



Supporting Information

for

Development of a flow photochemical process for a π -Lewis acidic metal-catalyzed cyclization/radical addition sequence: in situ-generated 2-benzopyrylium as photoredox catalyst and reactive intermediate

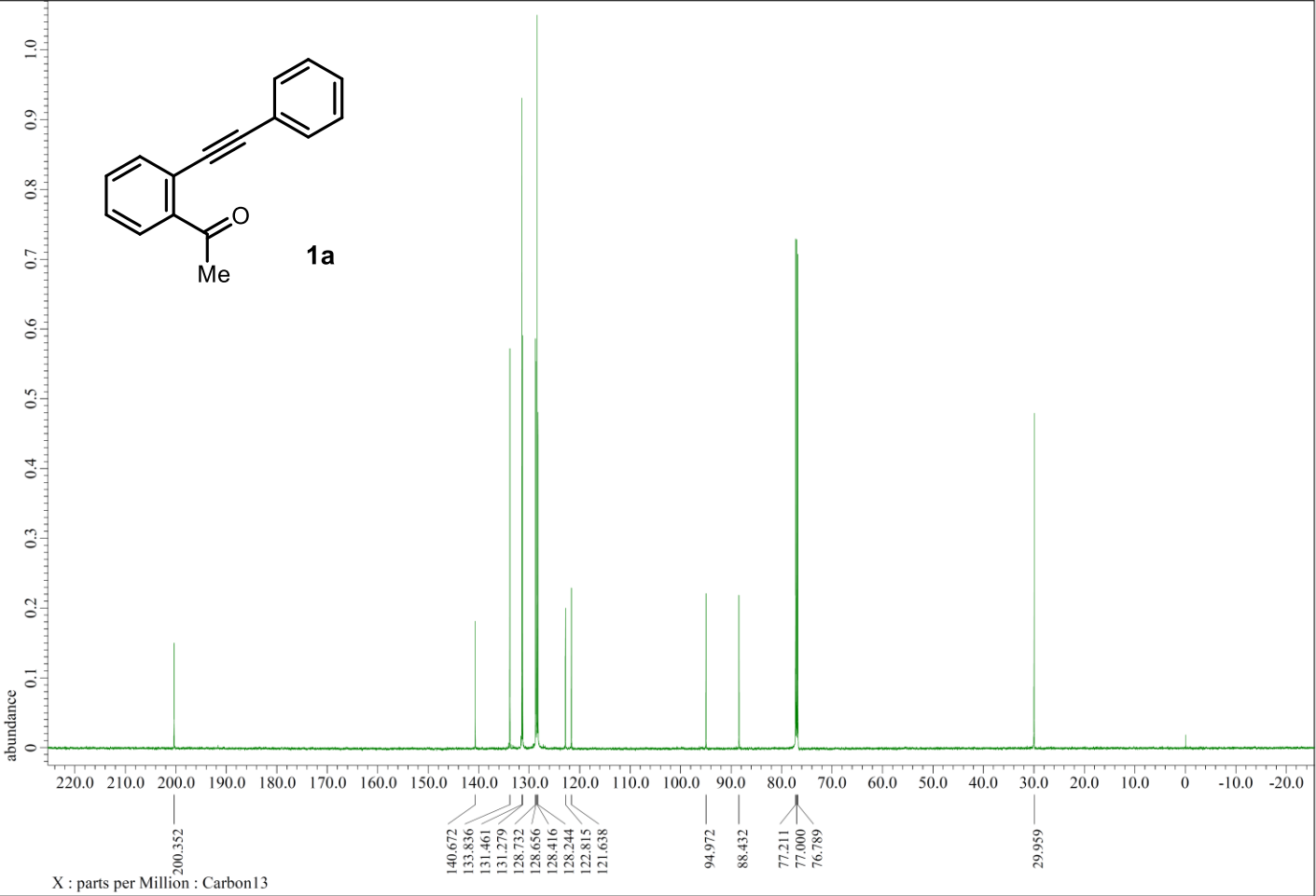
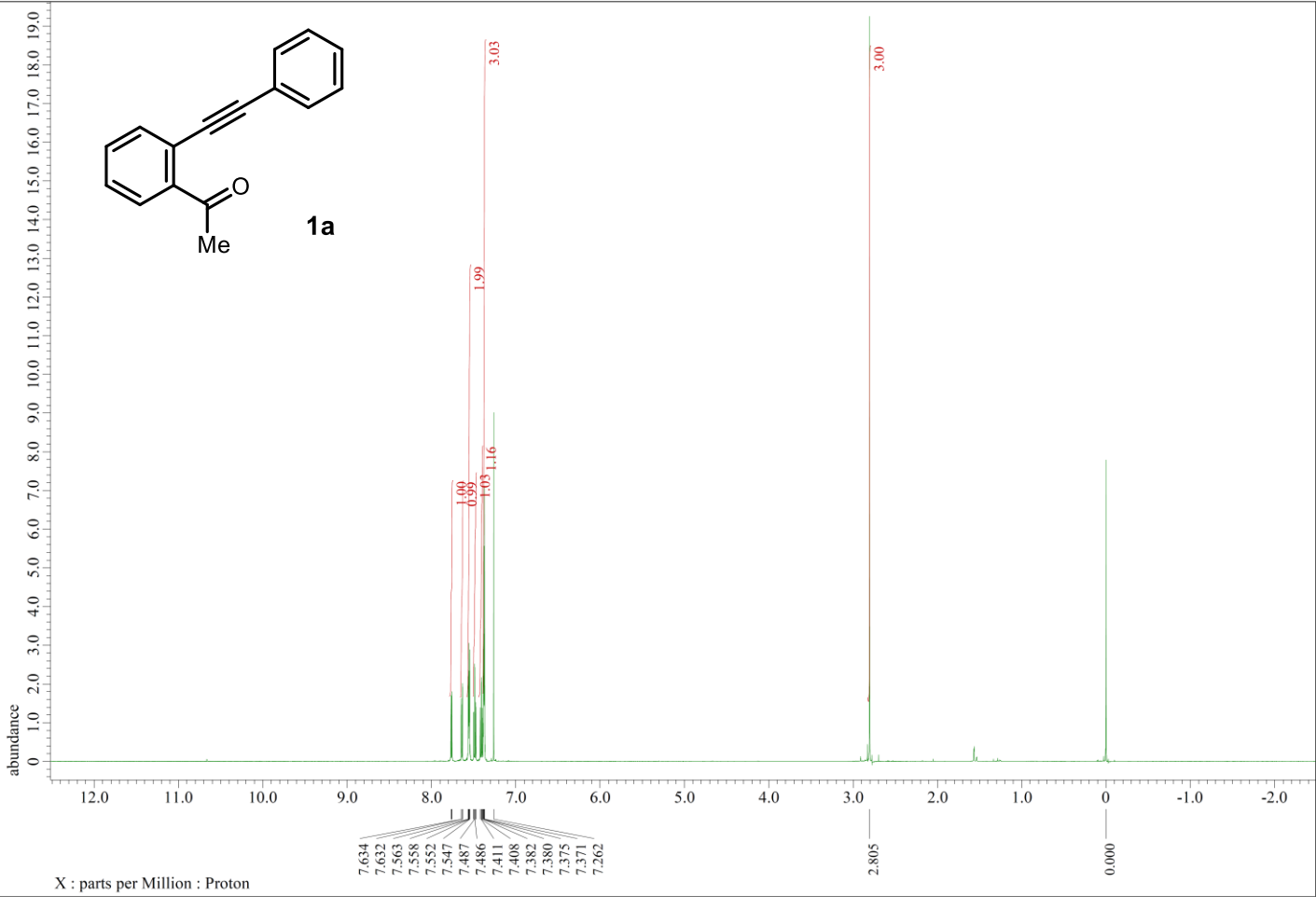
Masahiro Terada, Zen Iwasaki, Ryohei Yazaki, Shigenobu Umemiya and Jun Kikuchi

Beilstein J. Org. Chem. **2024**, *20*, 1973–1980. doi:10.3762/bjoc.20.173

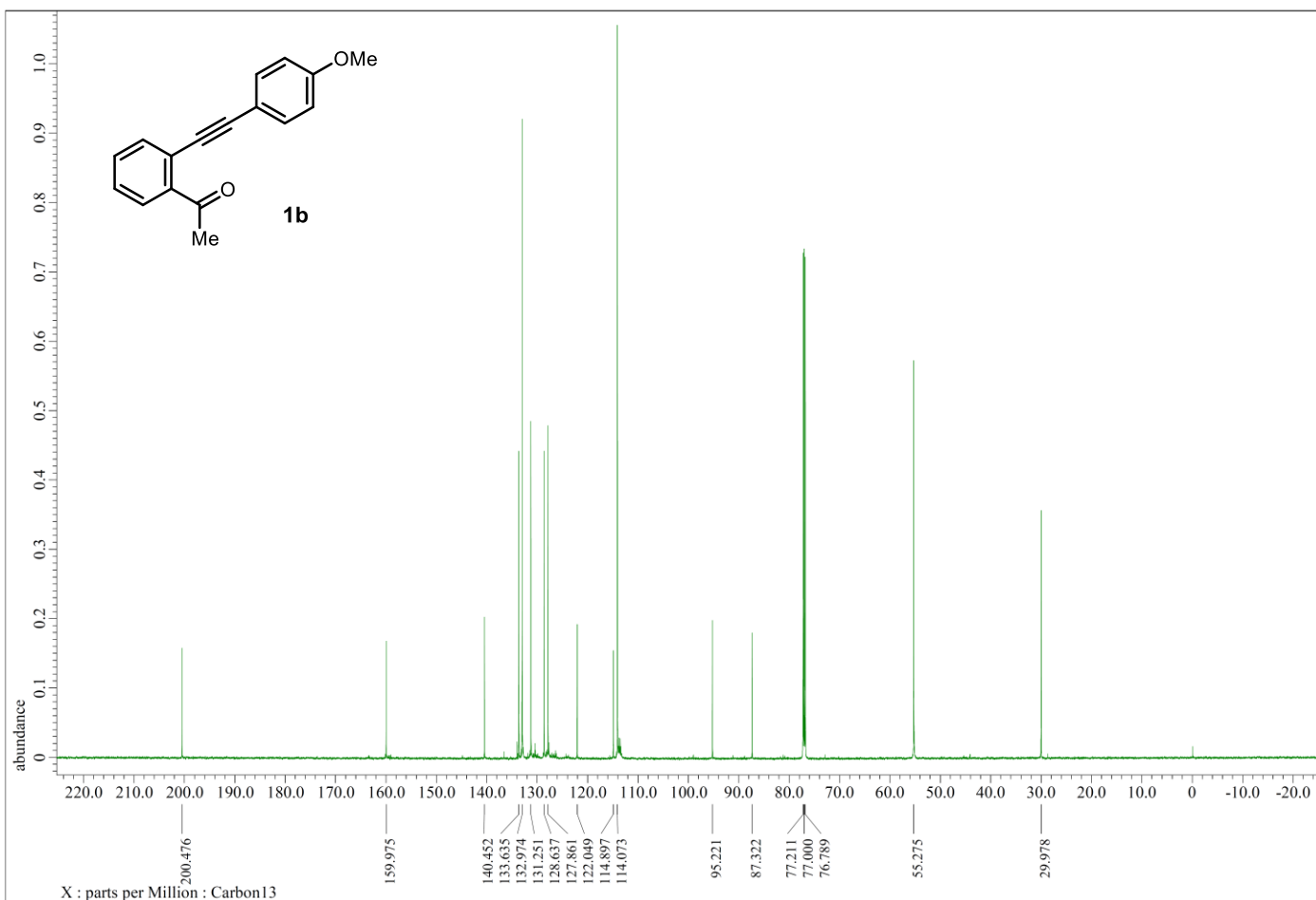
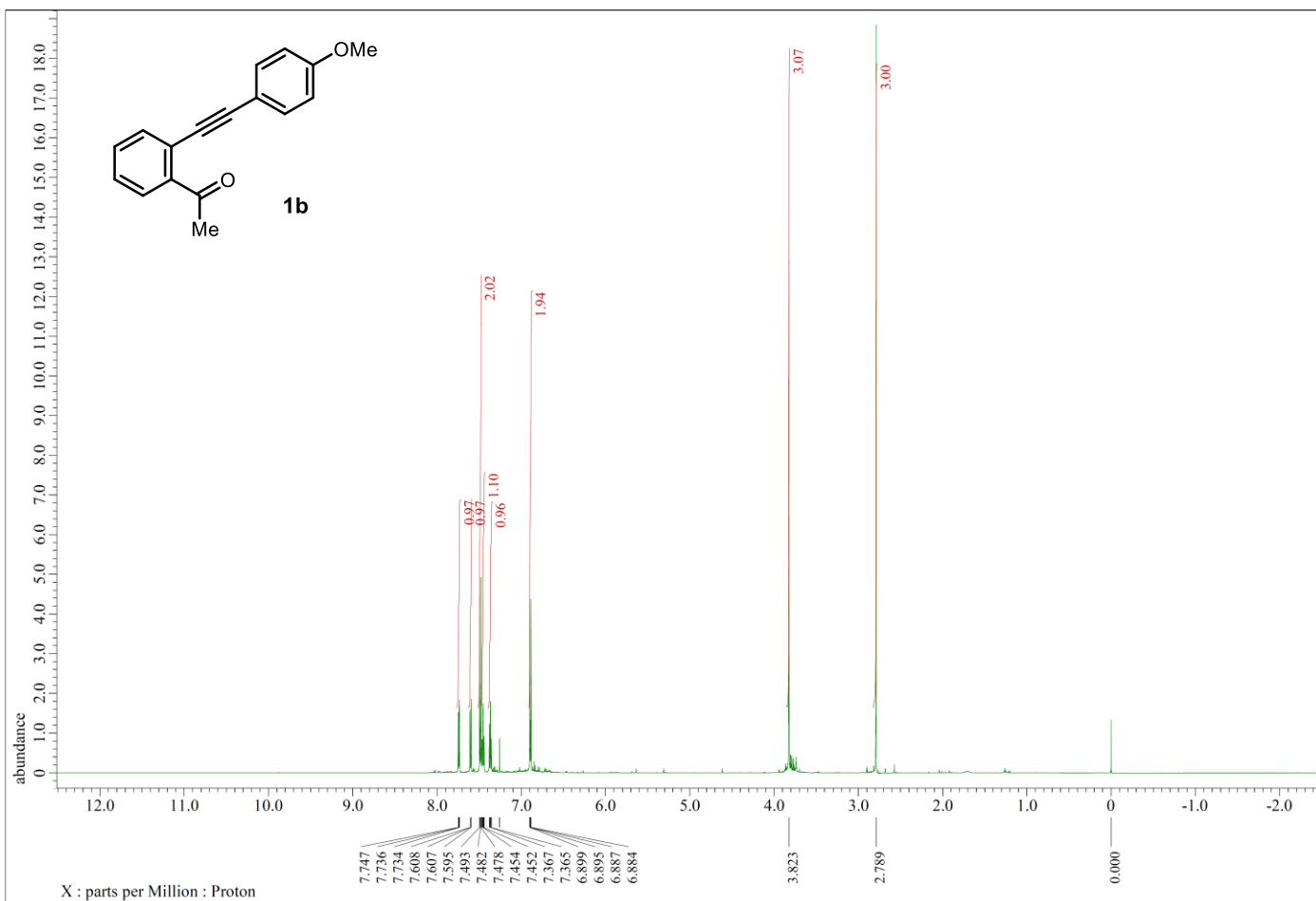
Copies of NMR spectra

NMR Spectra

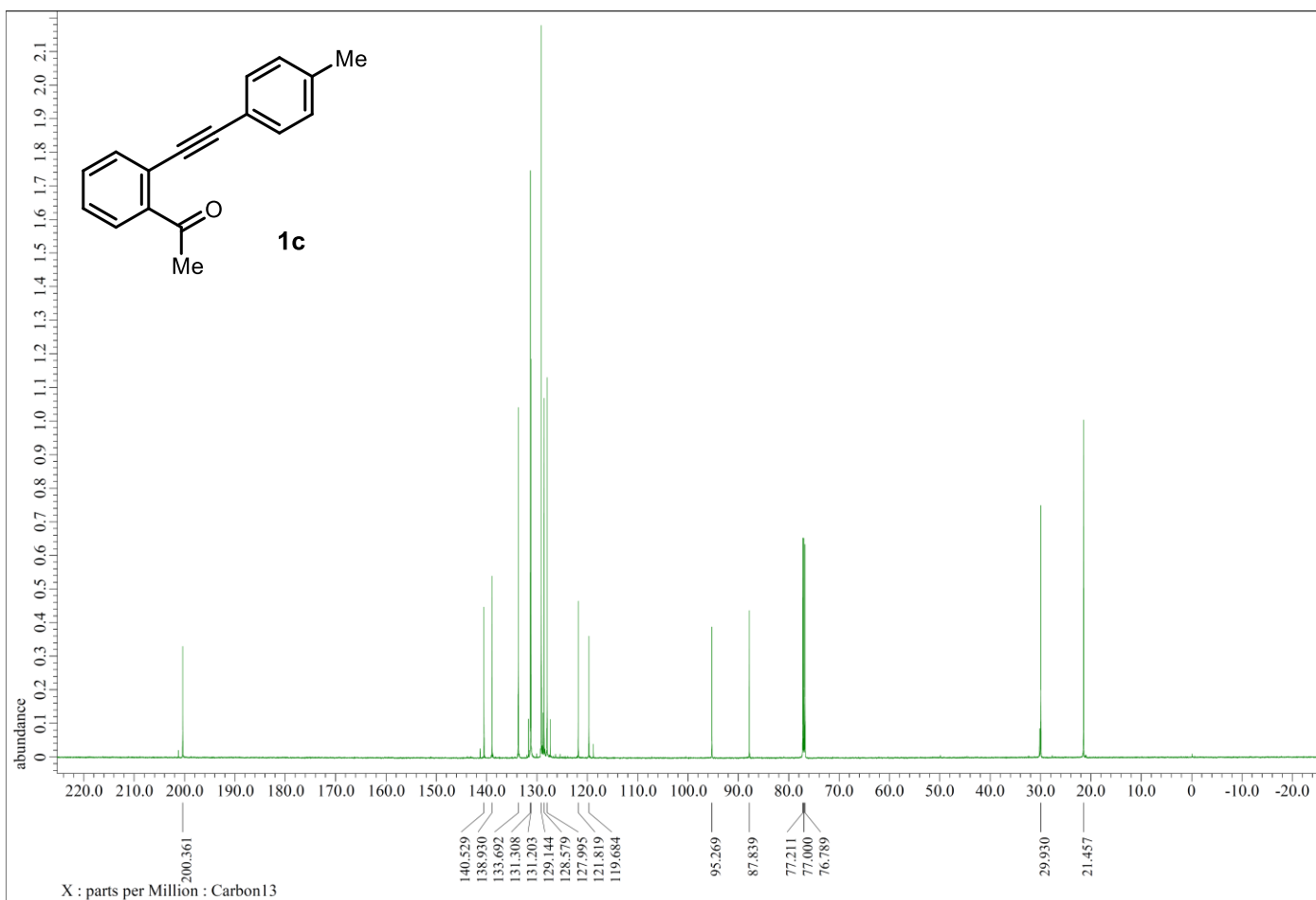
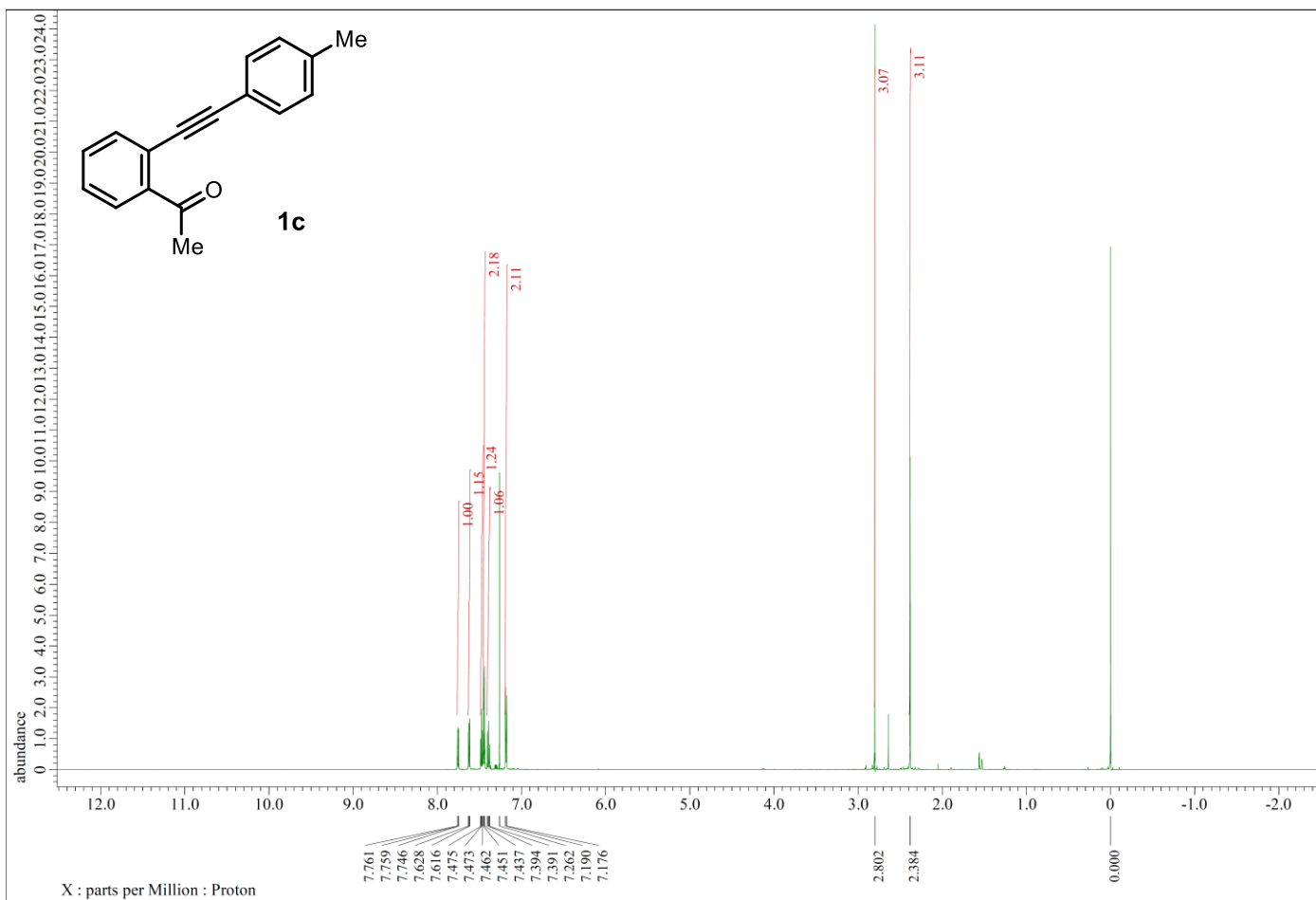
¹H NMR (600 MHz, CDCl₃) and ¹³C{¹H} NMR (151 MHz, CDCl₃) spectra of **1a**.



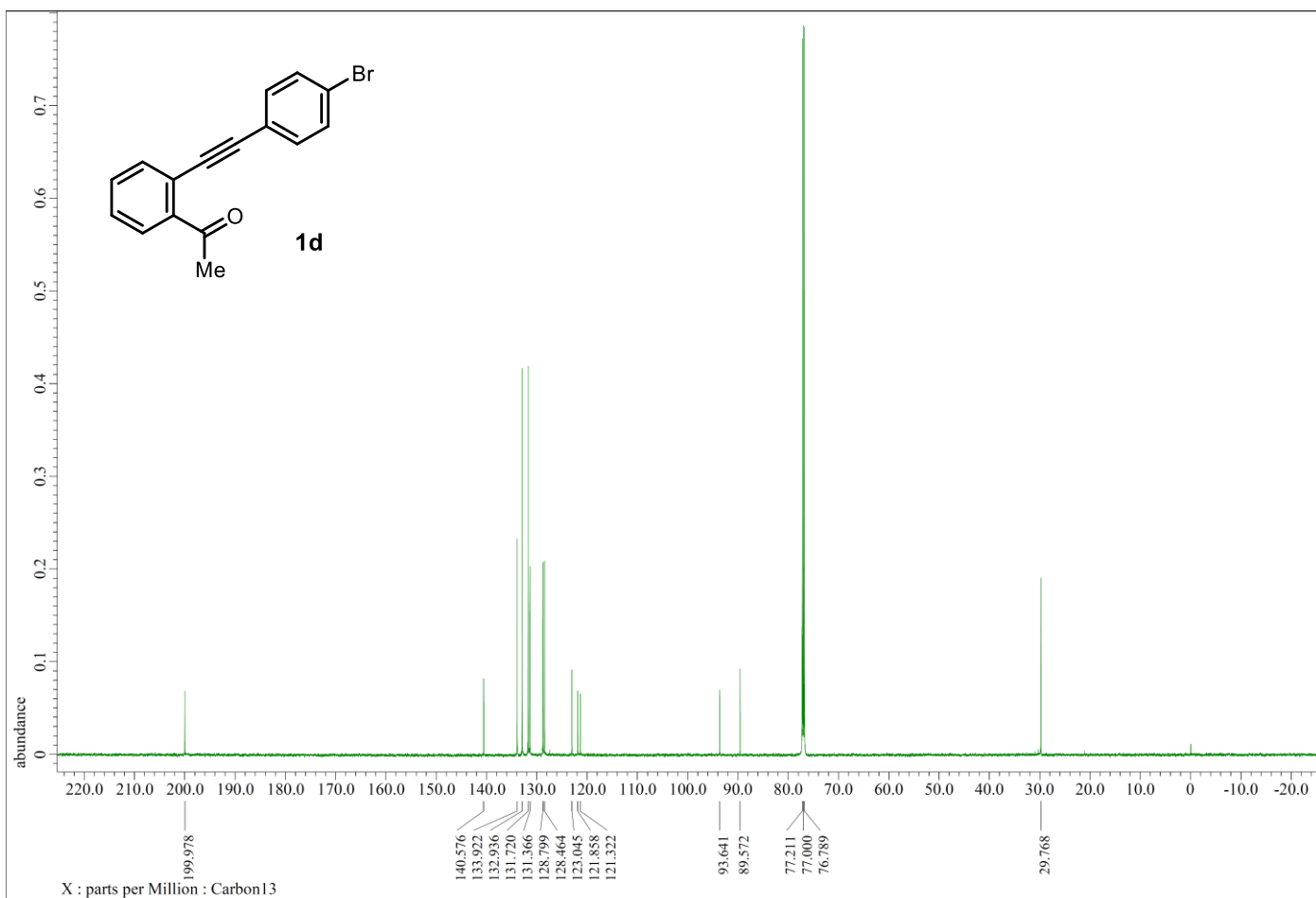
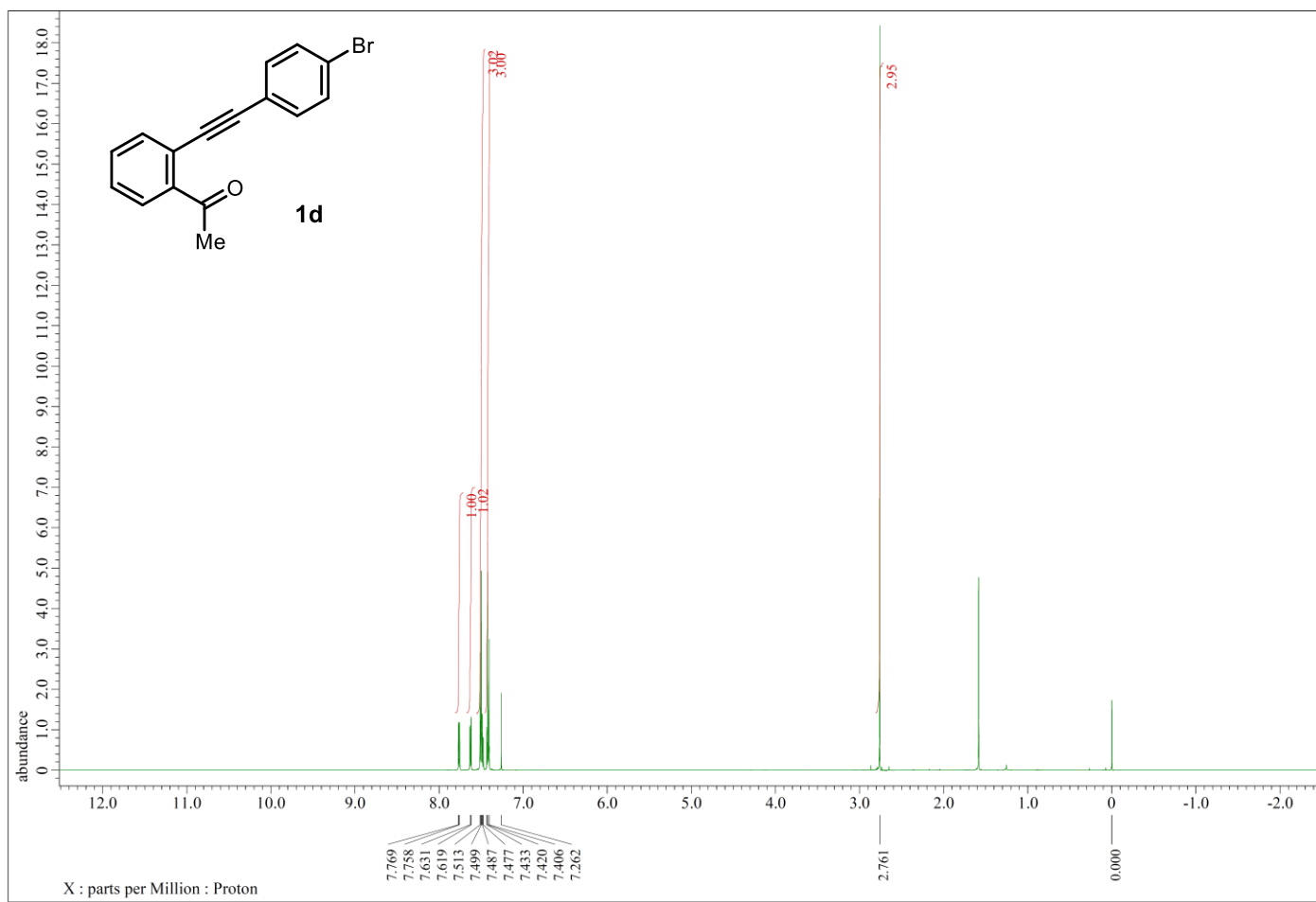
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1b**.



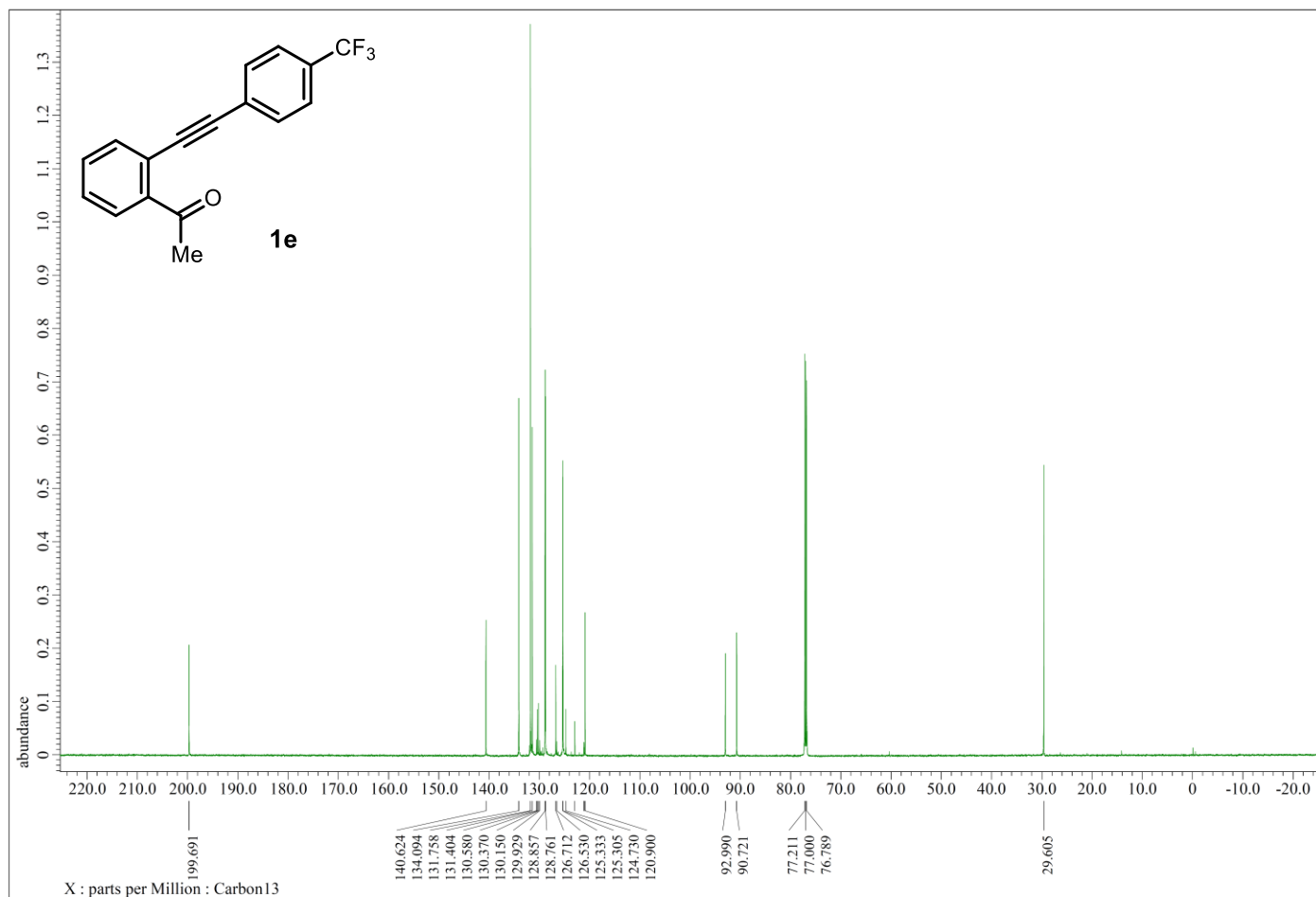
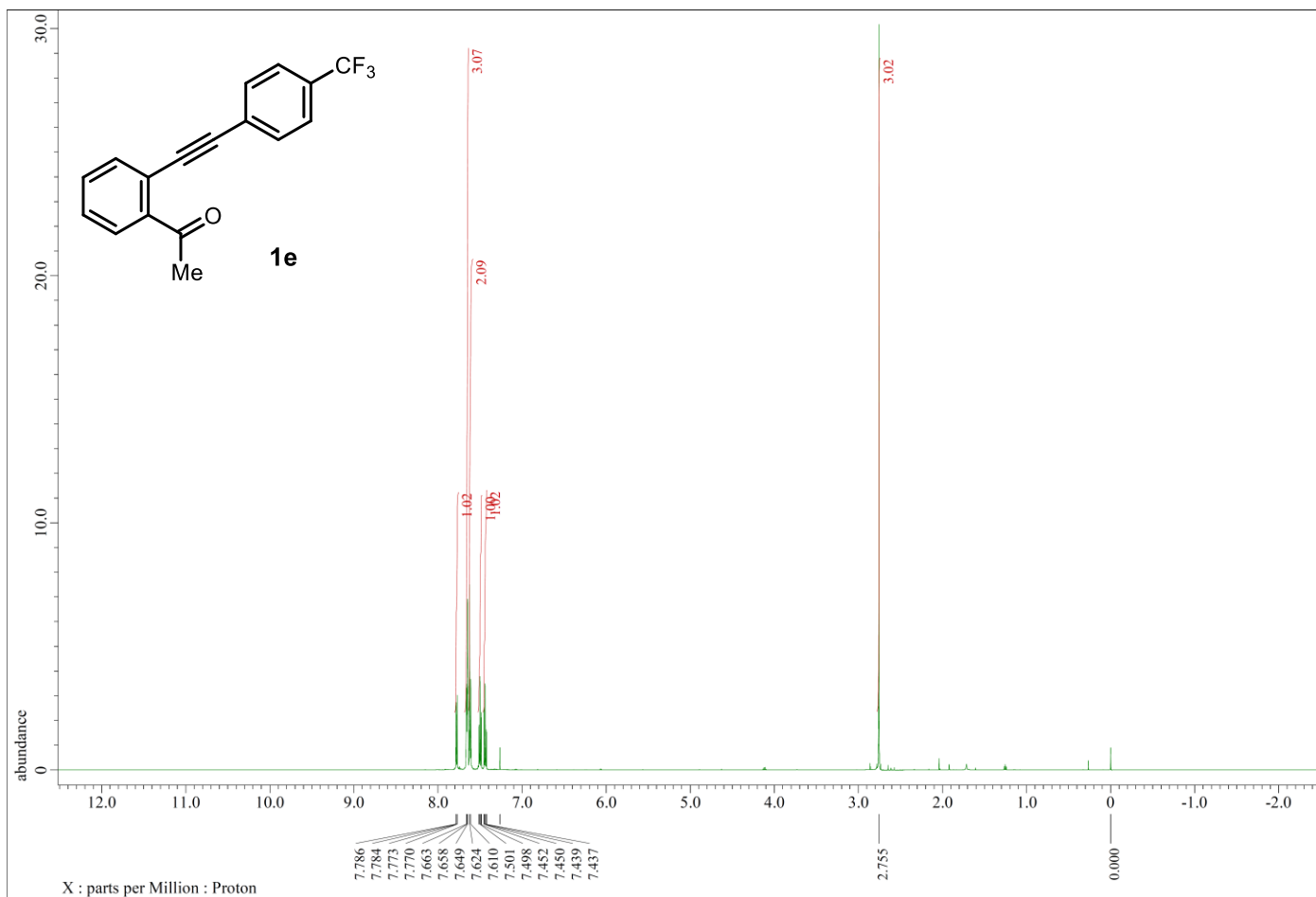
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1c**.



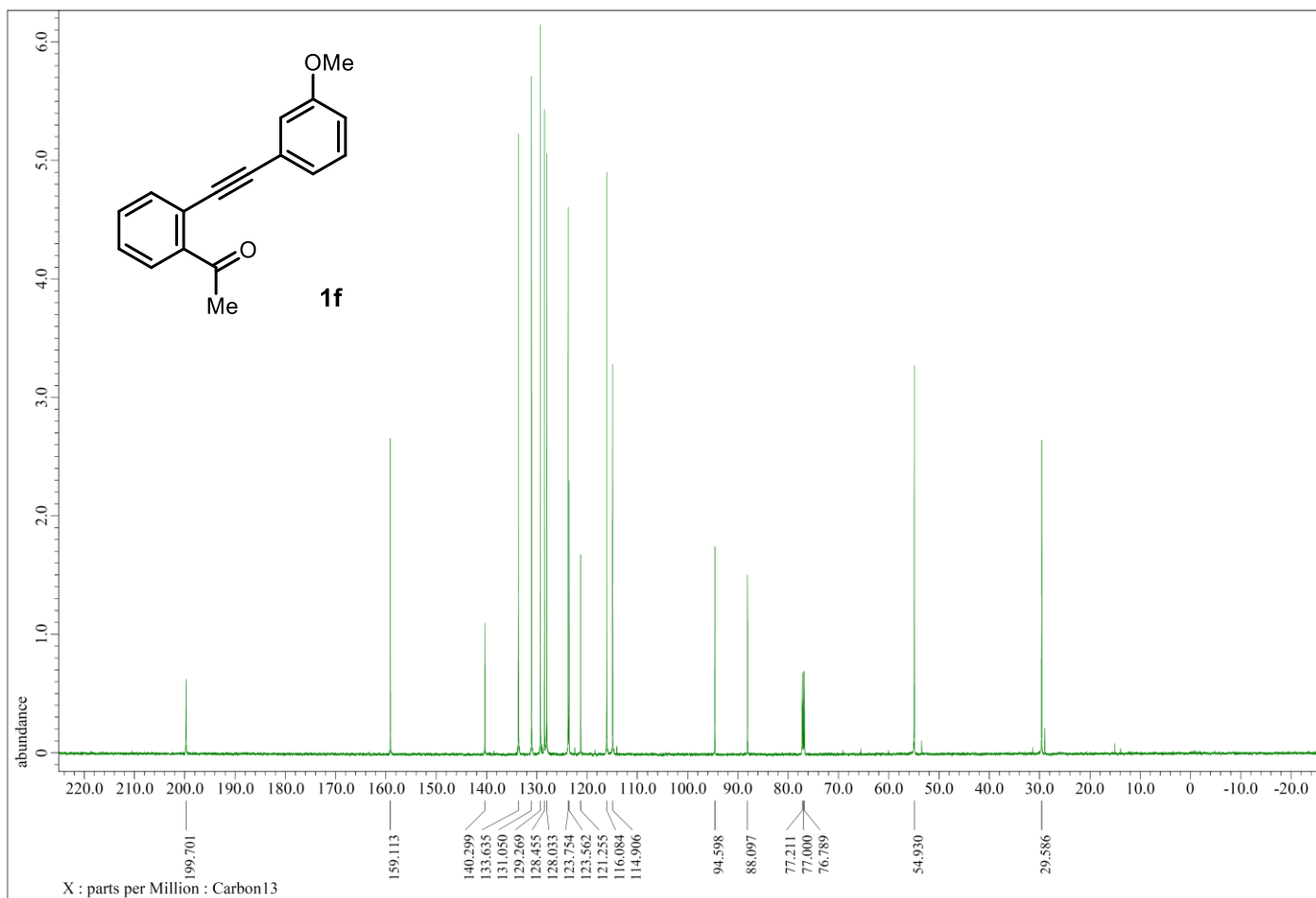
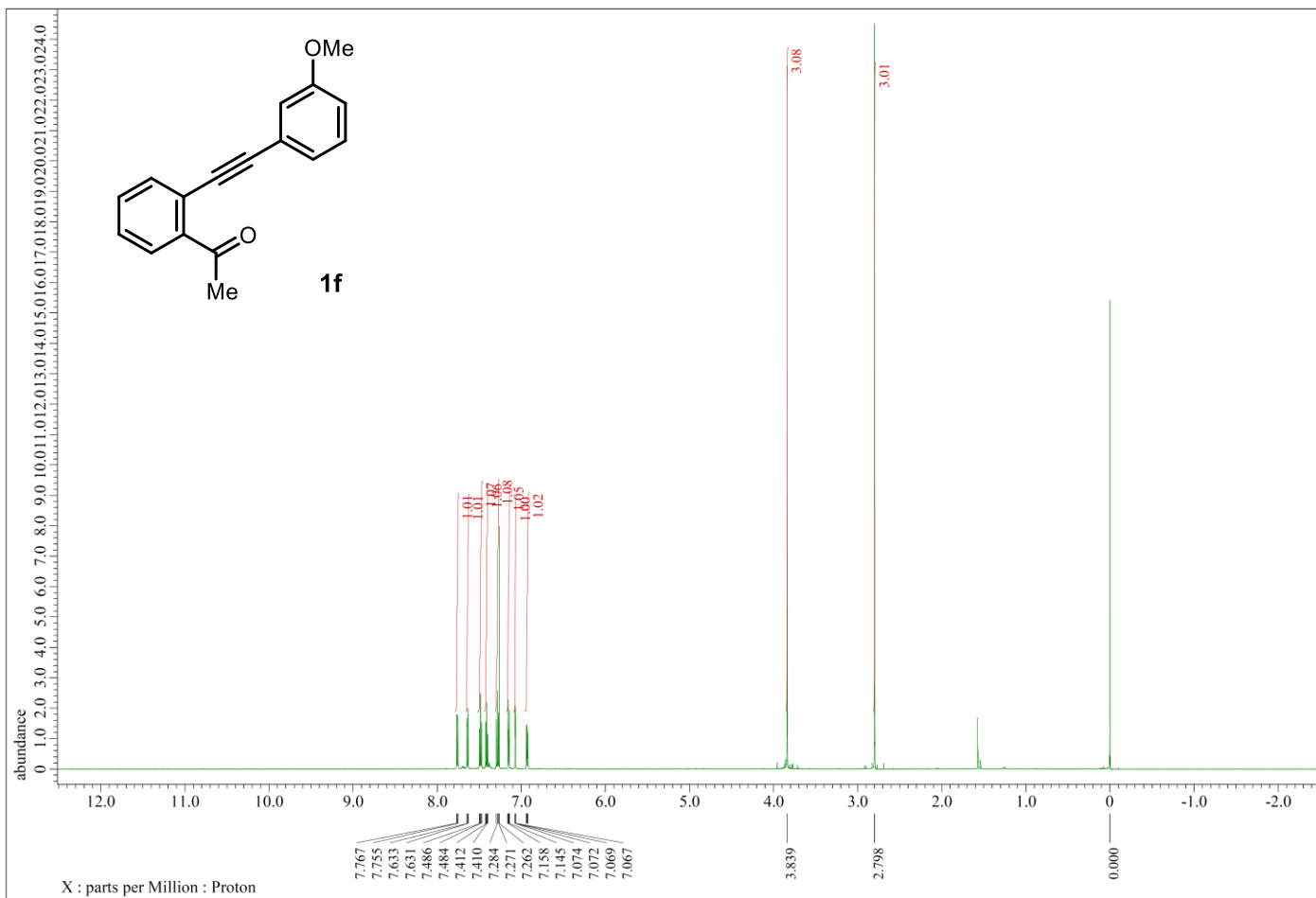
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1d**.



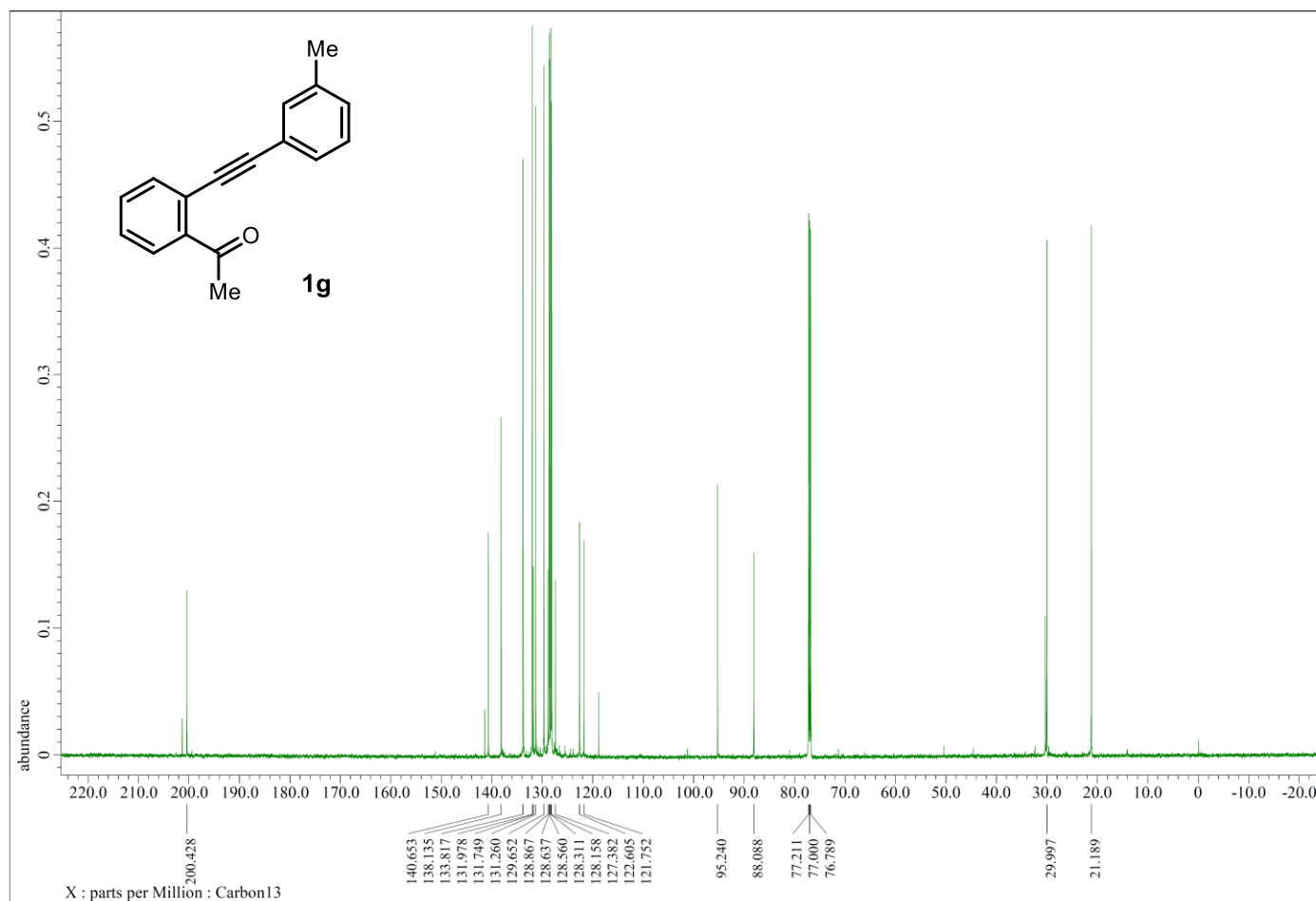
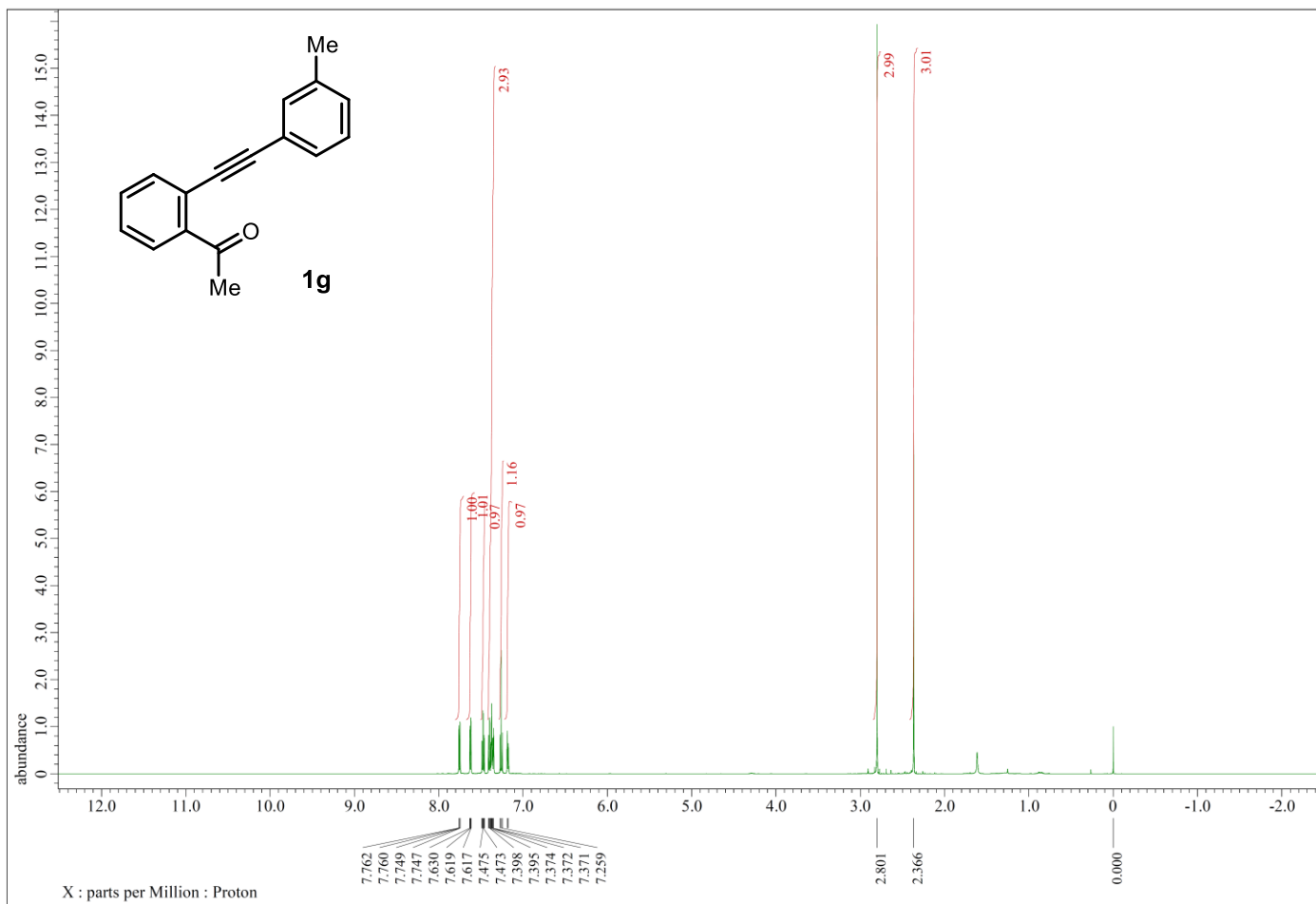
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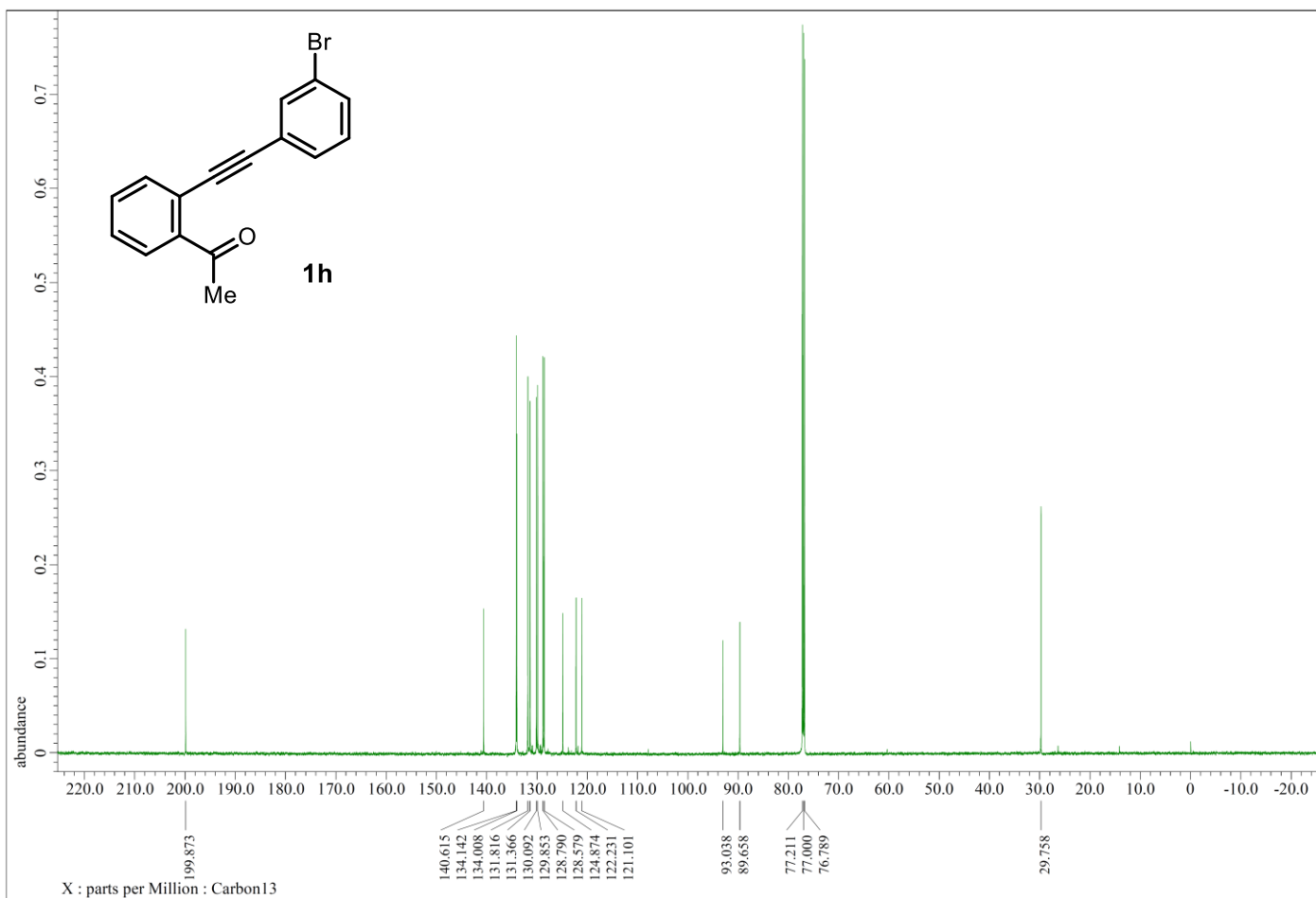
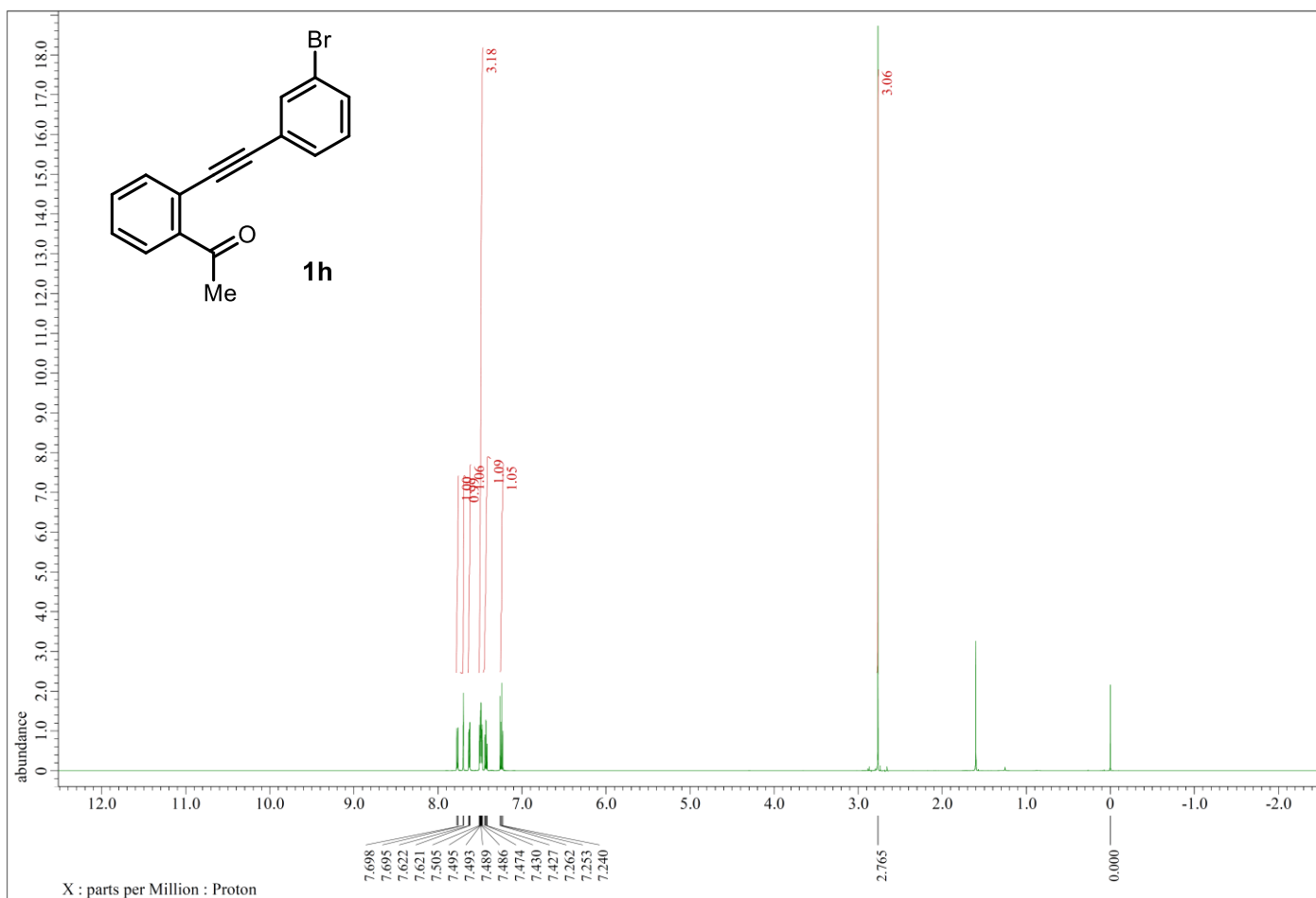
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1f**.



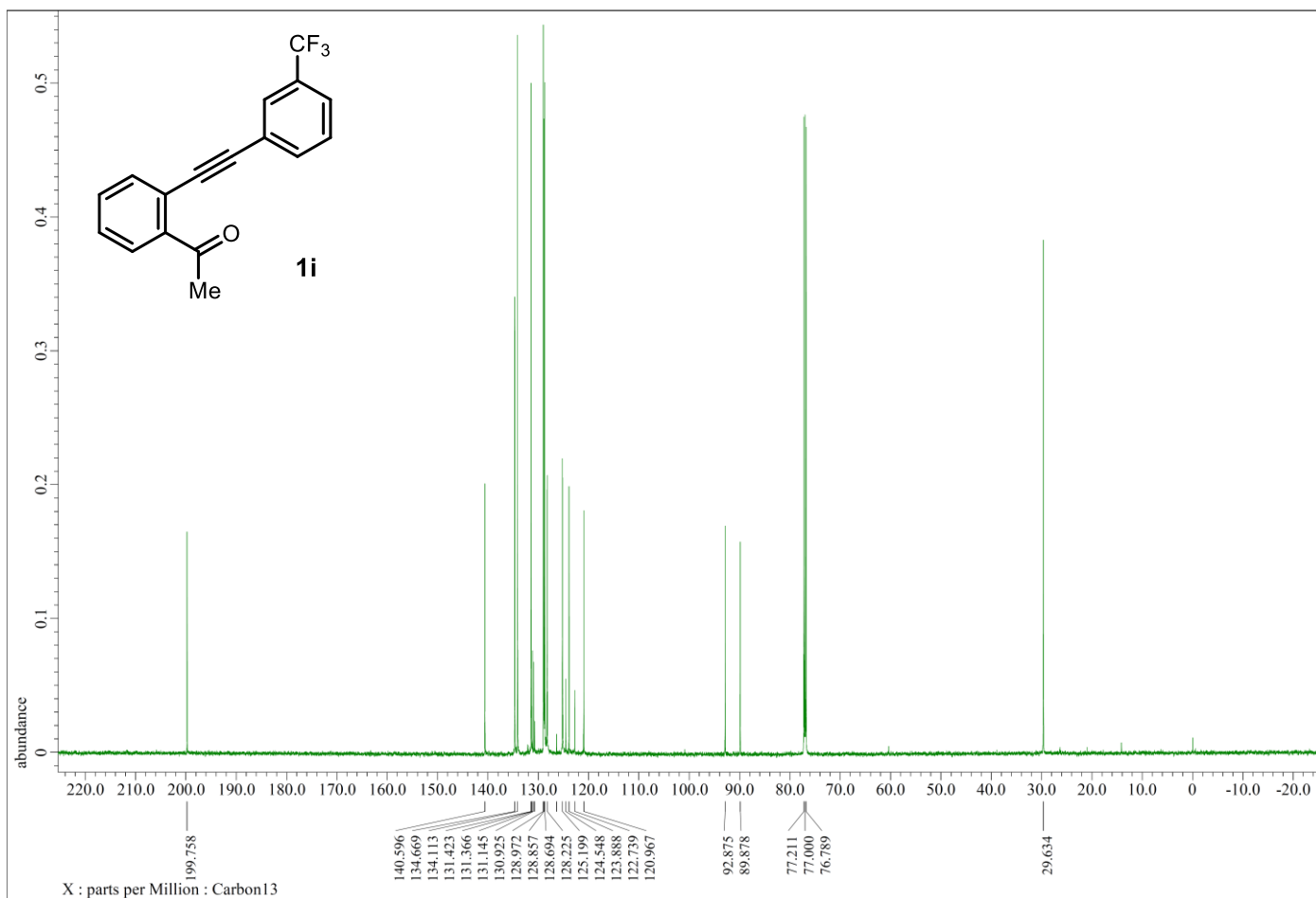
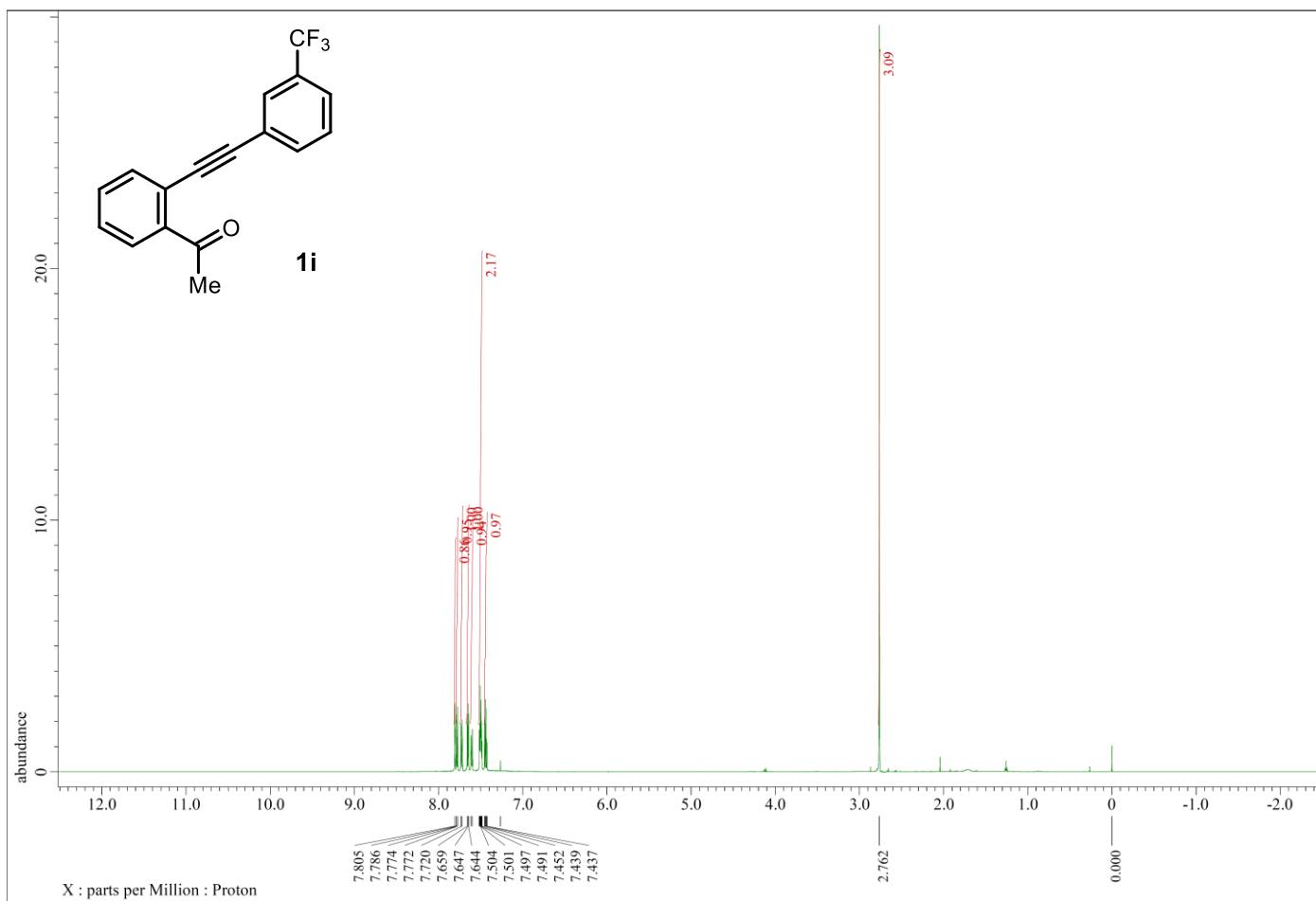
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1g**.

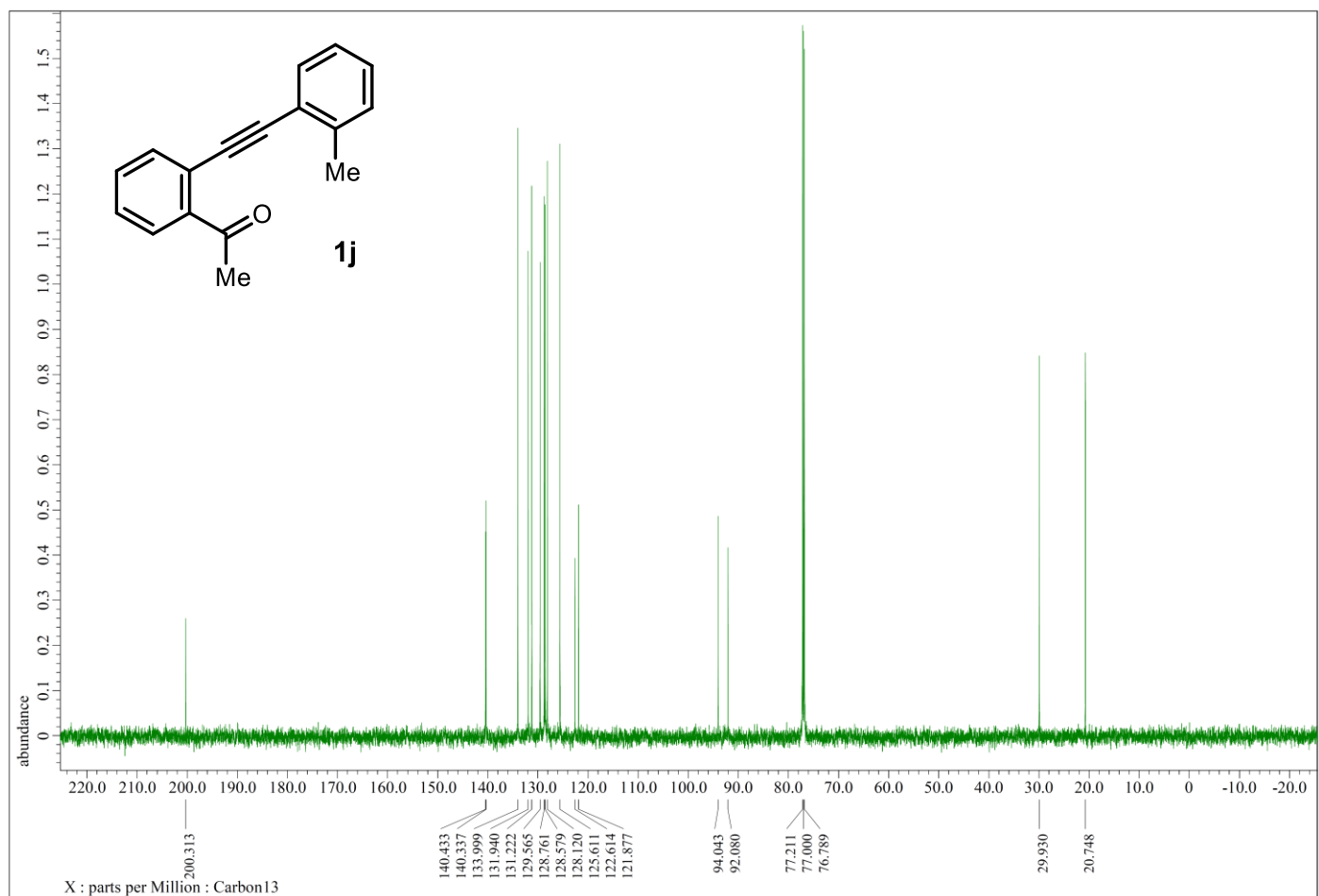
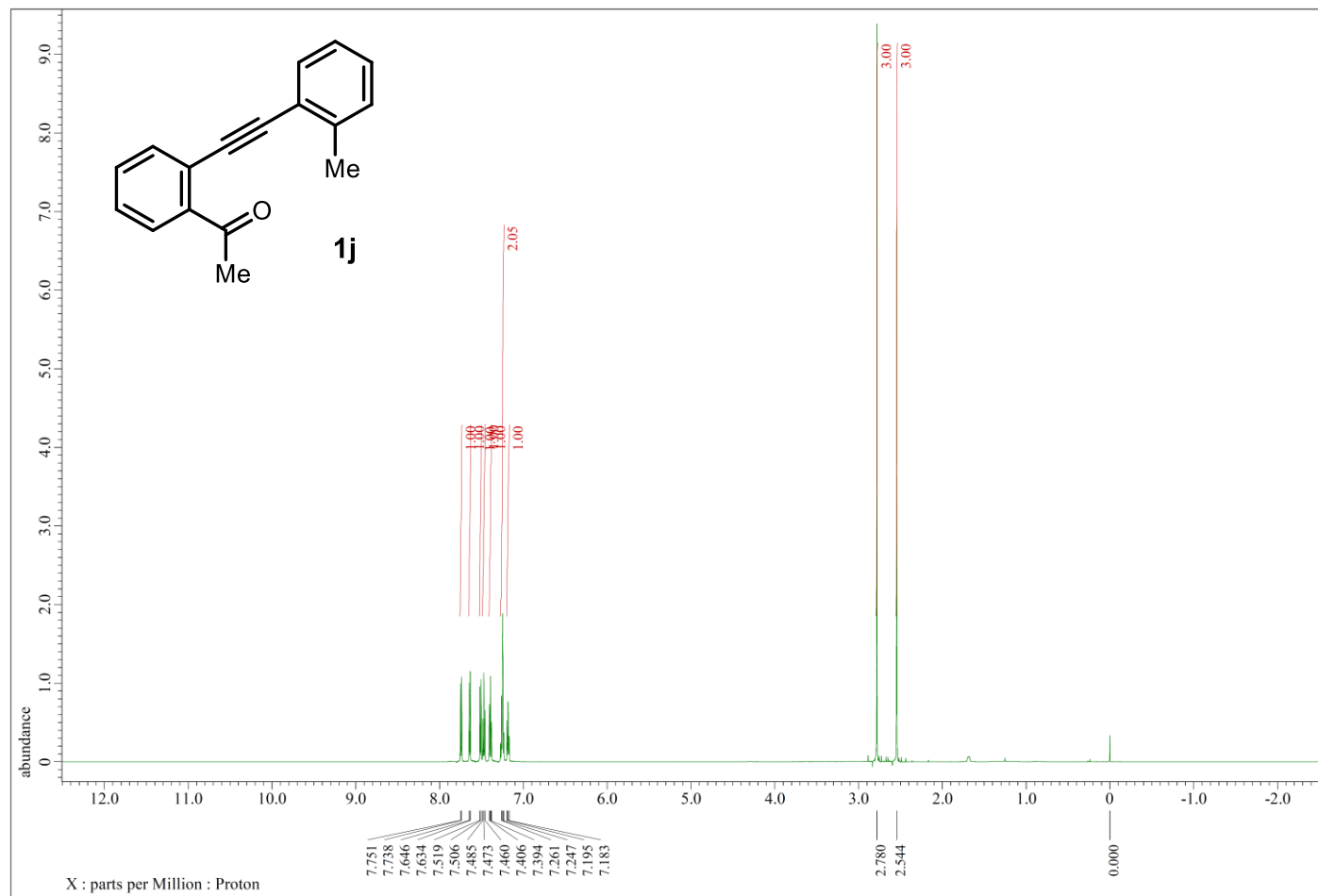


^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1h**.

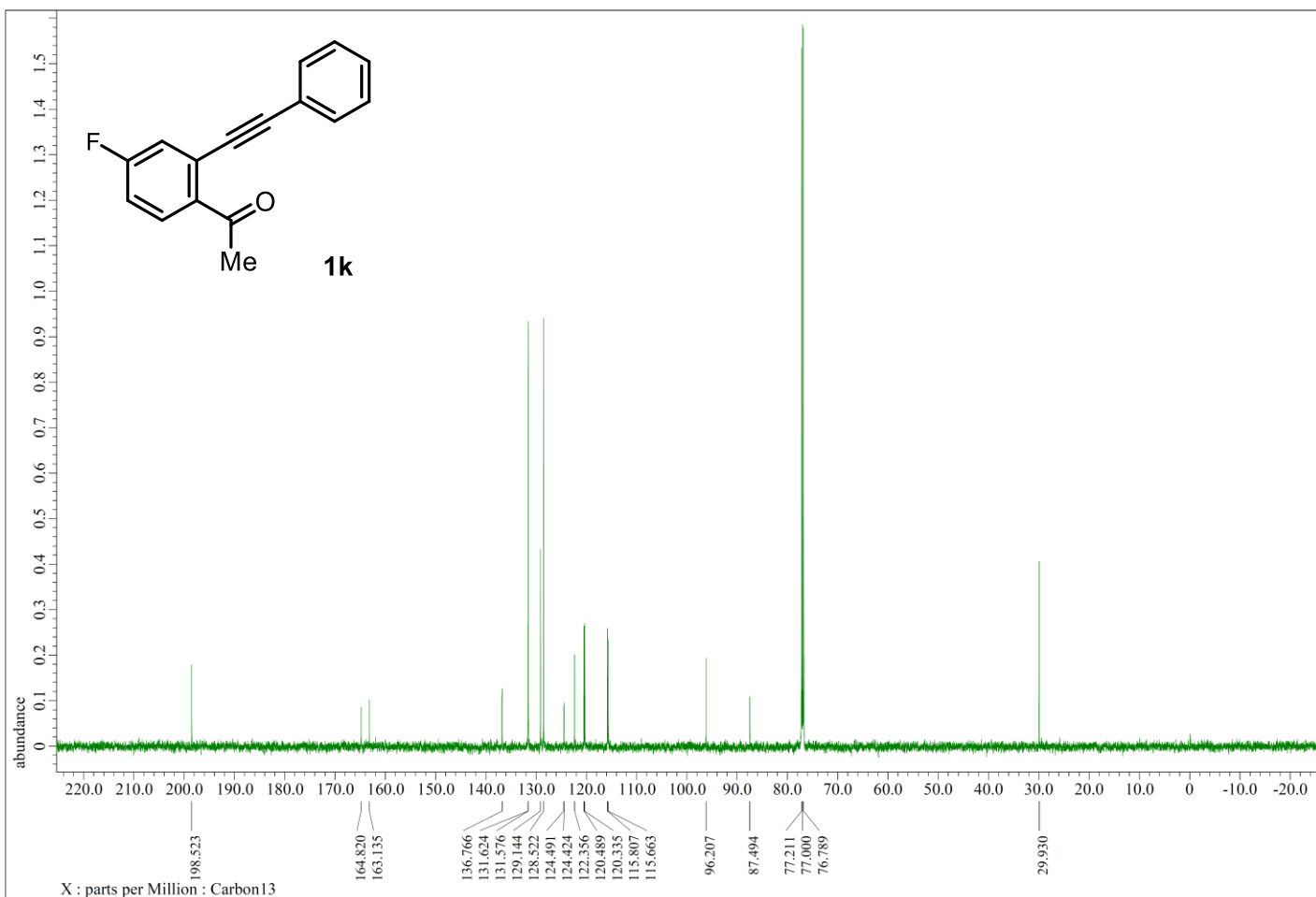
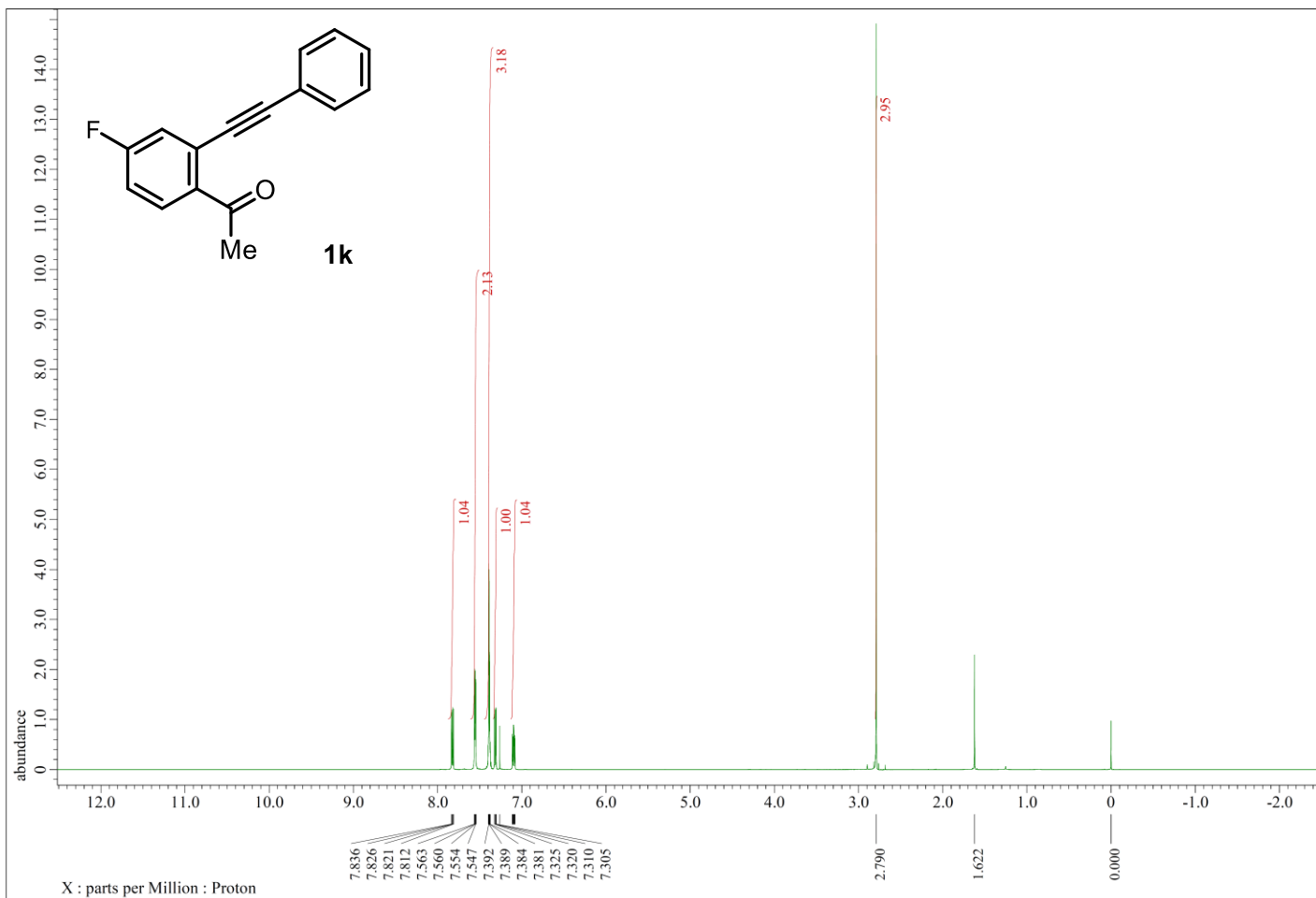


^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1i**.

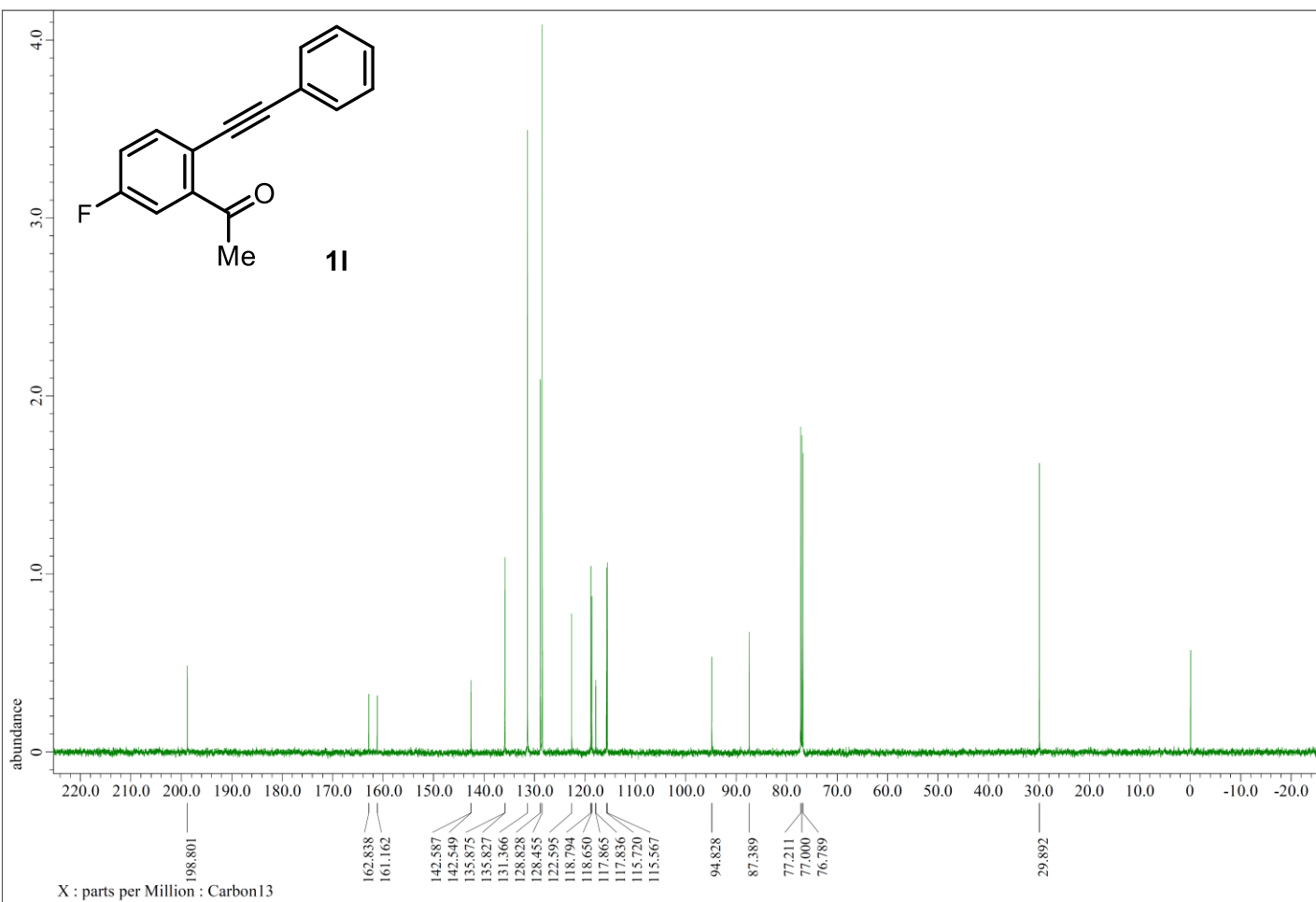
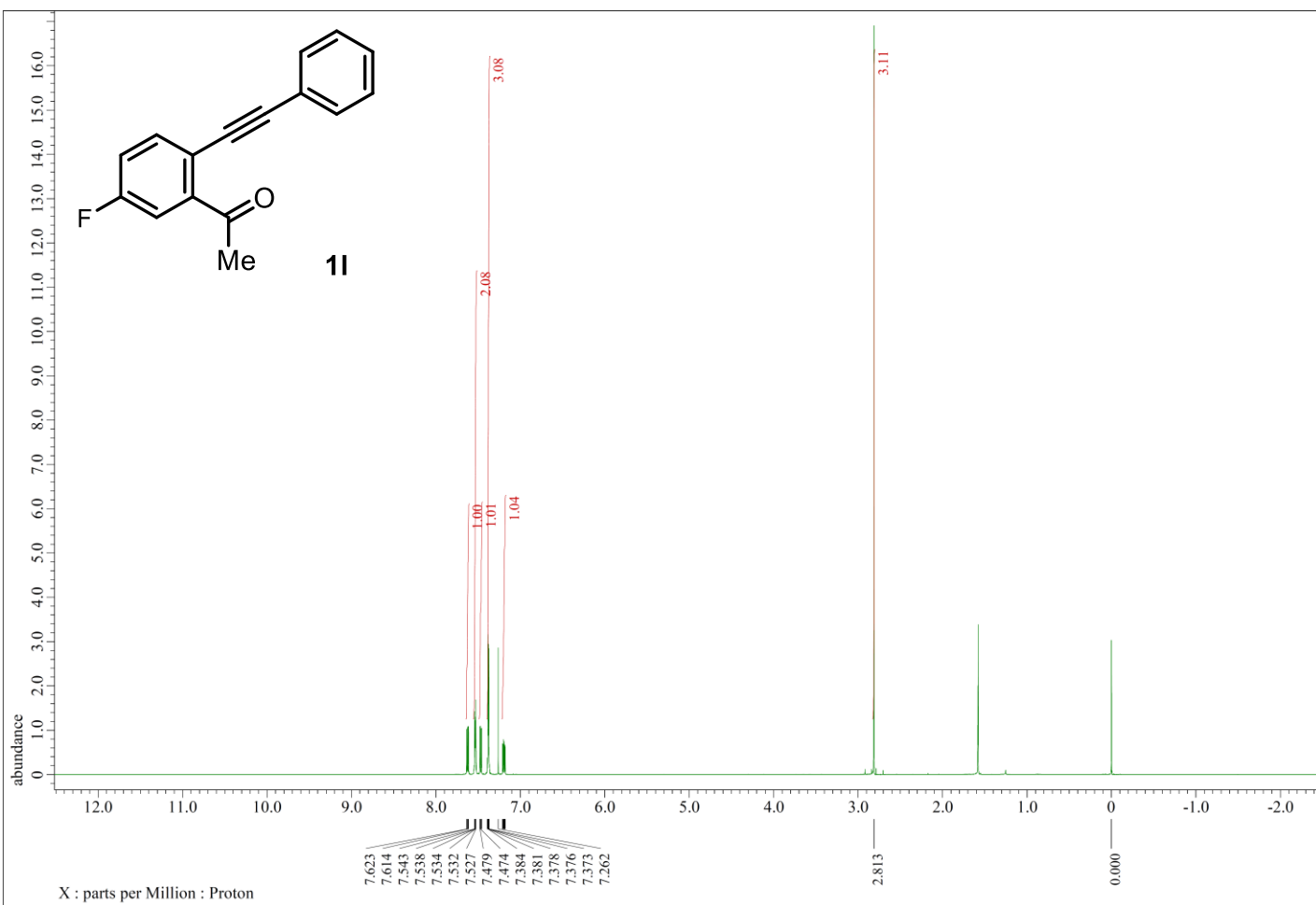


¹H NMR (600 MHz, CDCl₃) and ¹³C{¹H} NMR (151 MHz, CDCl₃) spectra of **1j**.

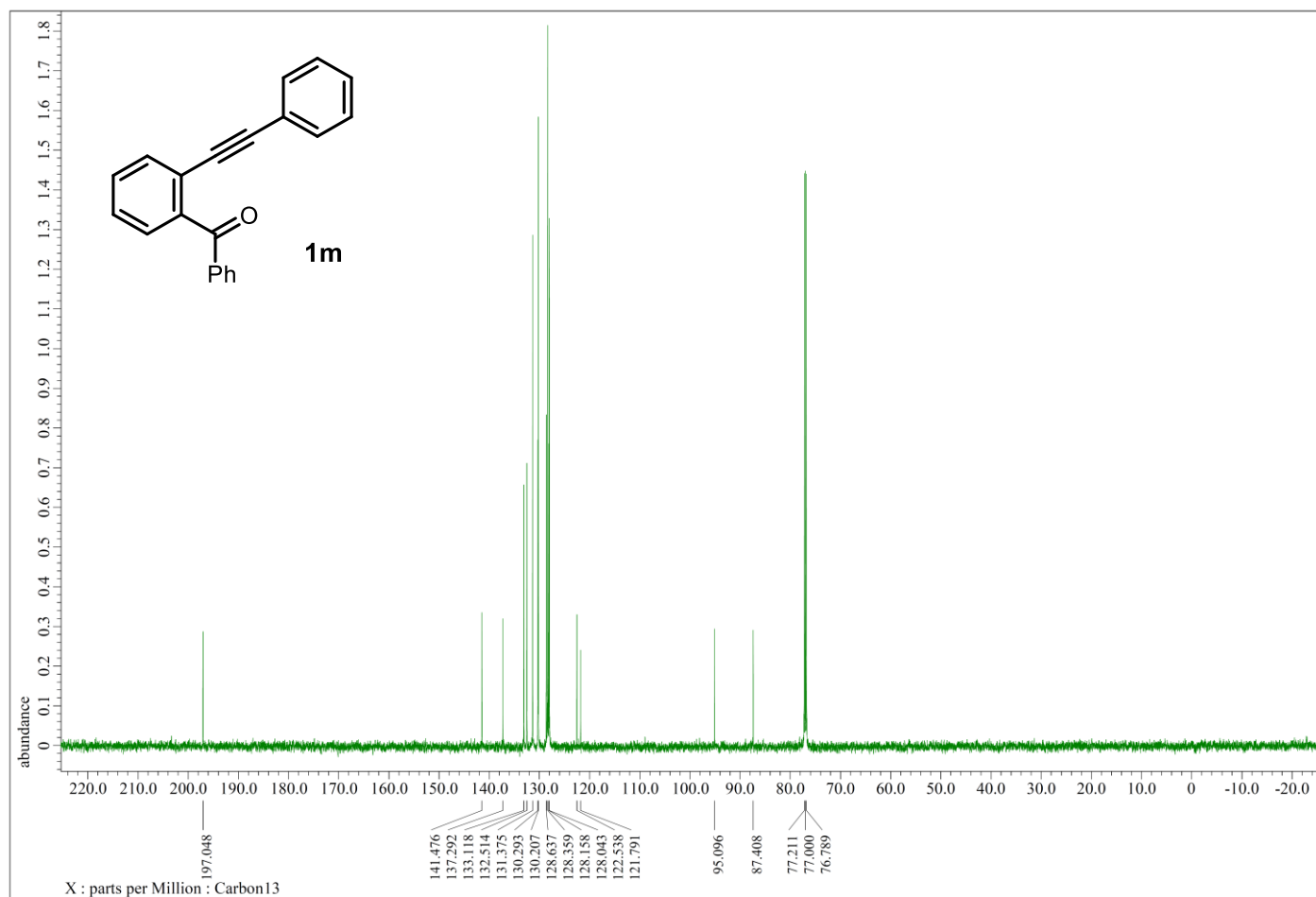
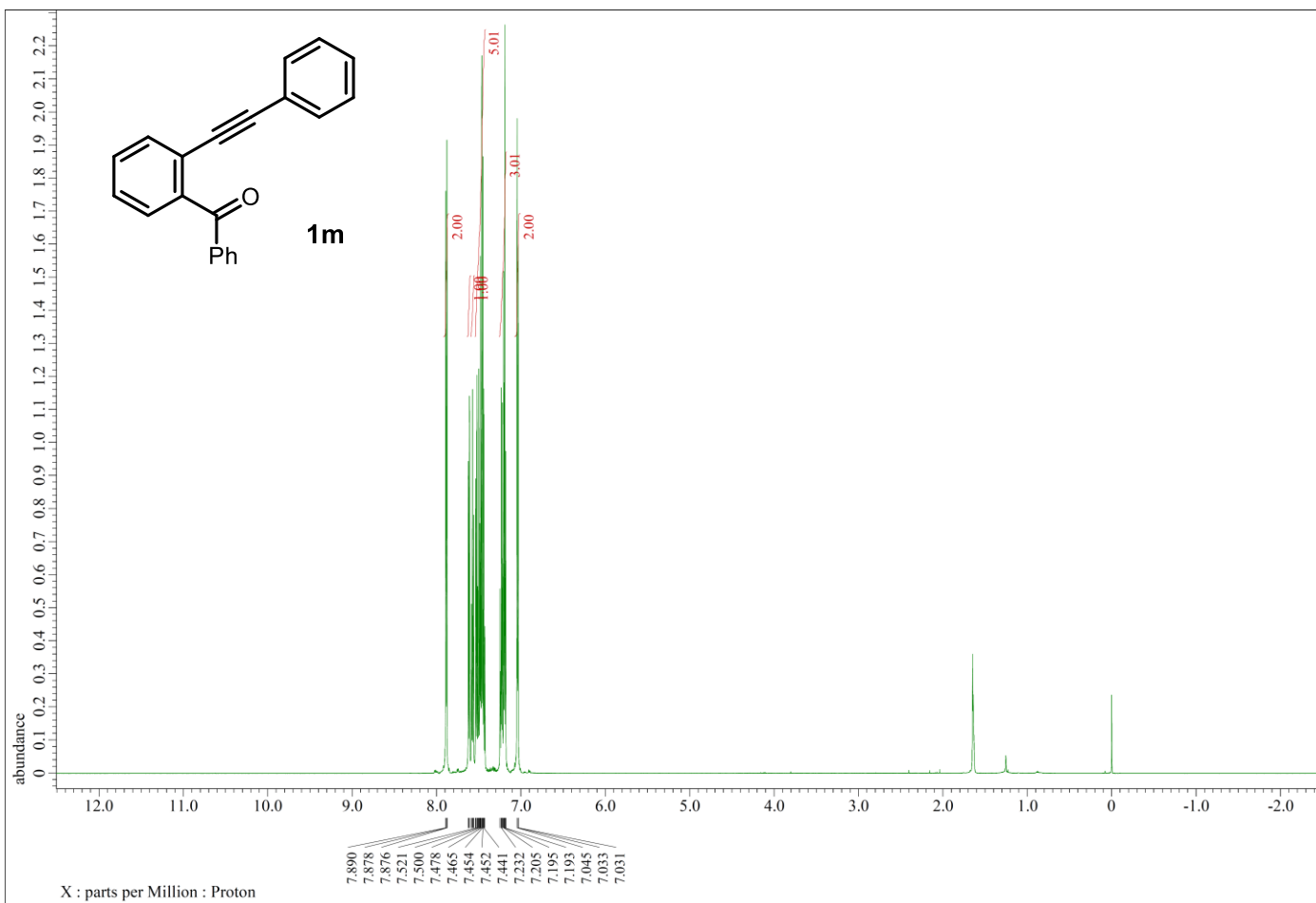
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1k**.



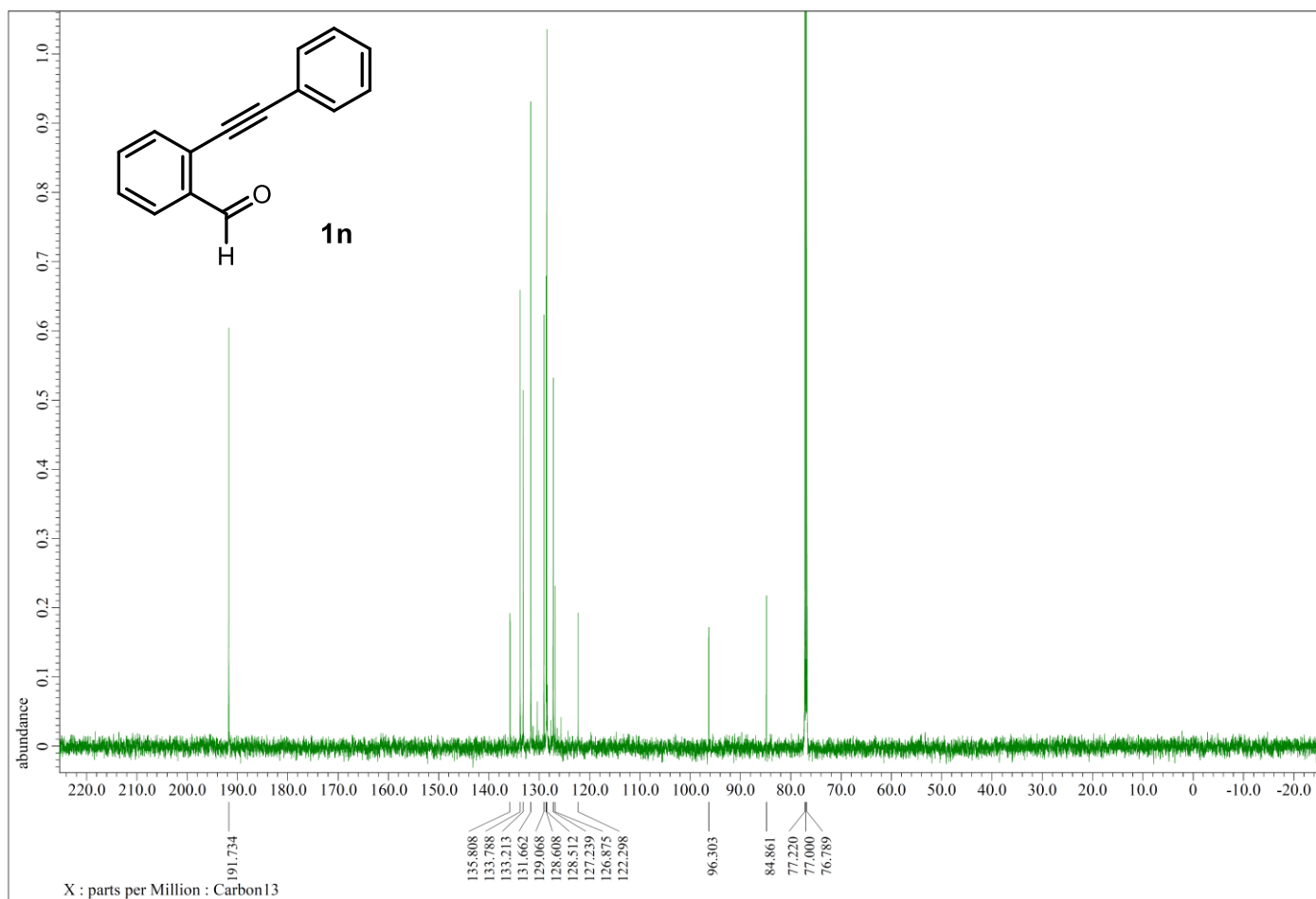
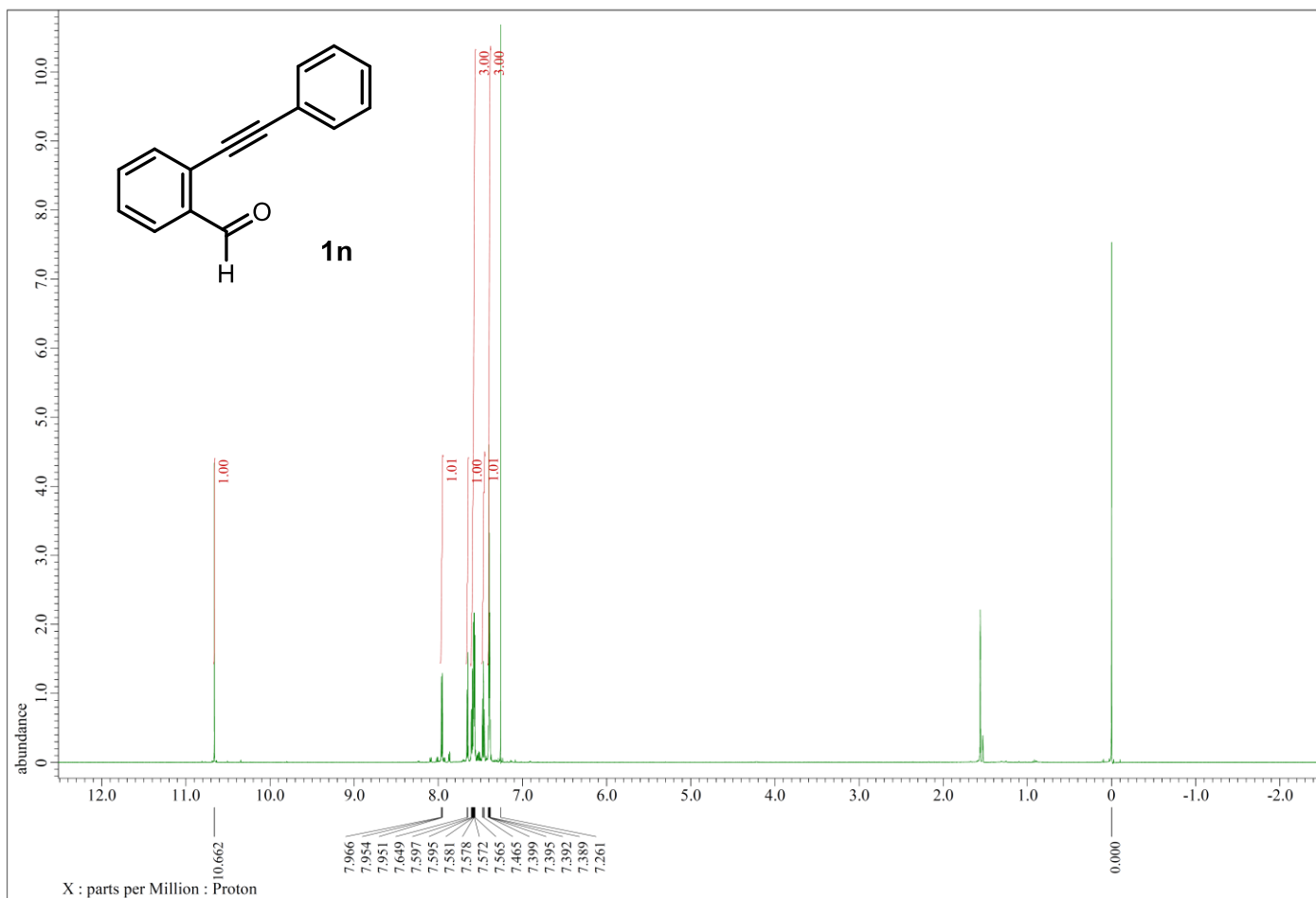
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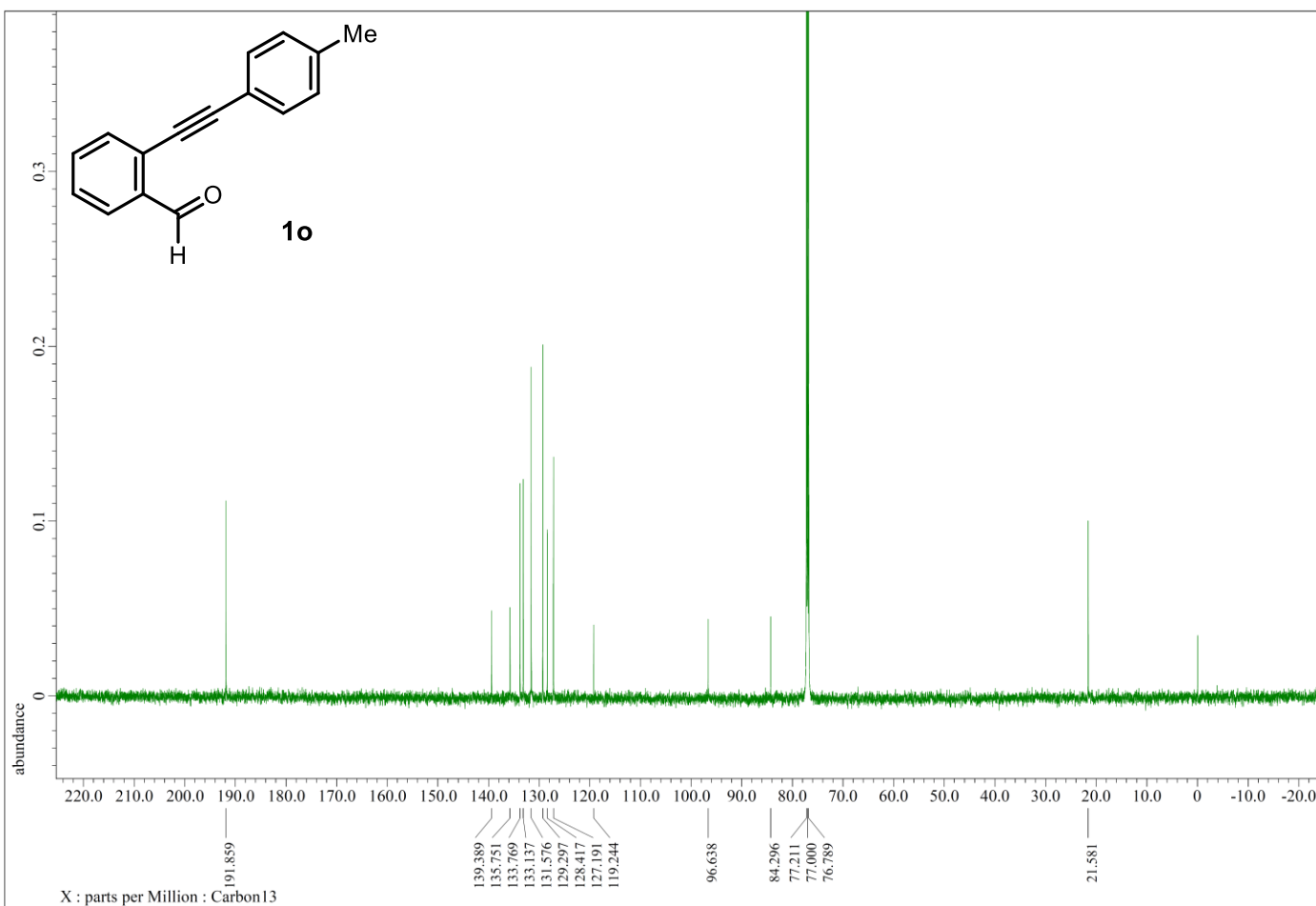
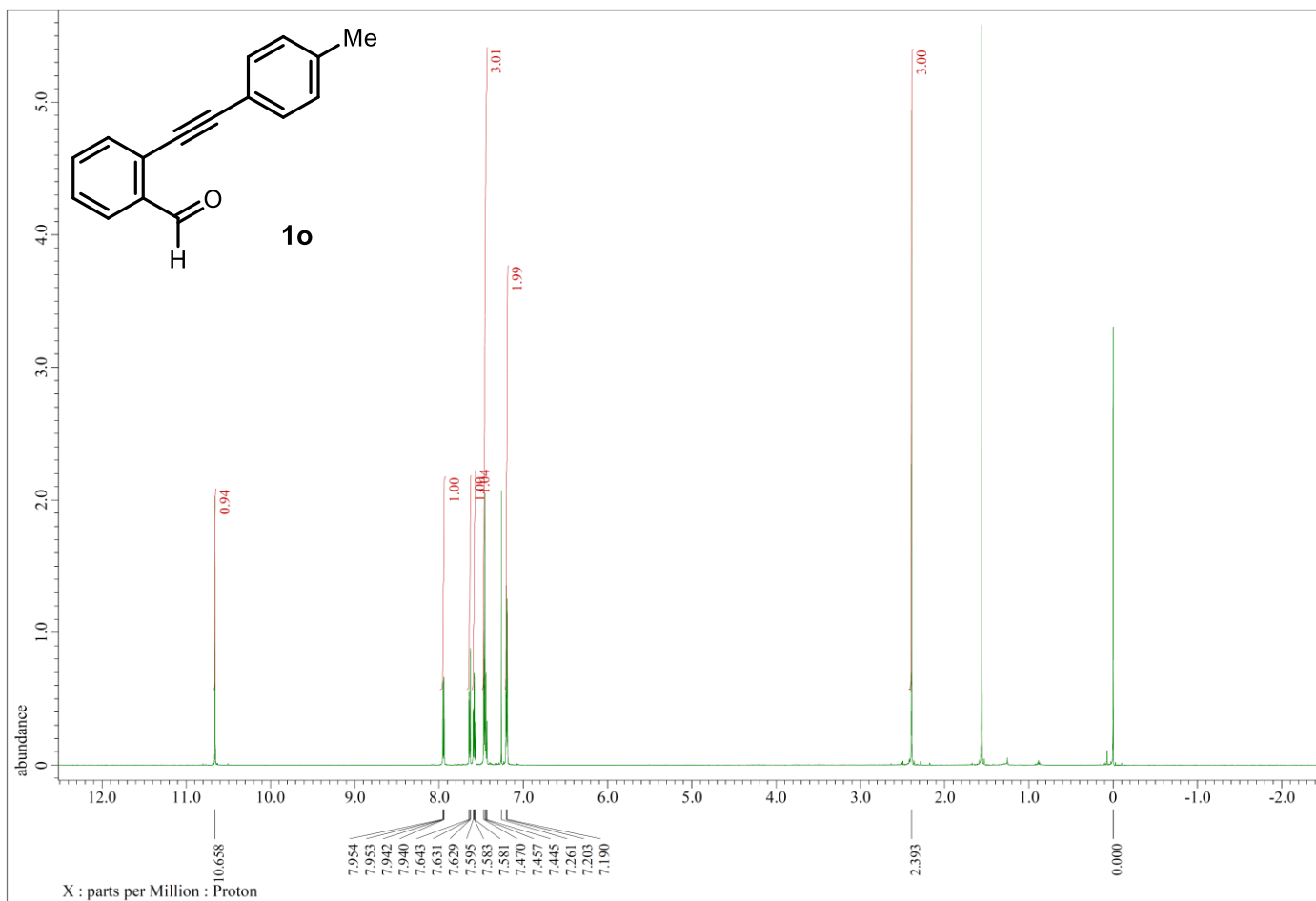
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1m**.



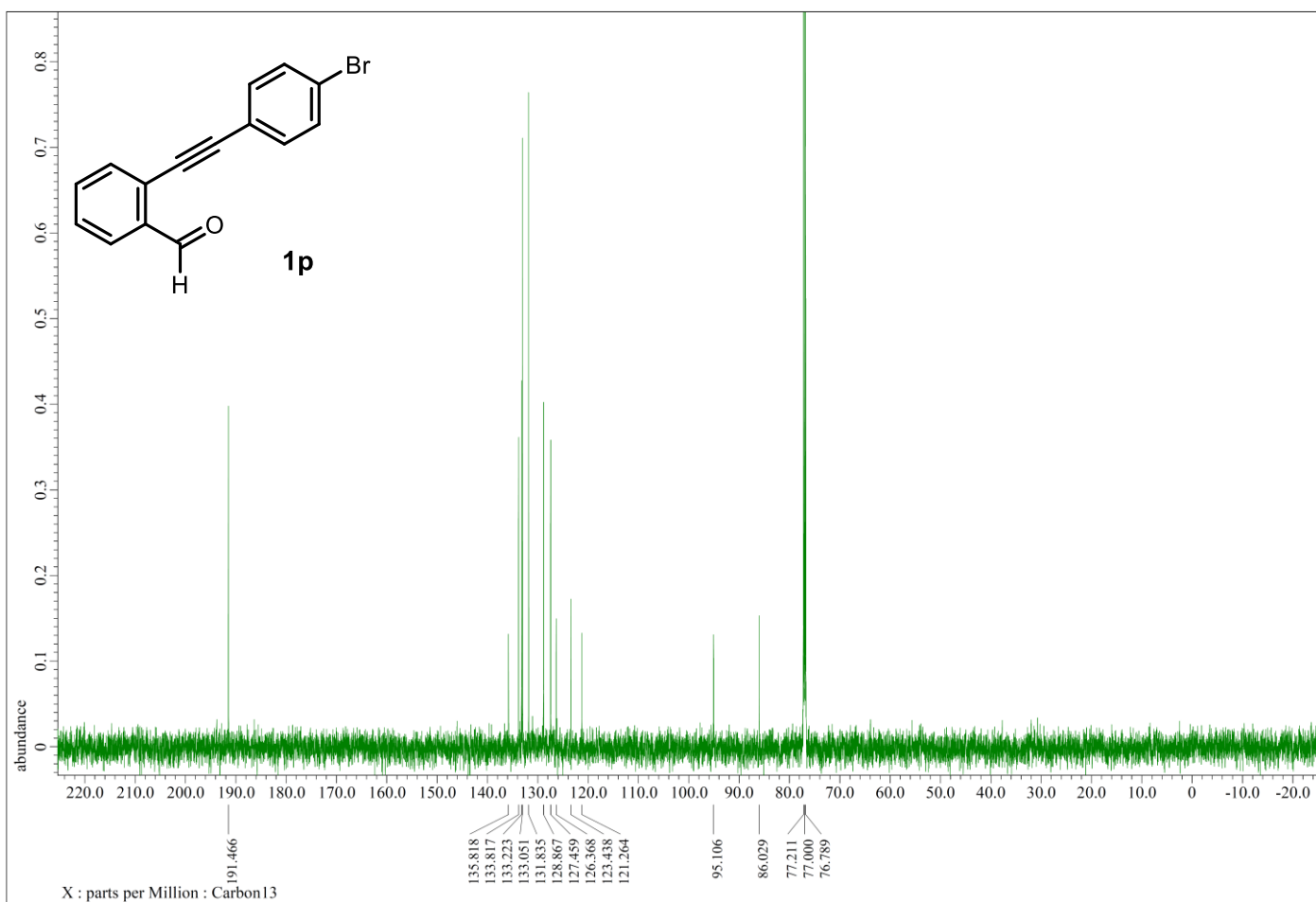
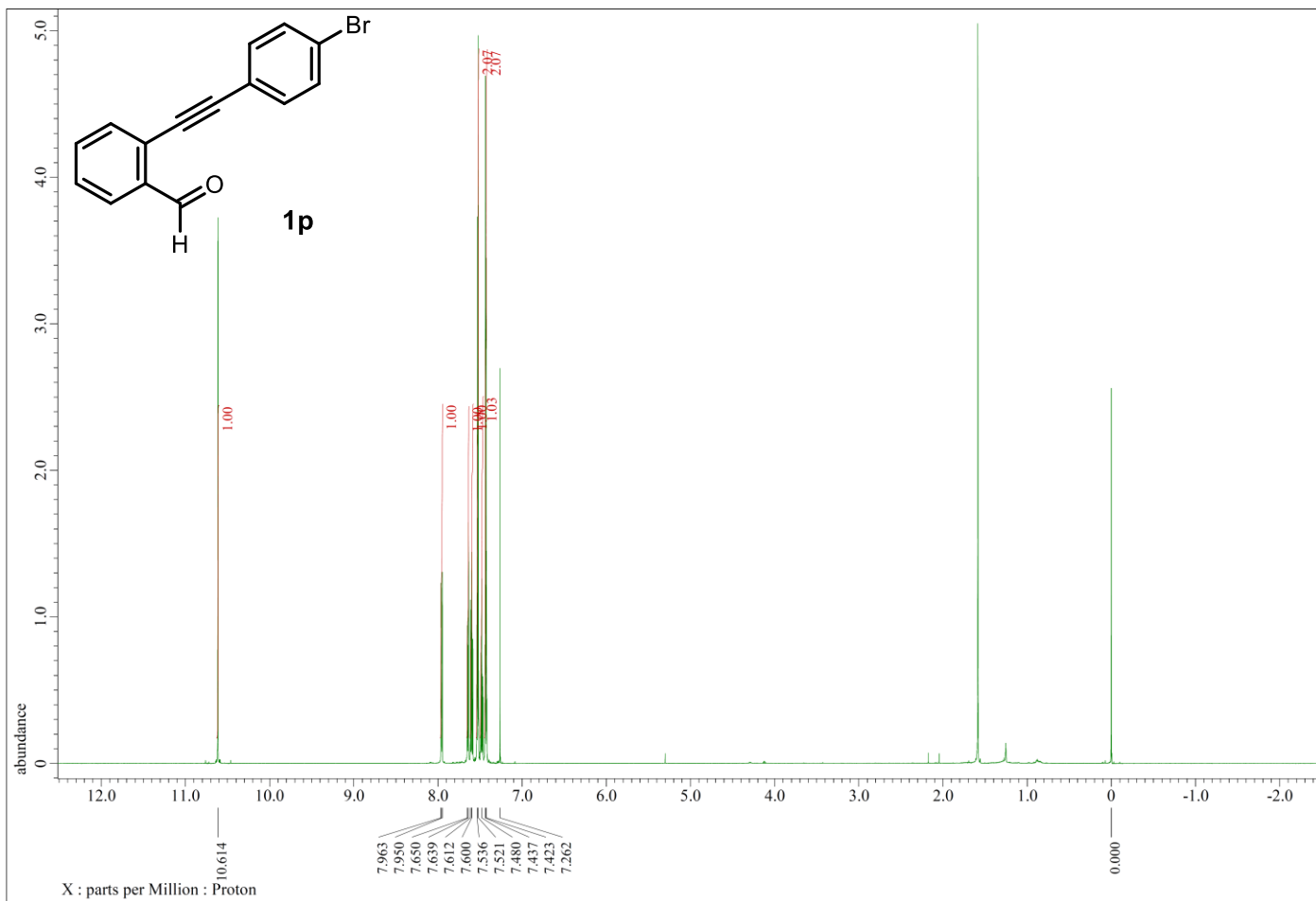
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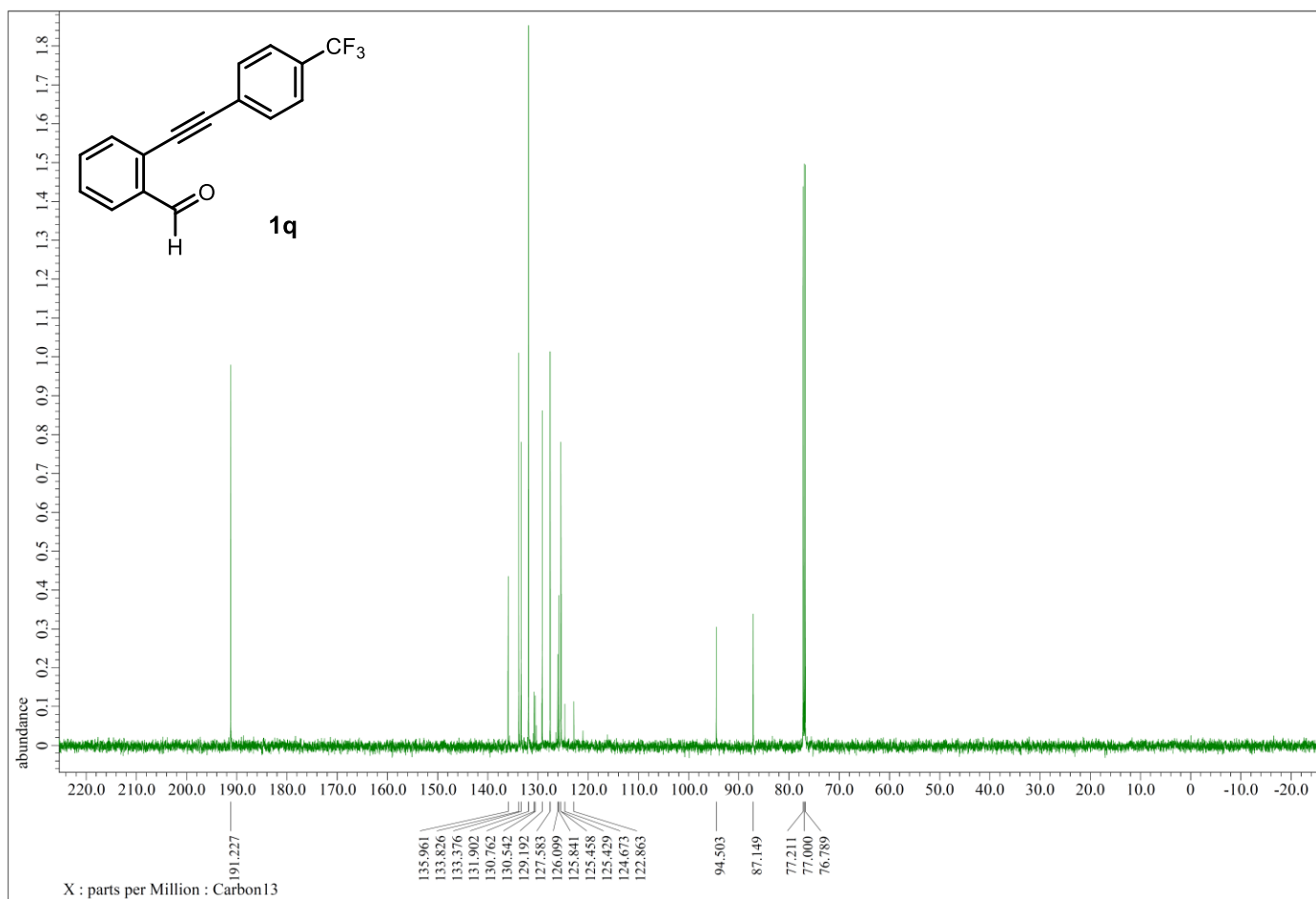
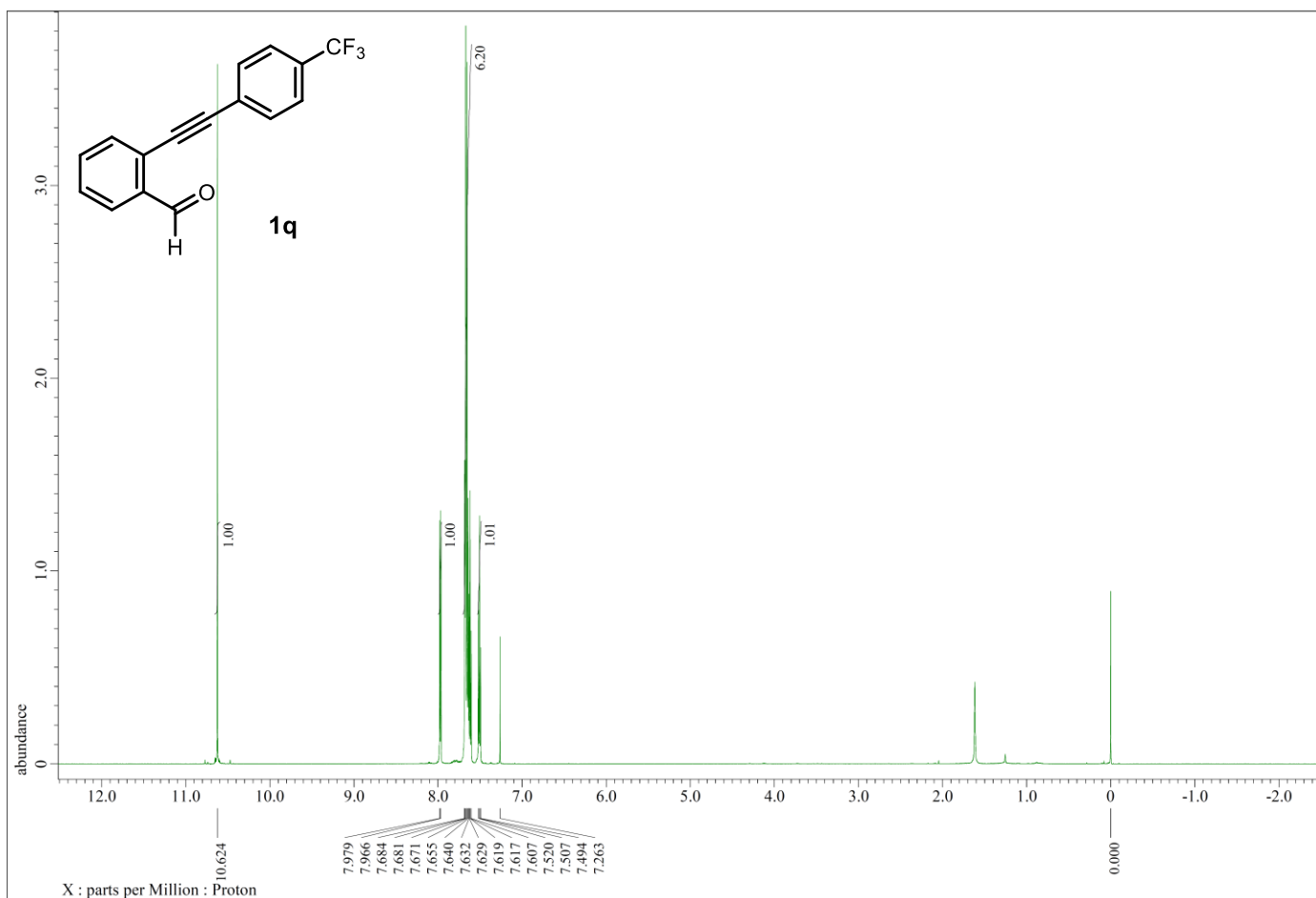
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1o**.



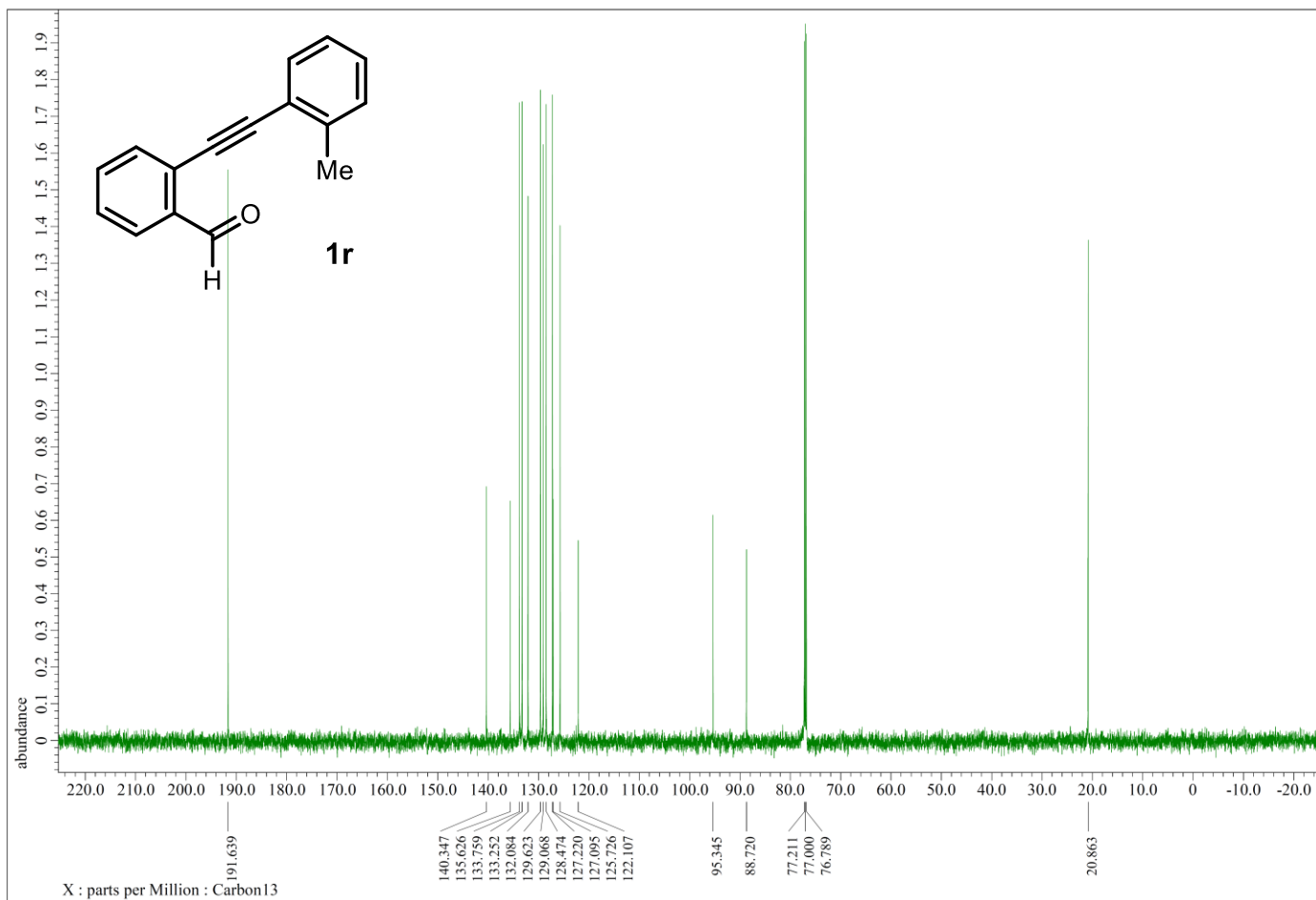
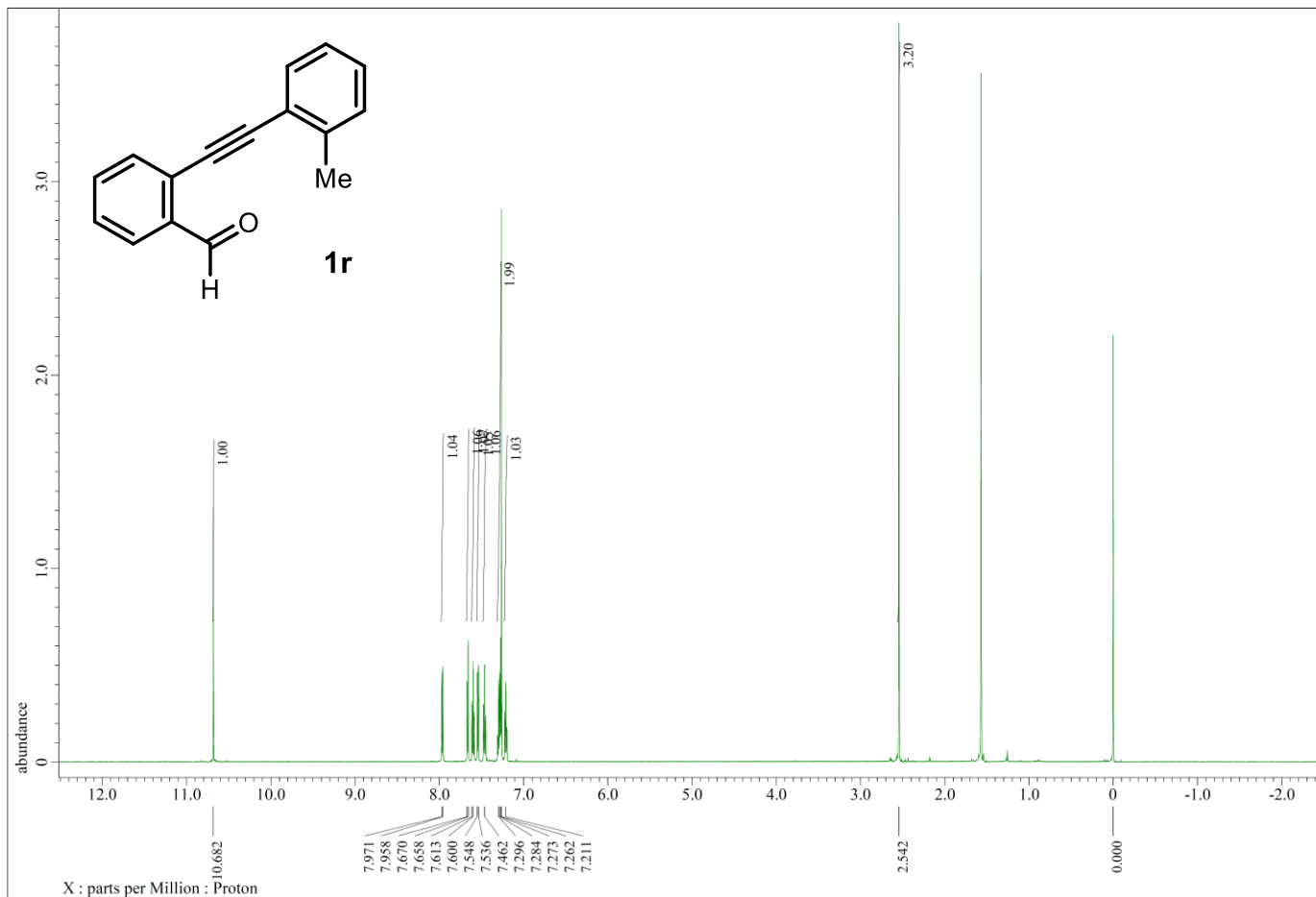
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1p**.



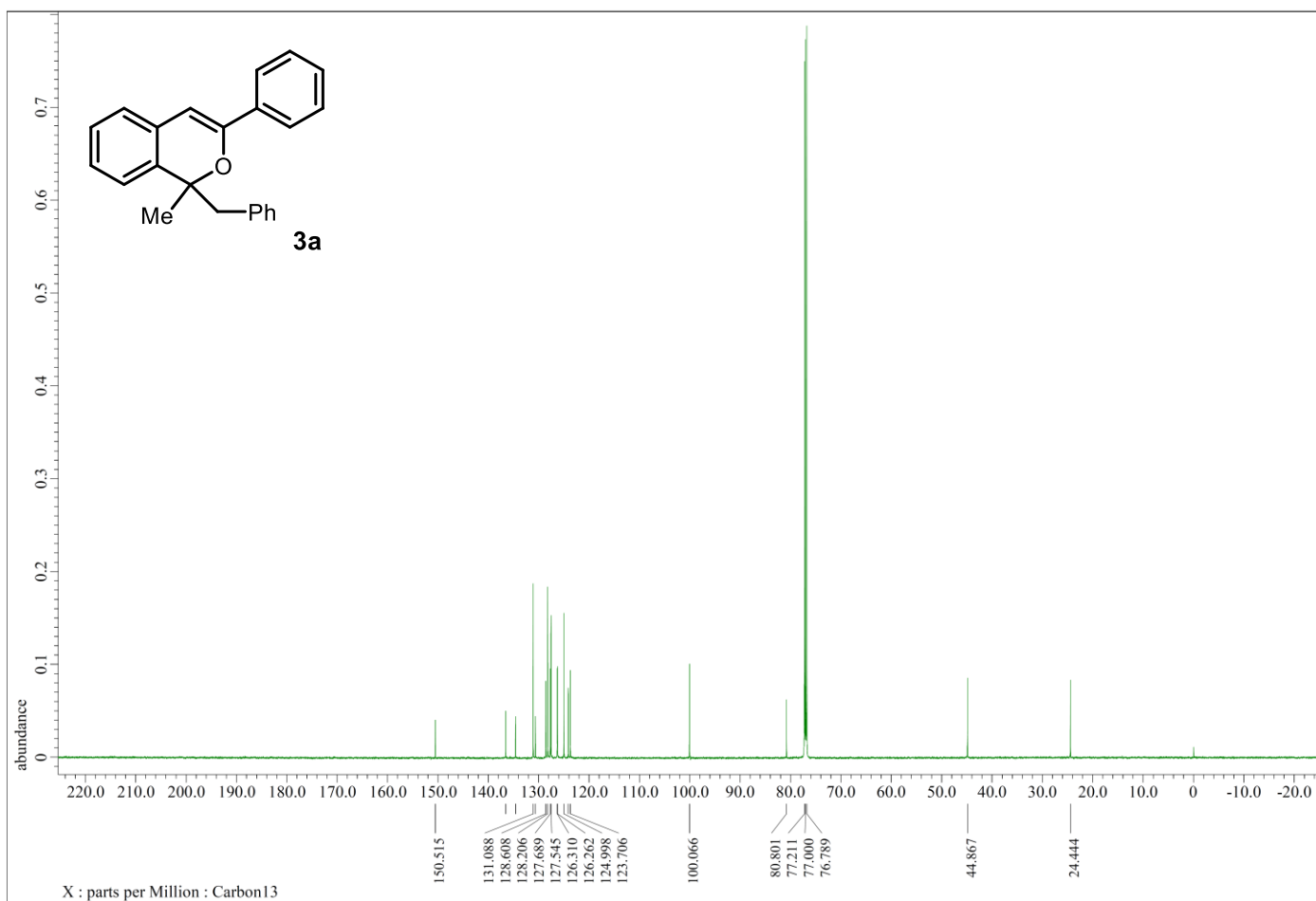
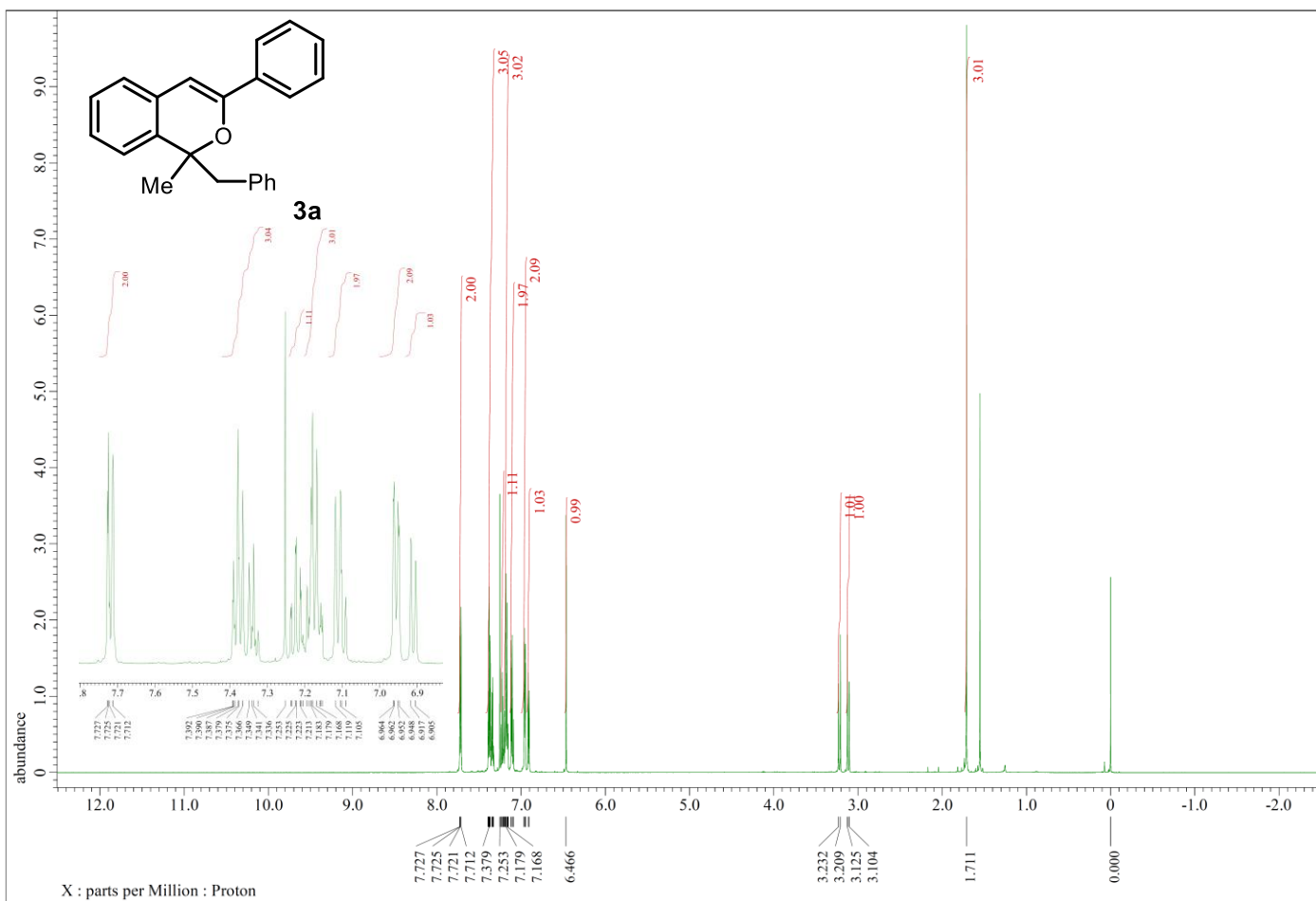
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1q**.



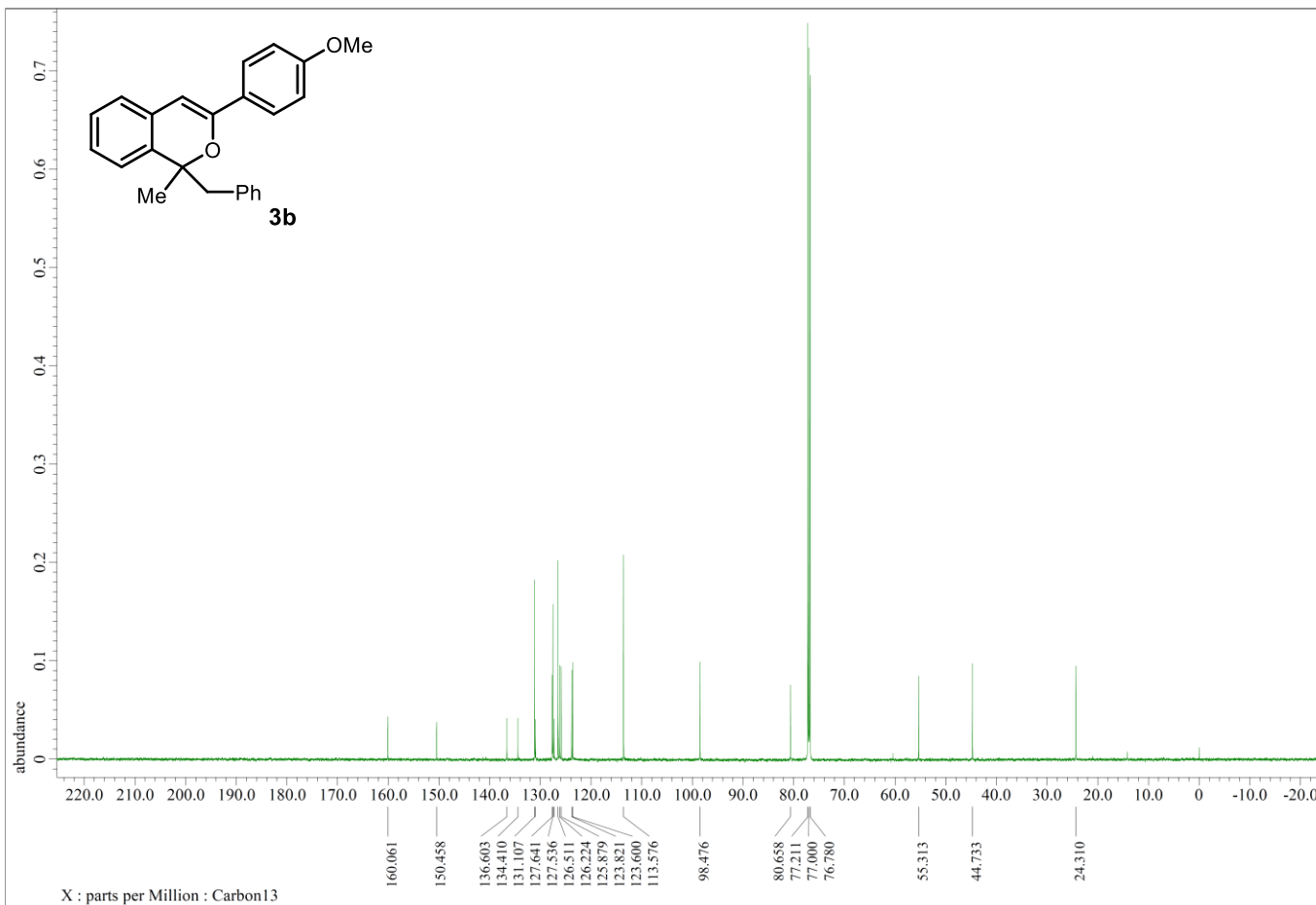
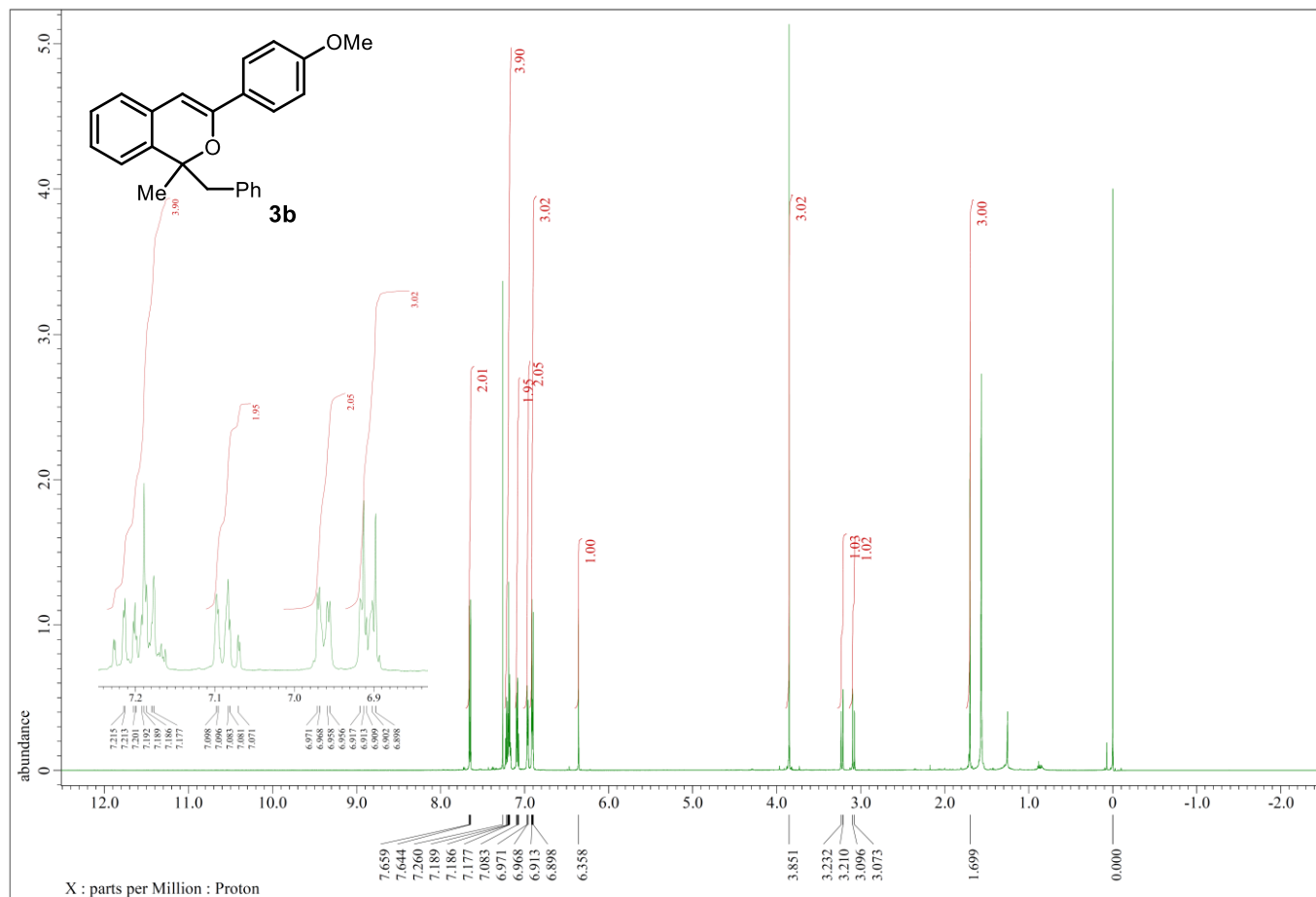
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **1r**.



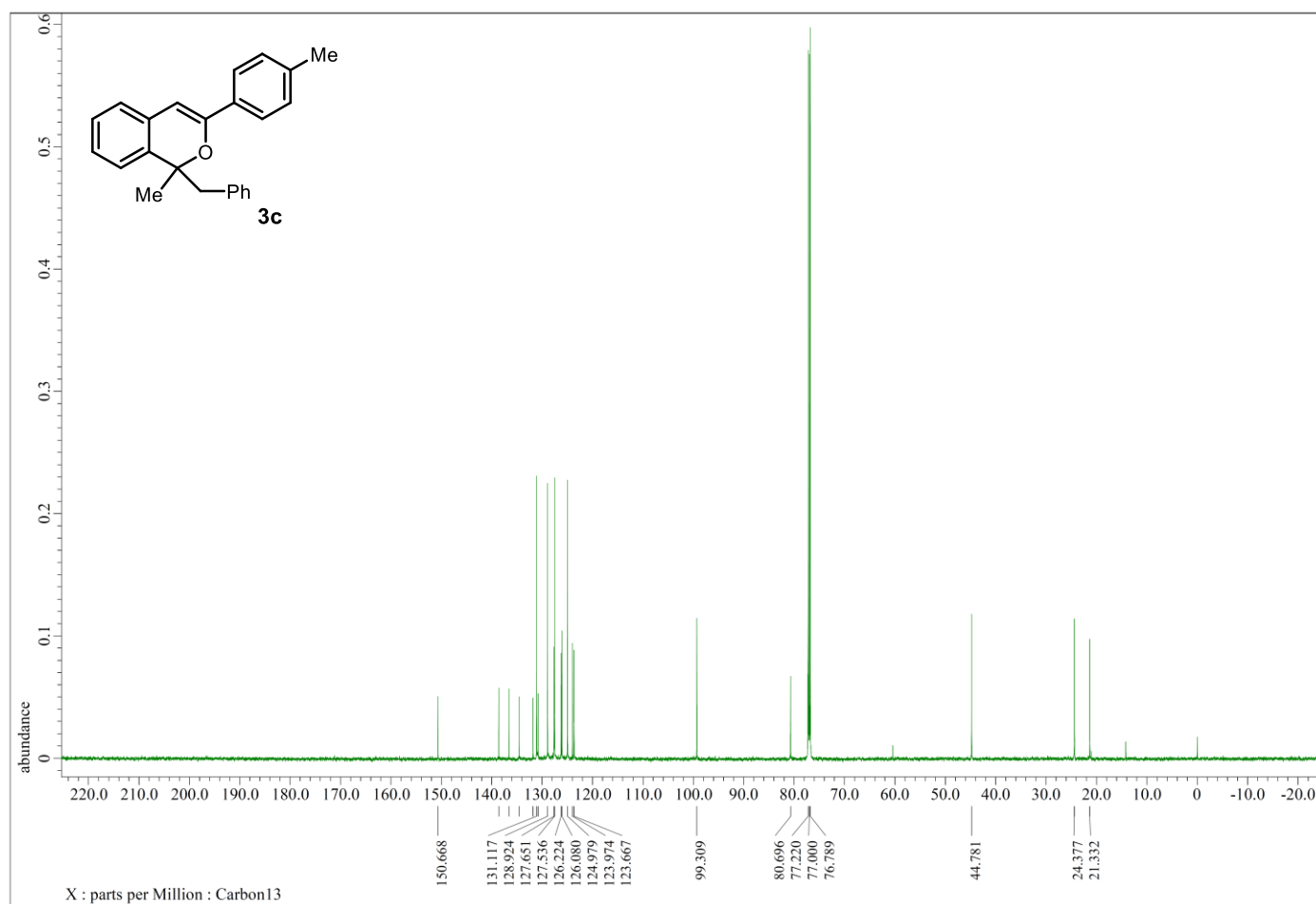
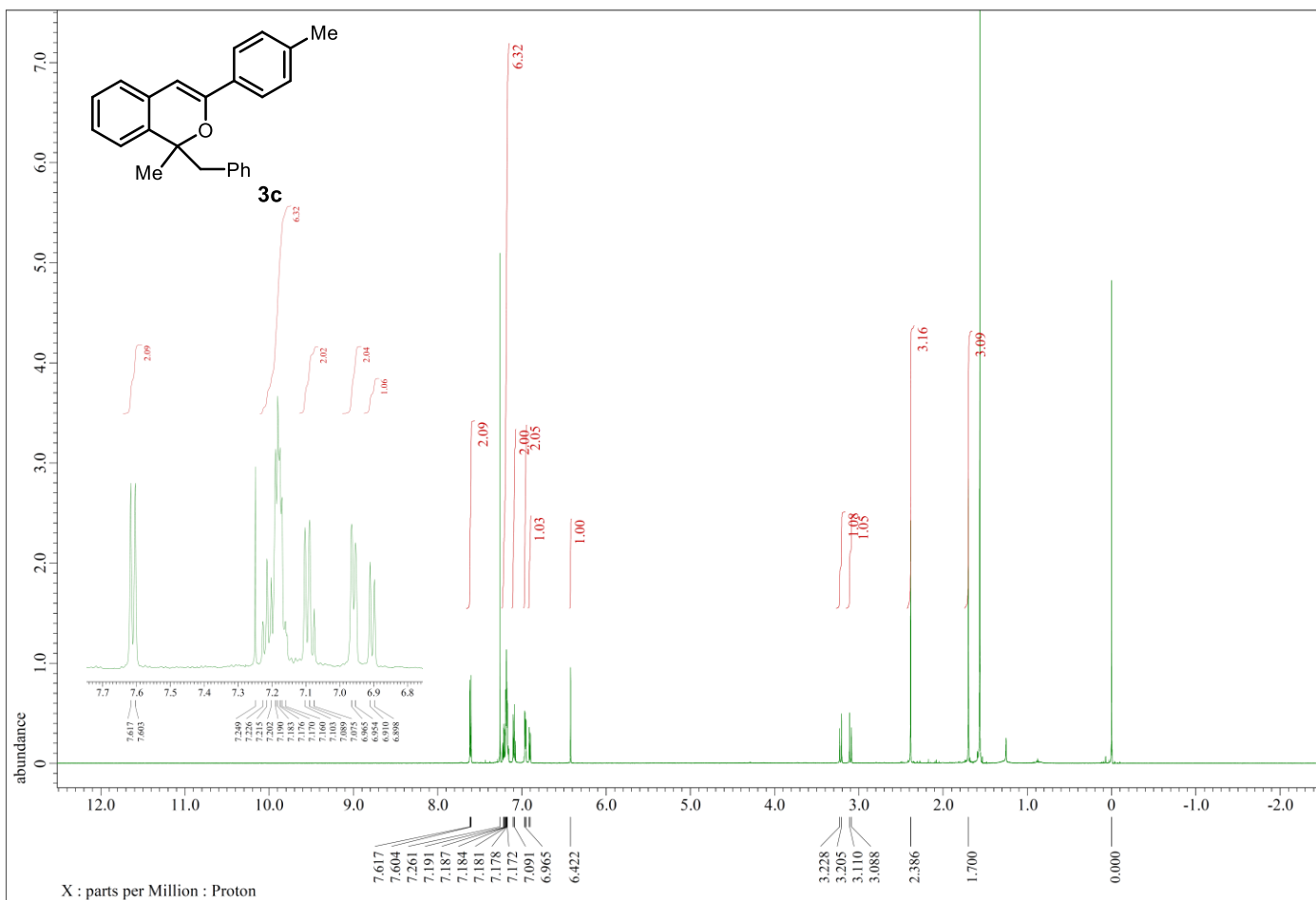
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3a**.



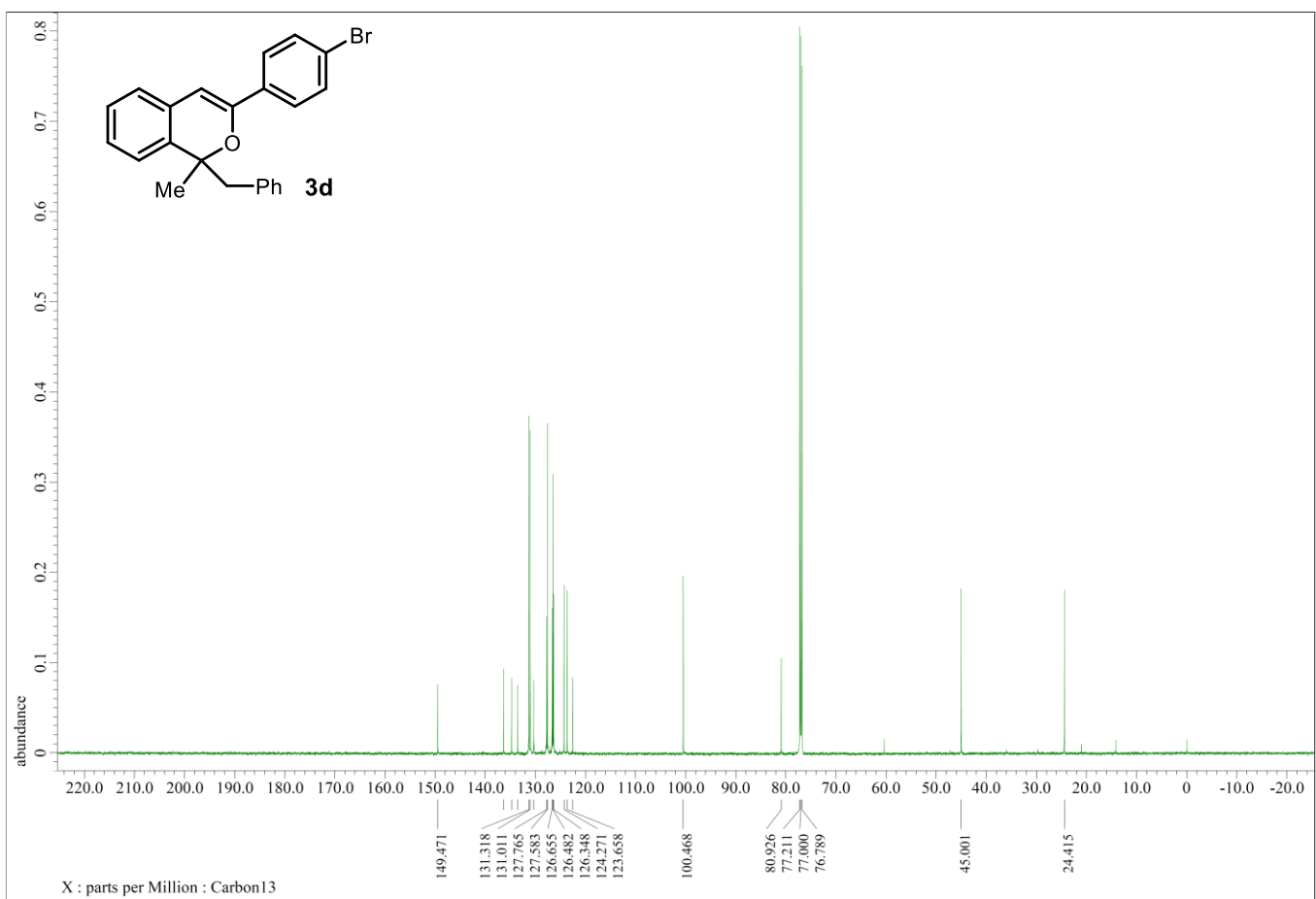
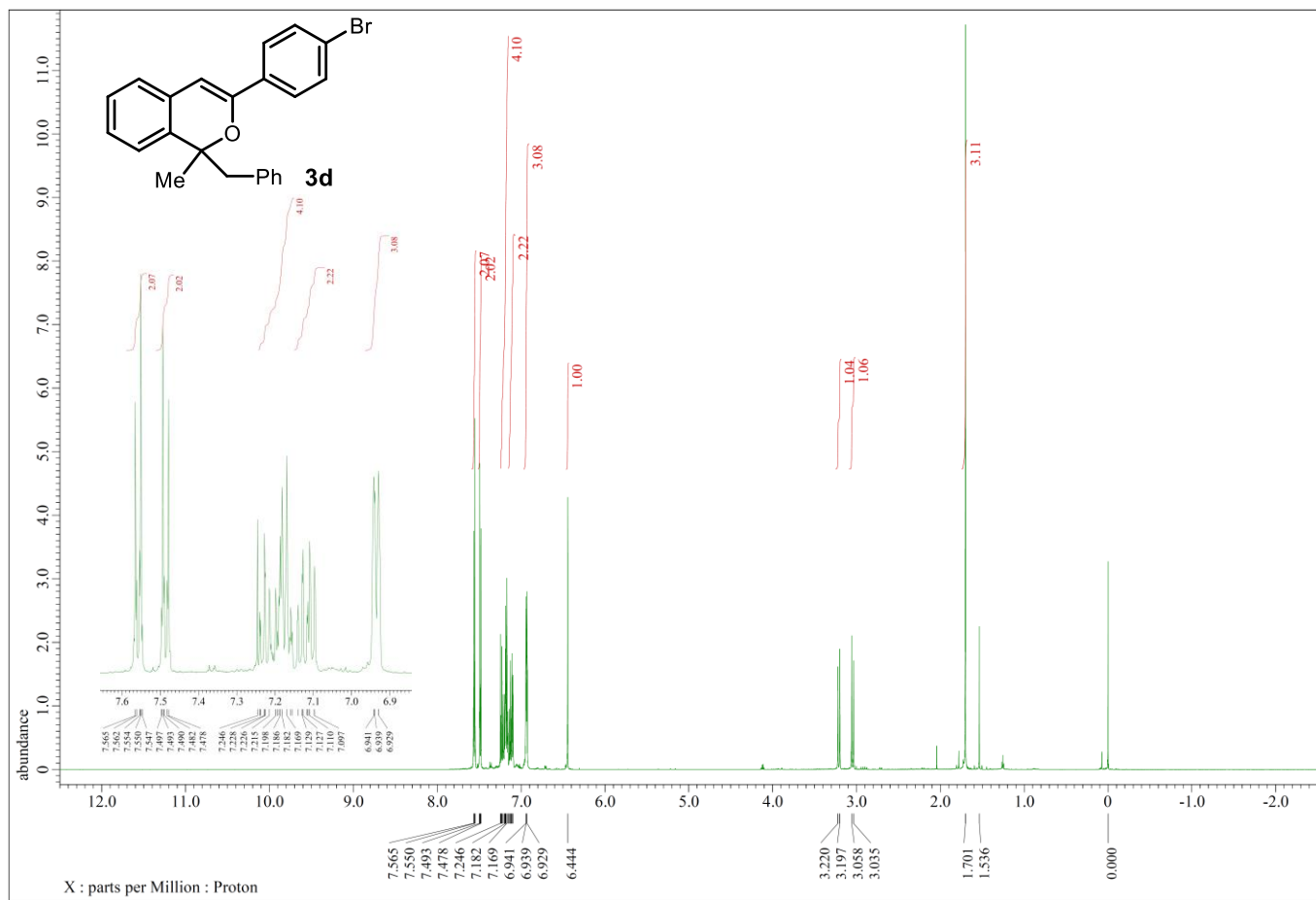
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3b**.



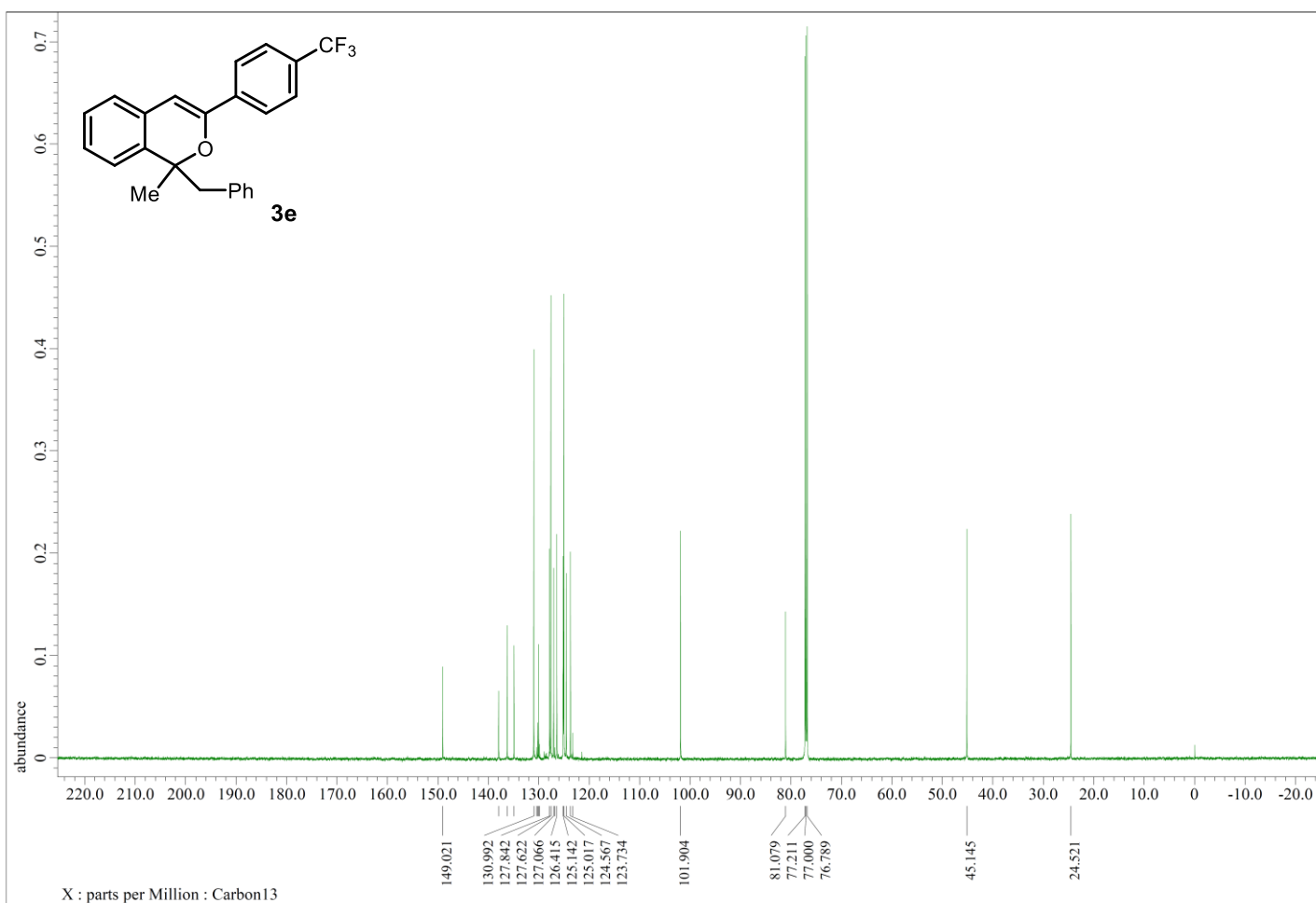
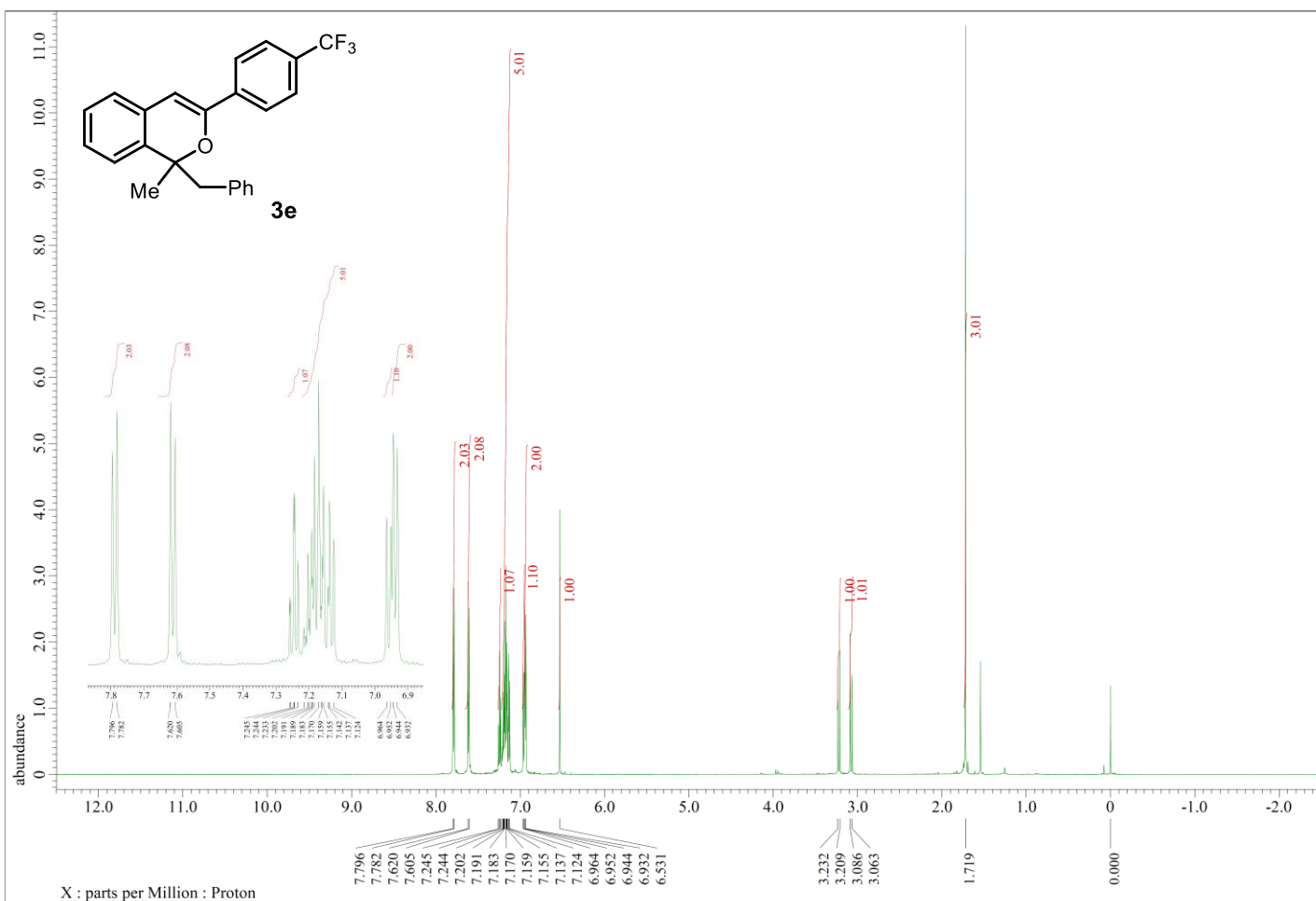
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3c**.



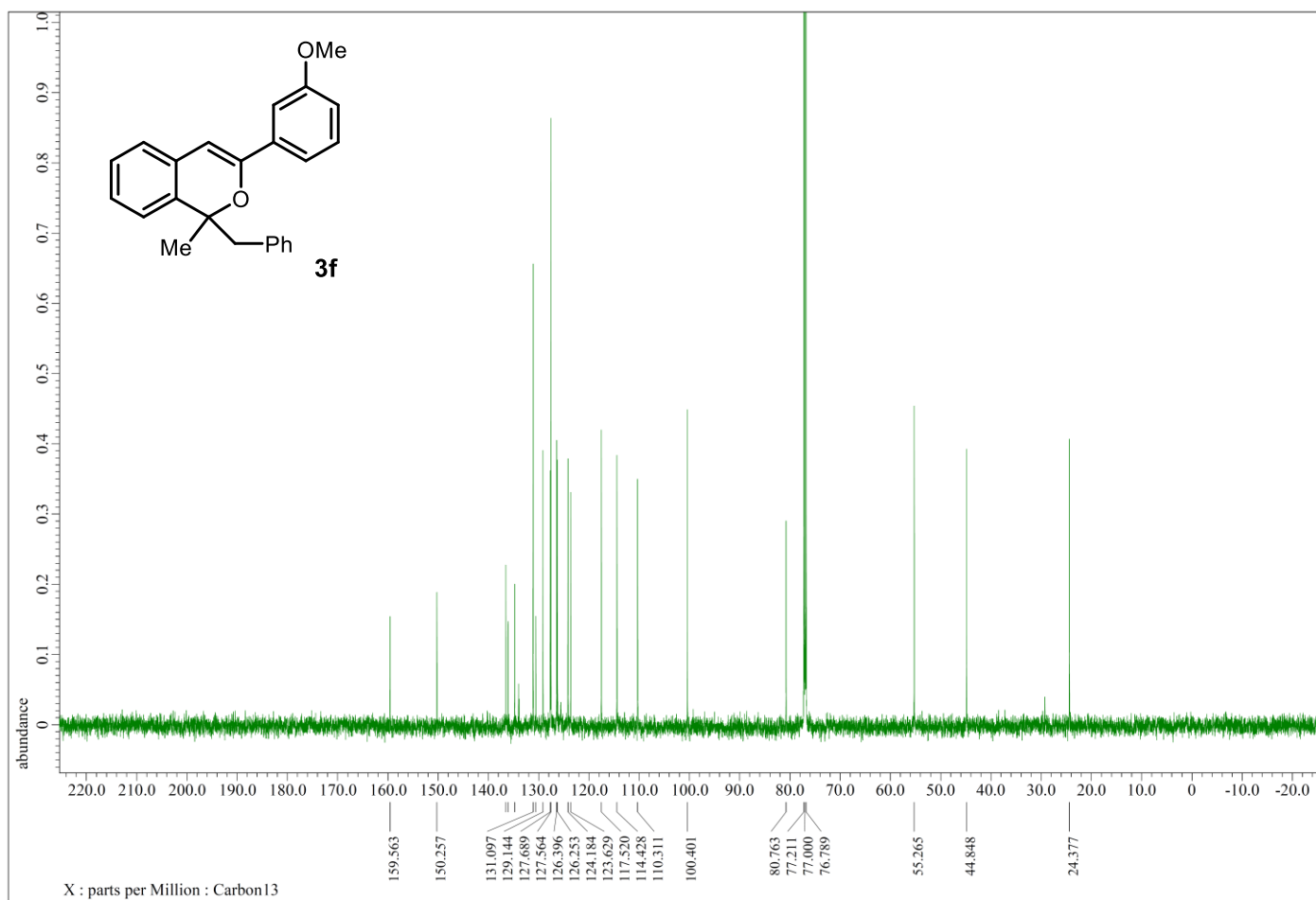
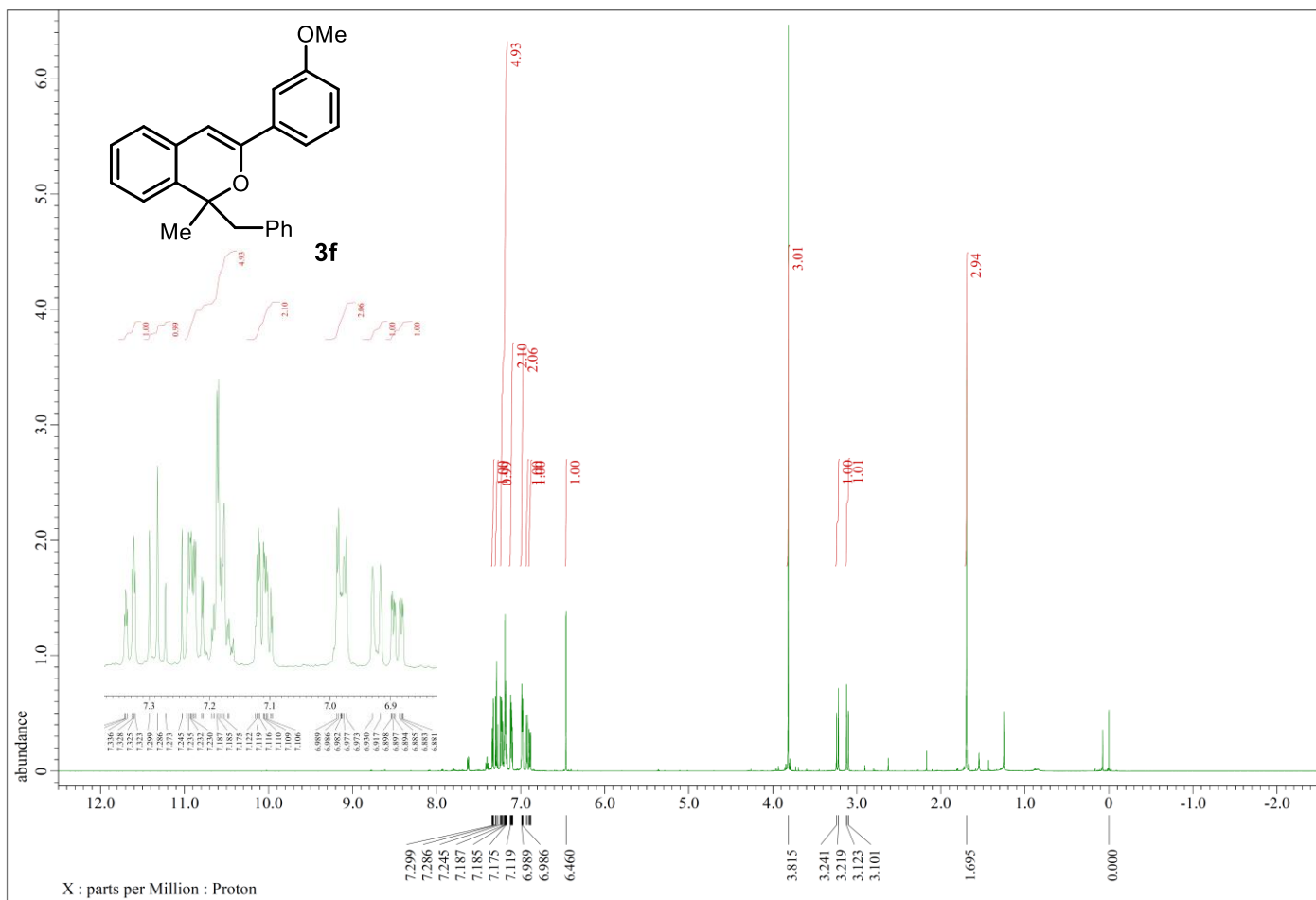
¹H NMR (600 MHz, CDCl₃) and ¹³C{¹H} NMR (151 MHz, CDCl₃) spectra of **3d**.



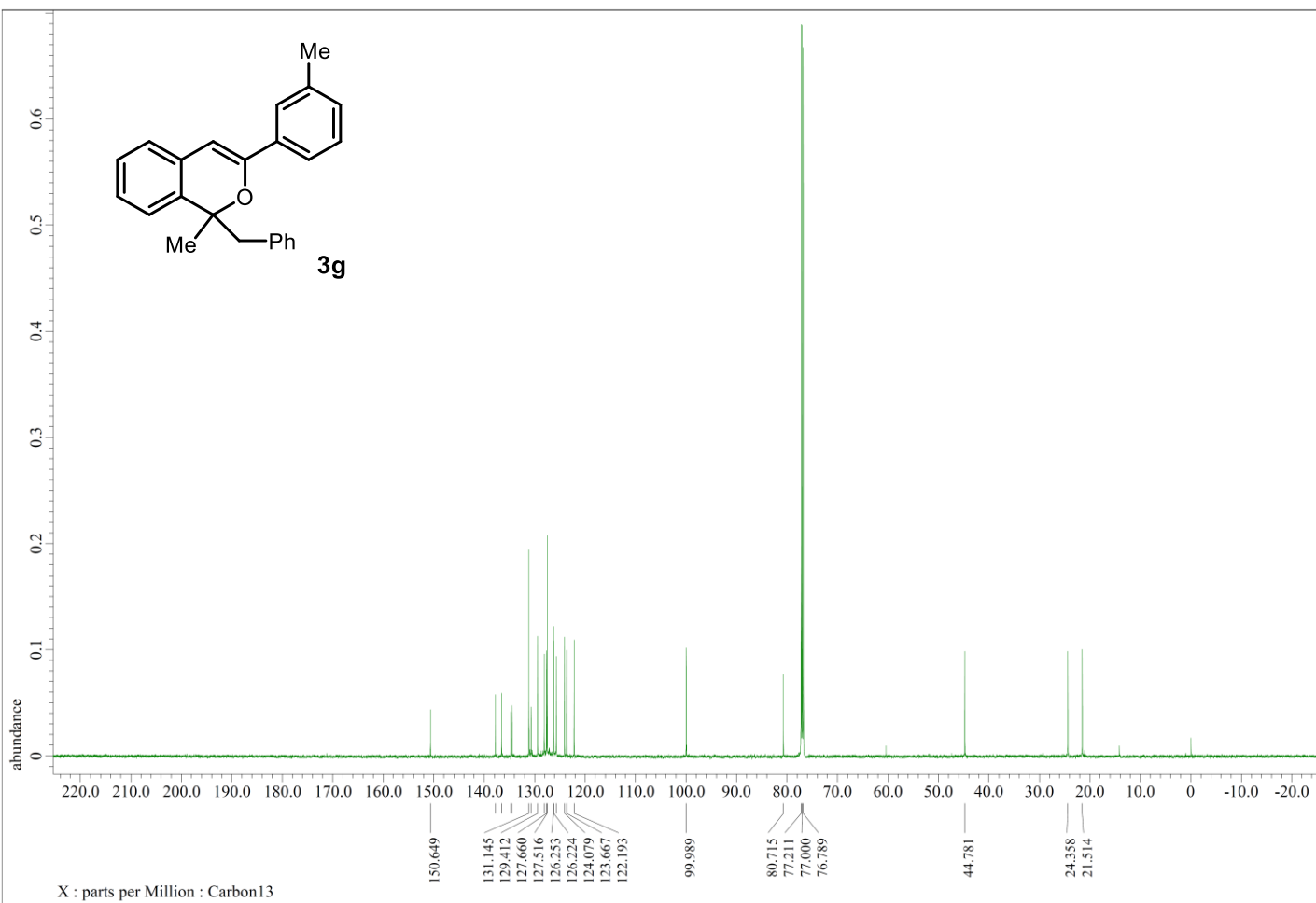
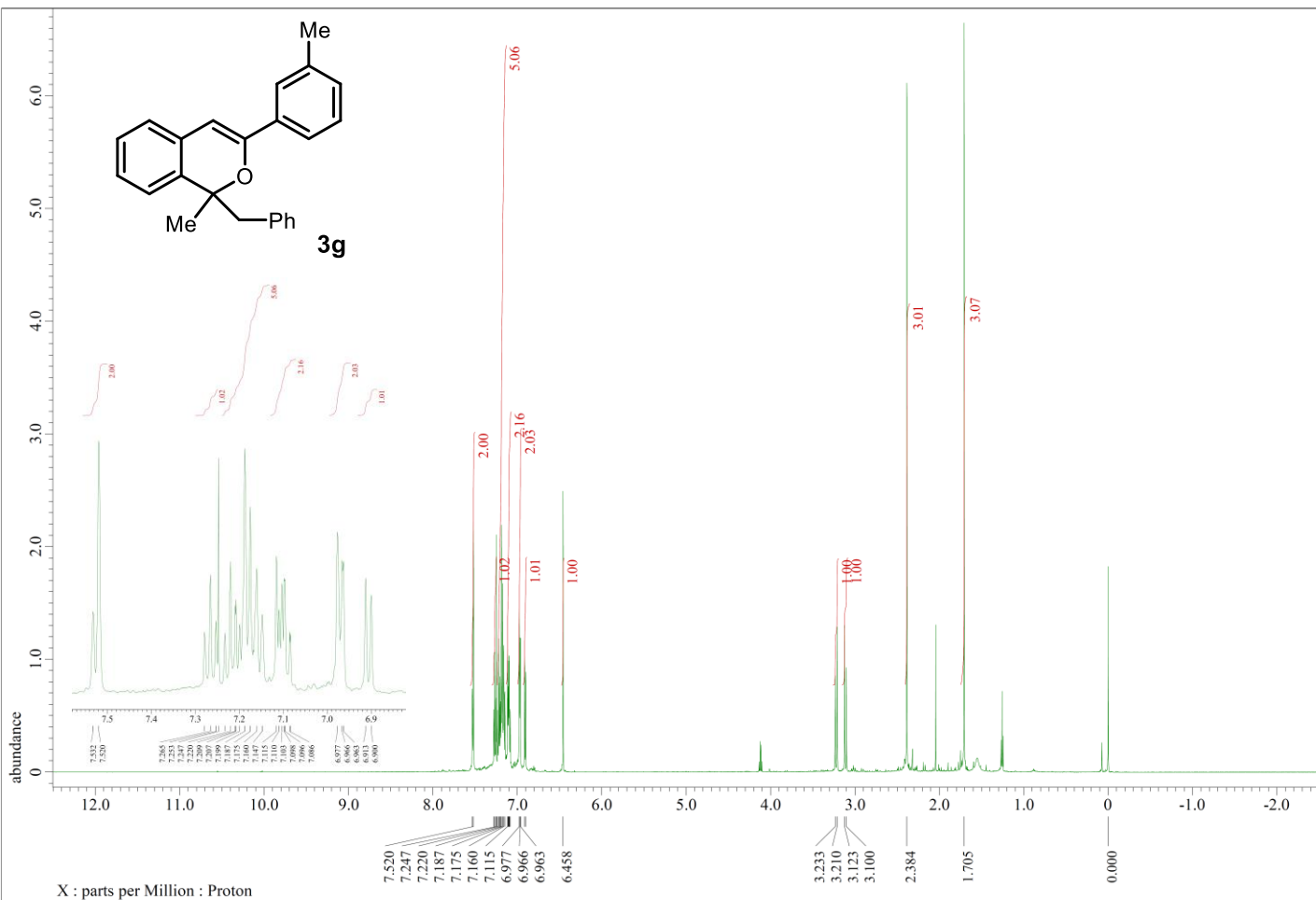
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3e**.



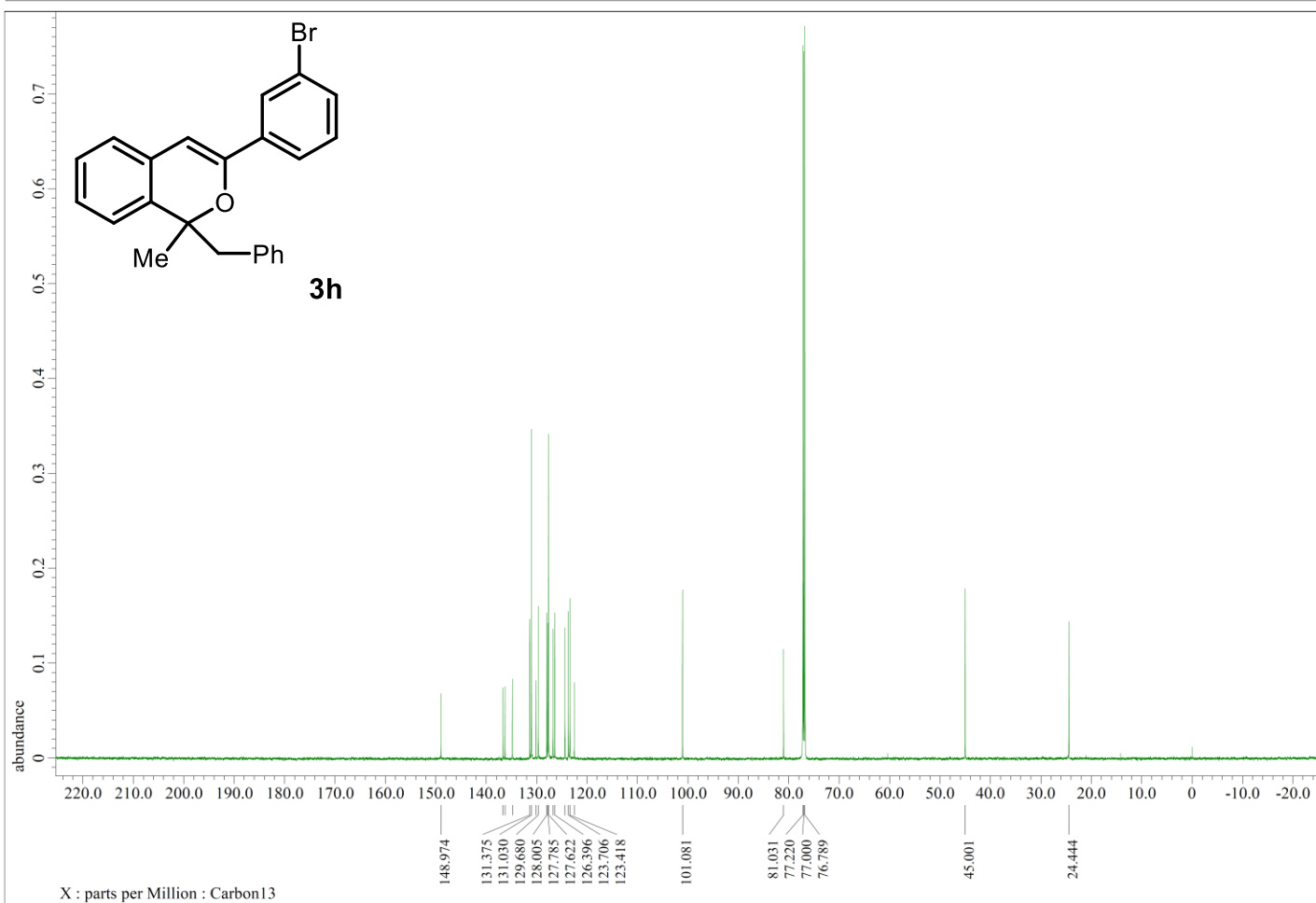
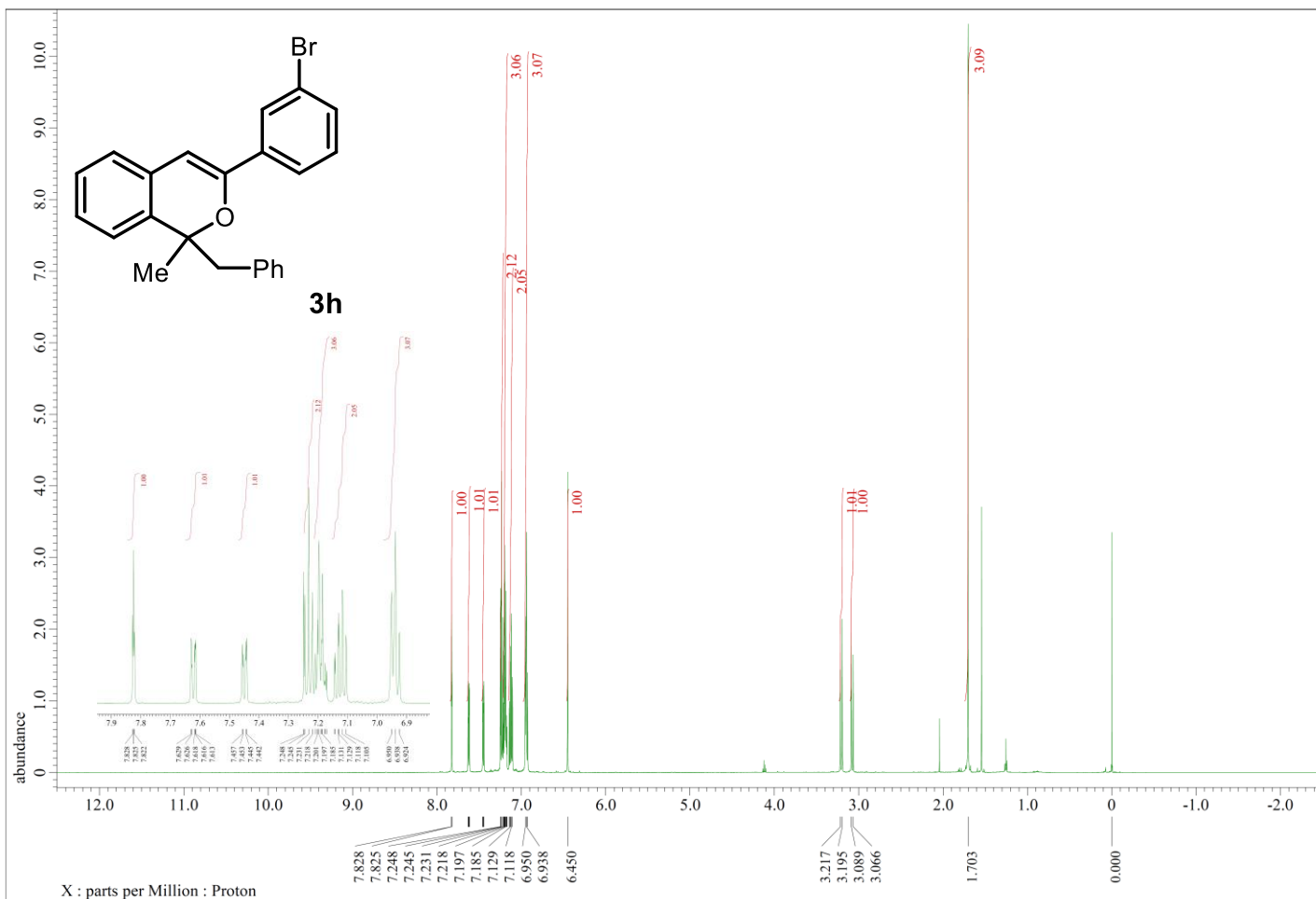
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3f**.



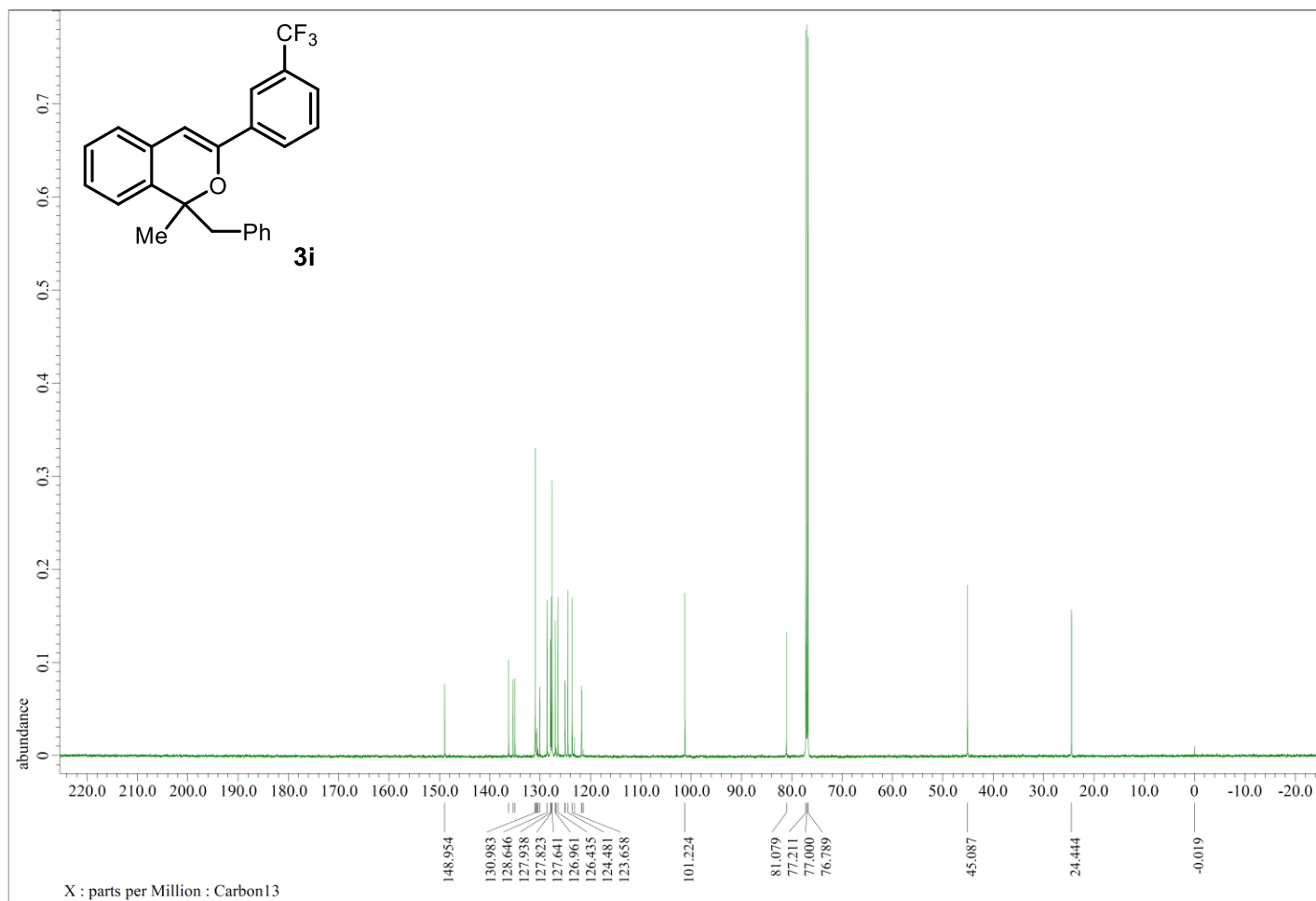
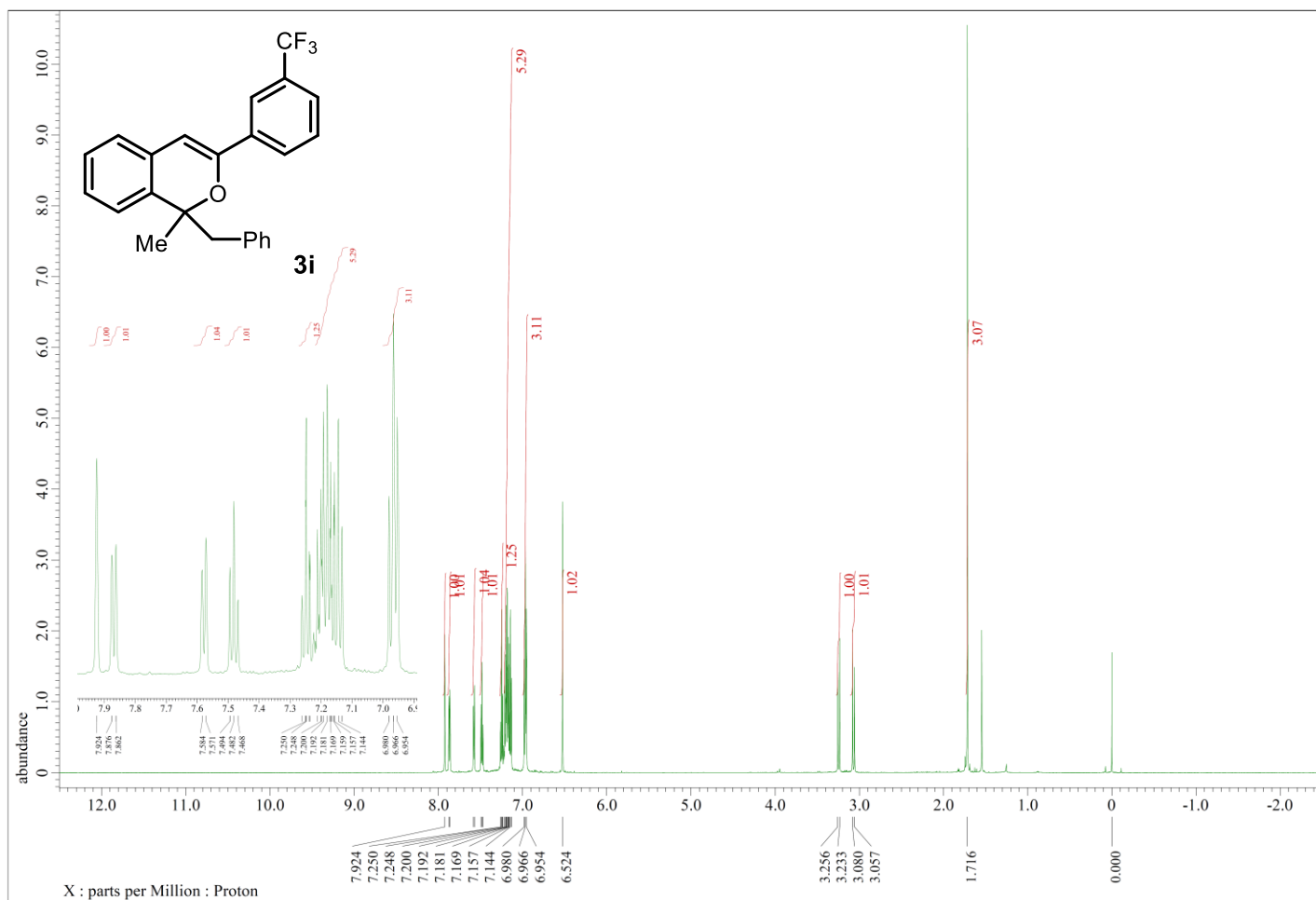
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3g**.



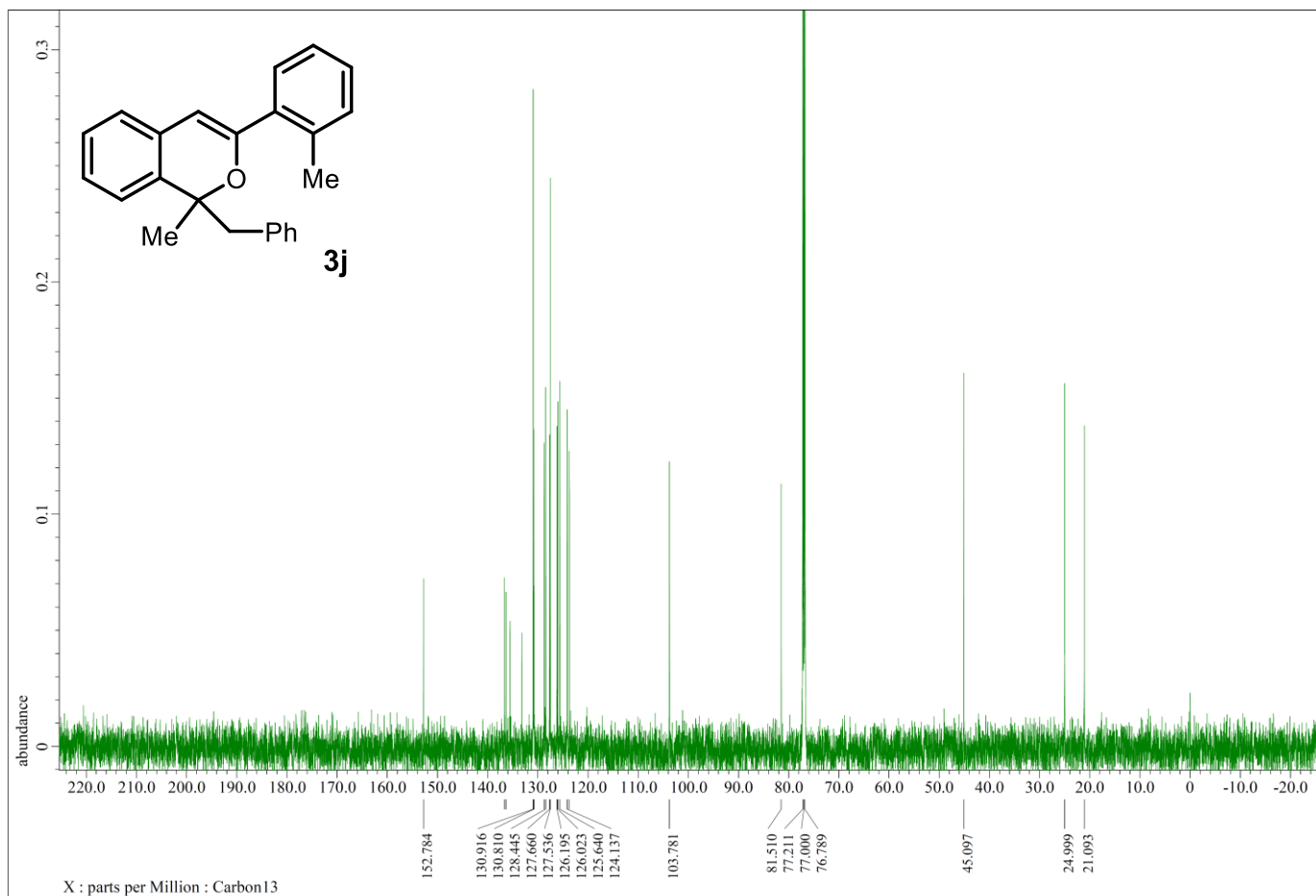
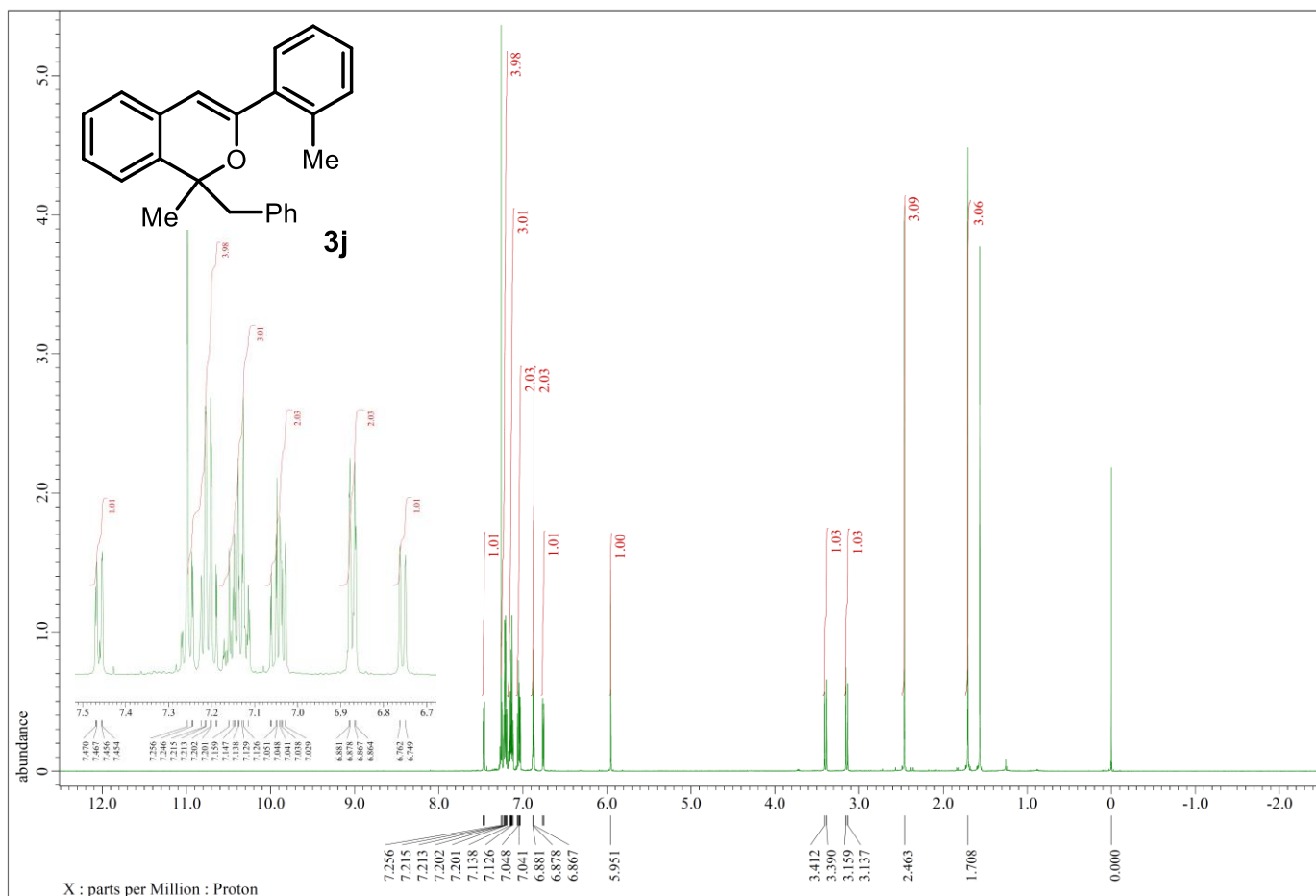
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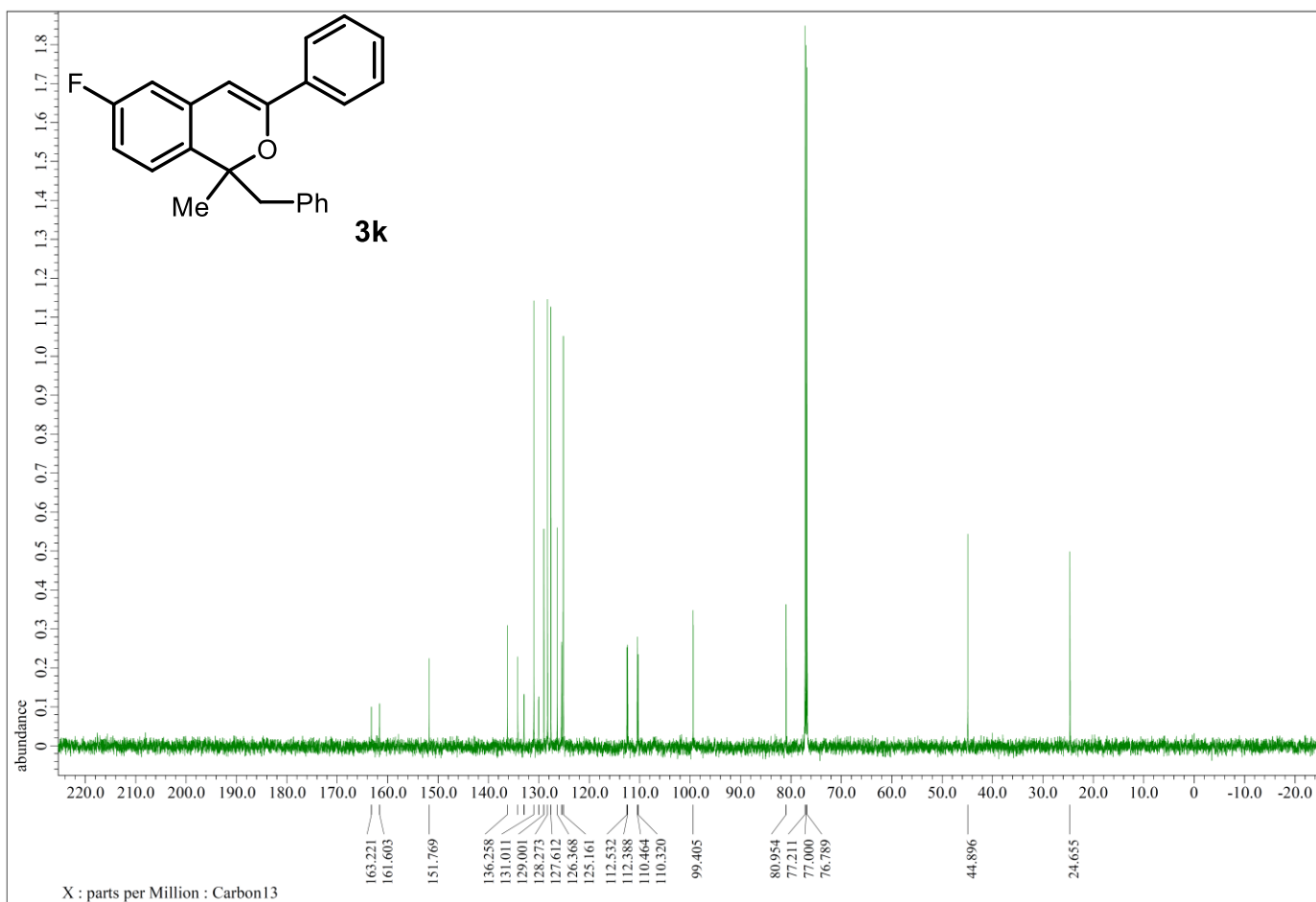
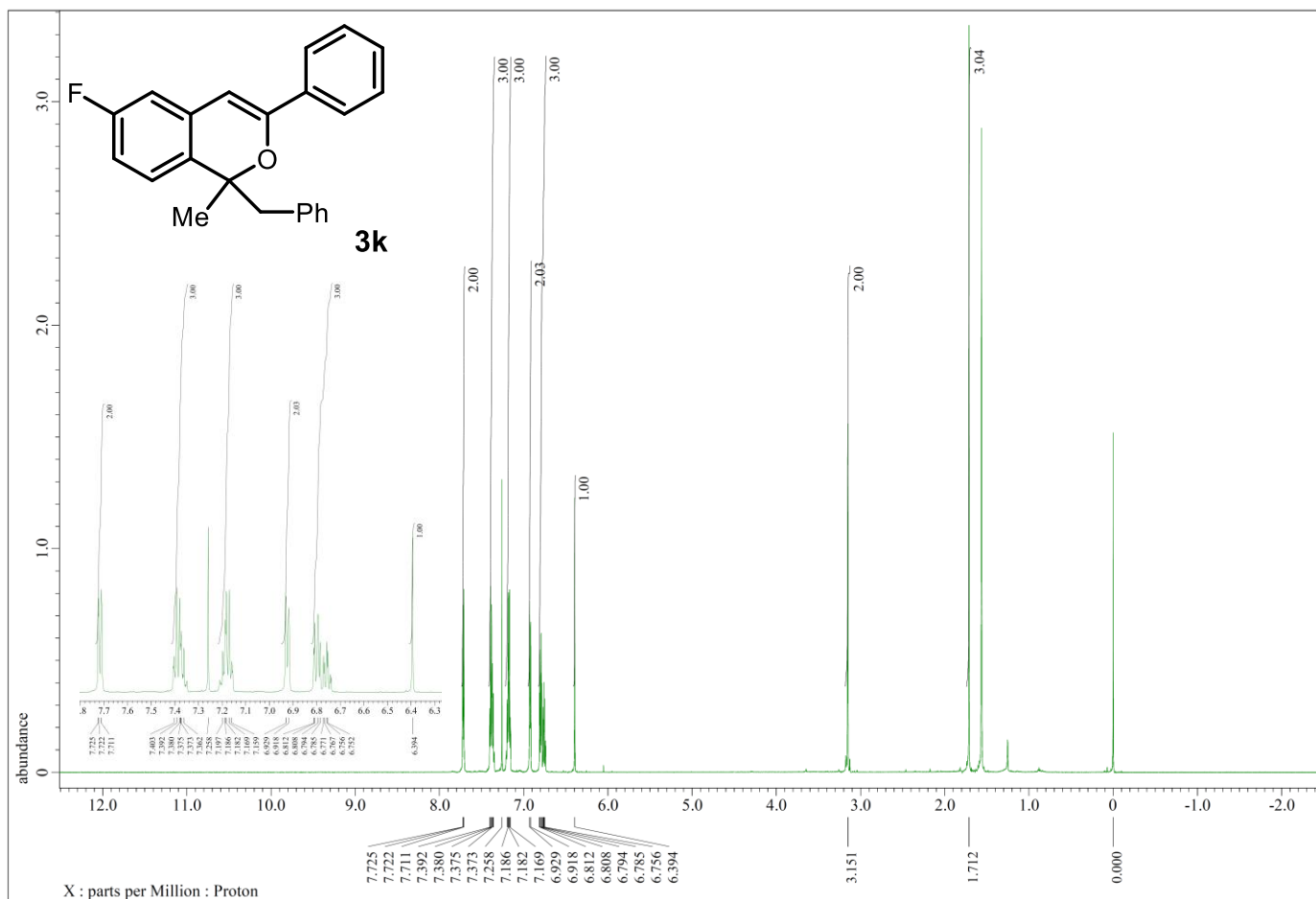
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3i**.

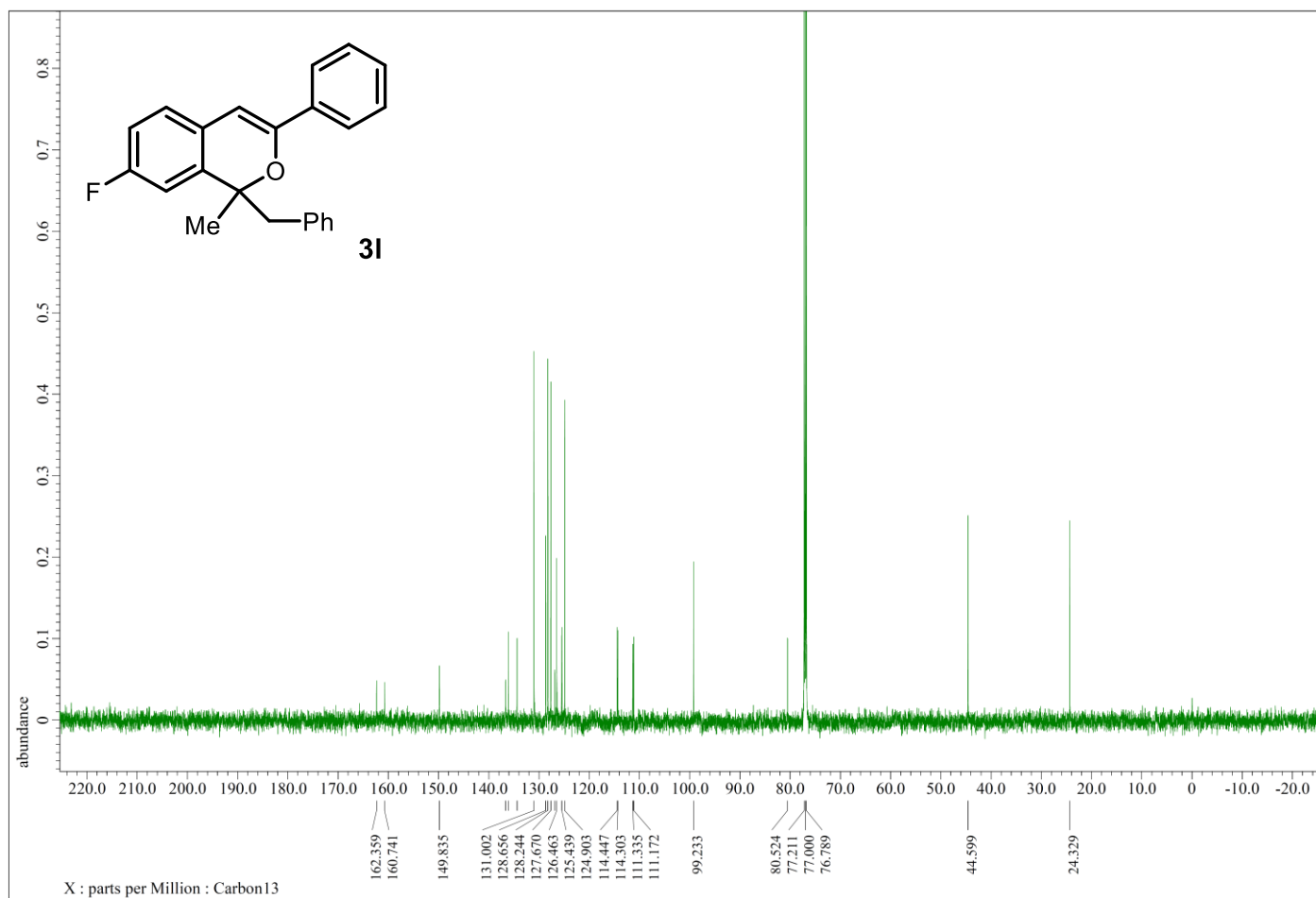
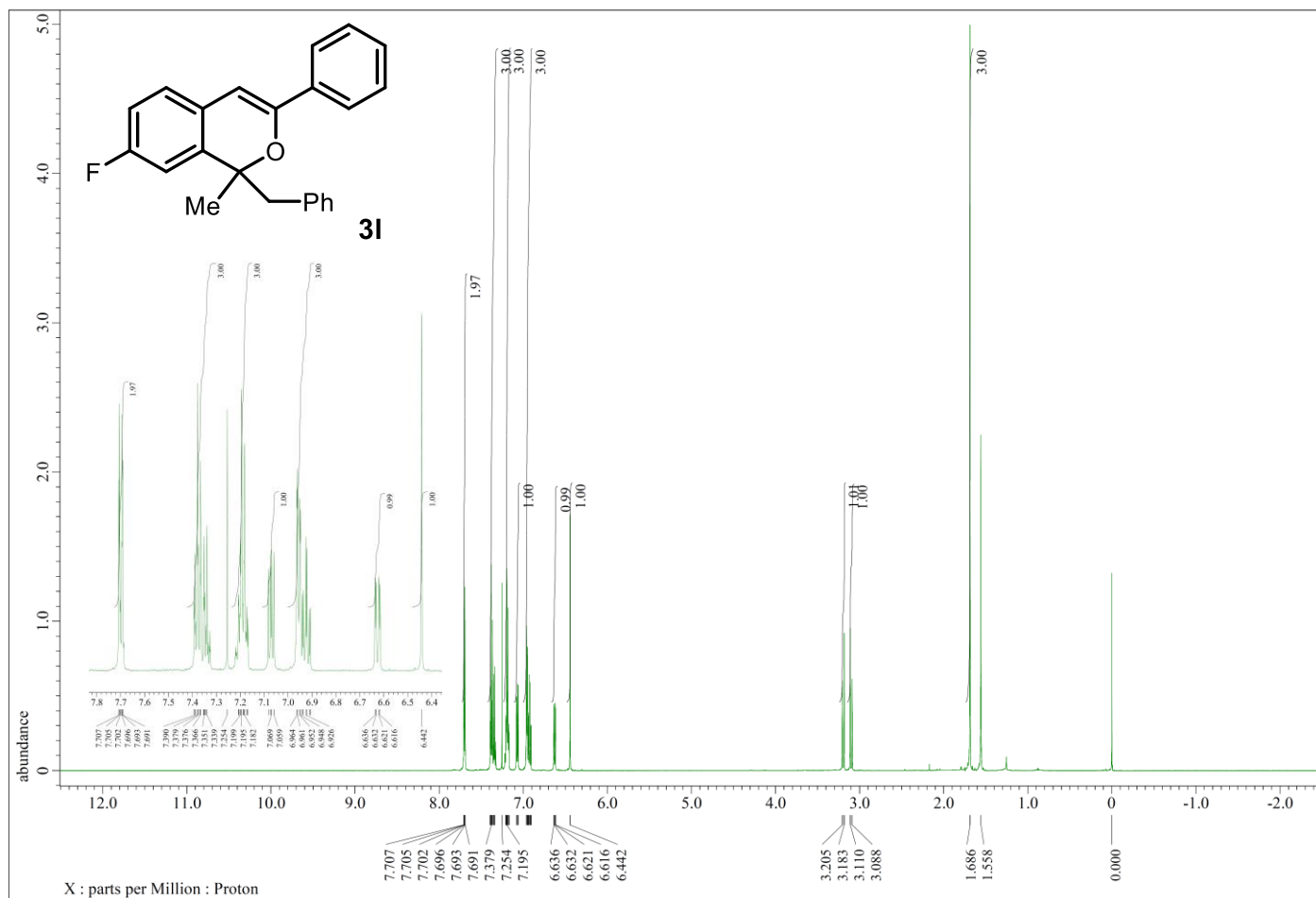


^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3j**.

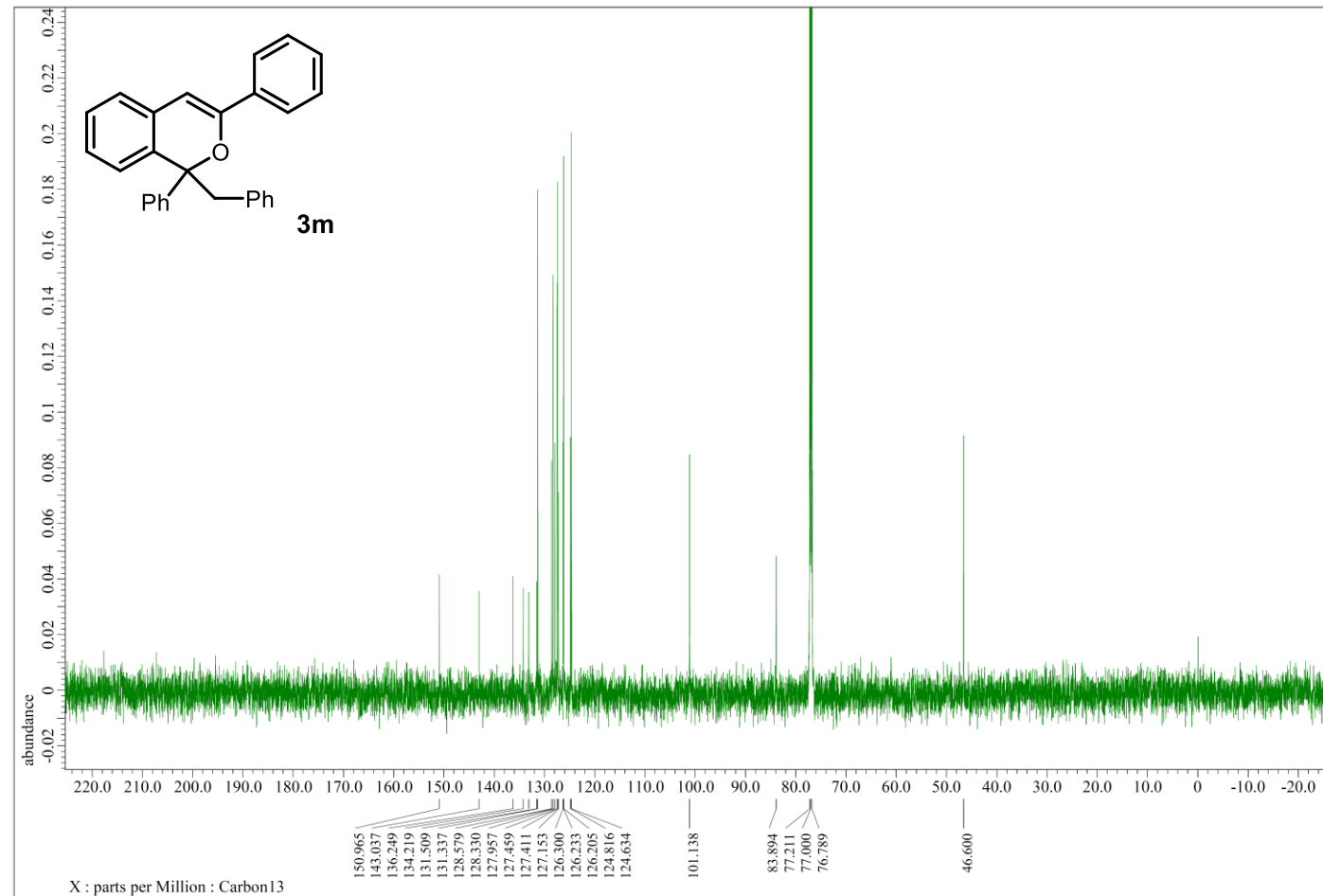
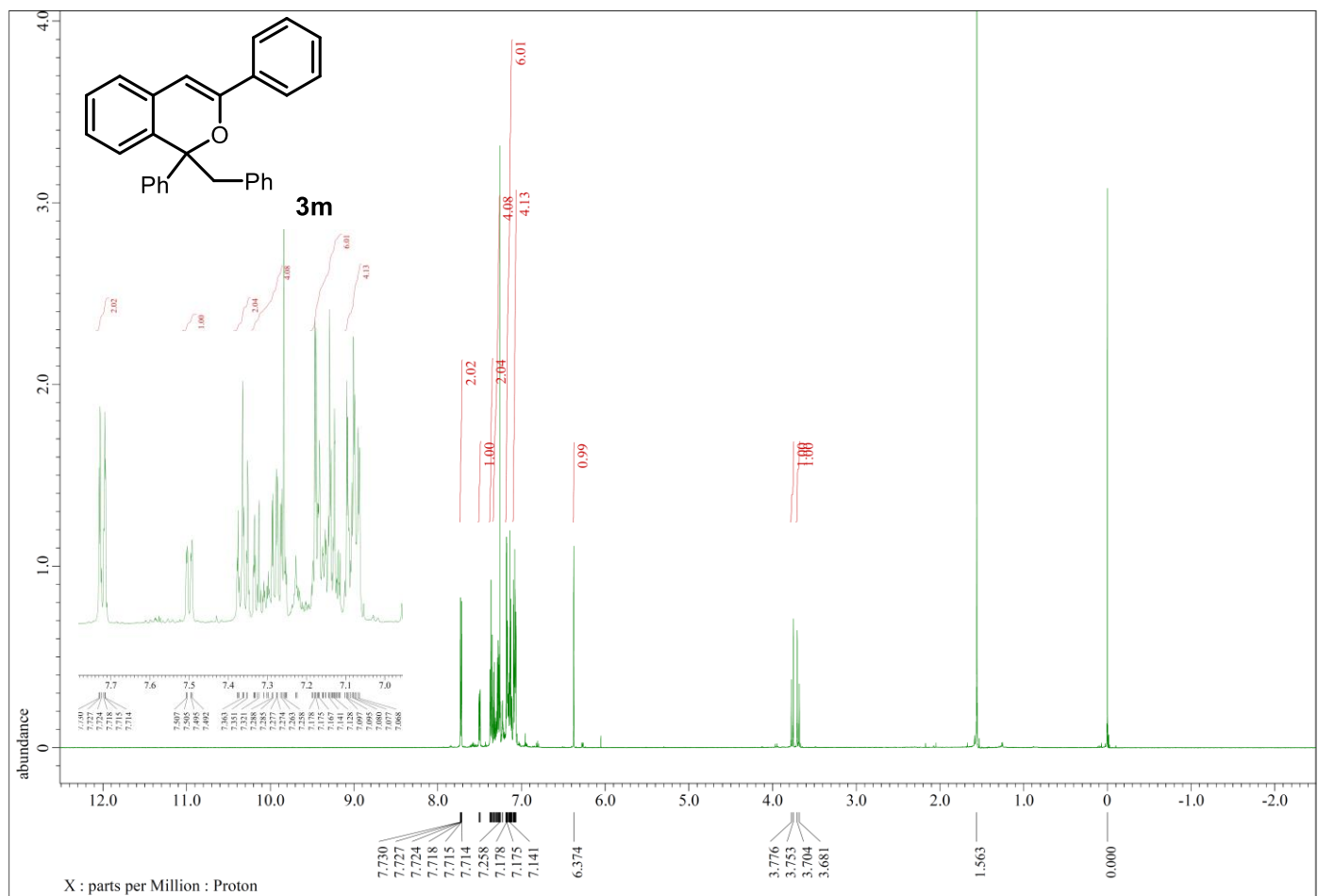


^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3k**.

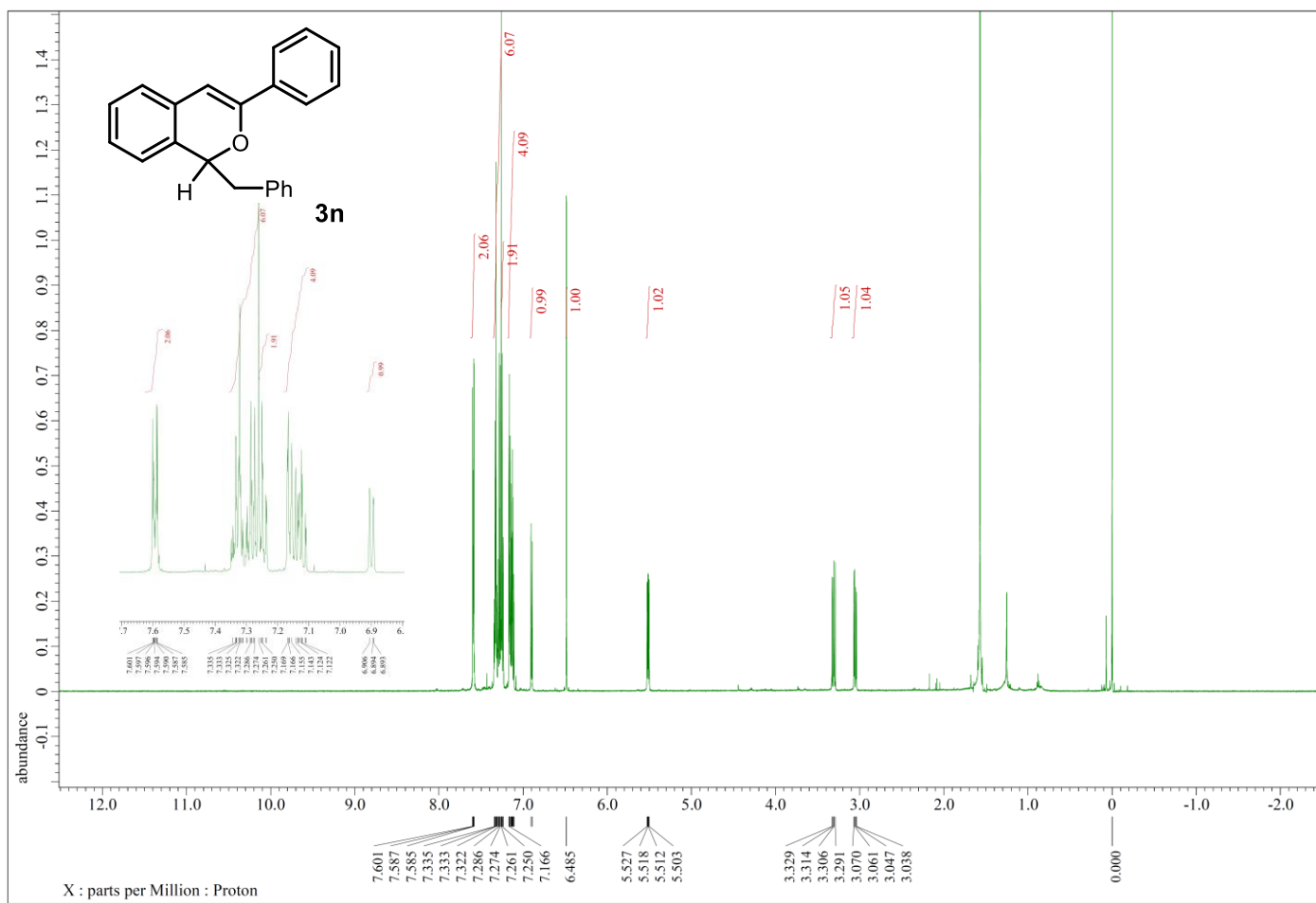


¹H NMR (600 MHz, CDCl₃) and ¹³C{¹H} NMR (151 MHz, CDCl₃) spectra of **3l**.

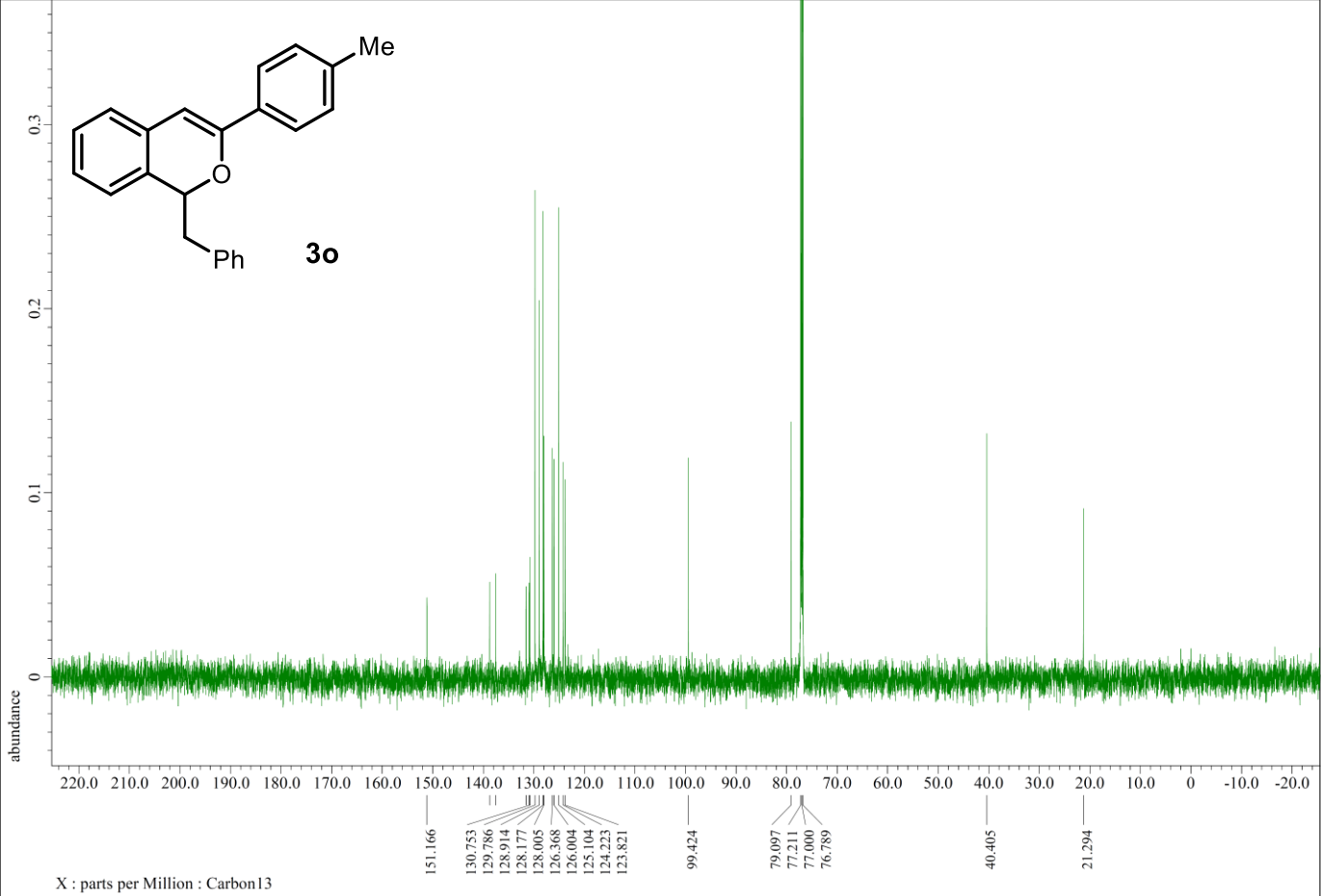
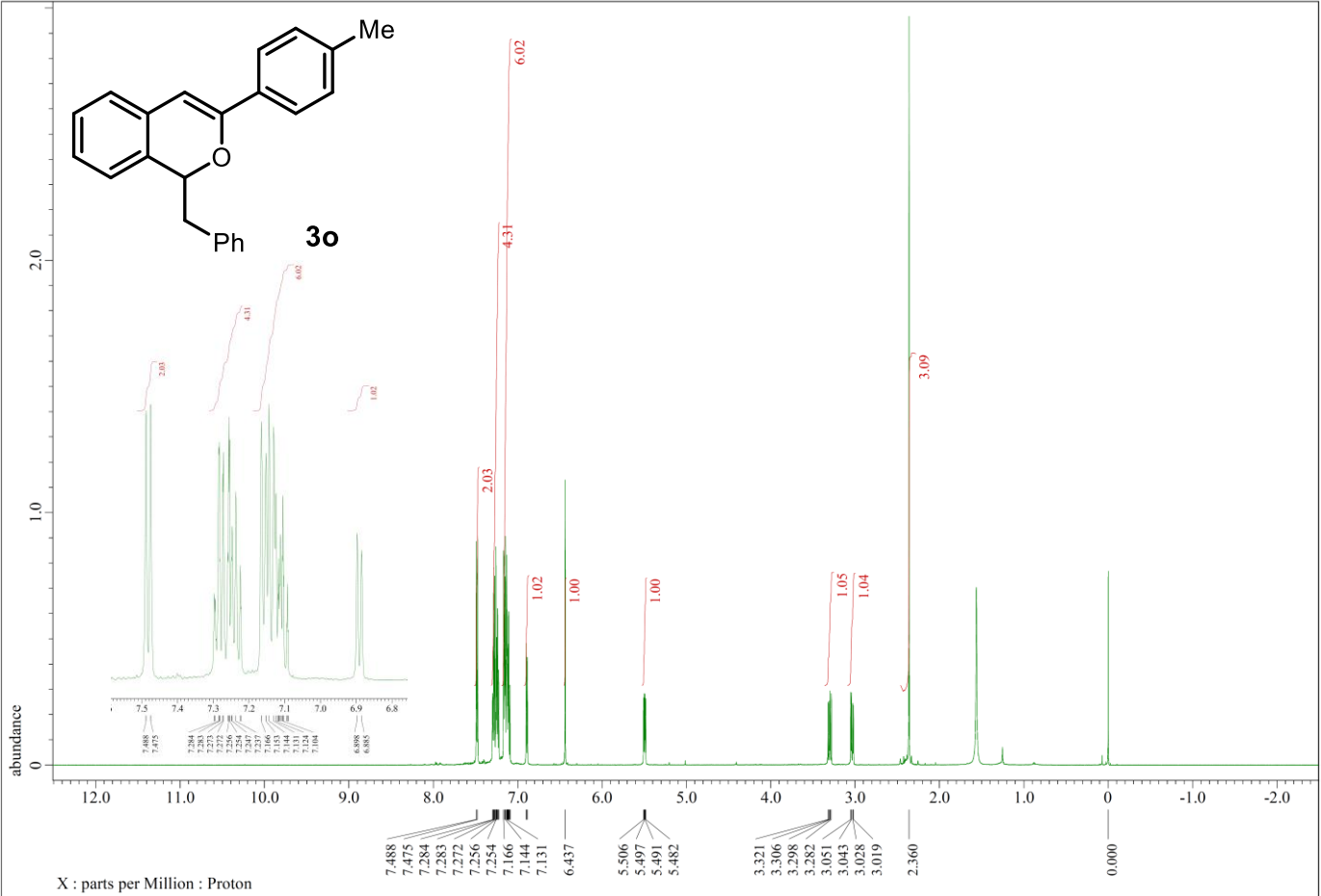
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3m**.



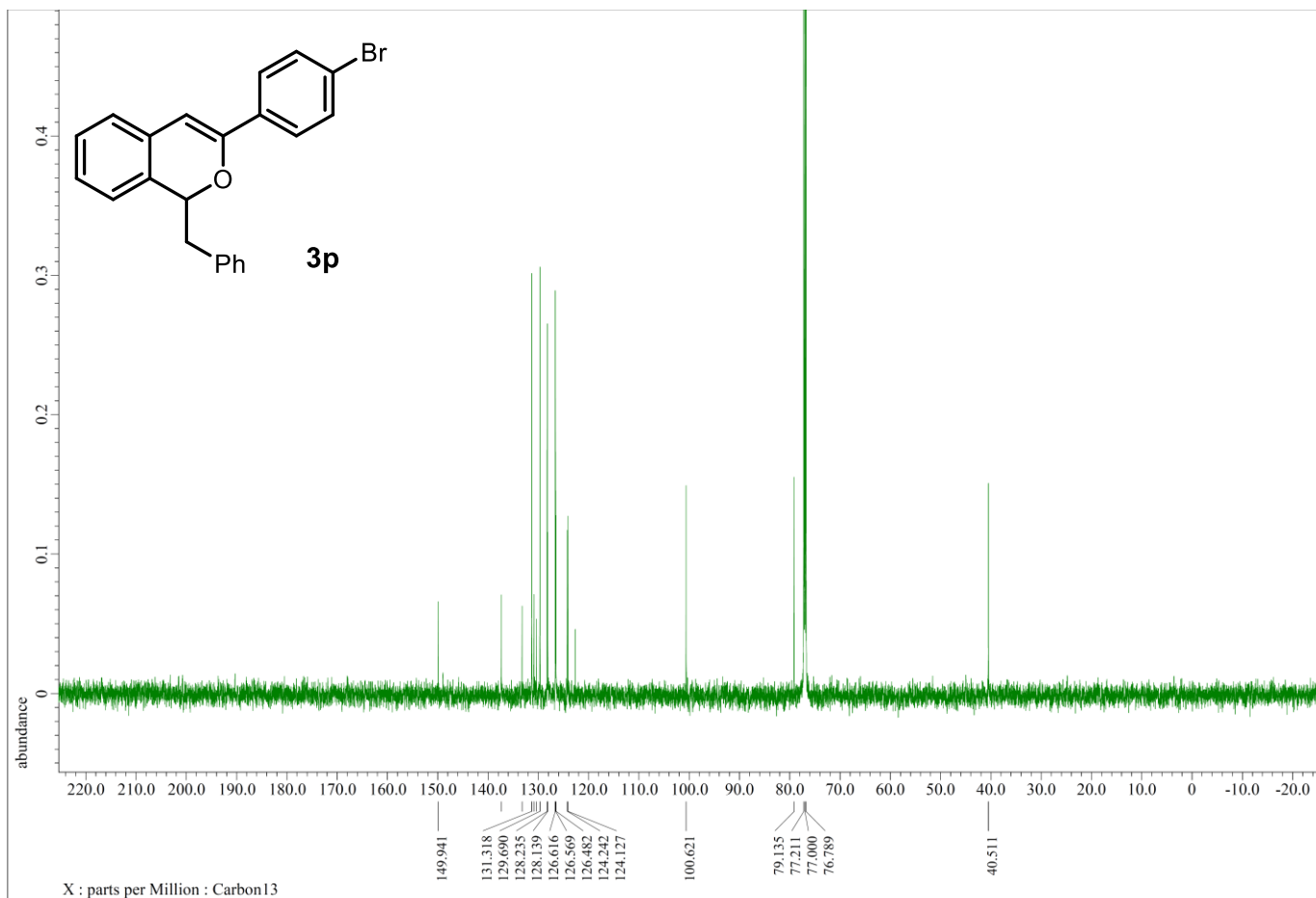
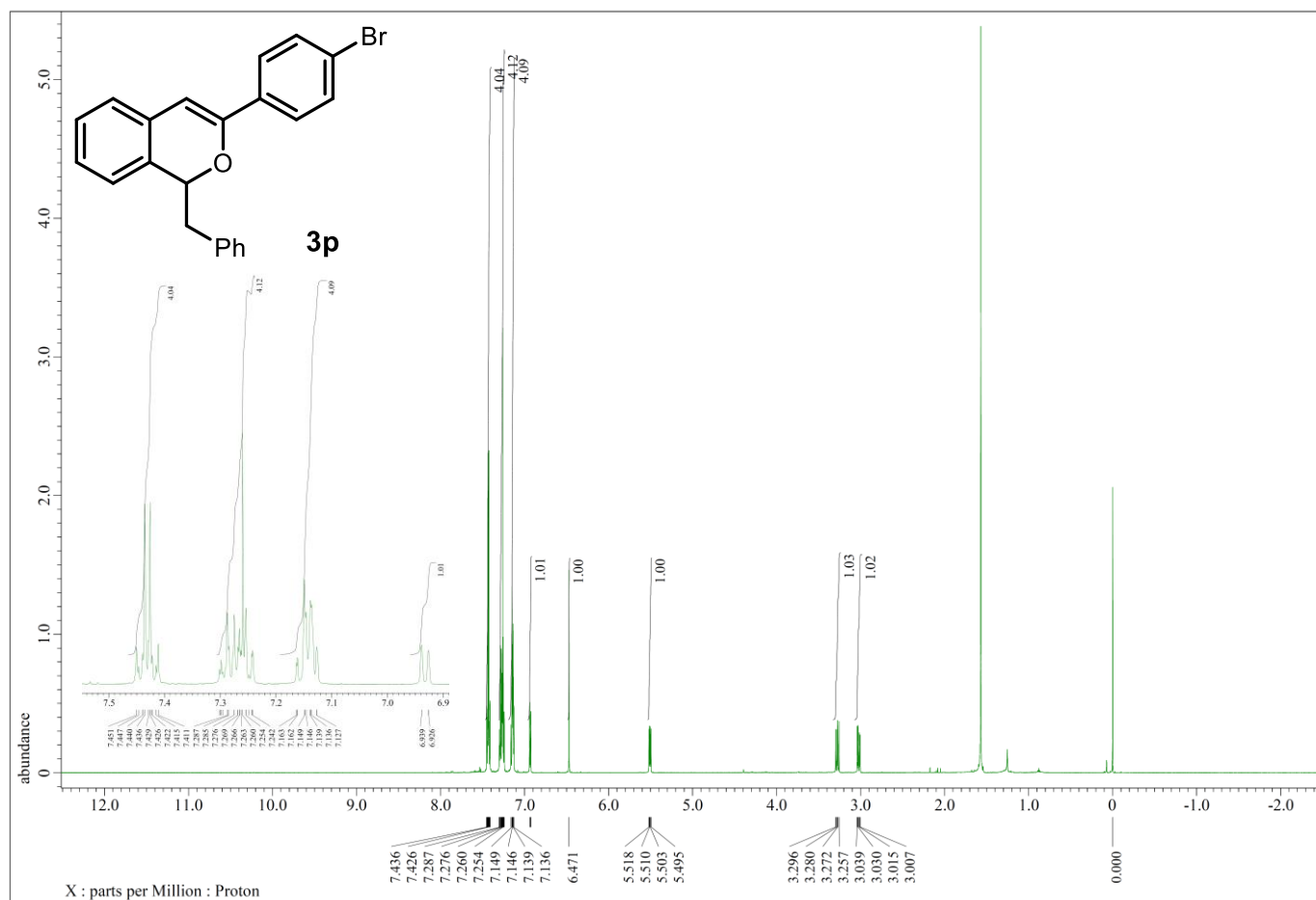
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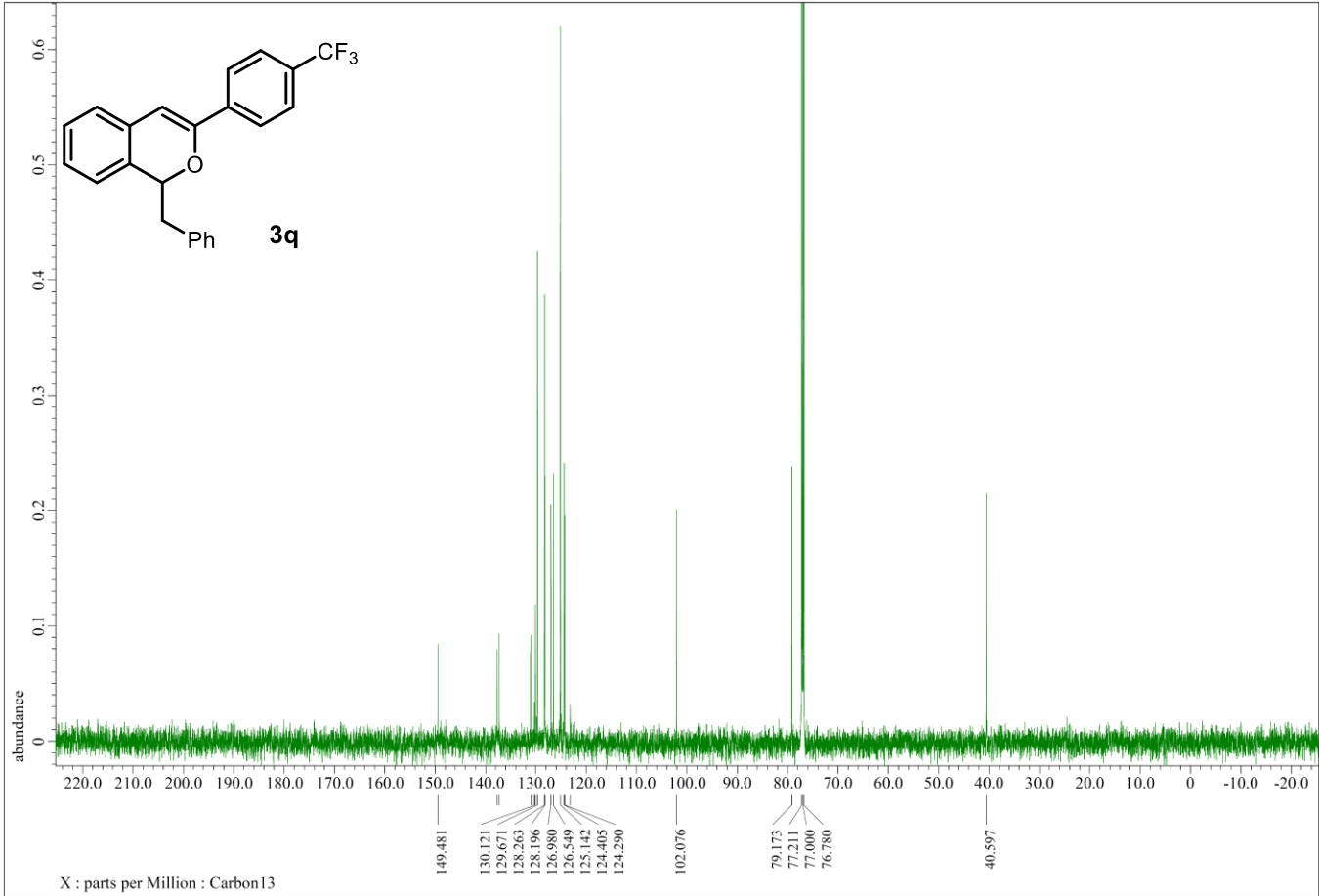
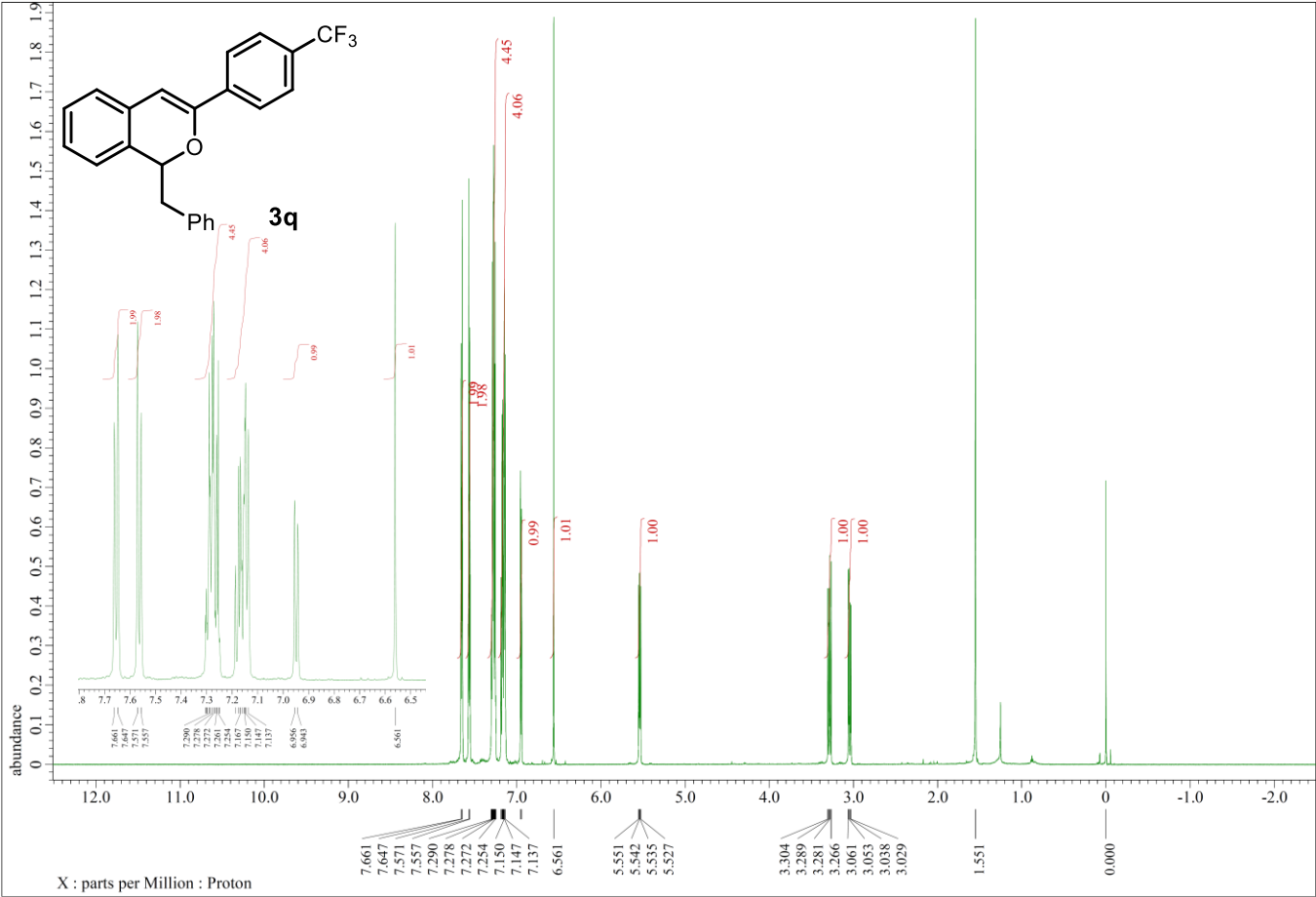
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3o**.



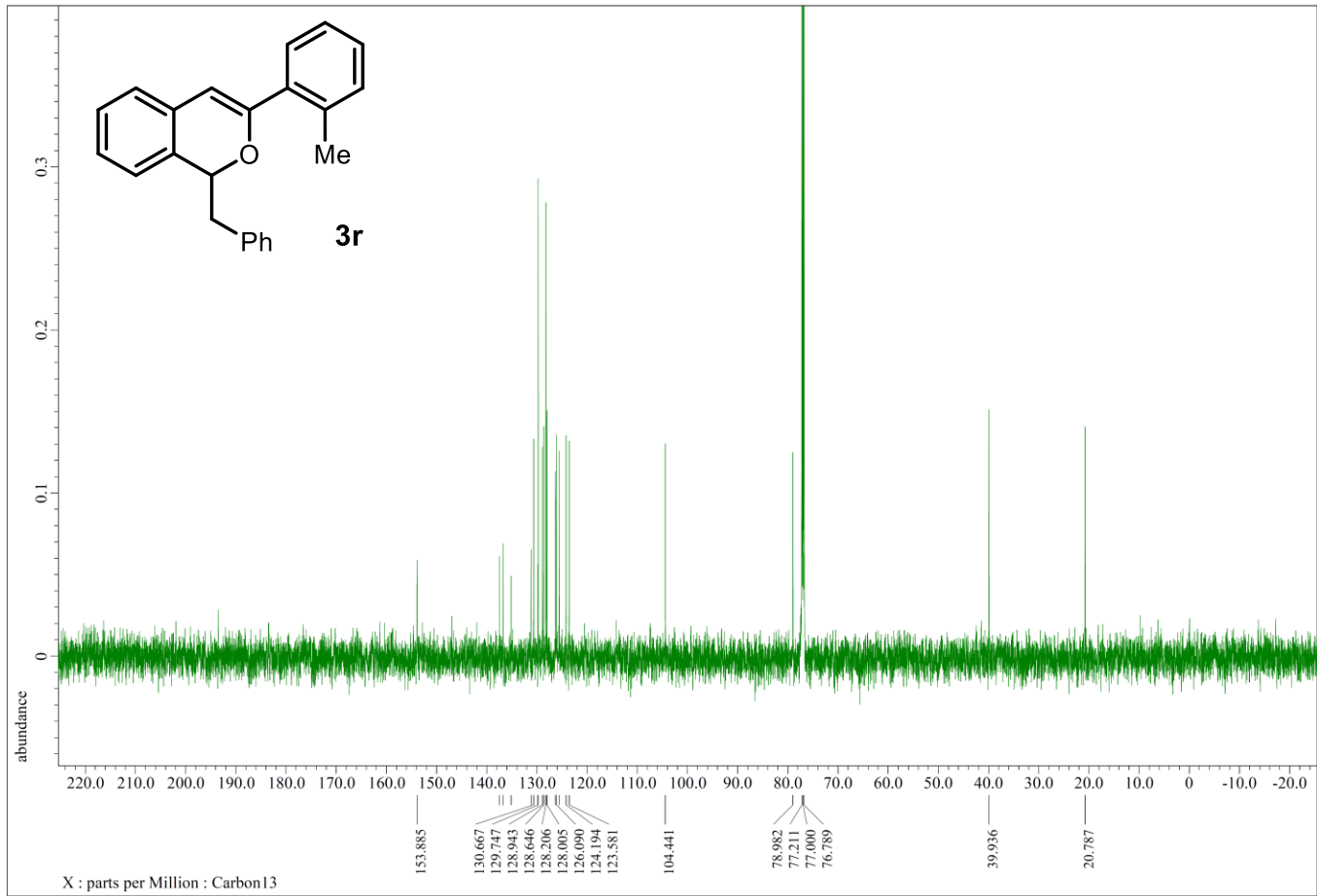
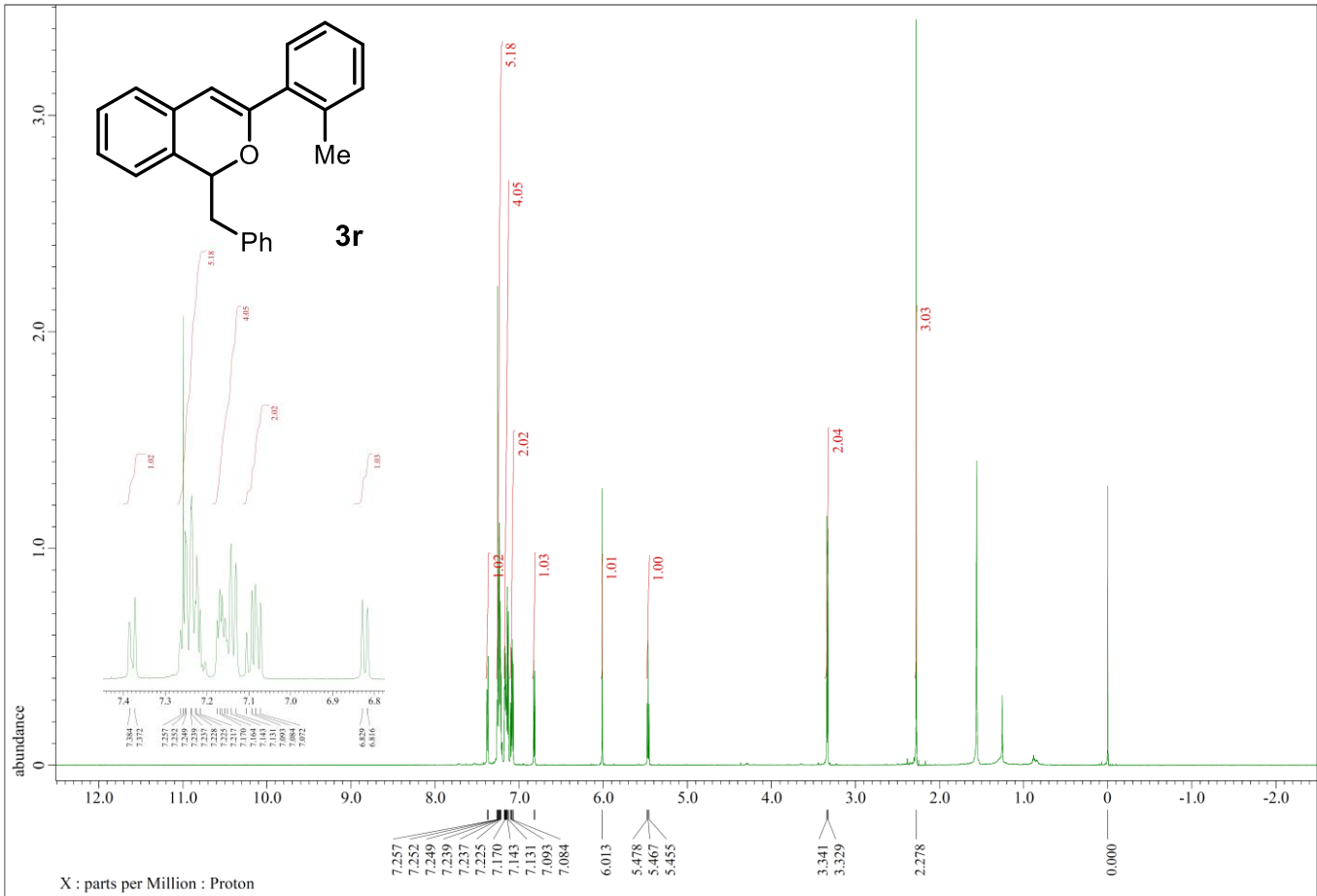
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3p**.



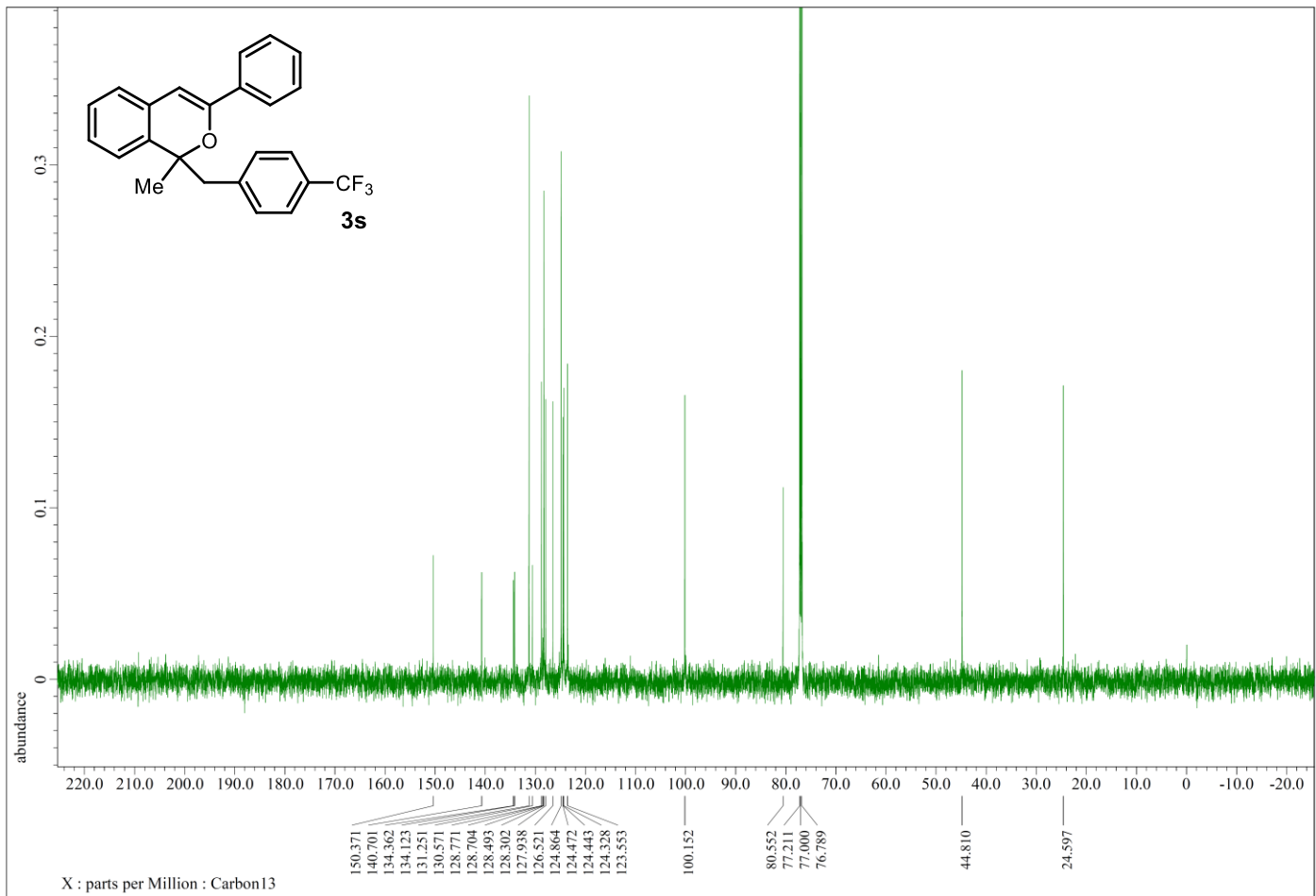
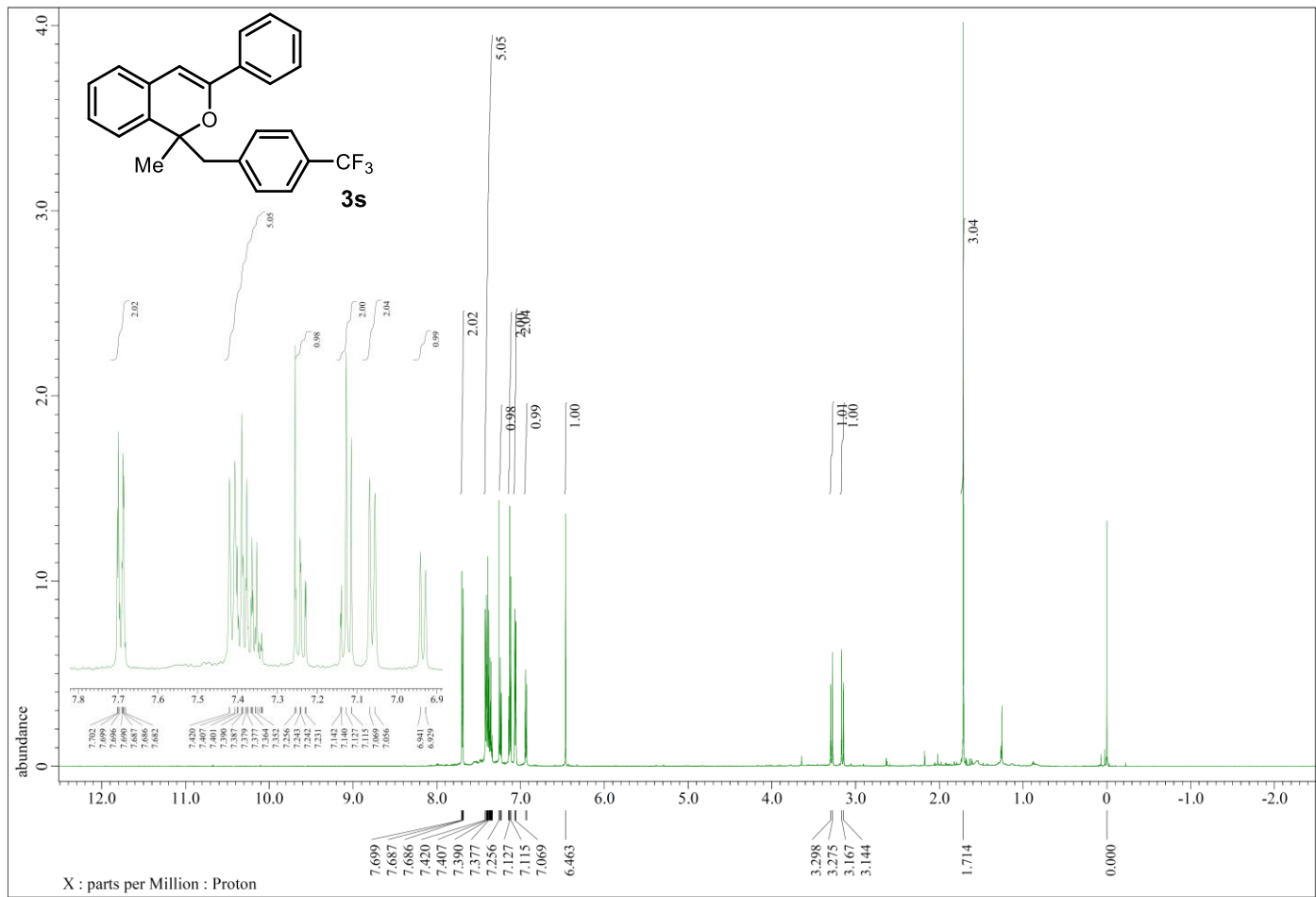
^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3q**.



¹H NMR (600 MHz, CDCl₃) and ¹³C{¹H} NMR (151 MHz, CDCl₃) spectra of **3r**.



^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3s**.



^1H NMR (600 MHz, CDCl_3) and $^{13}\text{C}\{^1\text{H}\}$ NMR (151 MHz, CDCl_3) spectra of **3t**.

