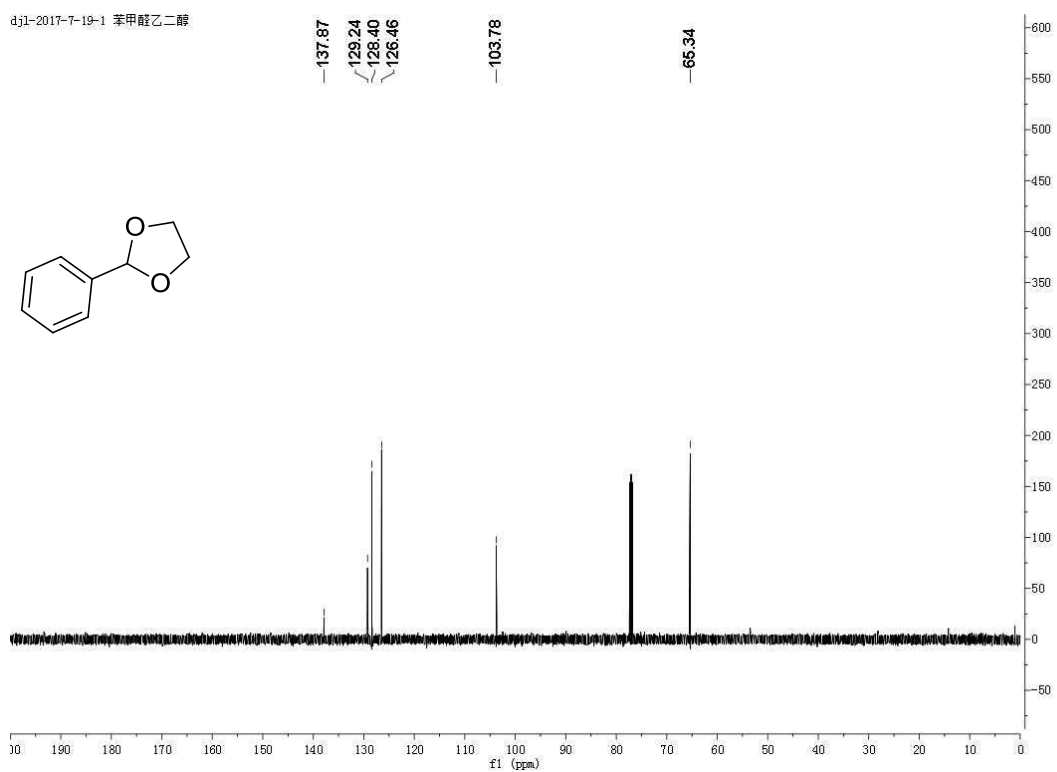


Figure S38: ^{13}C NMR (151 MHz, CDCl_3) of compound **2s**

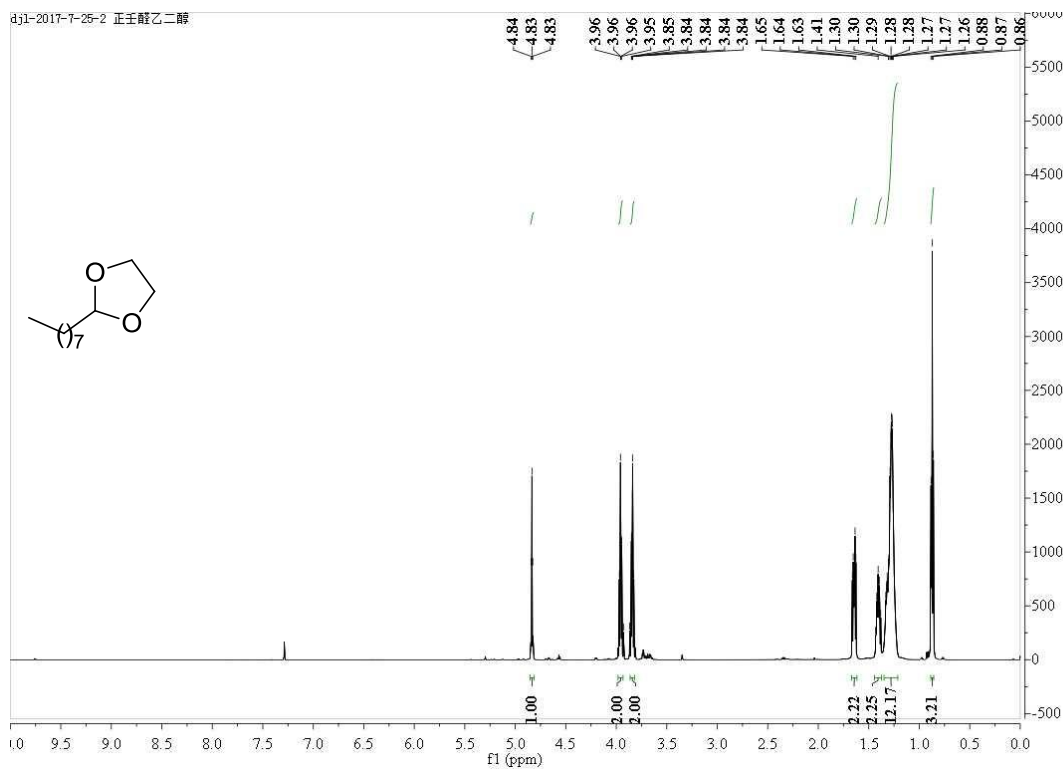


Figure S39: ^1H NMR (600 MHz, CDCl_3) of compound 2t

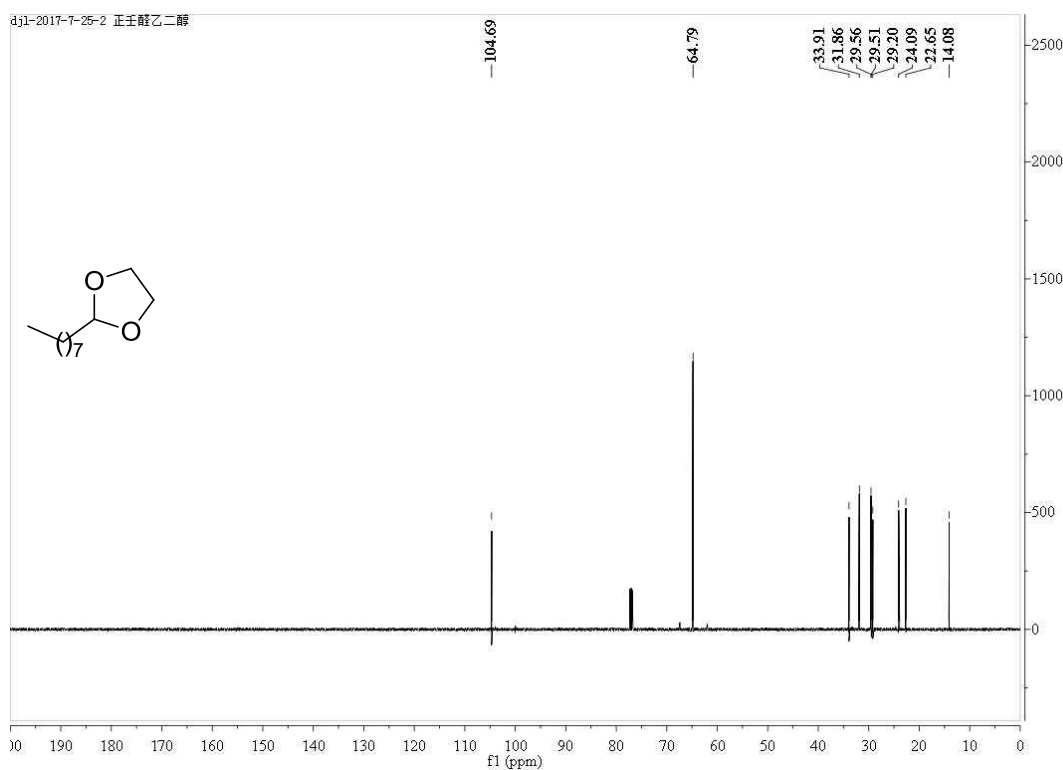


Figure S40: ^{13}C NMR (151 MHz, CDCl_3) of compound 2t

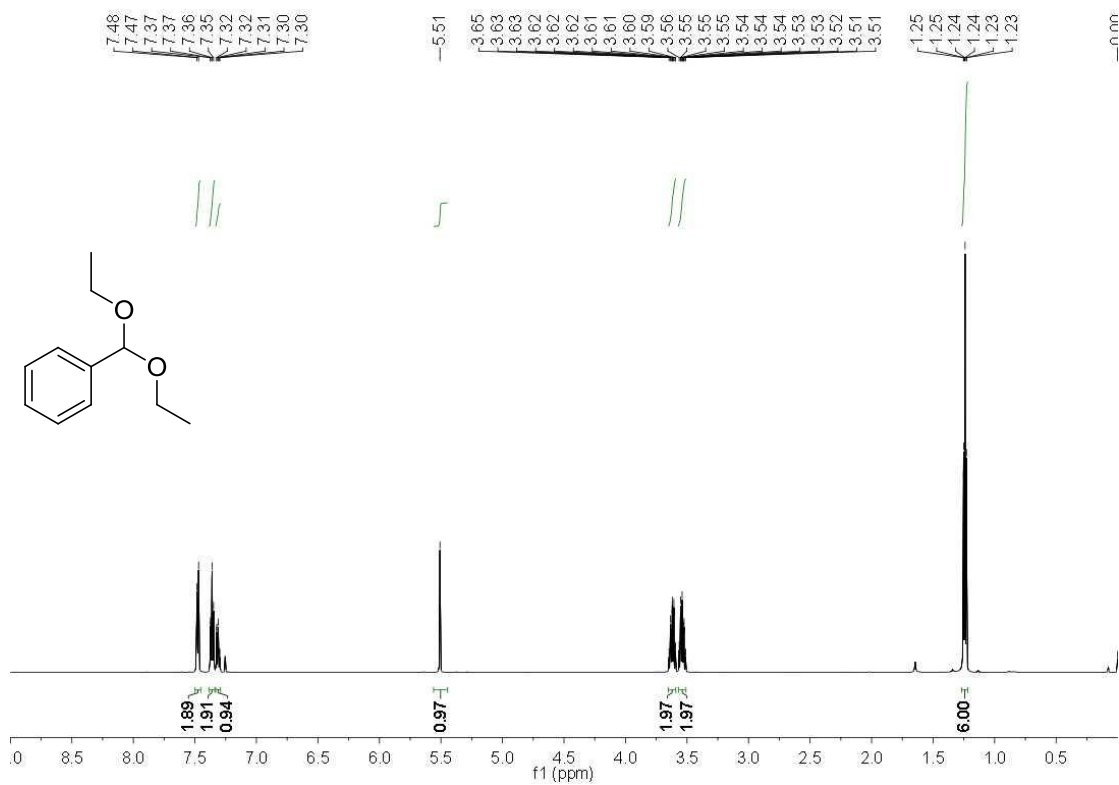


Figure S41: $^1\text{H NMR}$ (600 MHz, CDCl_3) of compound **2u**

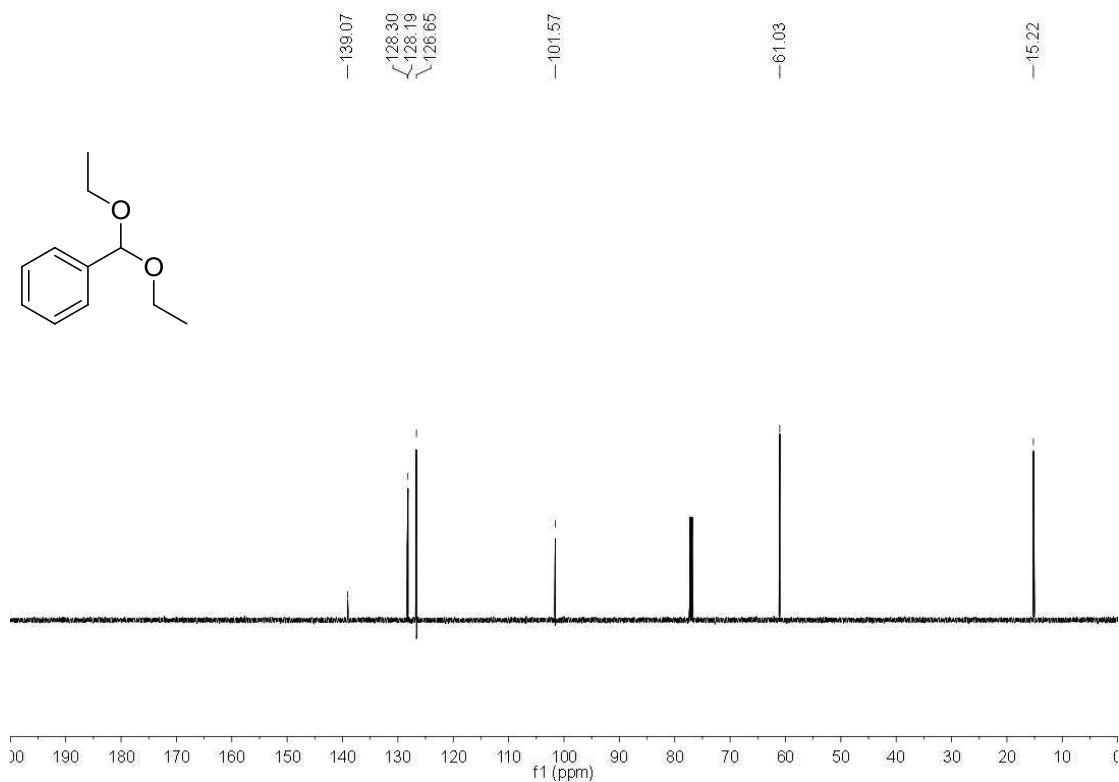


Figure S42: $^{13}\text{C NMR}$ (151 MHz, CDCl_3) of compound **2u**

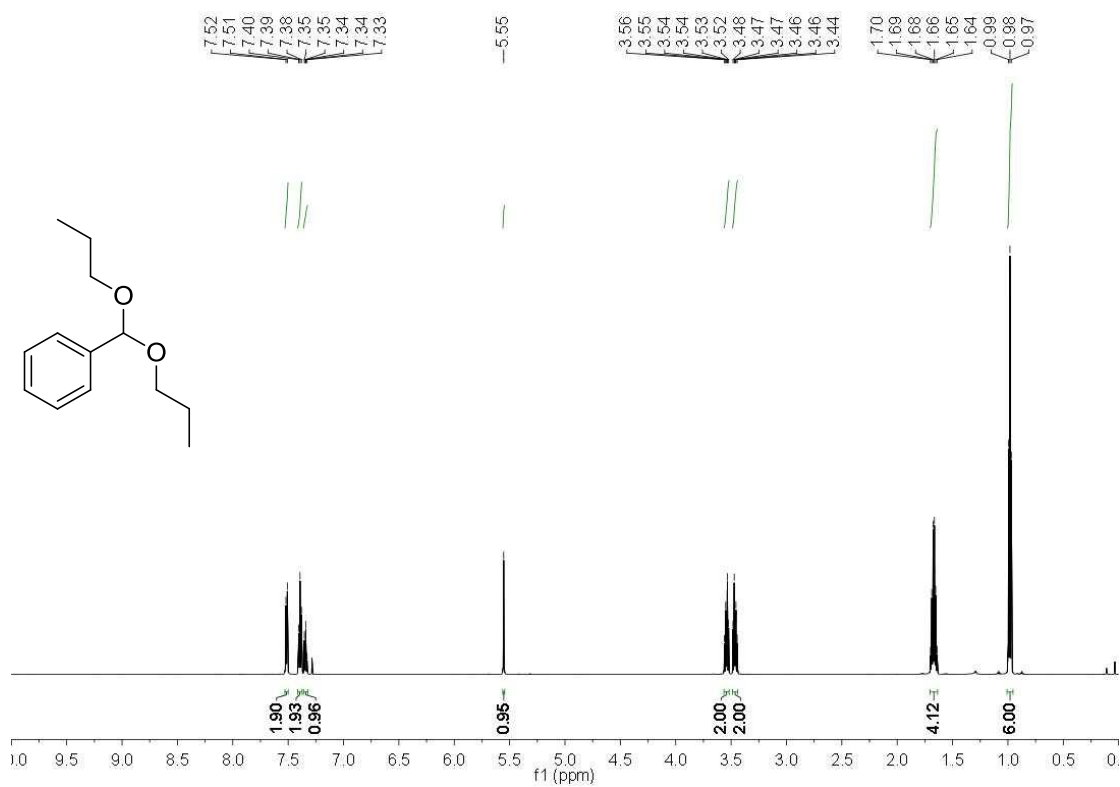


Figure S43: $^1\text{H NMR}$ (600 MHz, CDCl_3) of compound **2v**

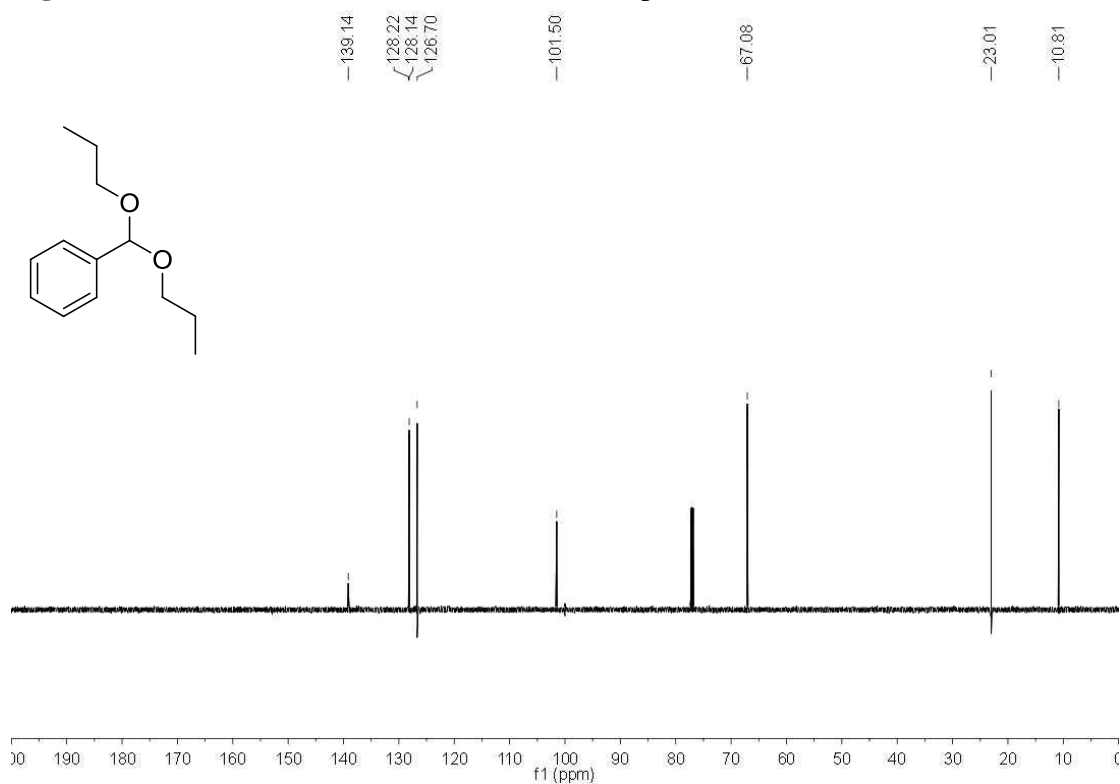


Figure S44: $^{13}\text{C NMR}$ (151 MHz, CDCl_3) of compound **2v**

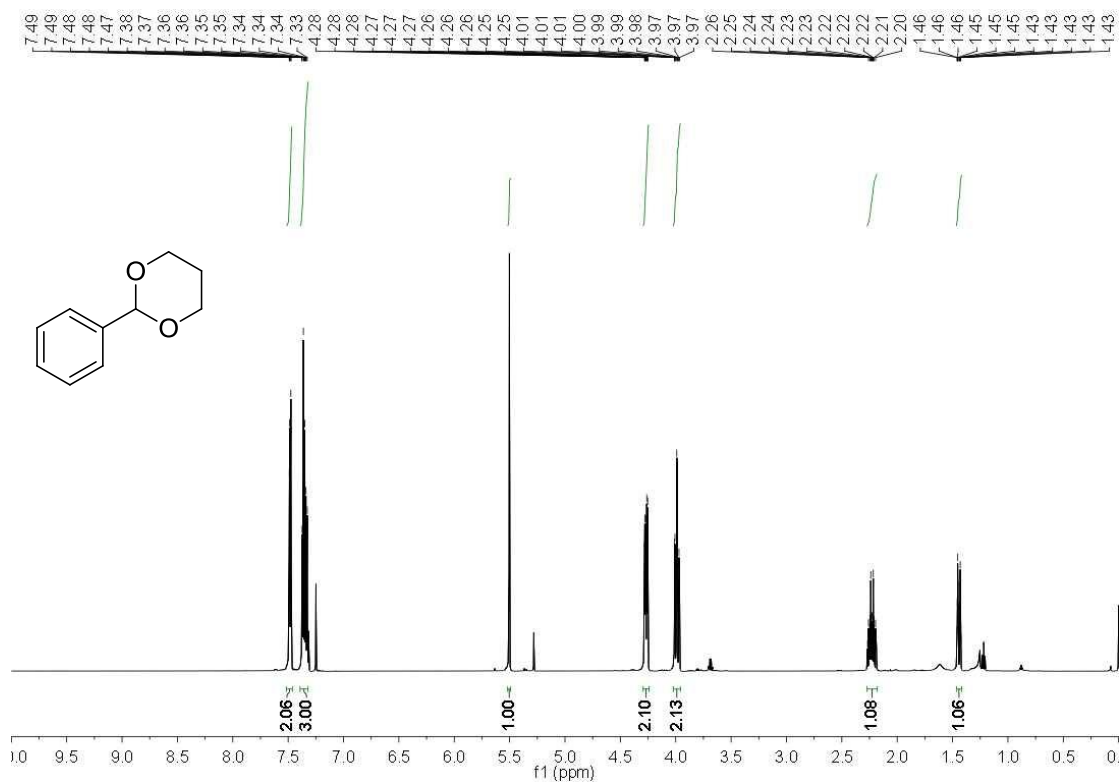


Figure S45: $^1\text{H NMR}$ (600 MHz, CDCl_3) of compound **2w**

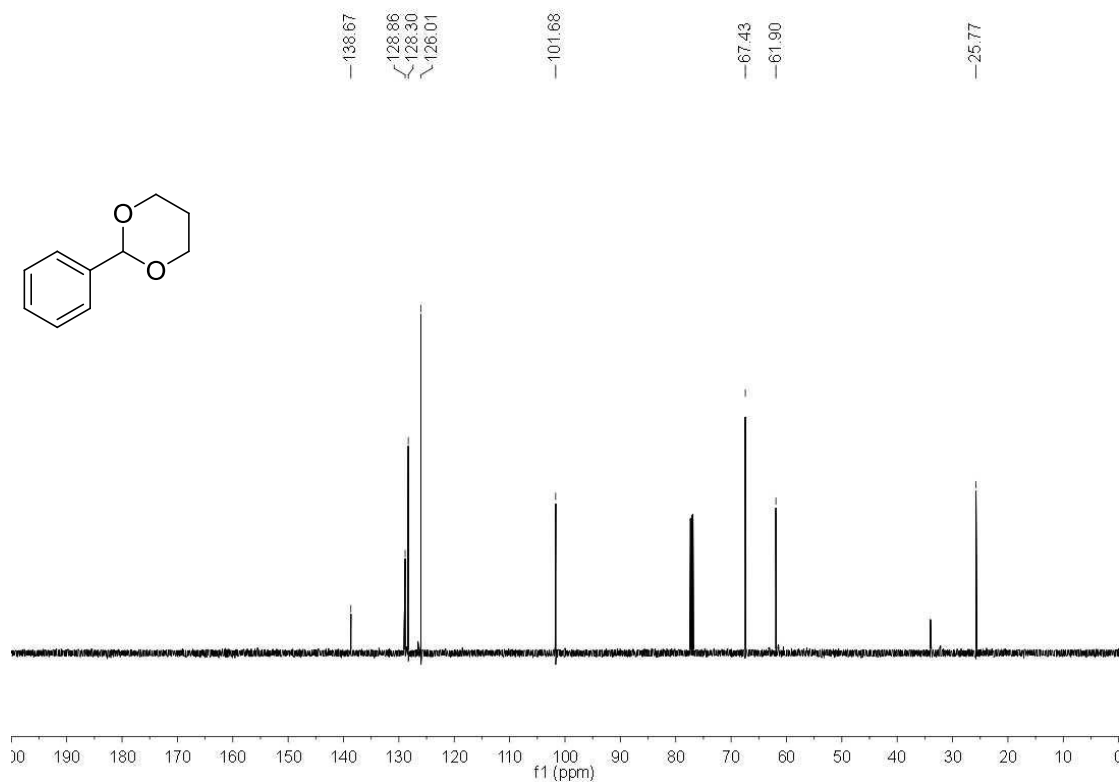


Figure S46: $^{13}\text{C NMR}$ (151 MHz, CDCl_3) of compound **2w**

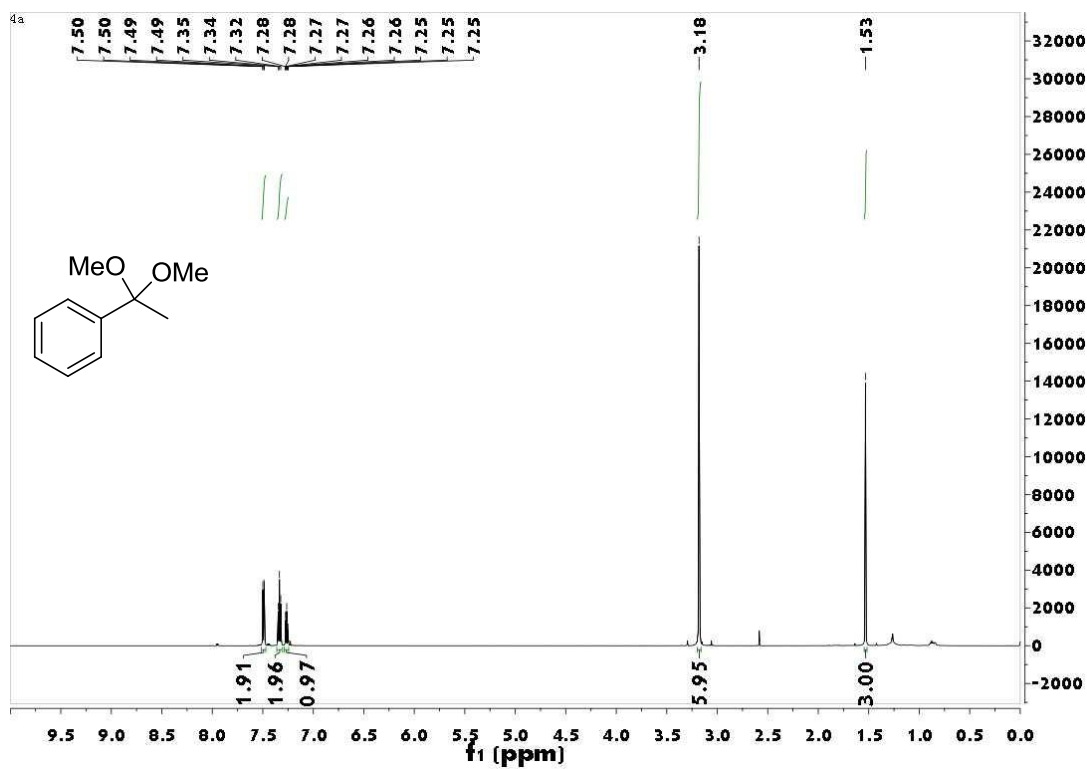


Figure S47: ^1H NMR (600 MHz, CDCl_3) of compound 4a

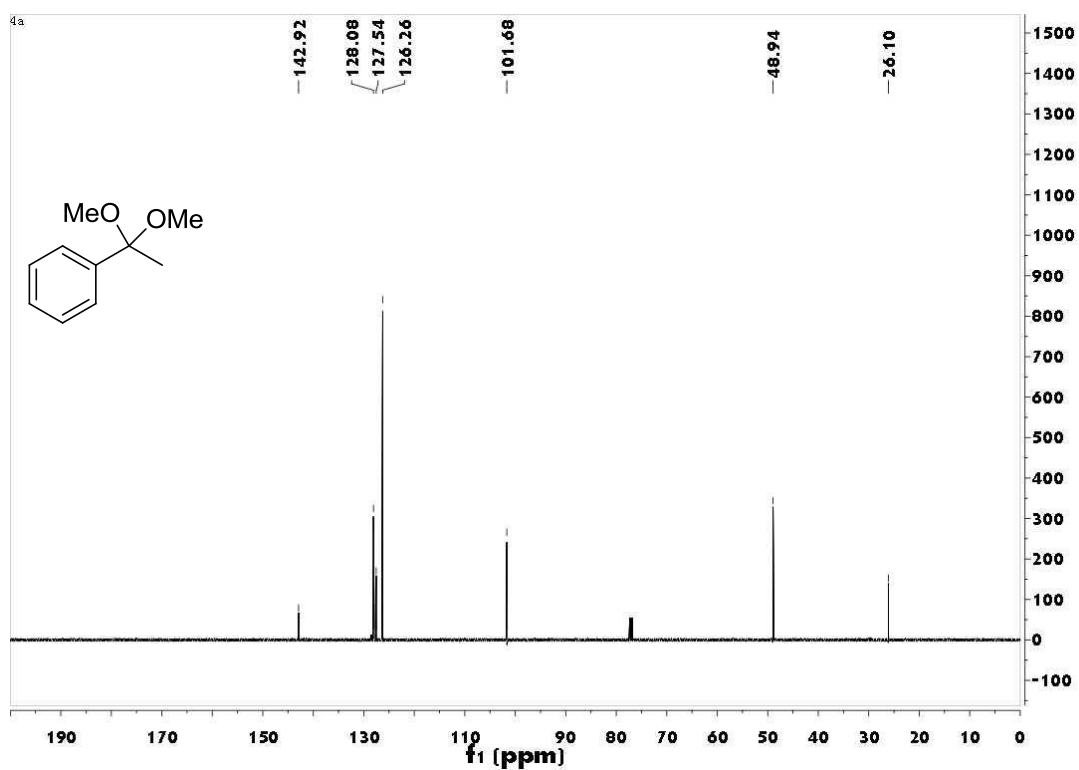


Figure S48: ^{13}C NMR (151 MHz, CDCl_3) of compound 4a

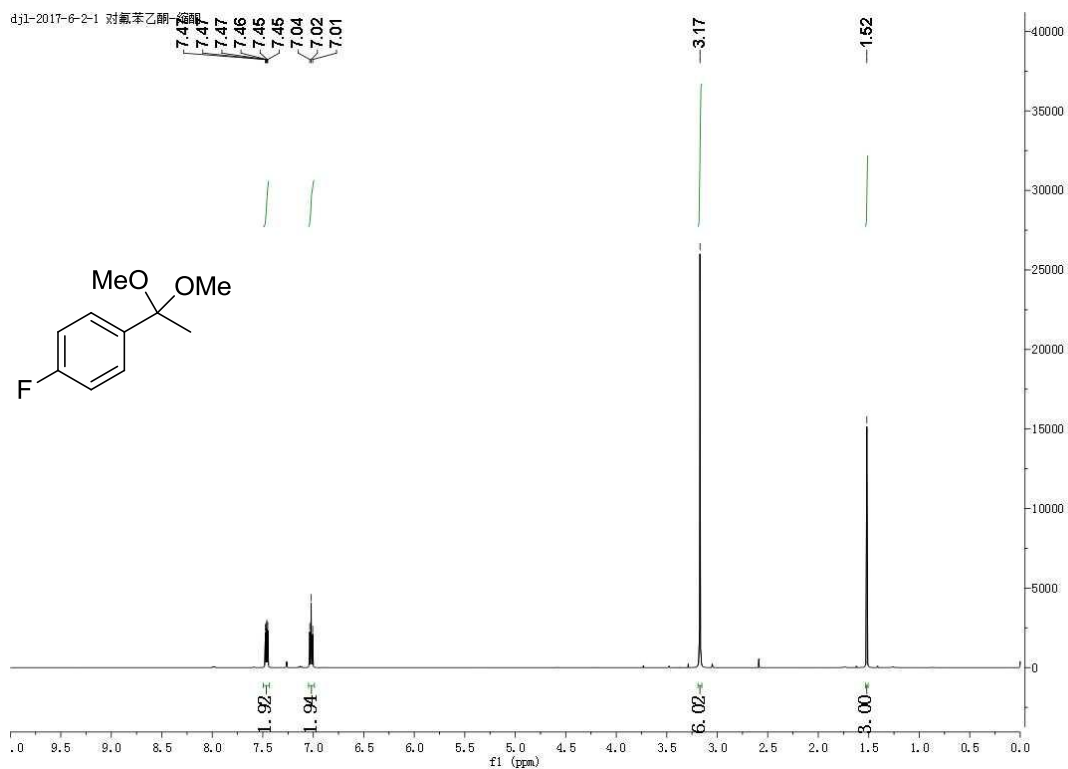


Figure S49: ^1H NMR (600 MHz, CDCl_3) of compound **4b**

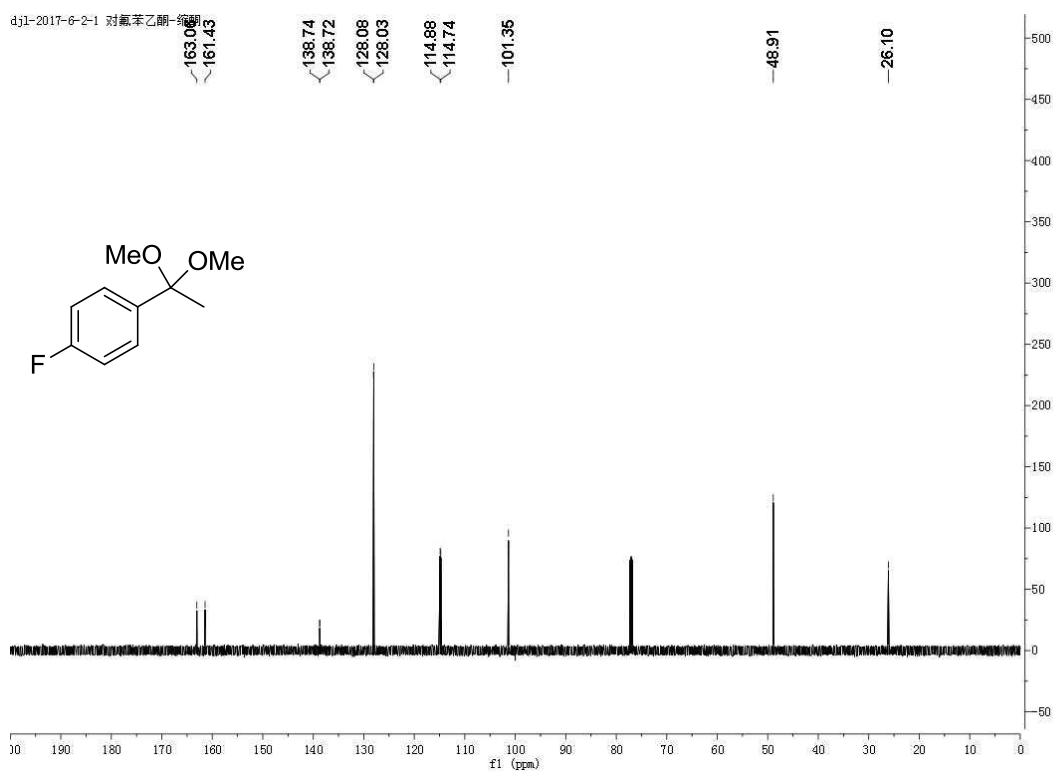


Figure S50: ^{13}C NMR (151 MHz, CDCl_3) of compound **4b**

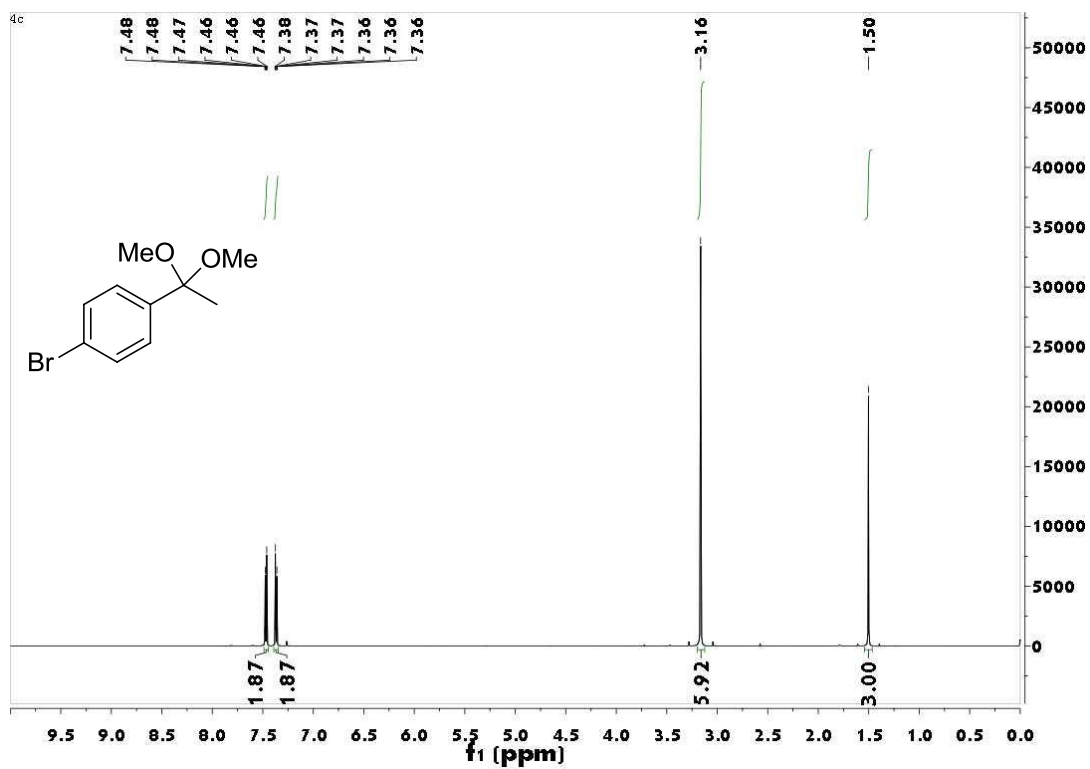


Figure S51: ^1H NMR (600 MHz, CDCl_3) of compound 4c

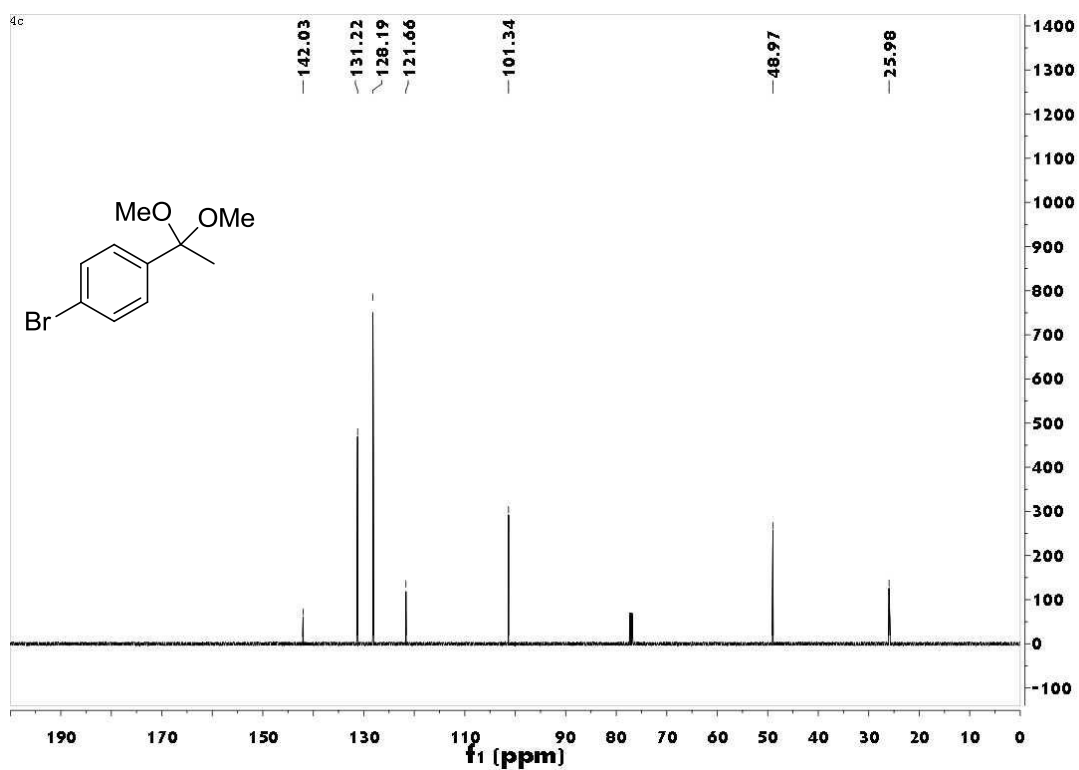


Figure S52: ^{13}C NMR (151 MHz, CDCl_3) of compound 4c

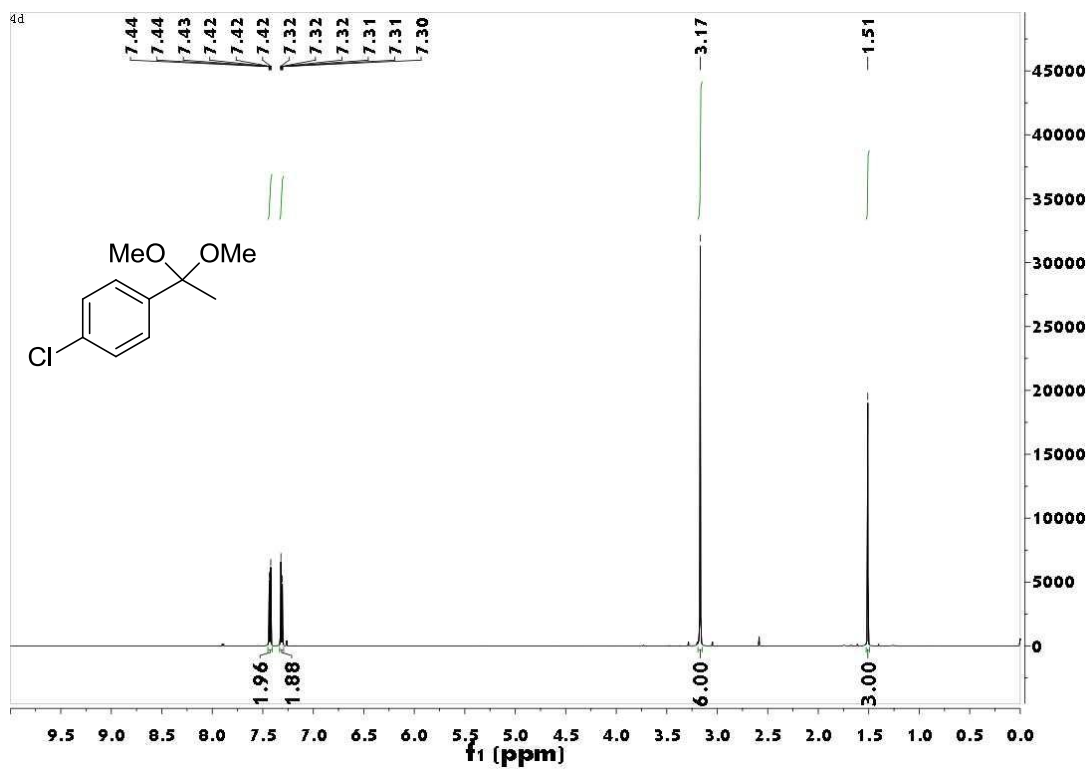


Figure S53: ^1H NMR (600 MHz, CDCl_3) of compound **4d**

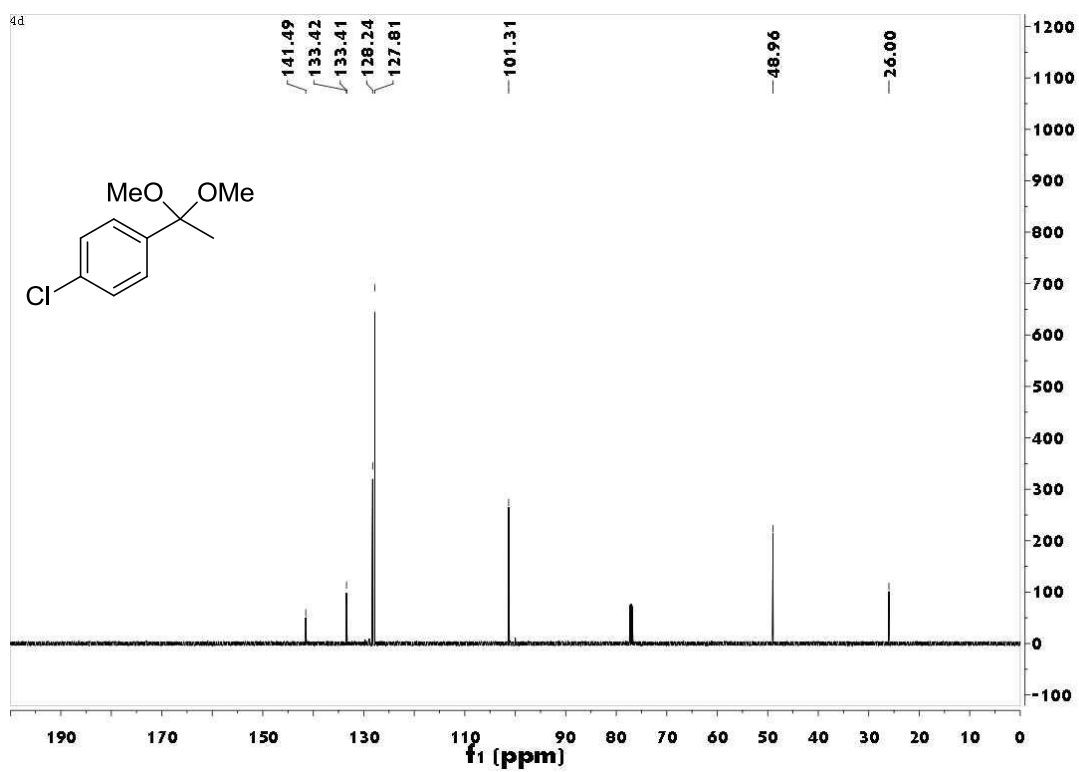


Figure S54: ^{13}C NMR (151 MHz, CDCl_3) of compound **4d**

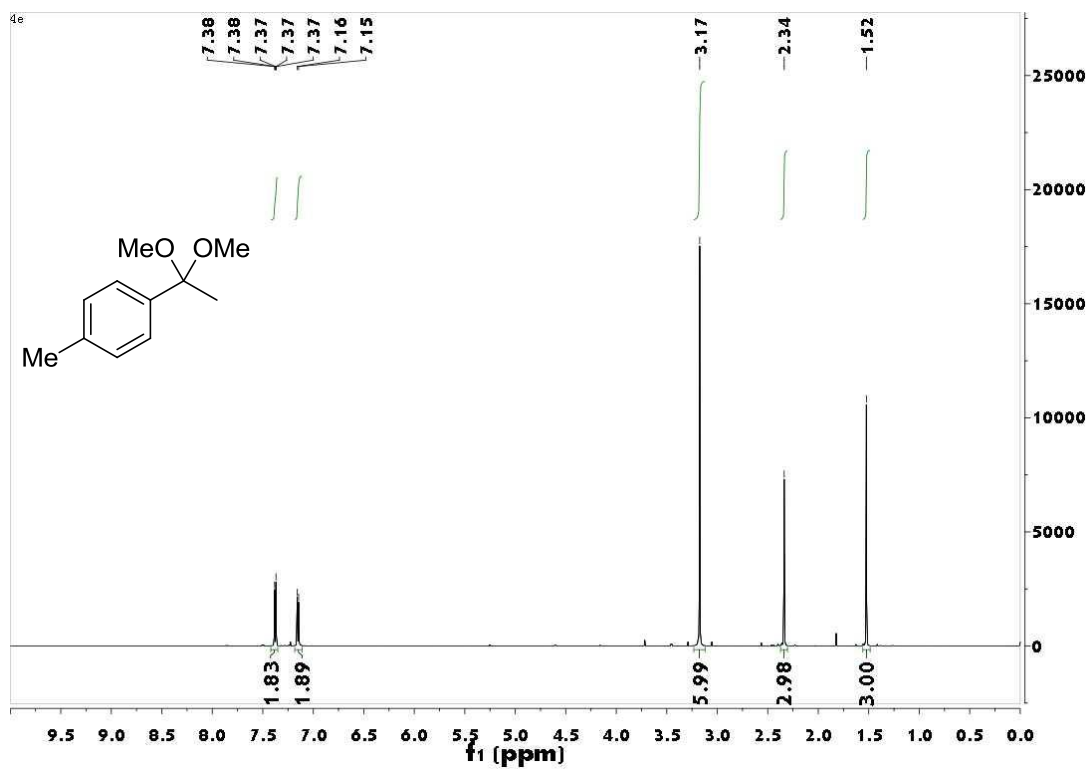


Figure S55: ^1H NMR (600 MHz, CDCl_3) of compound 4e

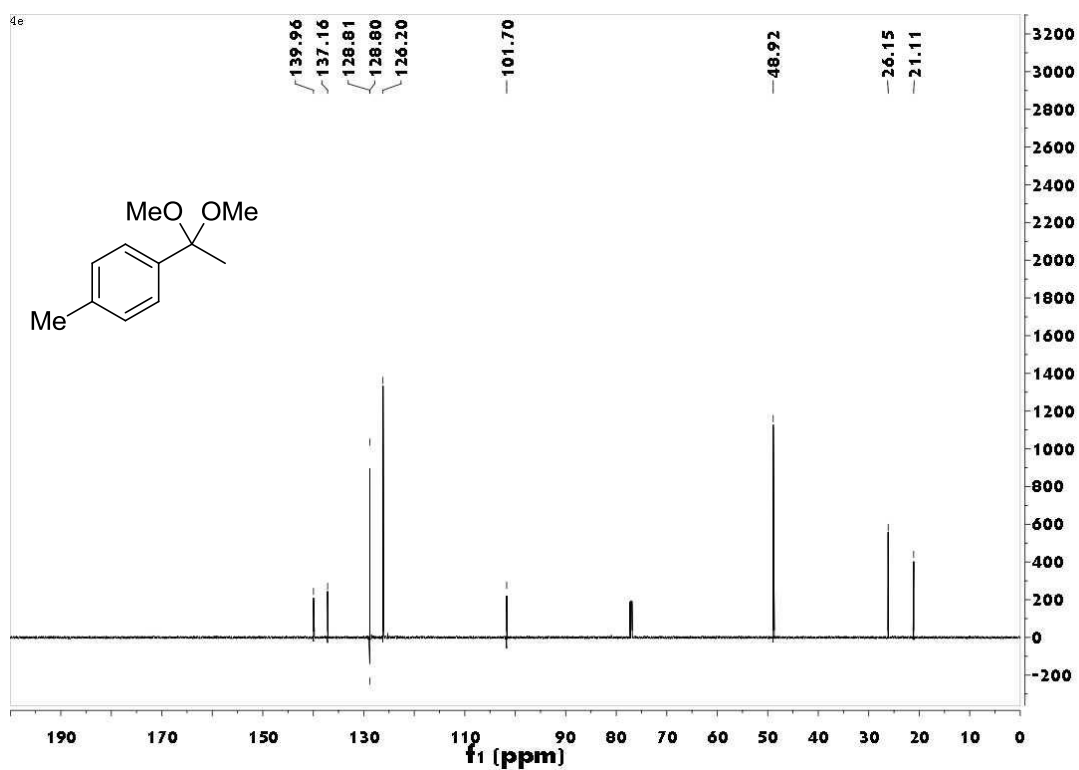


Figure S56: ^{13}C NMR (151 MHz, CDCl_3) of compound 4e

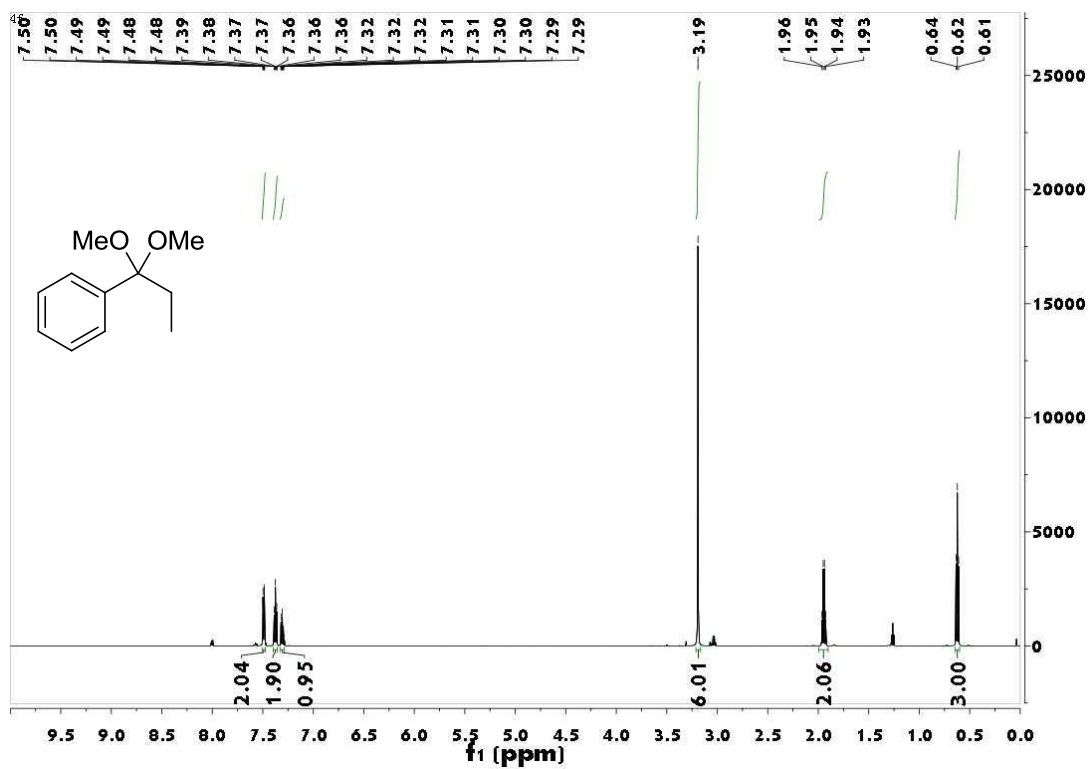


Figure S57: ^1H NMR (600 MHz, CDCl_3) of compound 4f

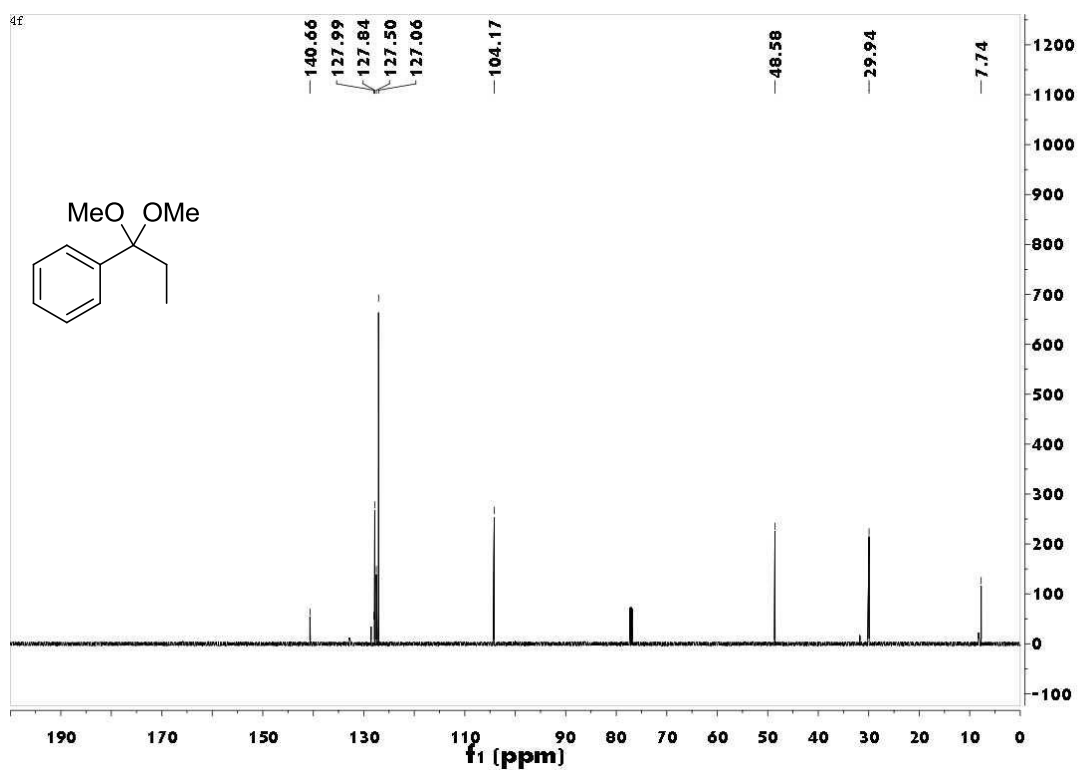


Figure S58: ^{13}C NMR (151 MHz, CDCl_3) of compound 4f

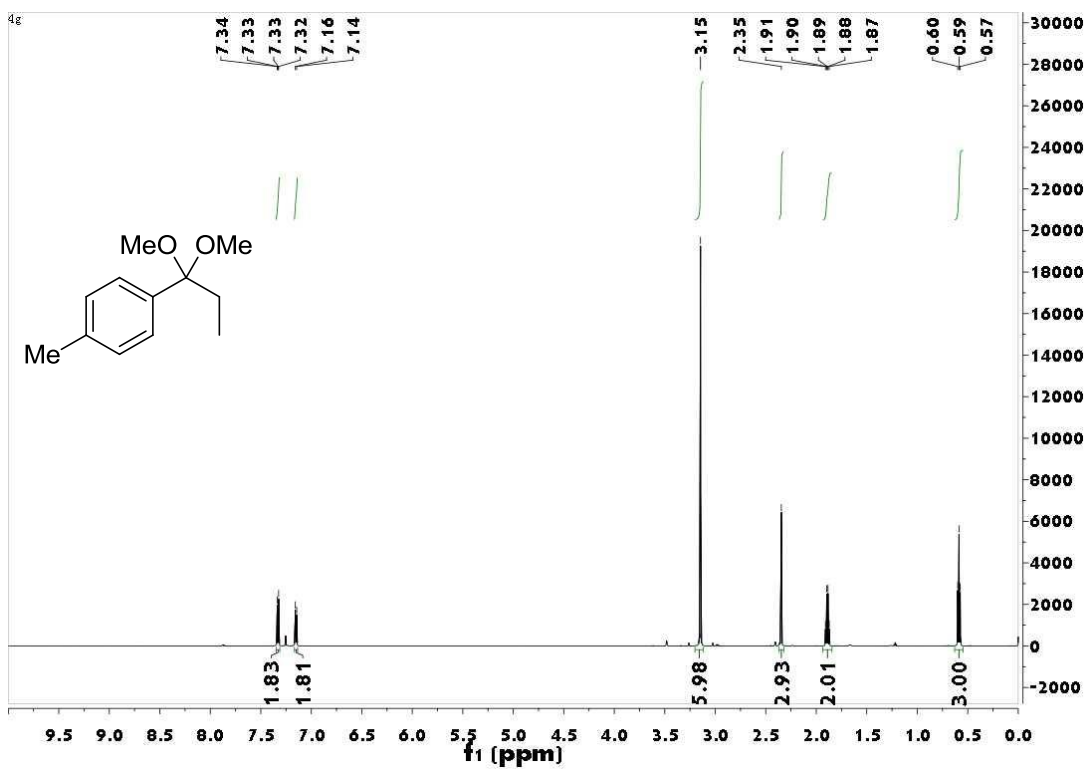


Figure S59: ^1H NMR (600 MHz, CDCl_3) of compound 4g

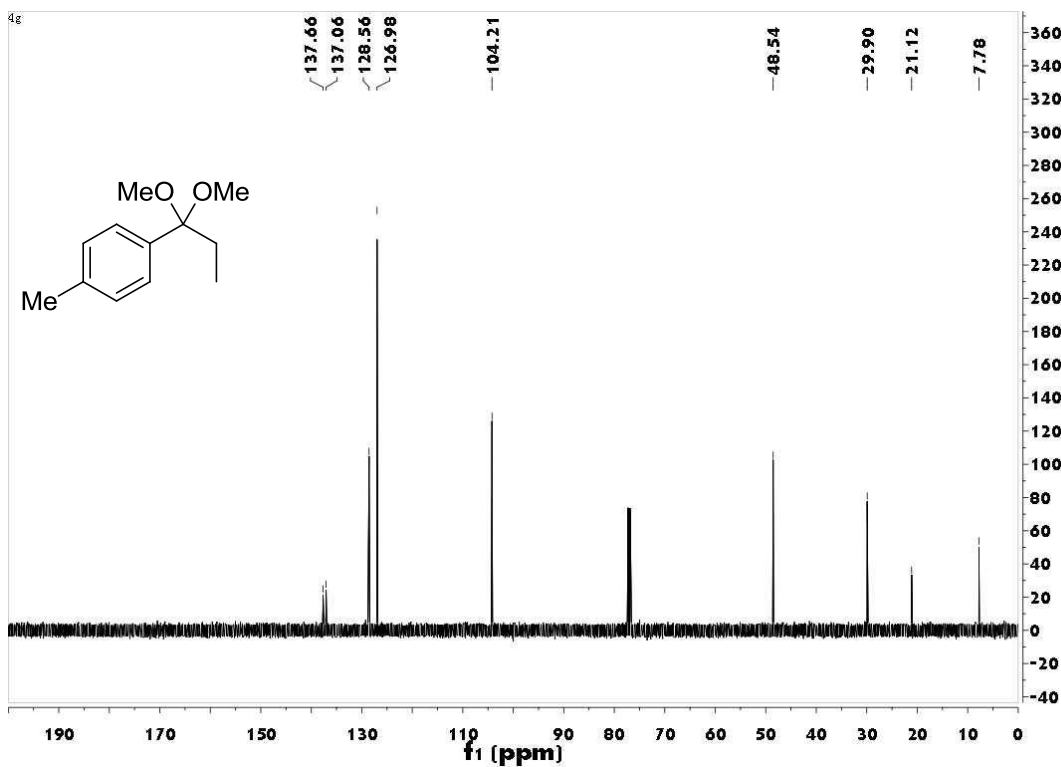


Figure S60: ^{13}C NMR (151 MHz, CDCl_3) of compound 4g

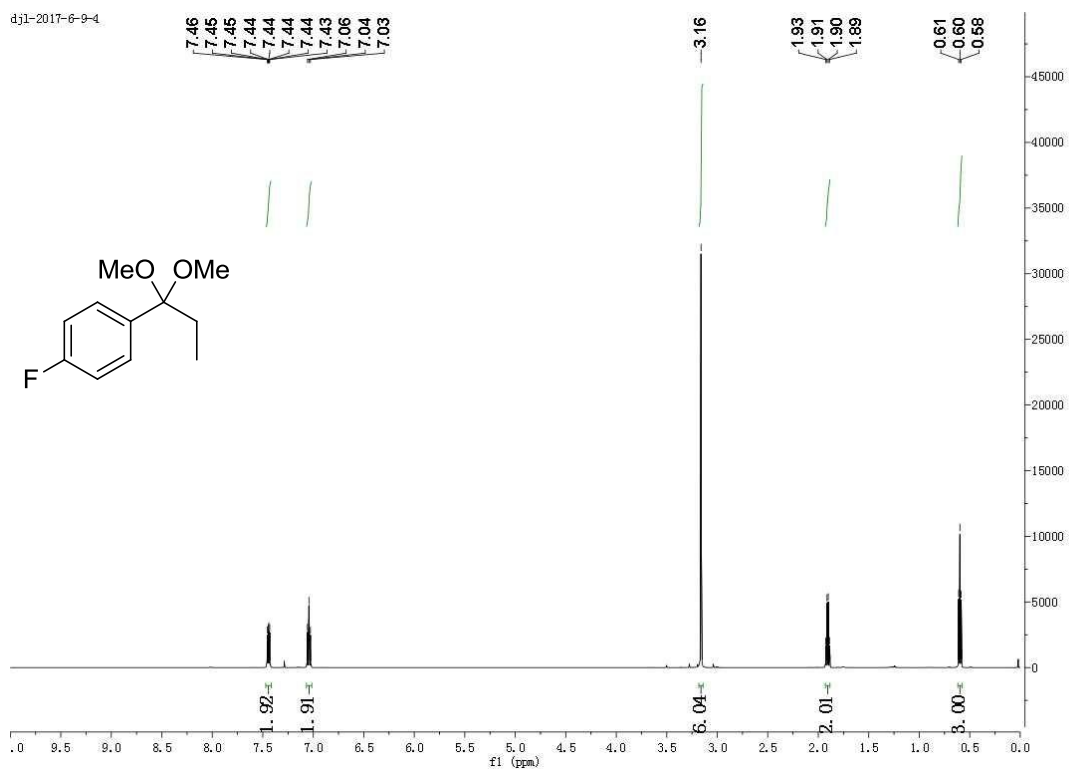


Figure S61: ^1H NMR (600 MHz, CDCl_3) of compound **4h**

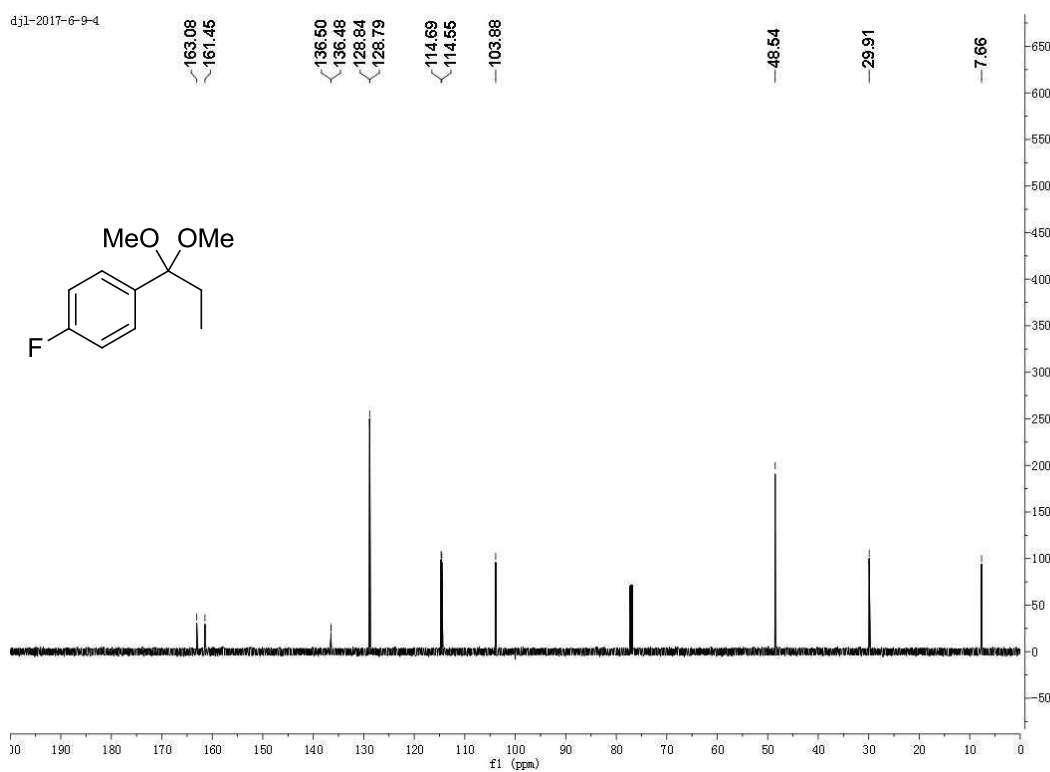


Figure S62: ^{13}C NMR (151 MHz, CDCl_3) of compound **4h**

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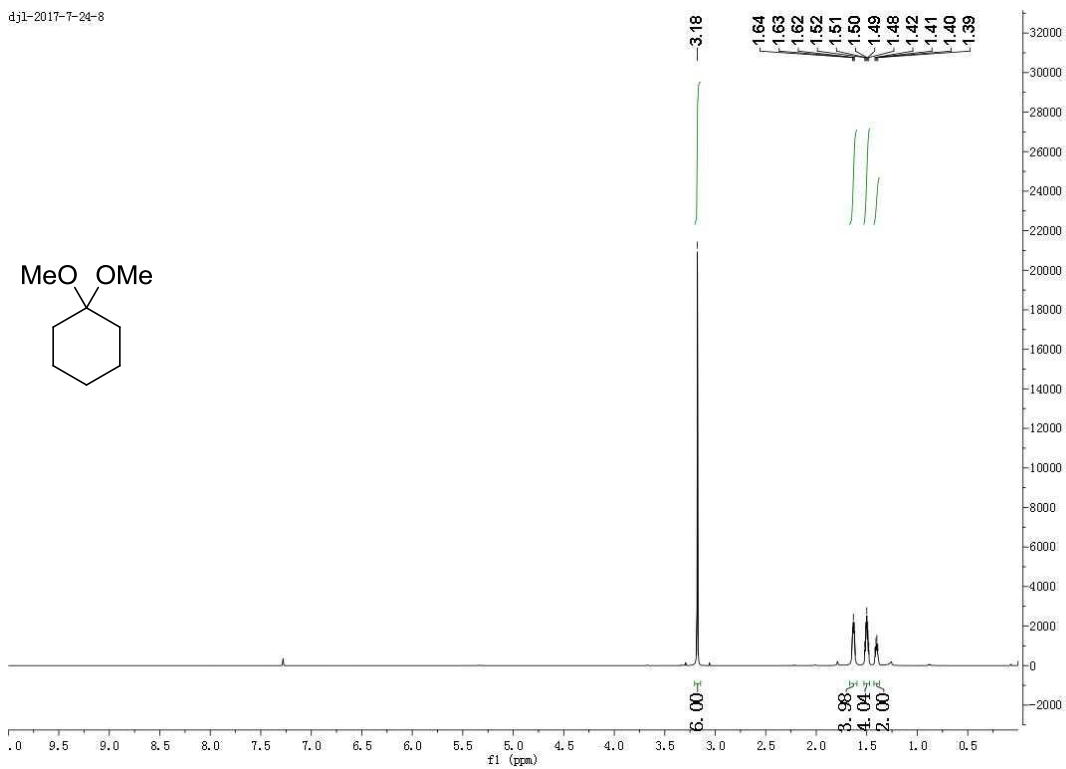


Figure S63: ¹H NMR (600 MHz, CDCl₃) of compound 4i

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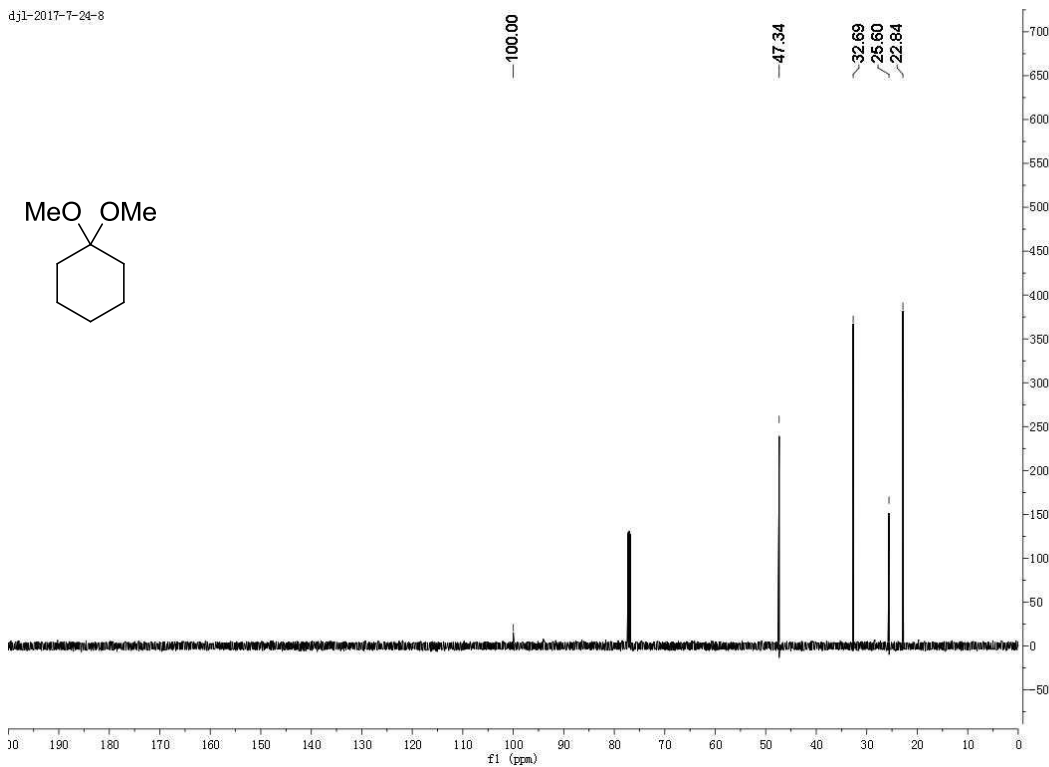


Figure S64: ¹³C NMR (151 MHz, CDCl₃) of compound 4i

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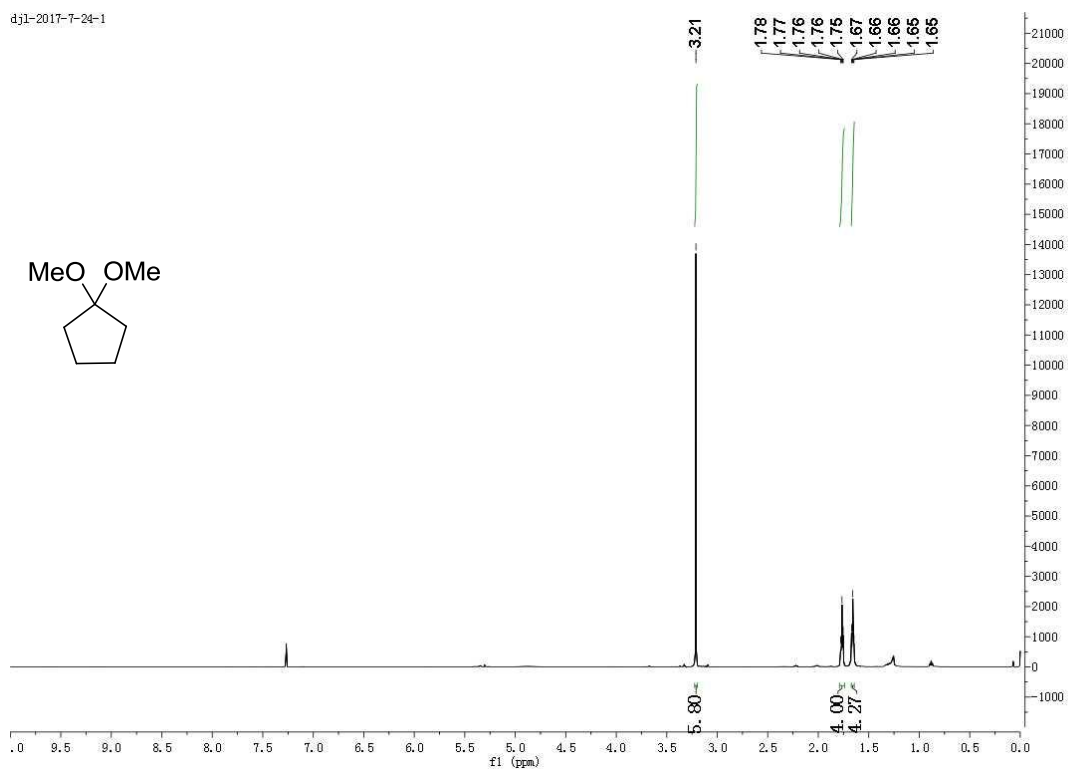


Figure S65: $^1\text{H NMR}$ (600 MHz, CDCl_3) of compound 4j

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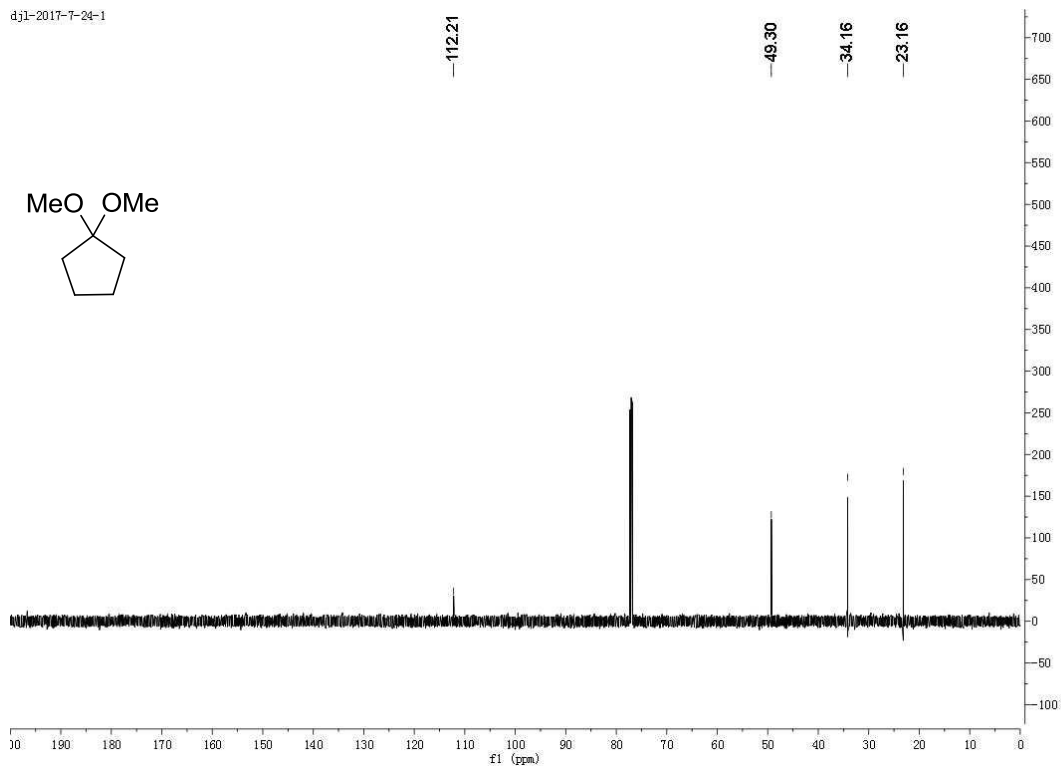


Figure S66: $^{13}\text{C NMR}$ (151 MHz, CDCl_3) of compound 4j

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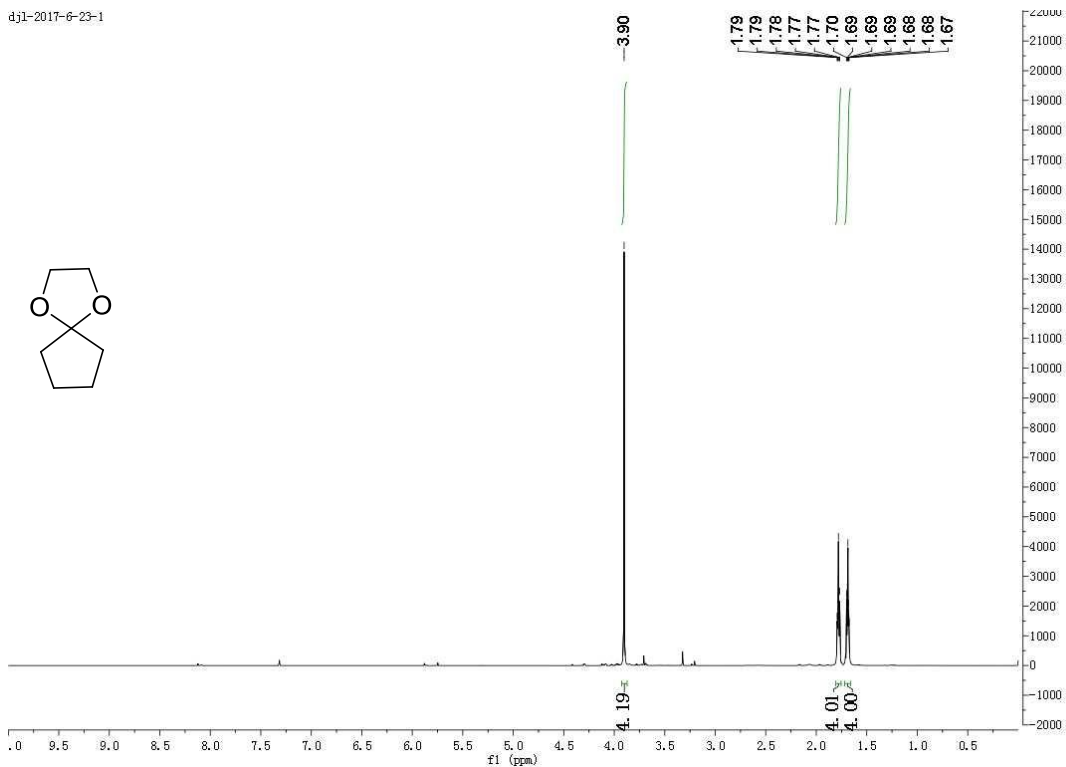


Figure S67: ^1H NMR (600 MHz, CDCl_3) of compound **4j'**

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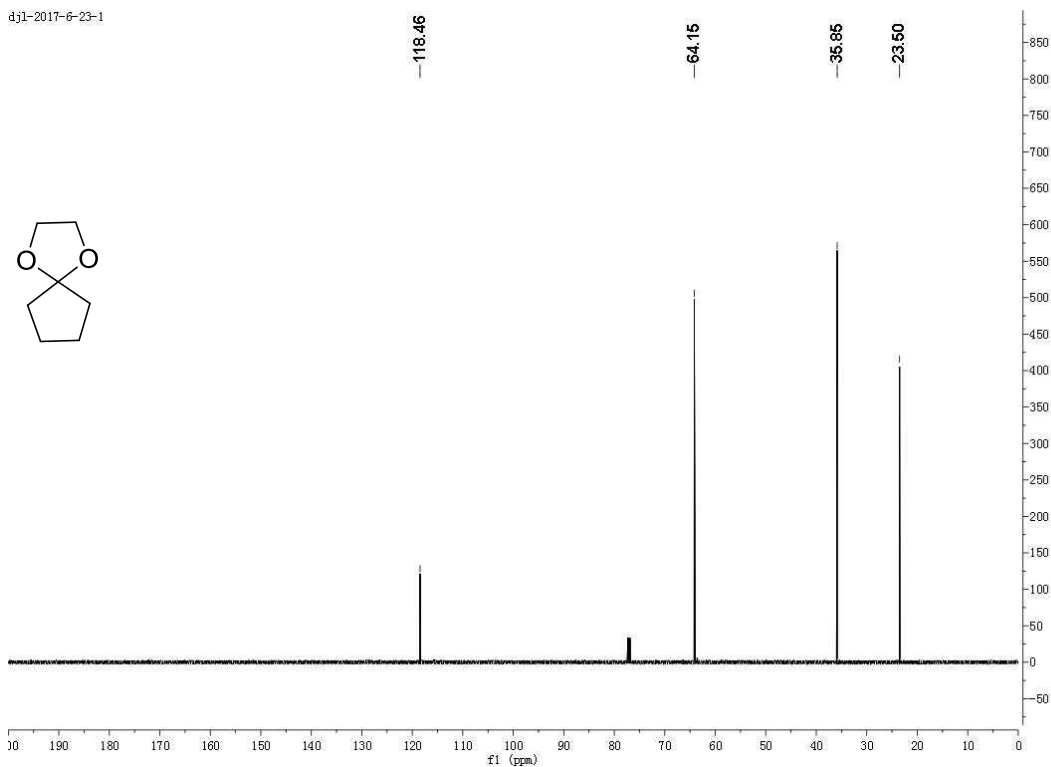


Figure S68: ^{13}C NMR (151 MHz, CDCl_3) of compound **4j'**

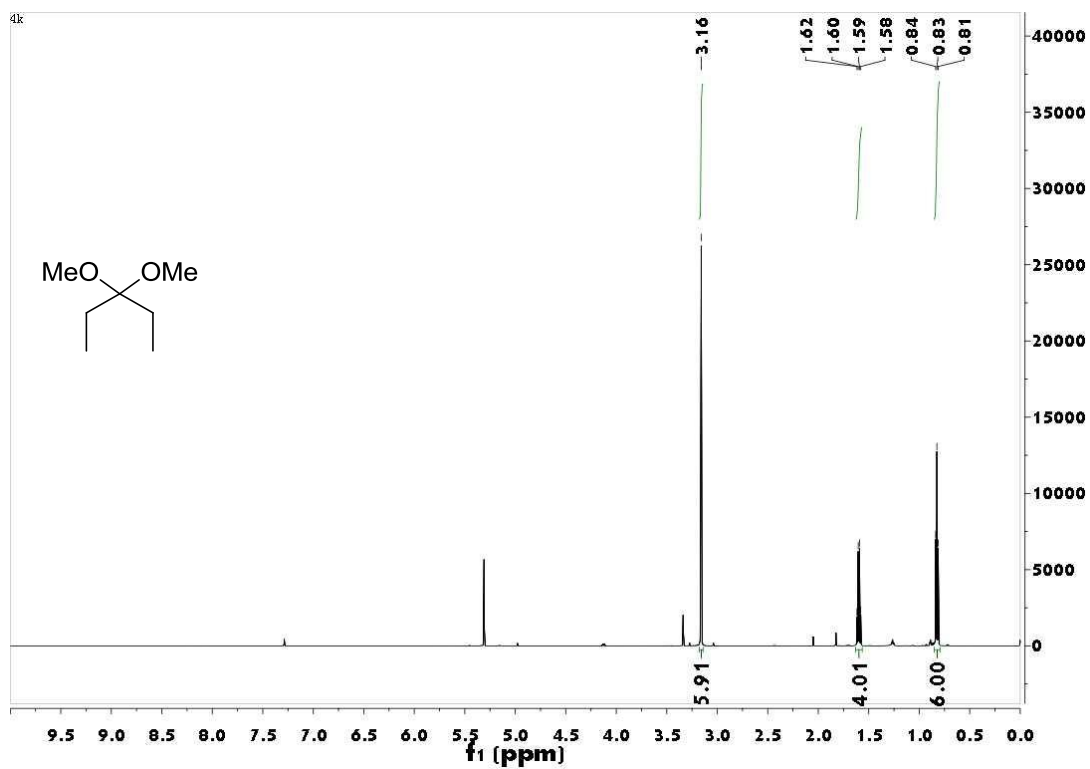


Figure S69: $^1\text{H NMR}$ (600 MHz, CDCl_3) of compound **4k**

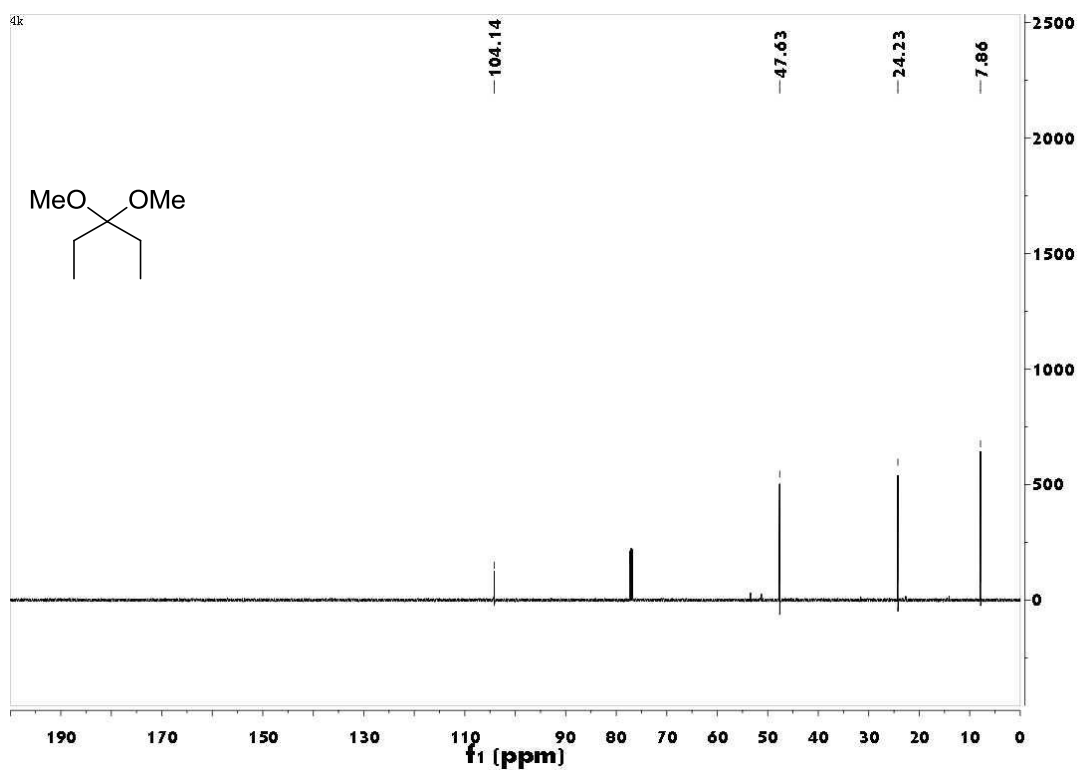


Figure S70: $^{13}\text{C NMR}$ (151 MHz, CDCl_3) of compound **4k**

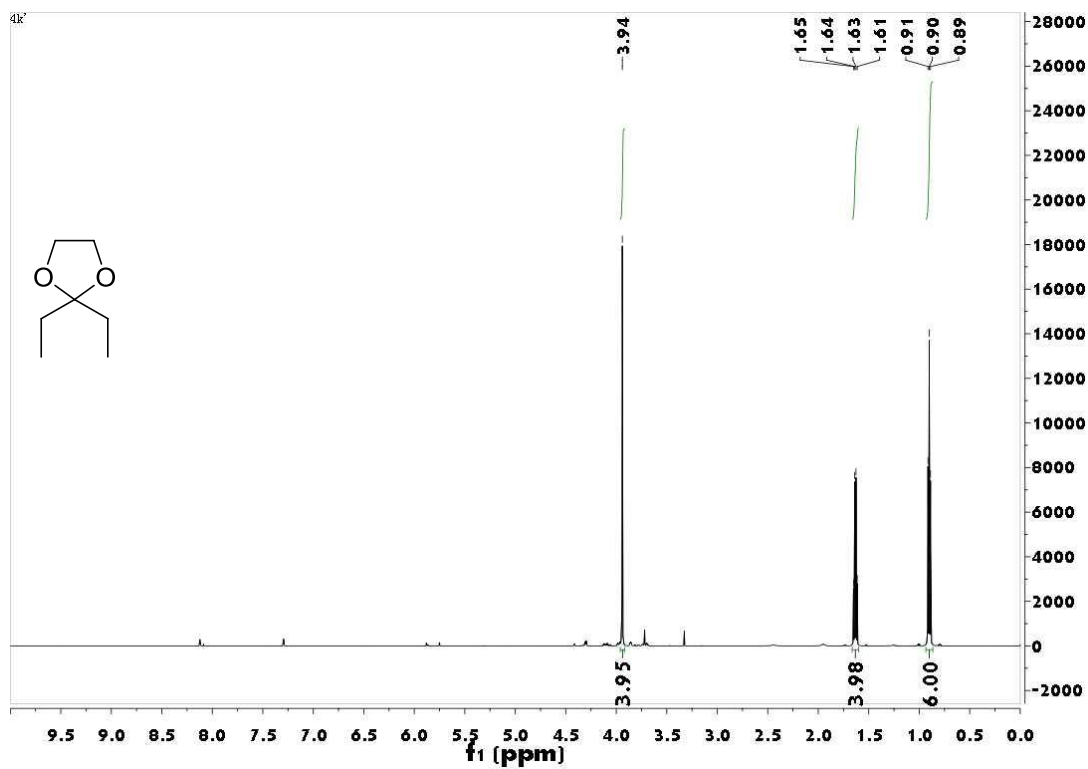


Figure S71: ^1H NMR (600 MHz, CDCl_3) of compound 4k'

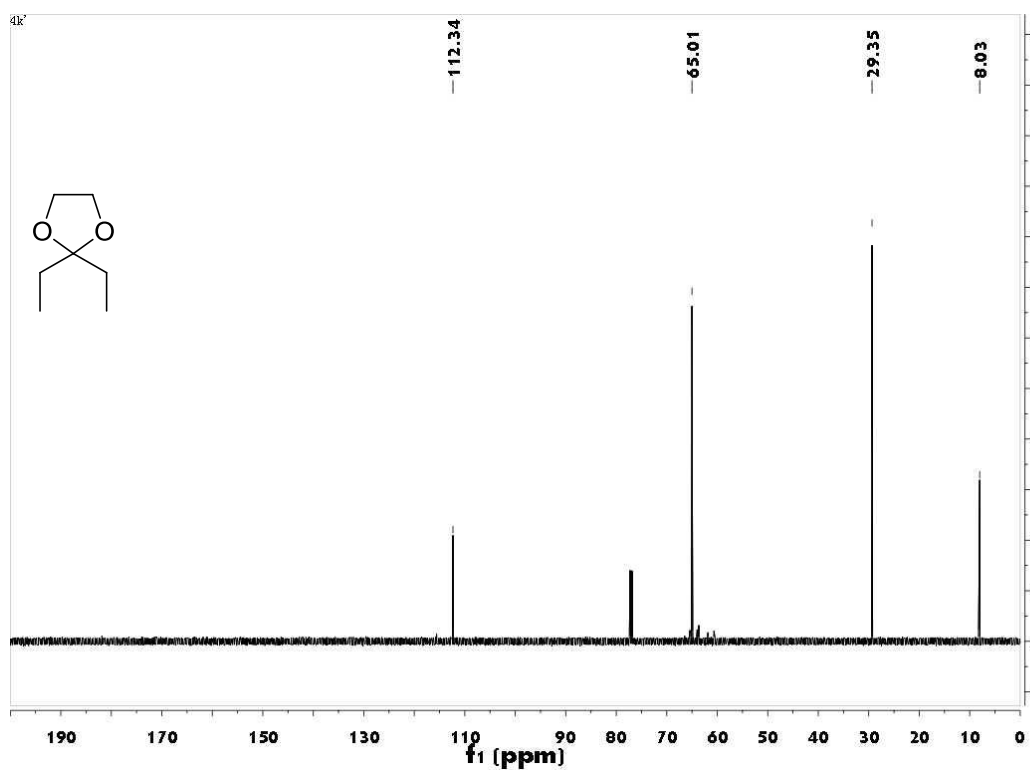


Figure S72: ^{13}C NMR (151 MHz, CDCl_3) of compound 4k'

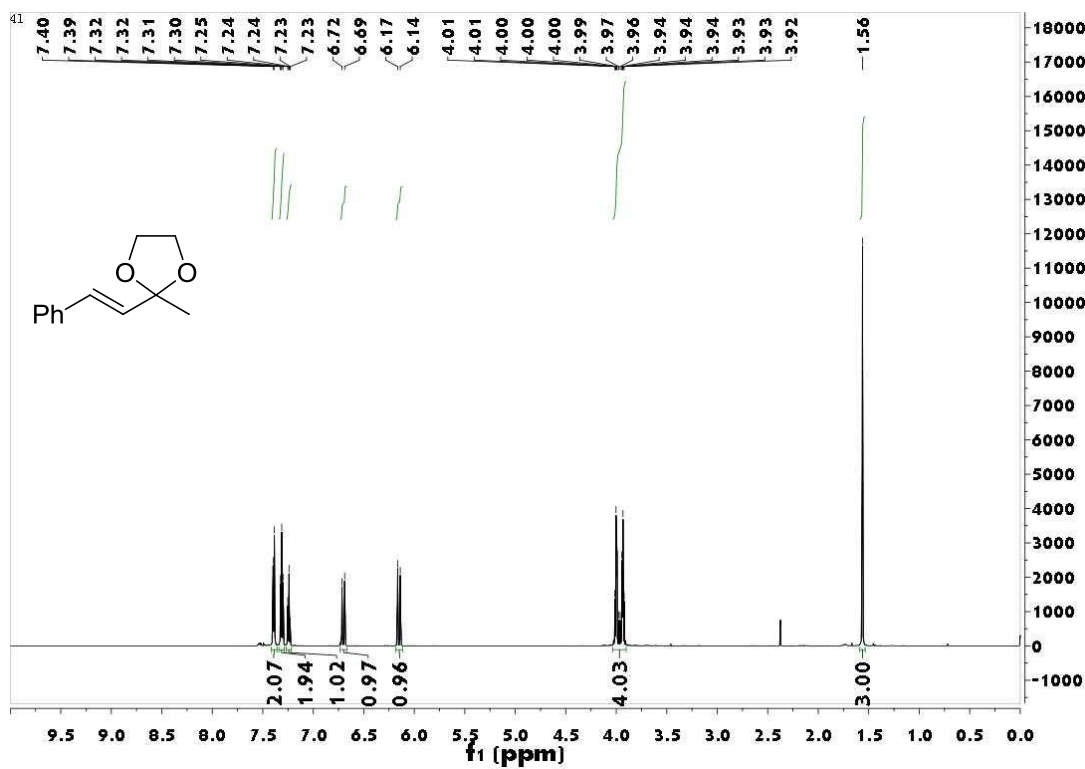


Figure S73: ^1H NMR (600 MHz, CDCl_3) of compound 4I

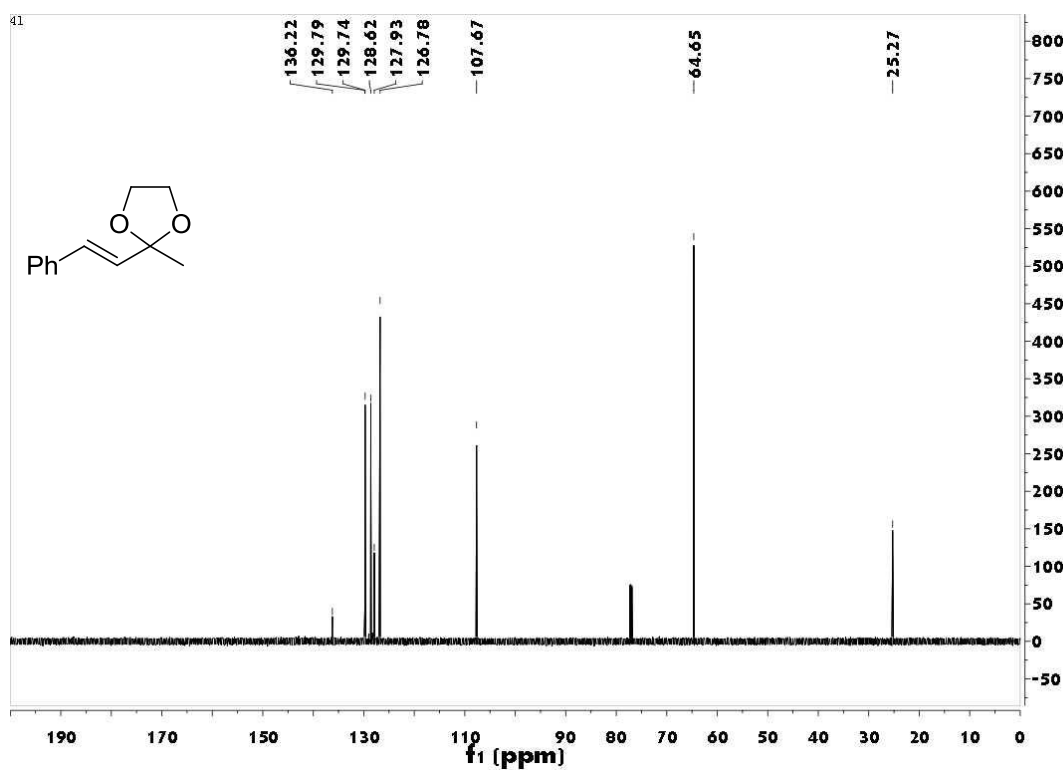


Figure S74: ^{13}C NMR (151 MHz, CDCl_3) of compound 4I

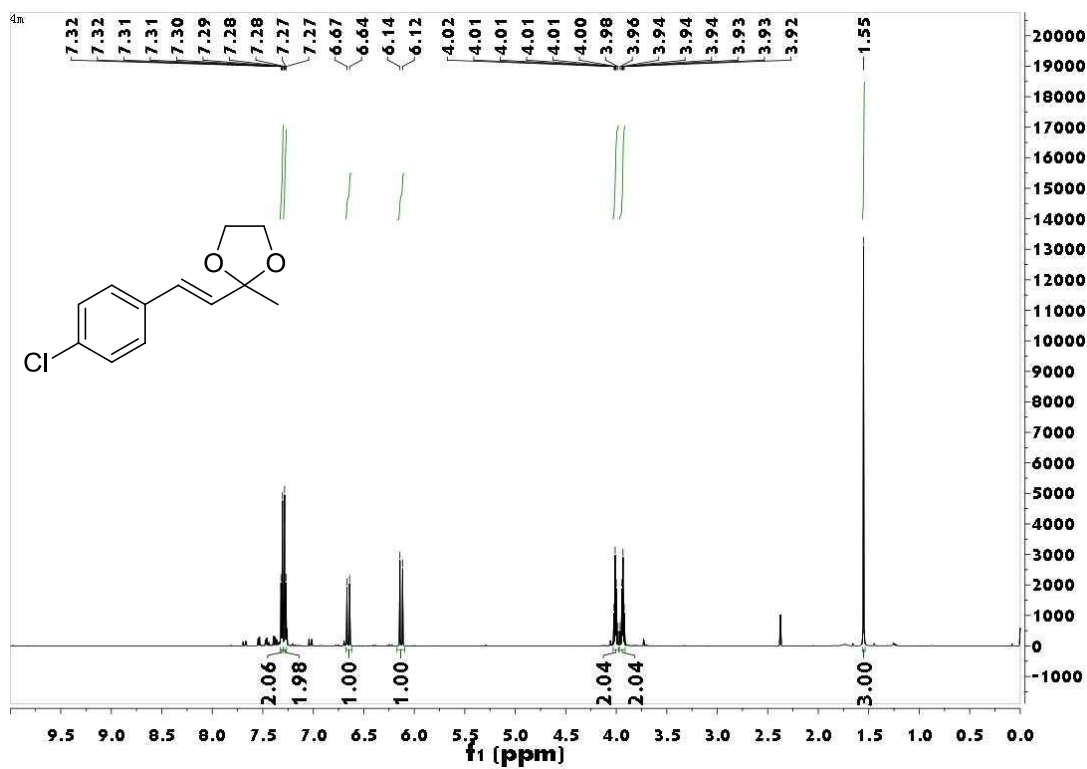


Figure S75: ^1H NMR (600 MHz, CDCl_3) of compound 4m

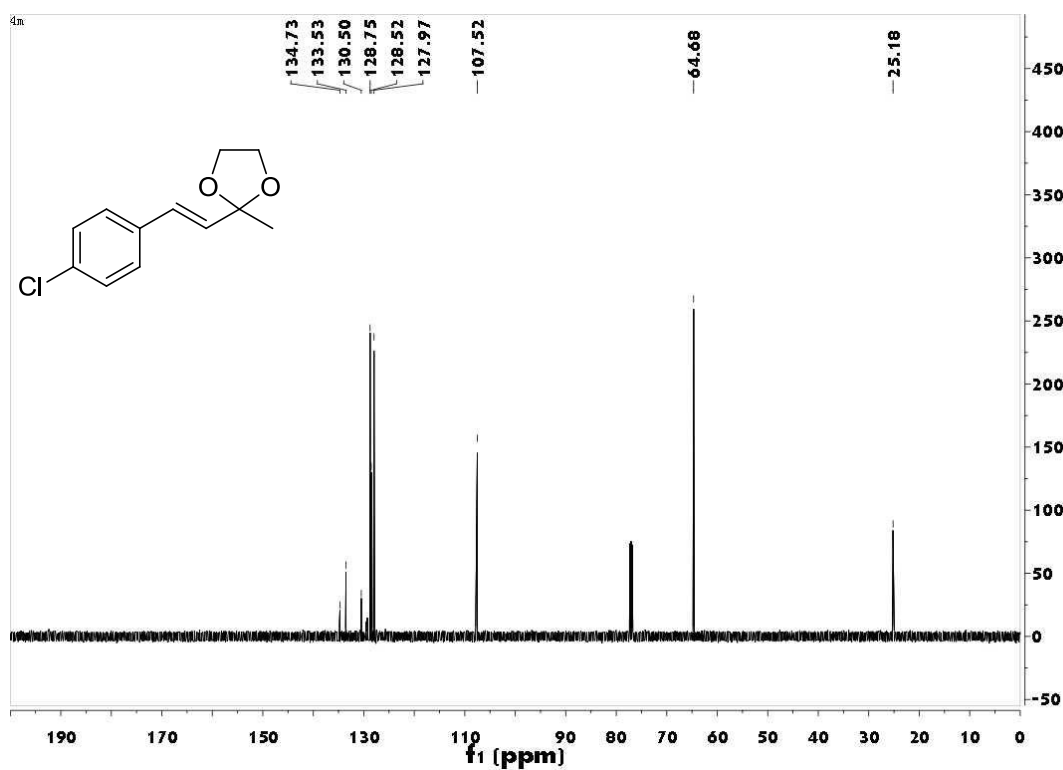


Figure S76: ^{13}C NMR (151 MHz, CDCl_3) of compound 4m

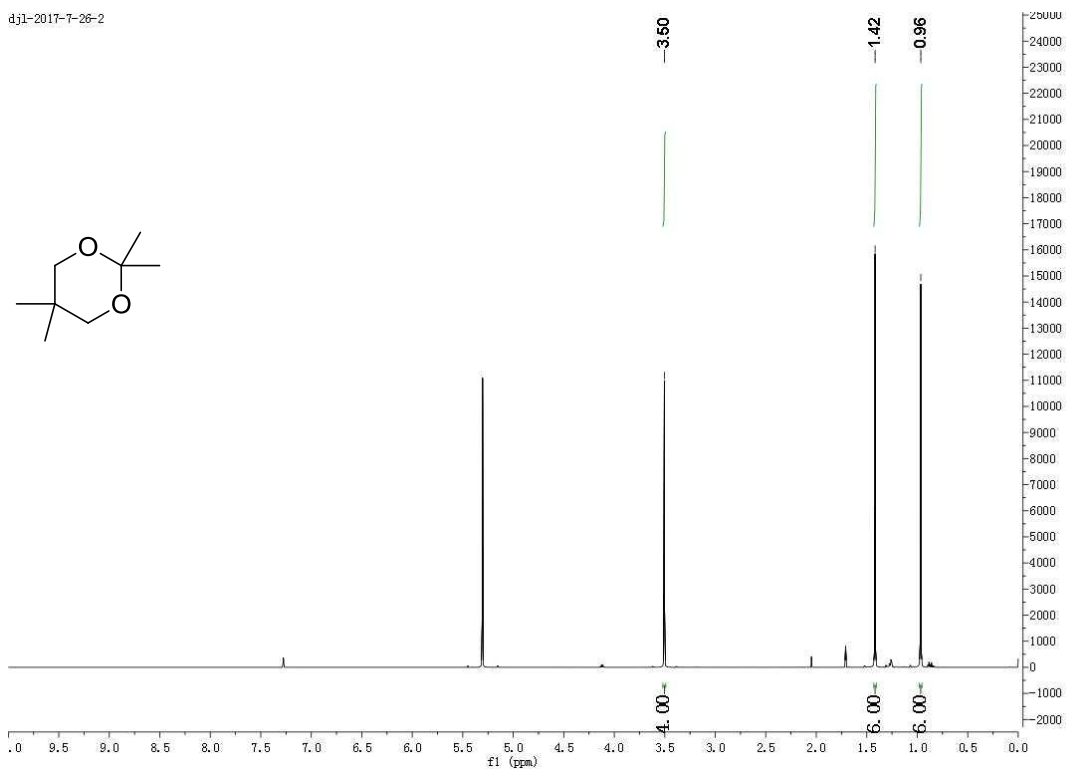


Figure S77: ^1H NMR (600 MHz, CDCl_3) of compound **6a**

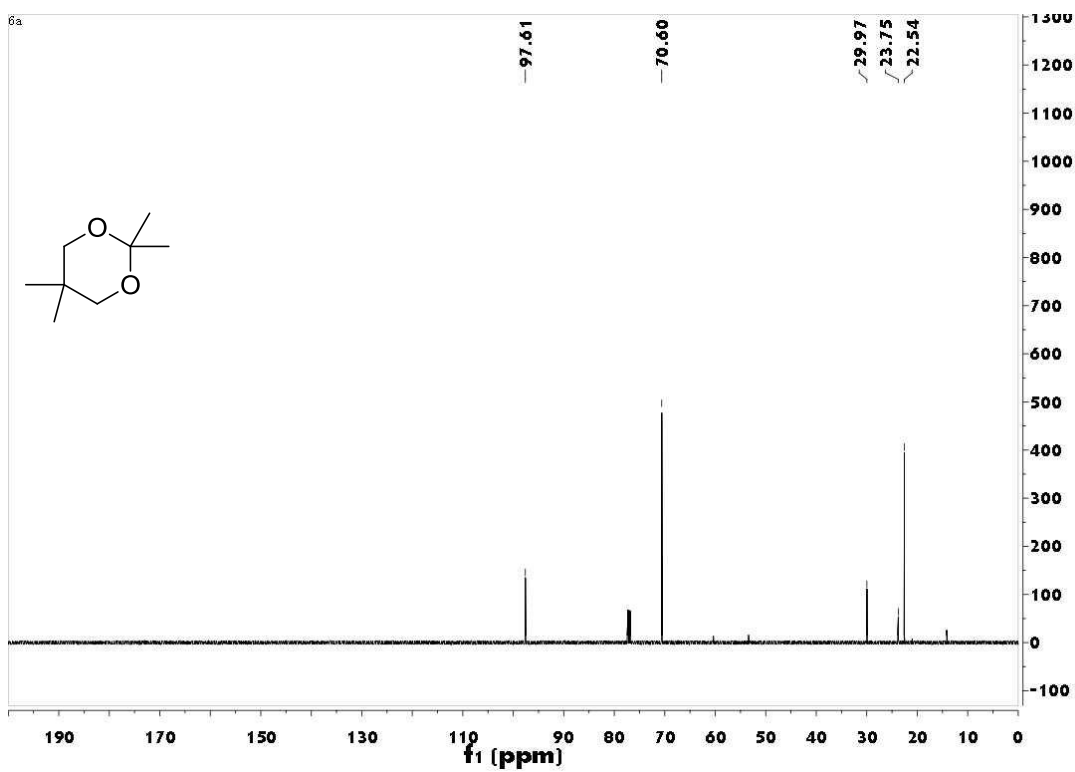


Figure S78: ^{13}C NMR (151 MHz, CDCl_3) of compound **6a**

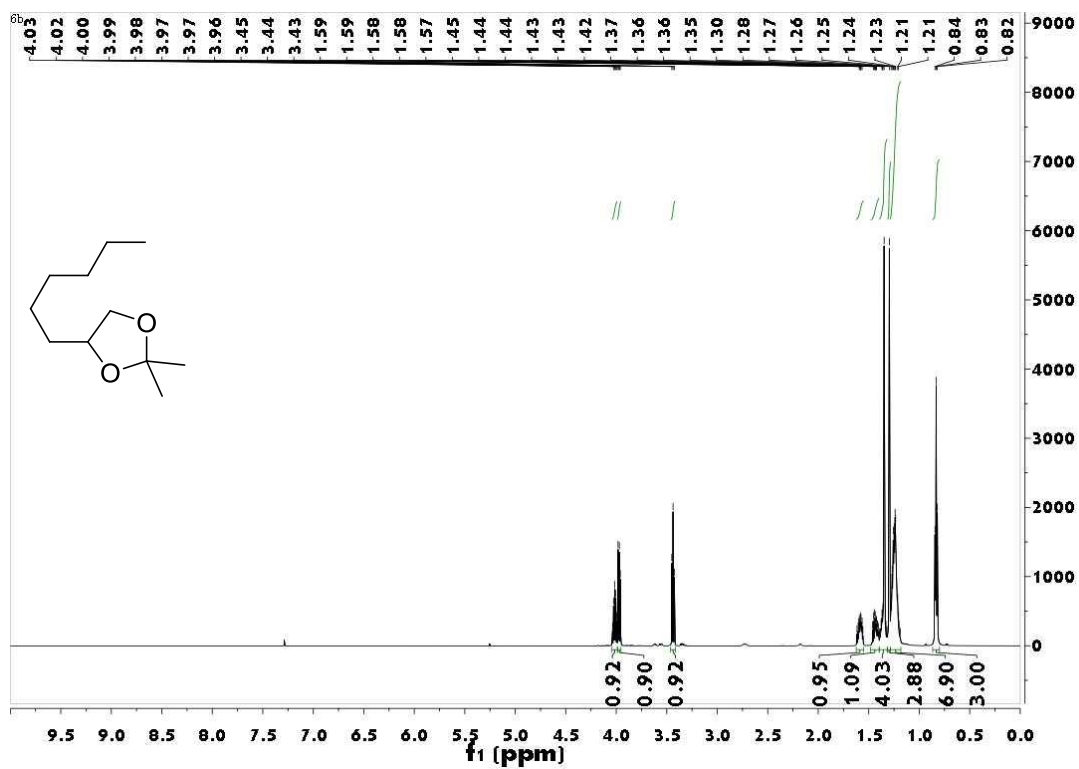


Figure S79: ^1H NMR (600 MHz, CDCl_3) of compound 6b

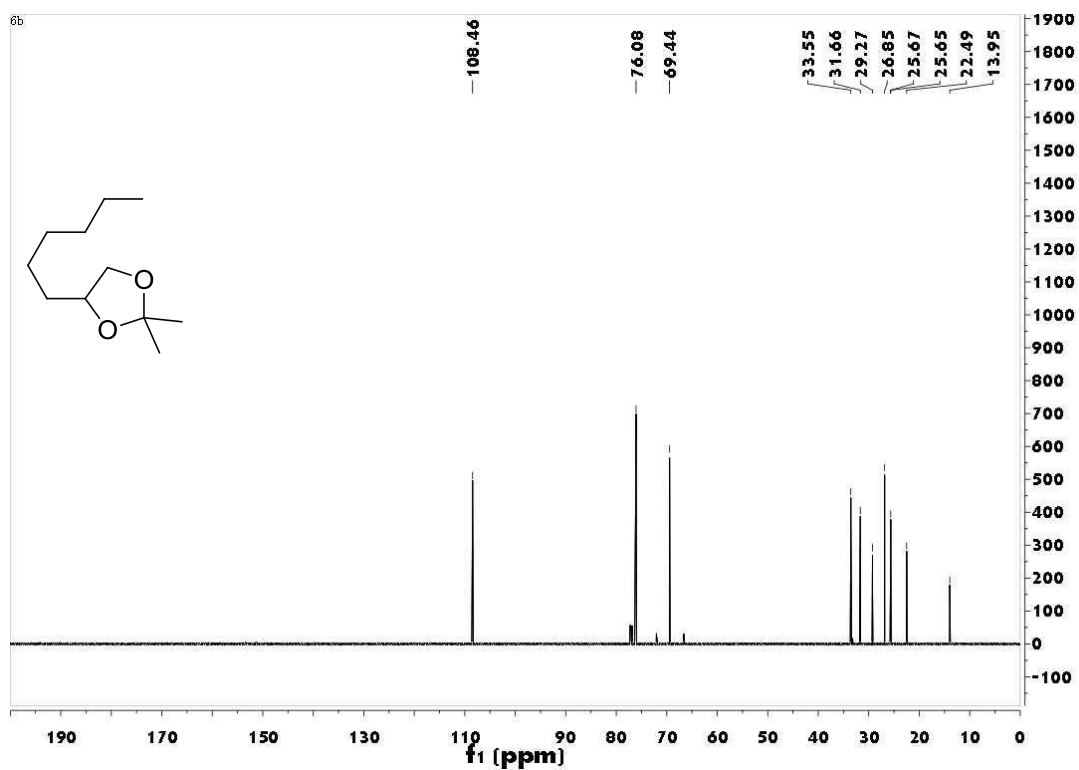


Figure S80: ^{13}C NMR (151 MHz, CDCl_3) of compound 6b

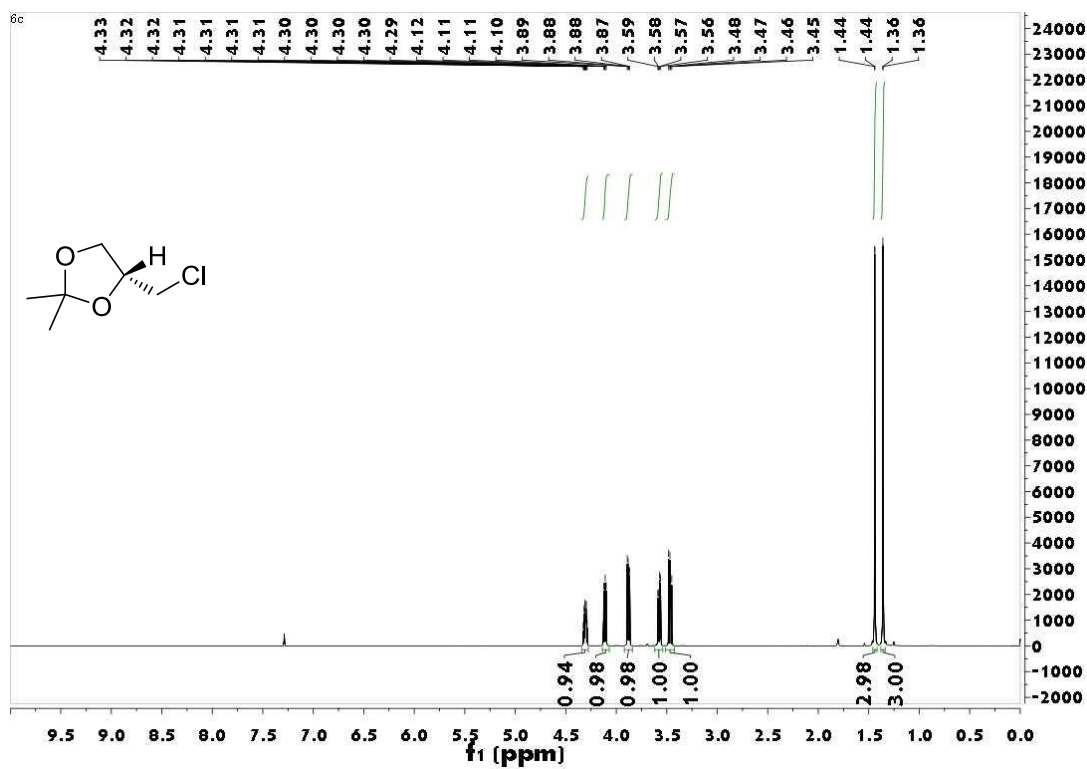


Figure S81: ¹H NMR (600 MHz, CDCl₃) of compound 6c

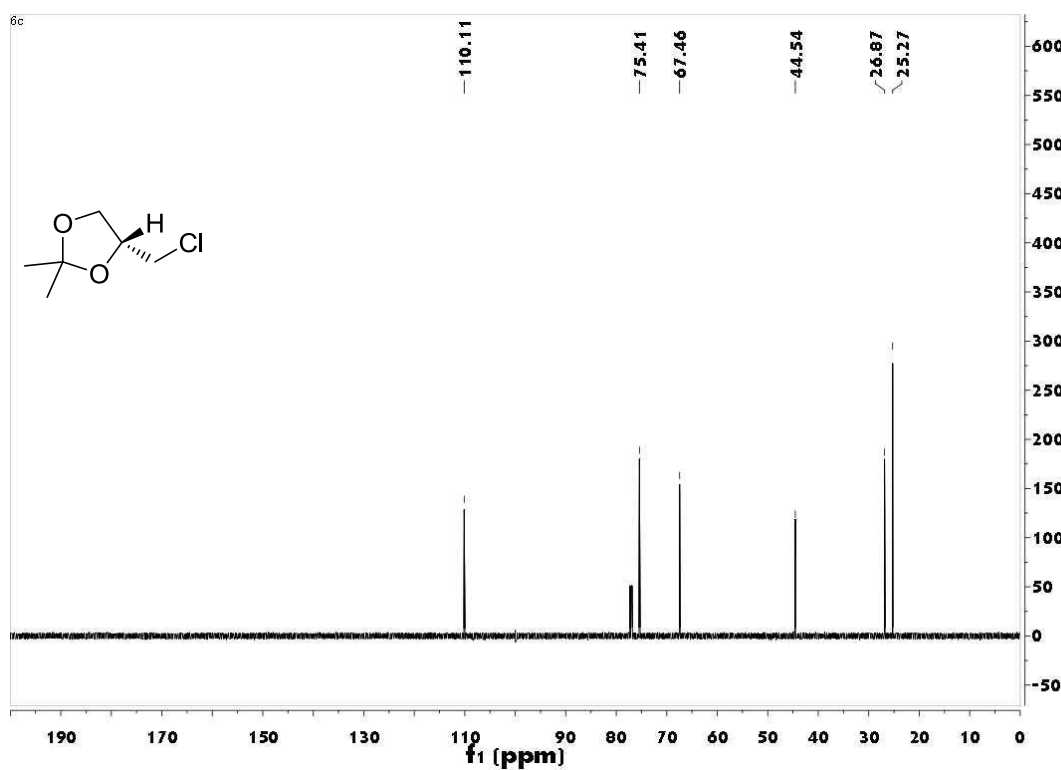


Figure S82: ¹³C NMR (151 MHz, CDCl₃) of compound 6c

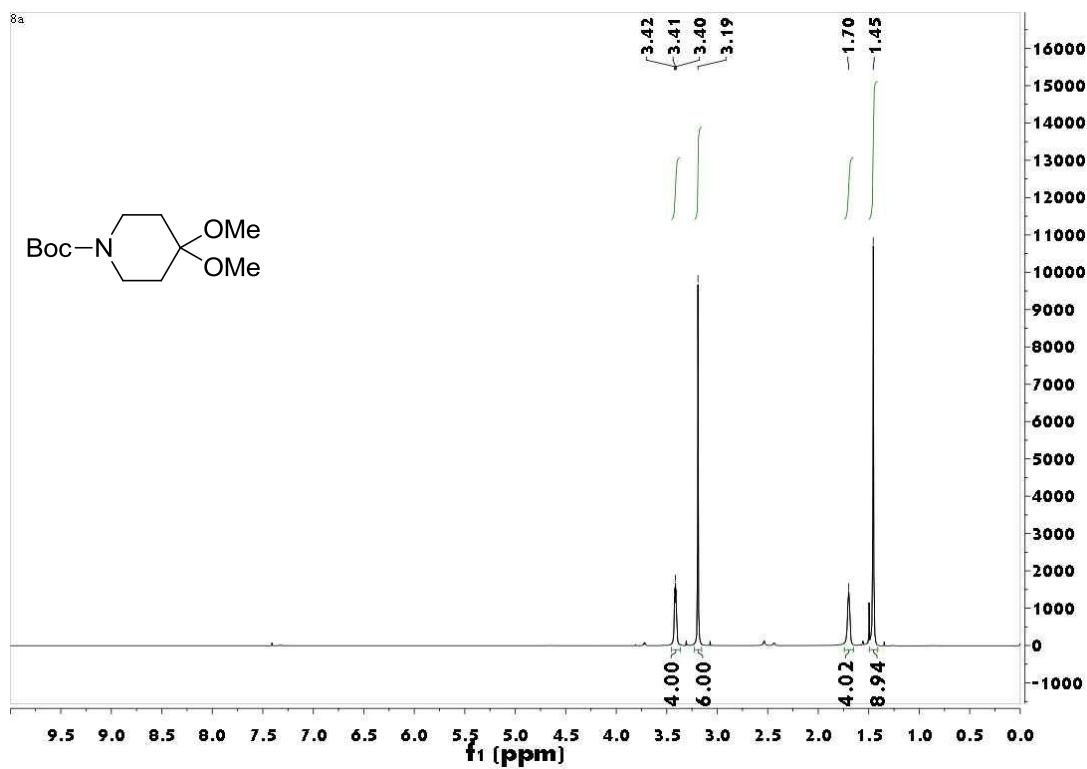


Figure S83: ^1H NMR (600 MHz, CDCl_3) of compound 8a

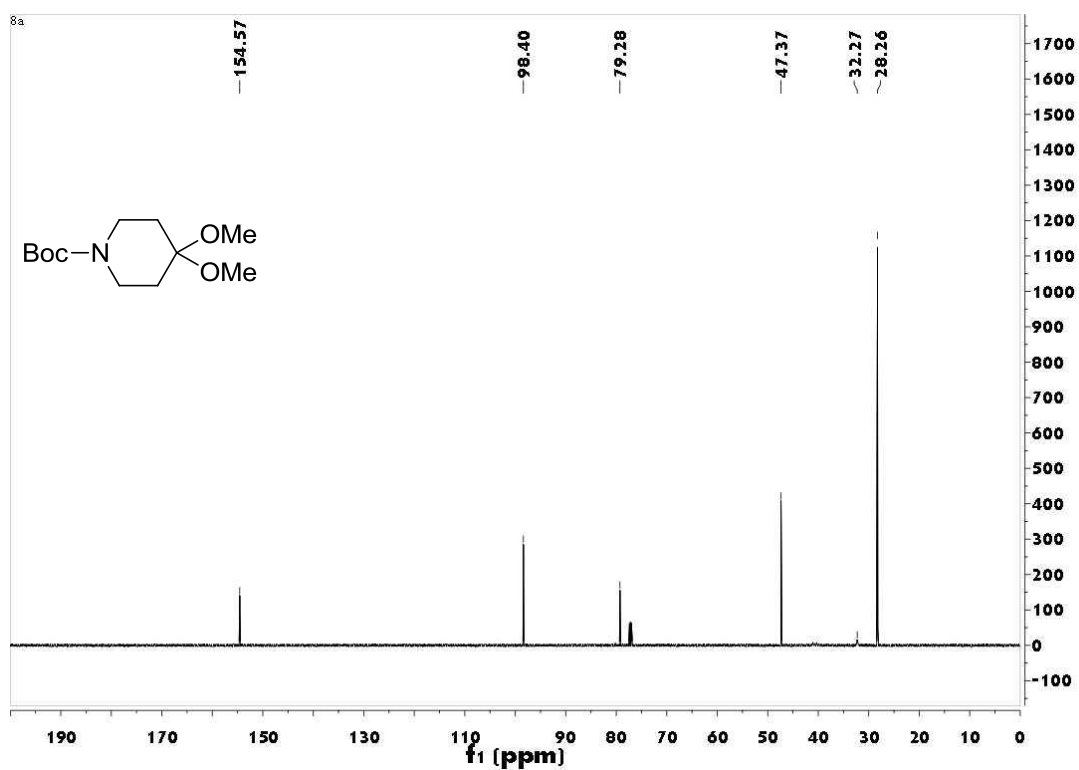


Figure S84: ^{13}C NMR (151 MHz, CDCl_3) of compound 8a

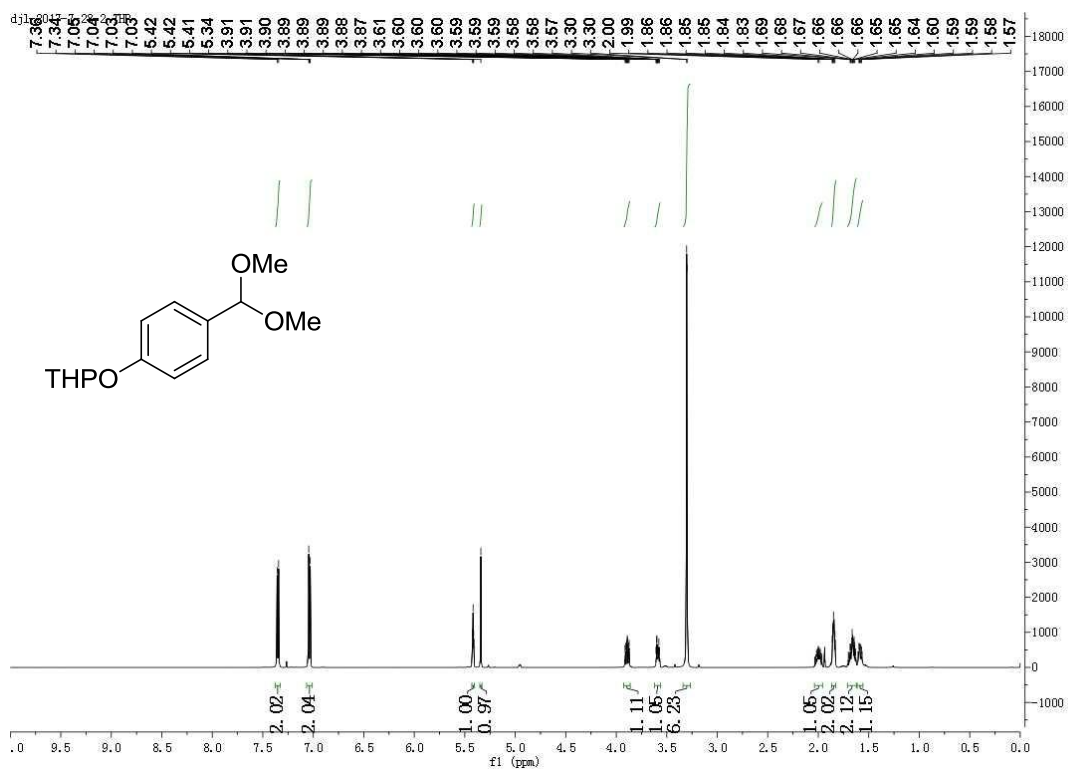


Figure S85: ¹H NMR (600 MHz, CDCl₃) of compound **8b**

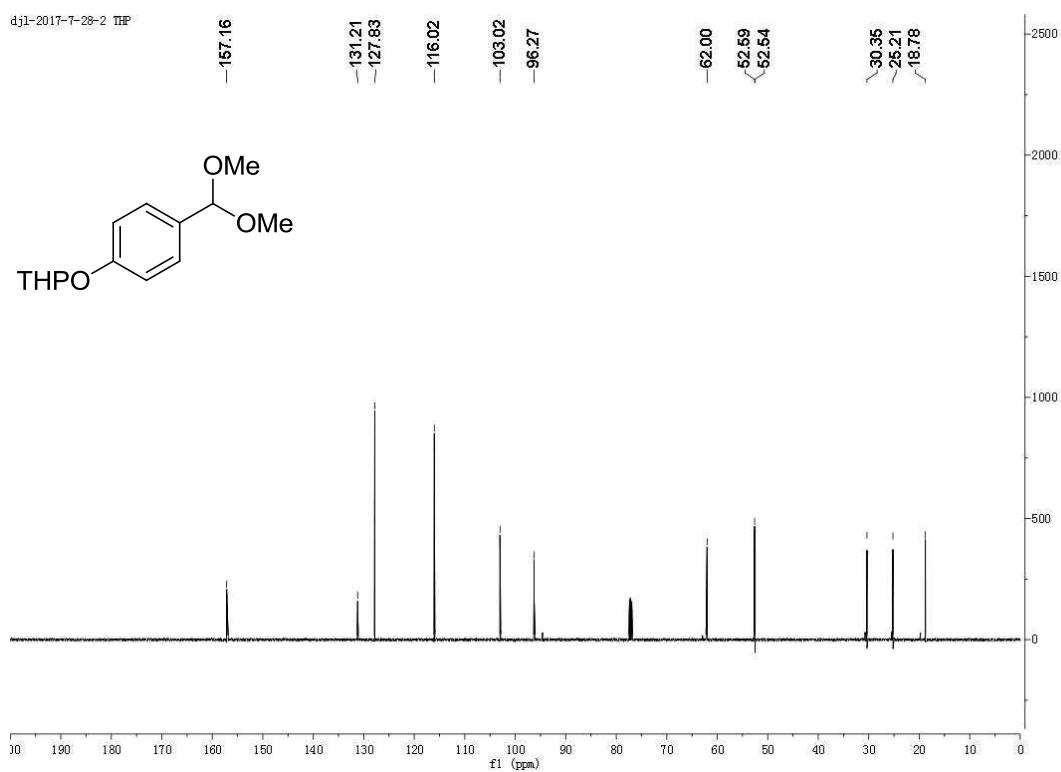


Figure S86: ¹³C NMR (151 MHz, CDCl₃) of compound **8b**

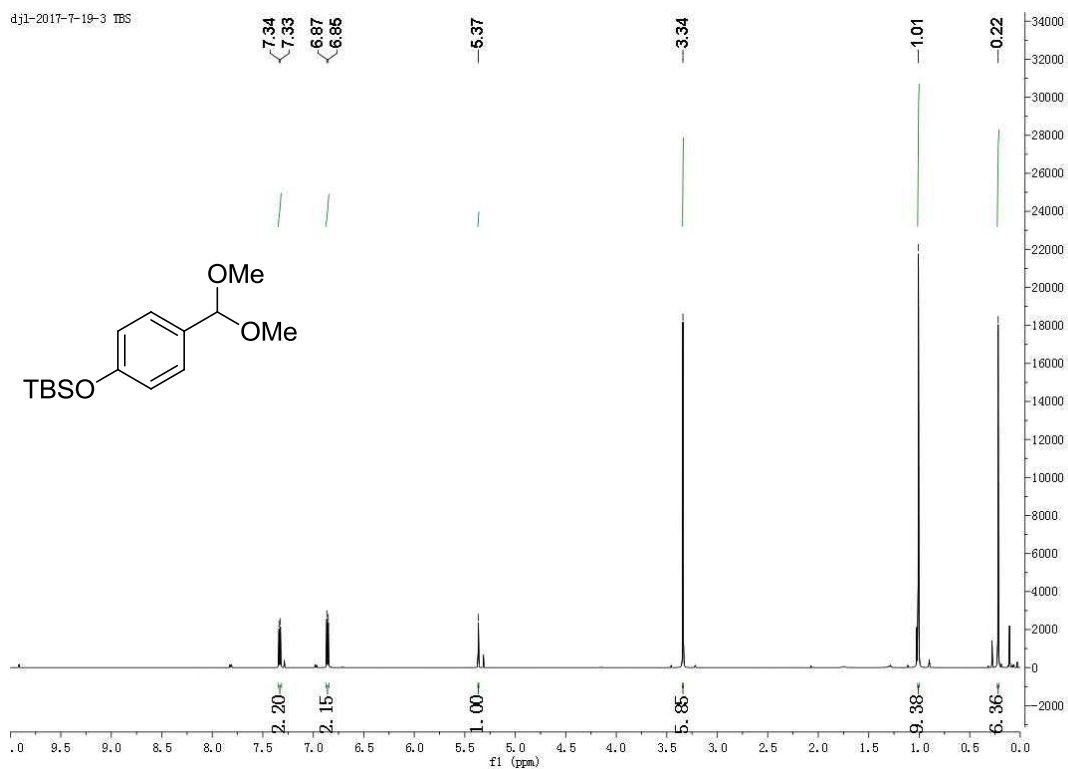


Figure S87: ^1H NMR (600 MHz, CDCl_3) of compound **8c**

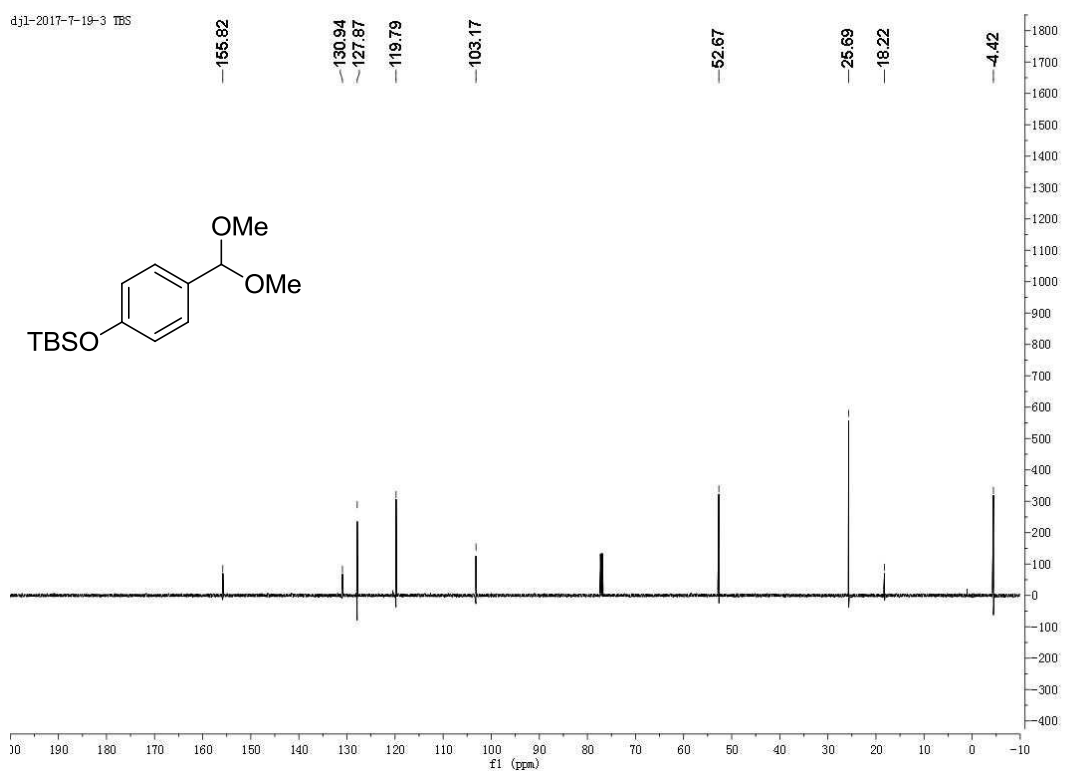


Figure S88: ^{13}C NMR (151 MHz, CDCl_3) of compound **8c**

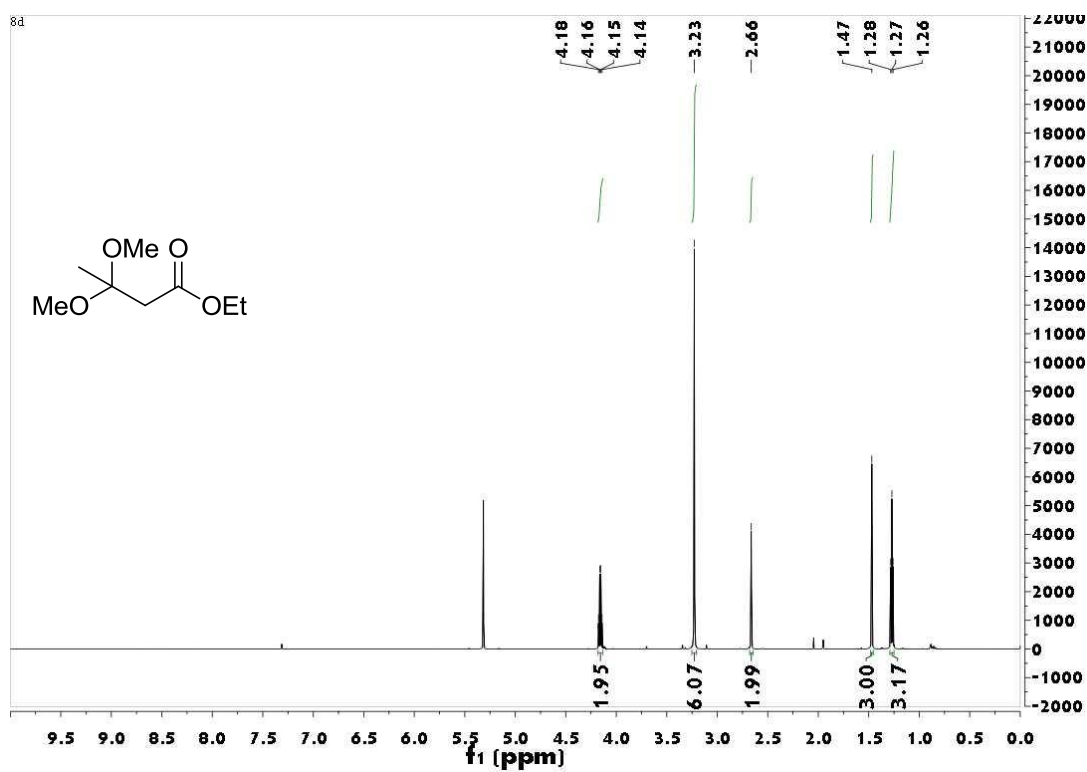


Figure S89: ^1H NMR (600 MHz, CDCl_3) of compound 8d

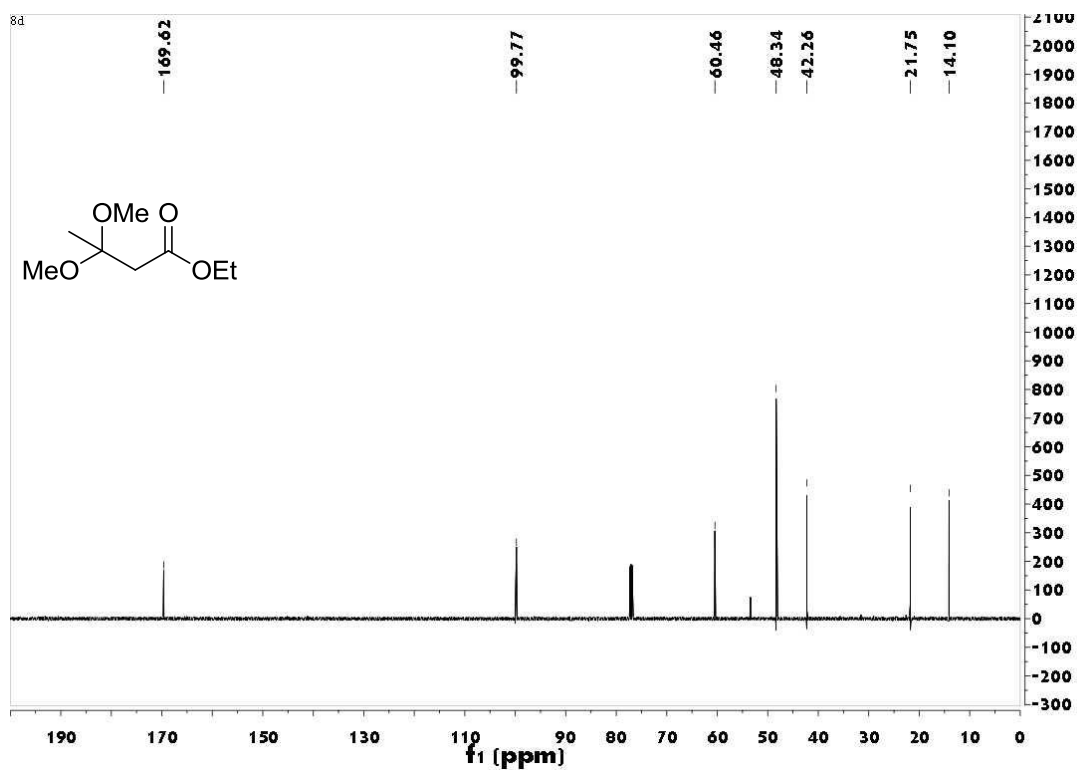


Figure S90: ^{13}C NMR (151 MHz, CDCl_3) of compound 8d

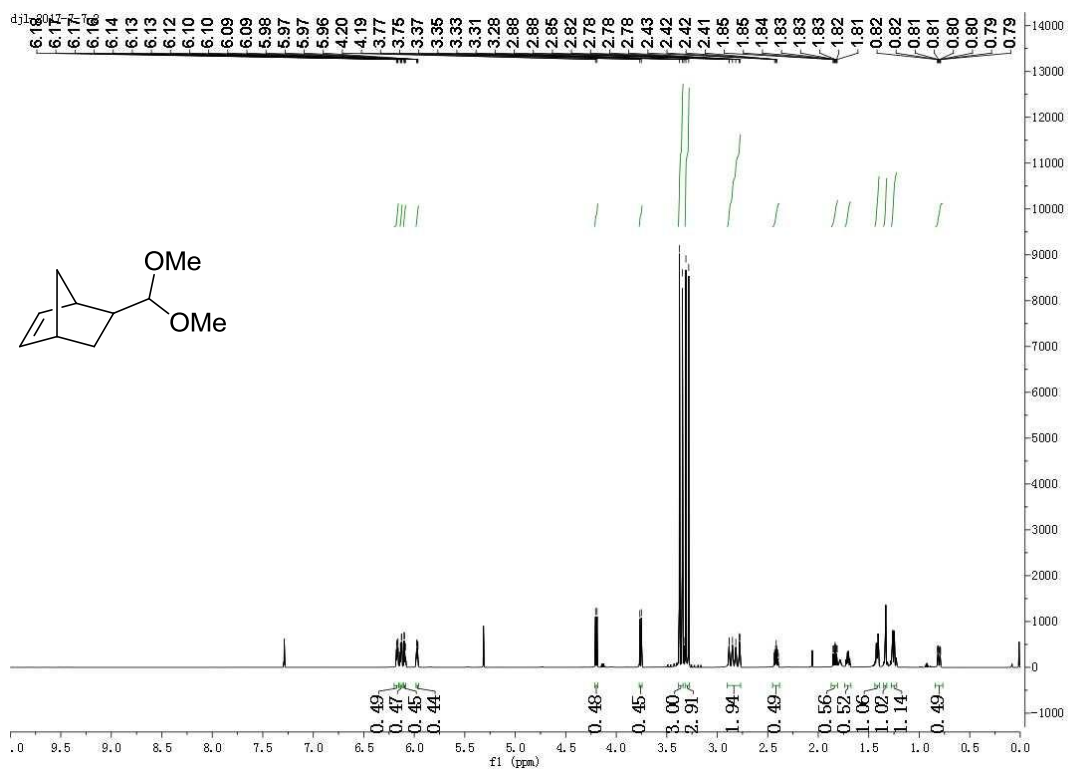


Figure S91: ¹H NMR (600 MHz, CDCl₃) of compound **8e**

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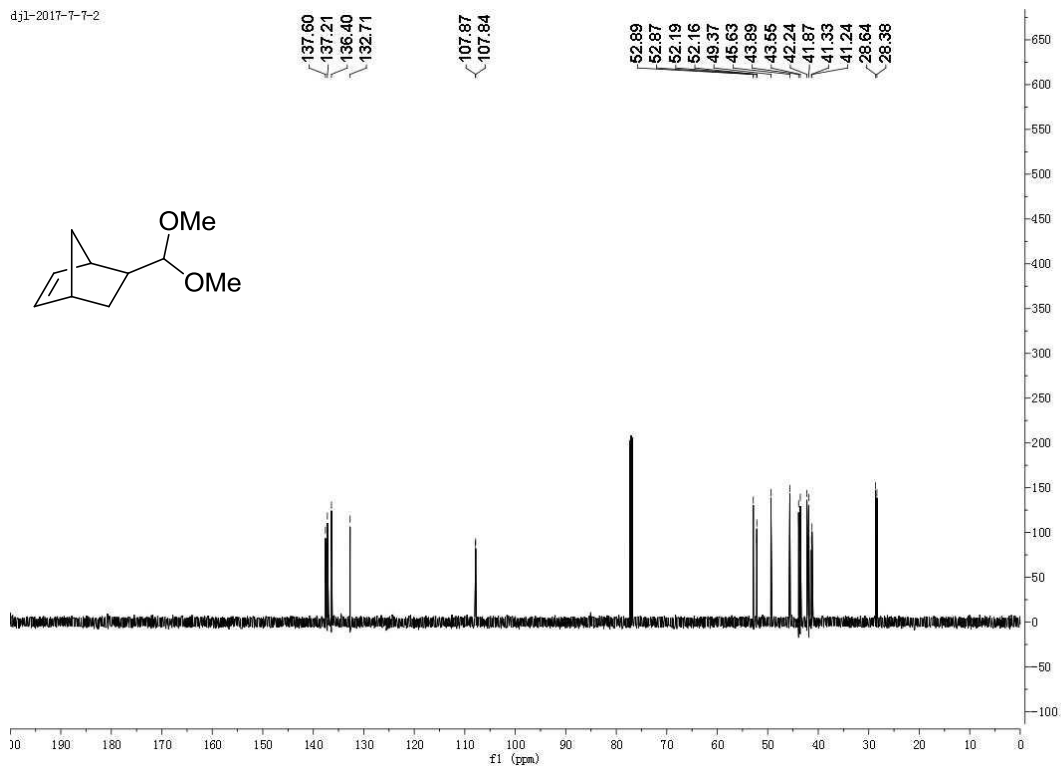
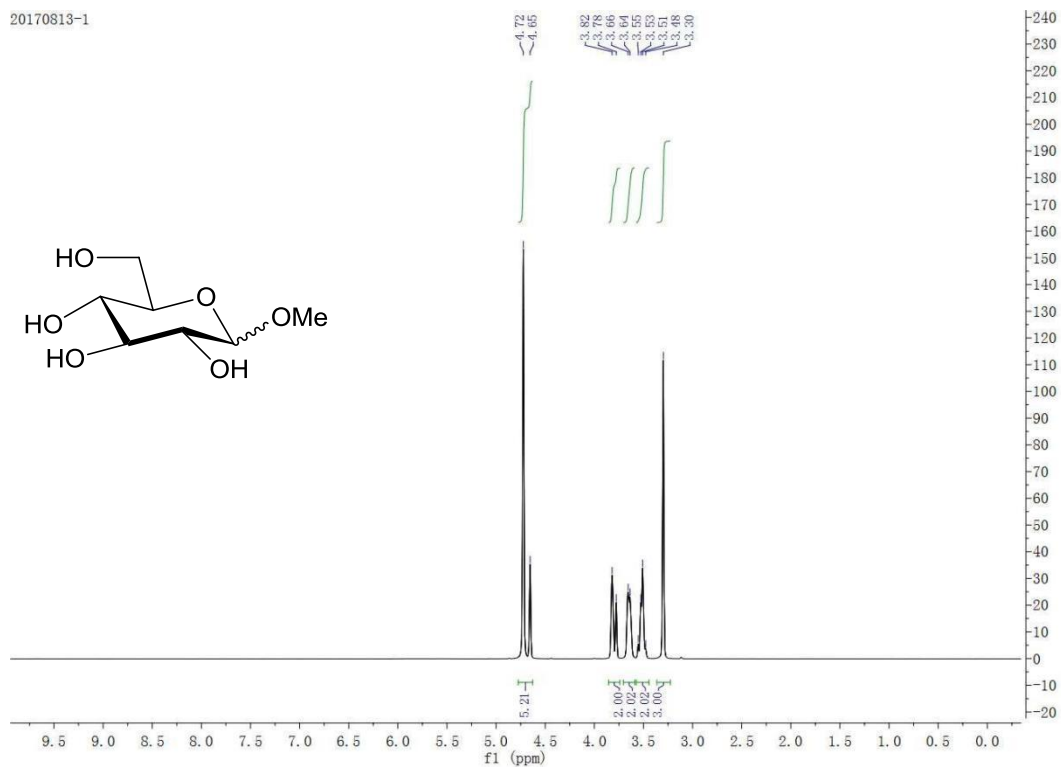
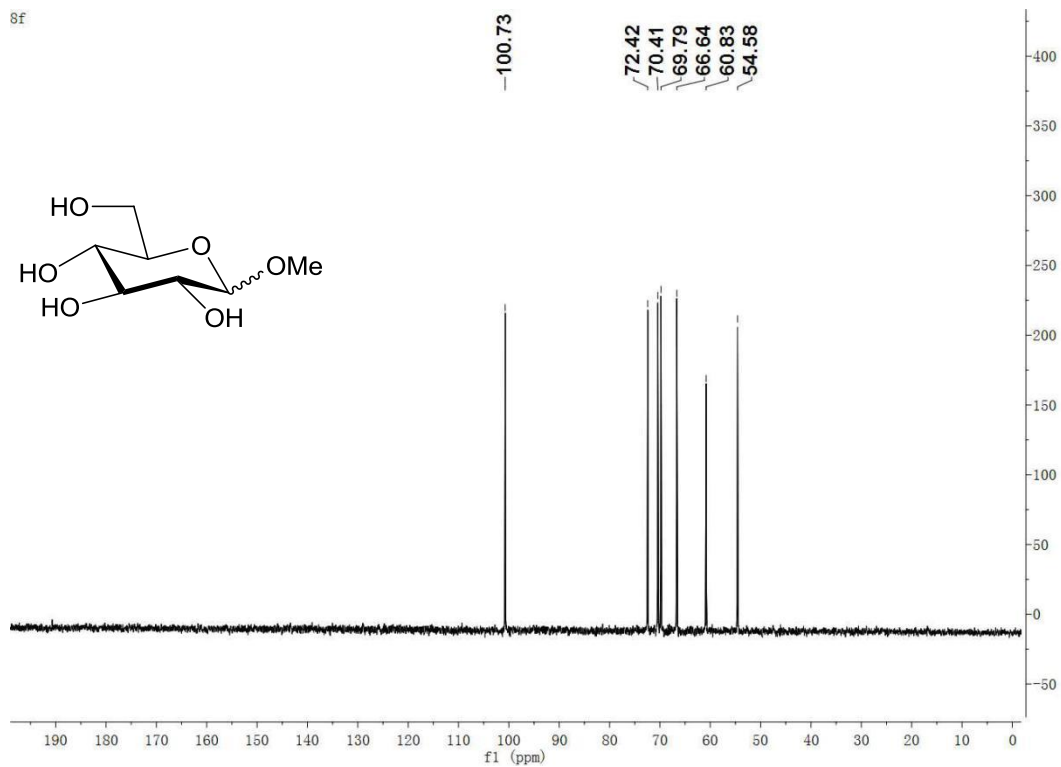


Figure S92: ¹³C NMR (151 MHz, CDCl₃) of compound **8e**

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**Figure S93:** ¹H NMR (400 MHz, D₂O) of compound **8f**

8f

**Figure S94:** ¹³C NMR (100 MHz, D₂O) of compound **8f**

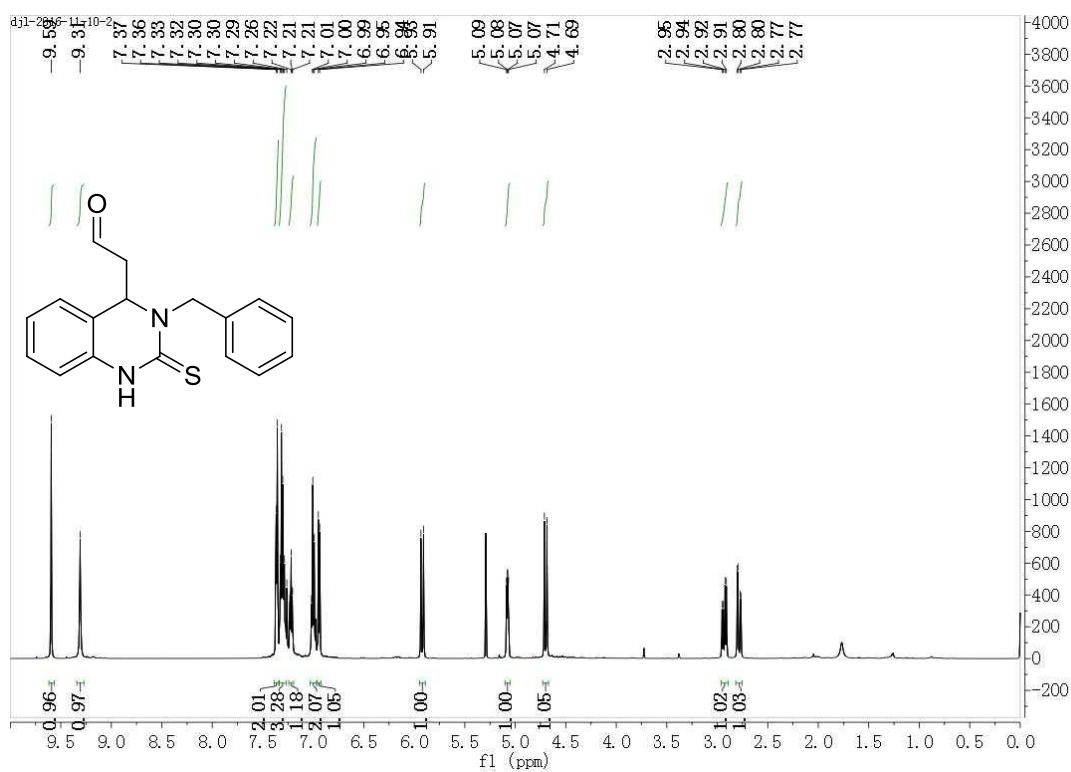


Figure S95: $^1\text{H NMR}$ (600 MHz, CDCl_3) of compound 10a

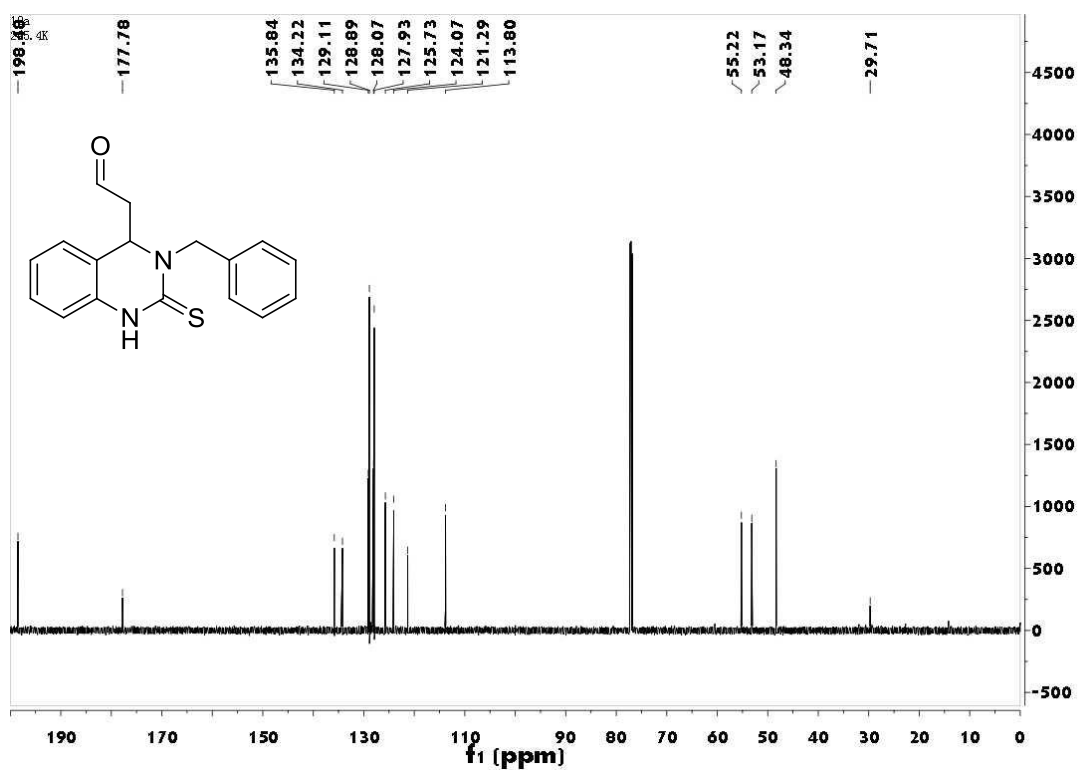


Figure S96: $^{13}\text{C NMR}$ (151 MHz, CDCl_3) of compound 10a

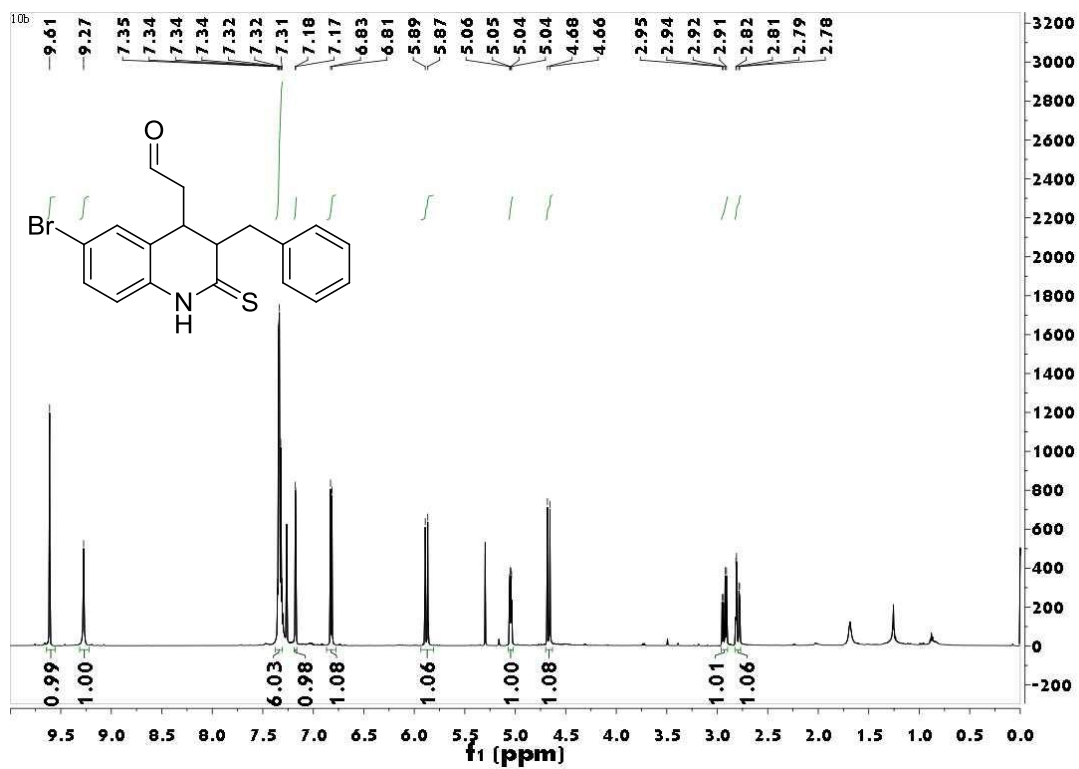


Figure S97: ^1H NMR (600 MHz, CDCl_3) of compound 10b

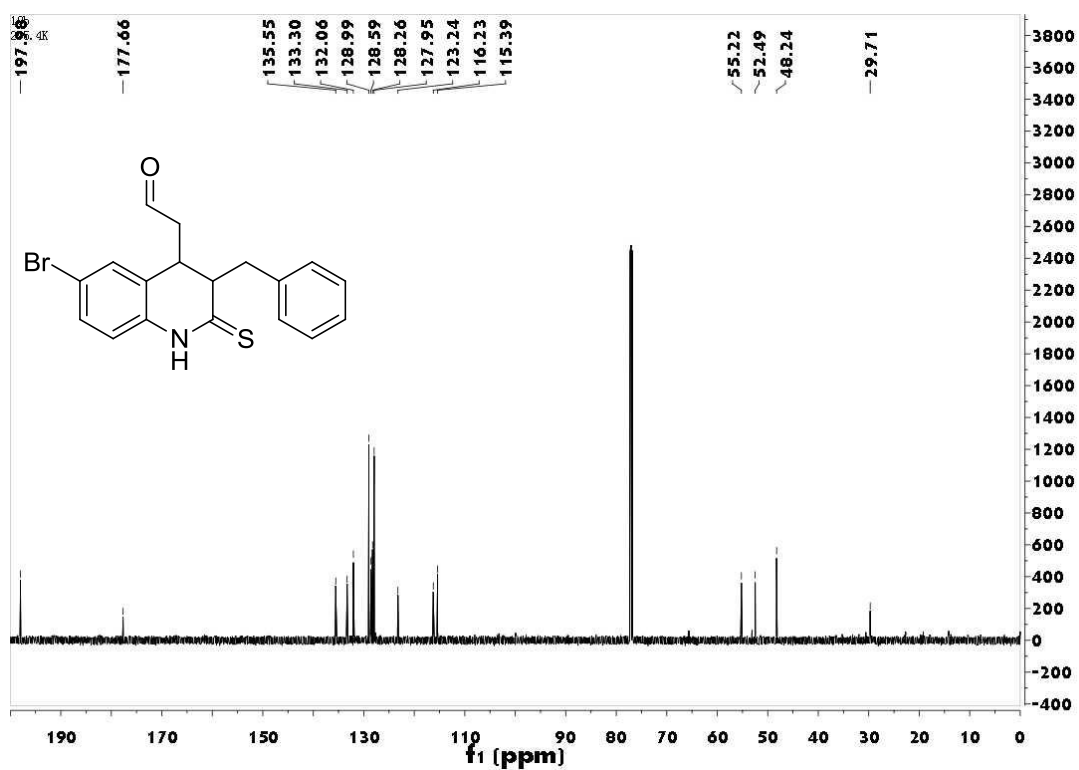


Figure S98: ^{13}C NMR (151 MHz, CDCl_3) of compound 10b

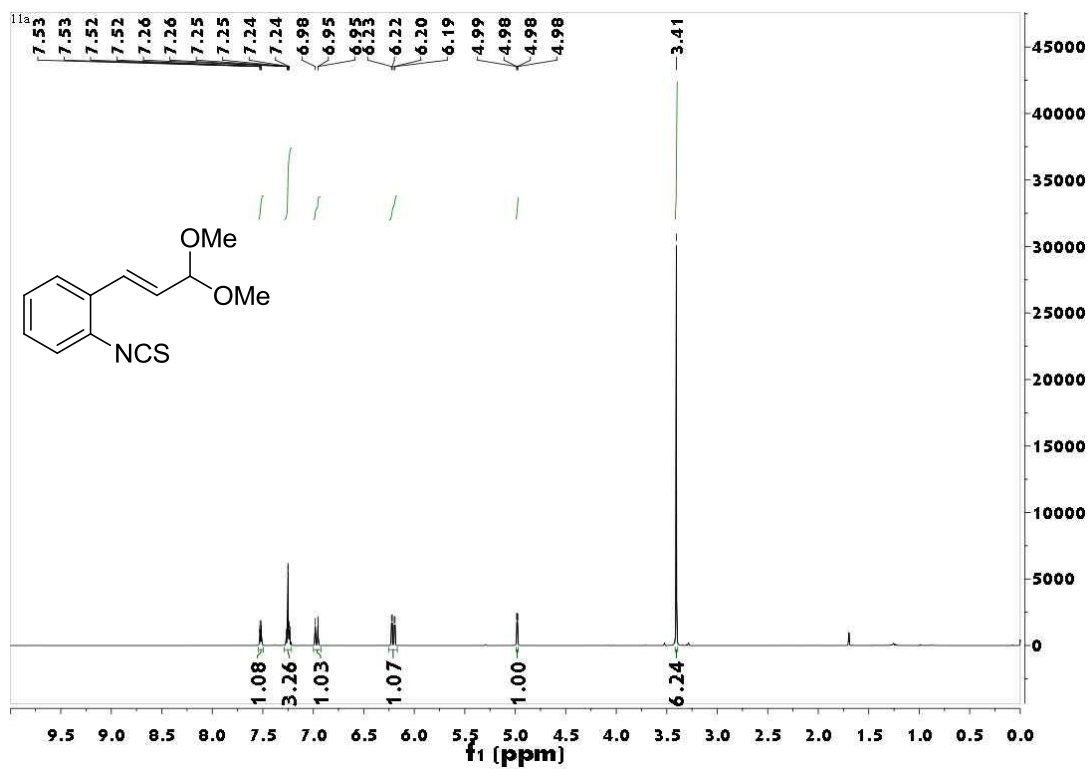


Figure S99: ^1H NMR (600 MHz, CDCl_3) of compound 11a

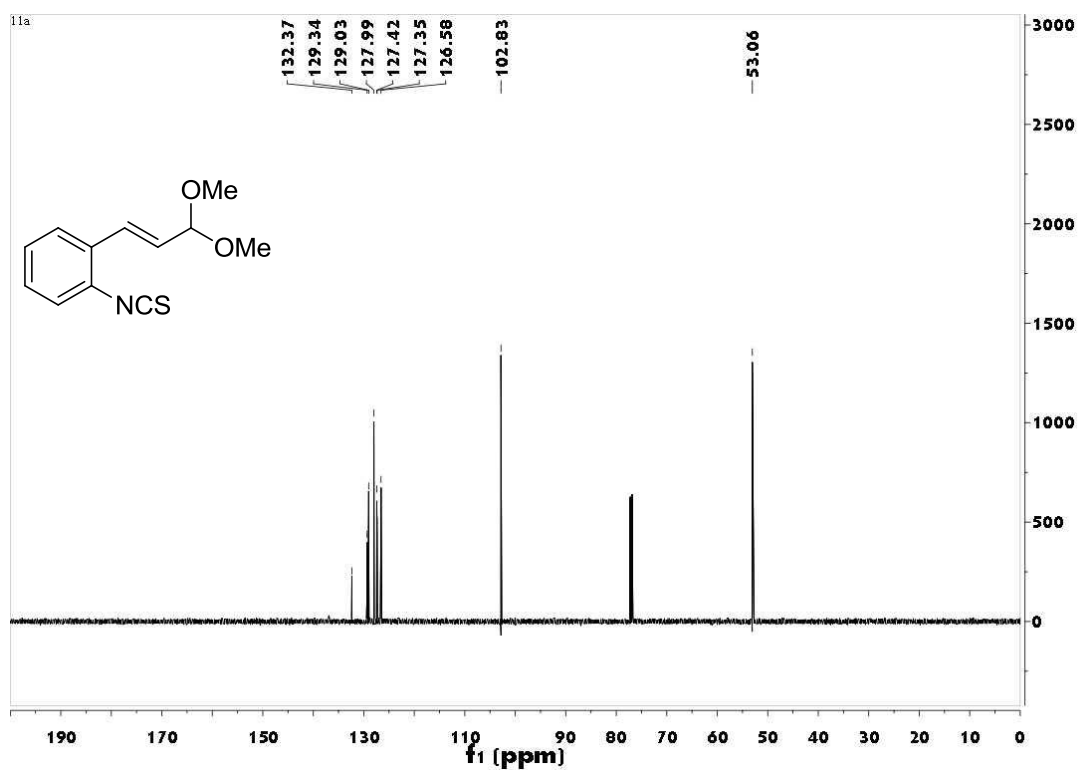


Figure S100: ^{13}C NMR (151 MHz, CDCl_3) of compound 11a

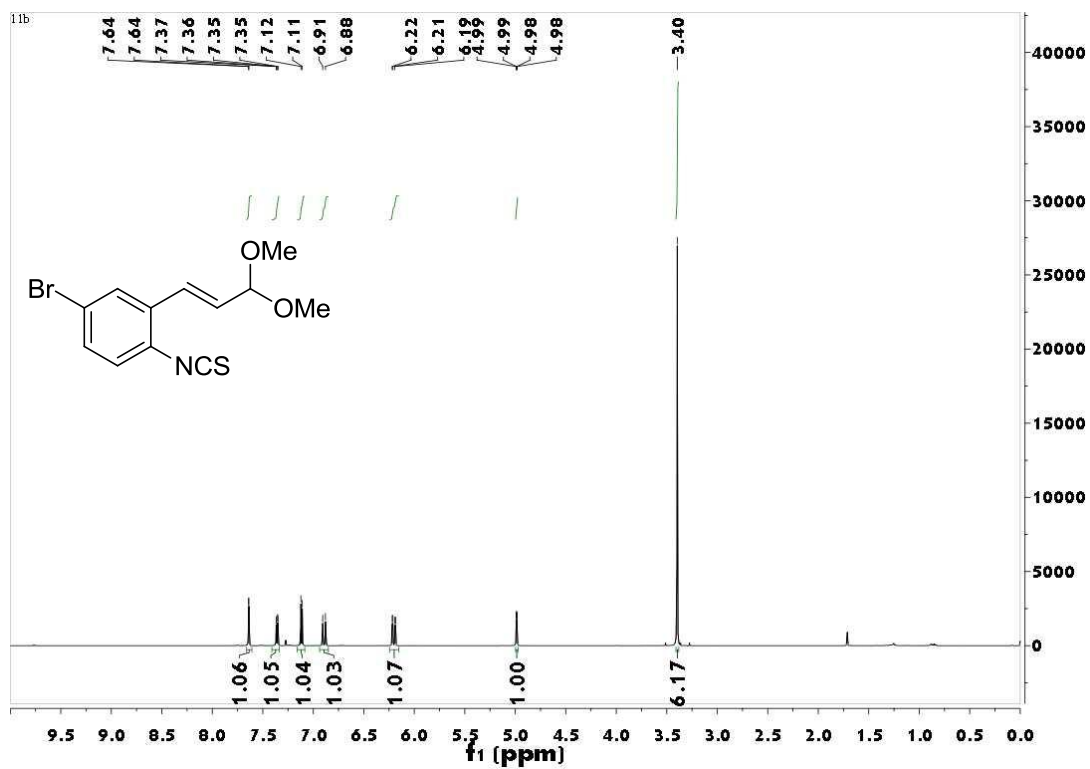


Figure S101: ^1H NMR (600 MHz, CDCl_3) of compound 11b

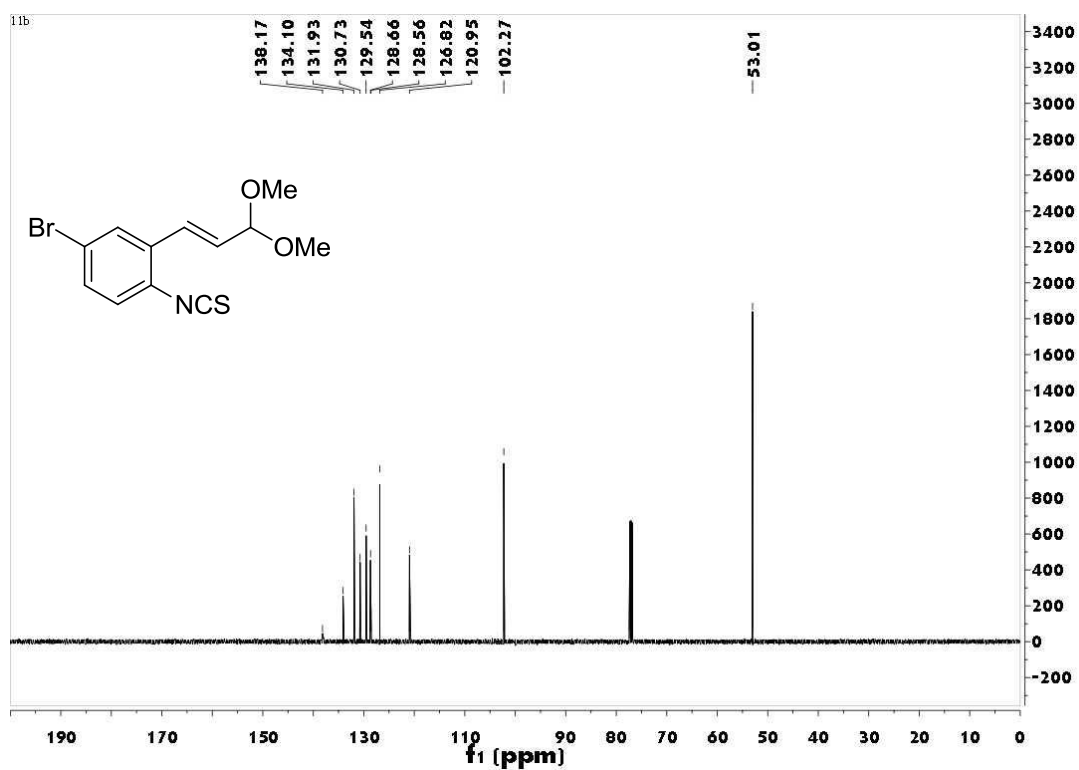


Figure S102: ^{13}C NMR (151 MHz, CDCl_3) of compound 11b

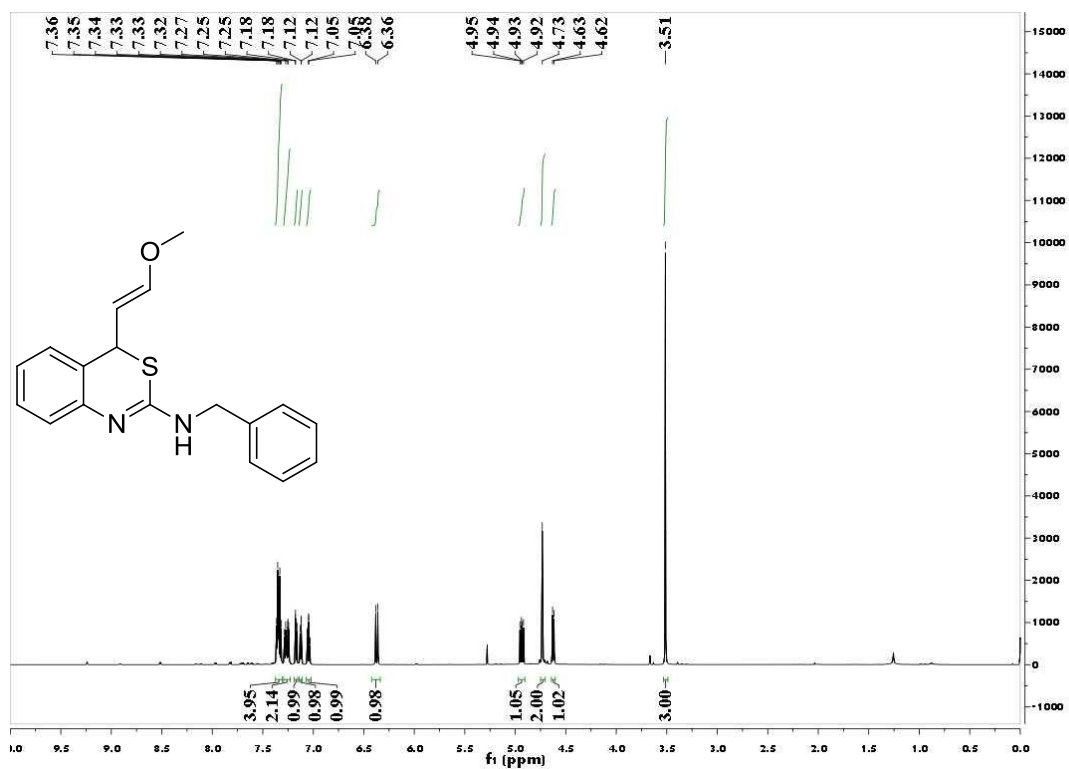


Figure S103: ^1H NMR (600 MHz, CDCl_3) of compound 12a

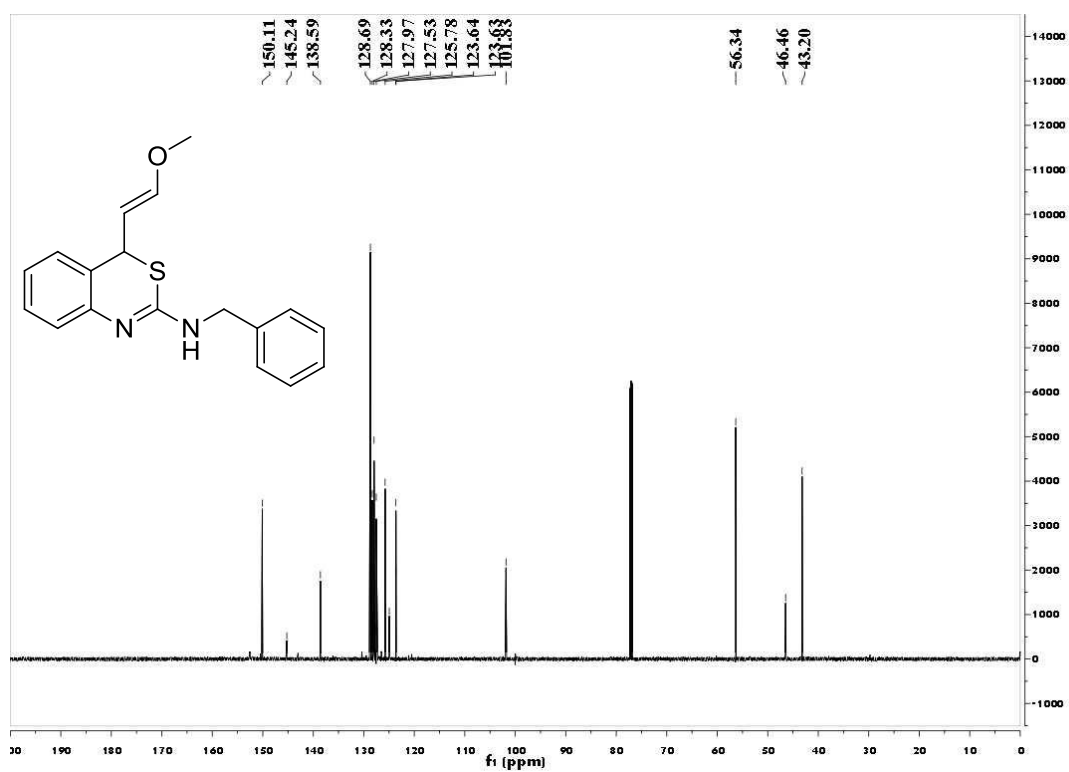


Figure S104: ^{13}C NMR (151 MHz, CDCl_3) of compound 12a

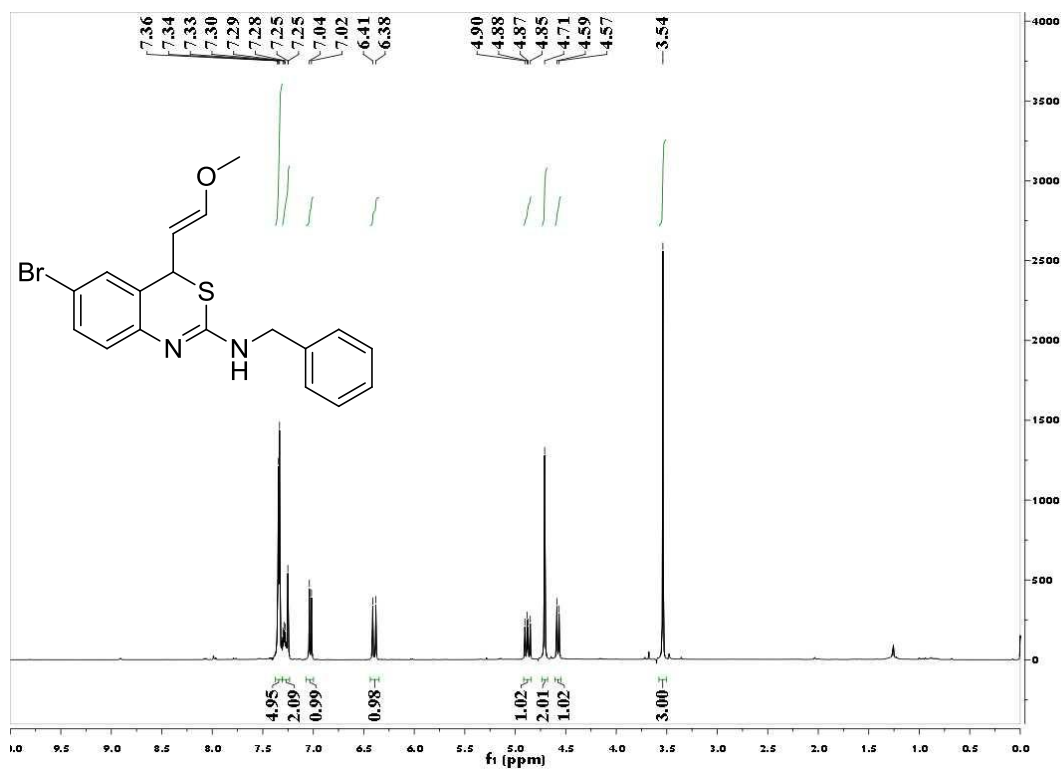


Figure S105: ^1H NMR (400 MHz, CDCl_3) of compound 12b

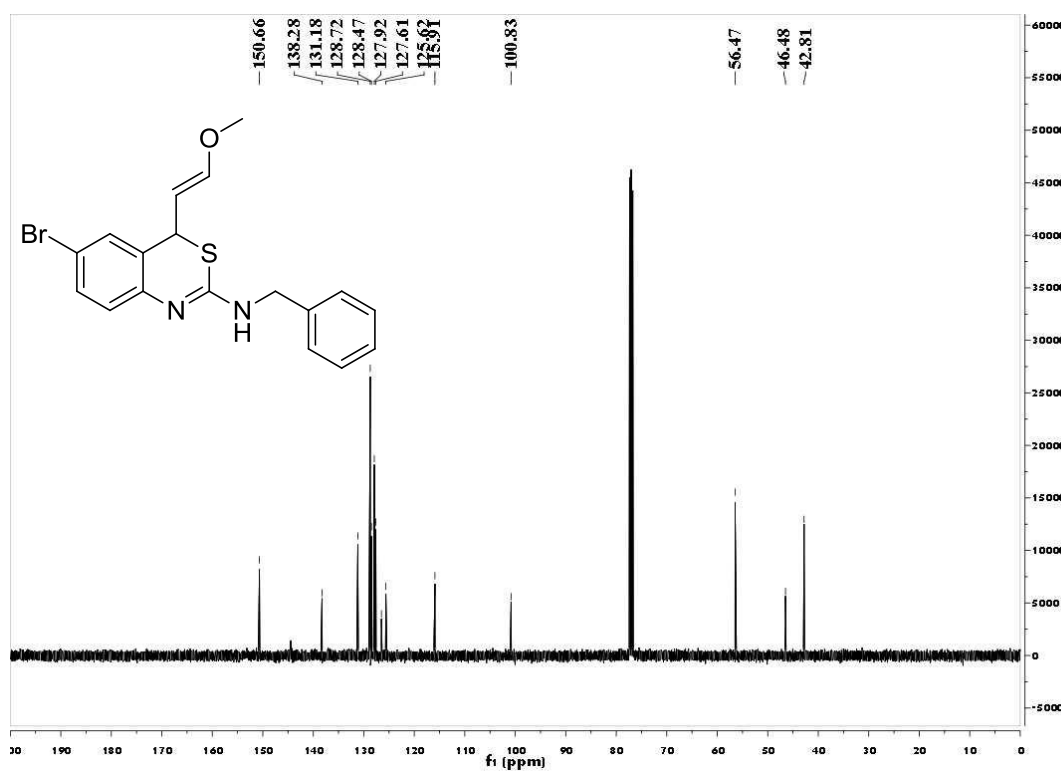


Figure S106: ^{13}C NMR (100 MHz, CDCl_3) of compound 12b