

Electronic Supplementary Information

for

HOAc catalyzed three-component reaction for the synthesis of 3,3'- (arylmethylene)bis(1*H*-indoles)

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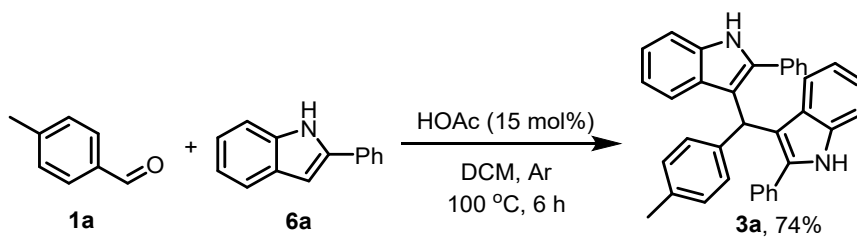
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Functional Materials, Nanjing Normal University, Nanjing 210023, China.*

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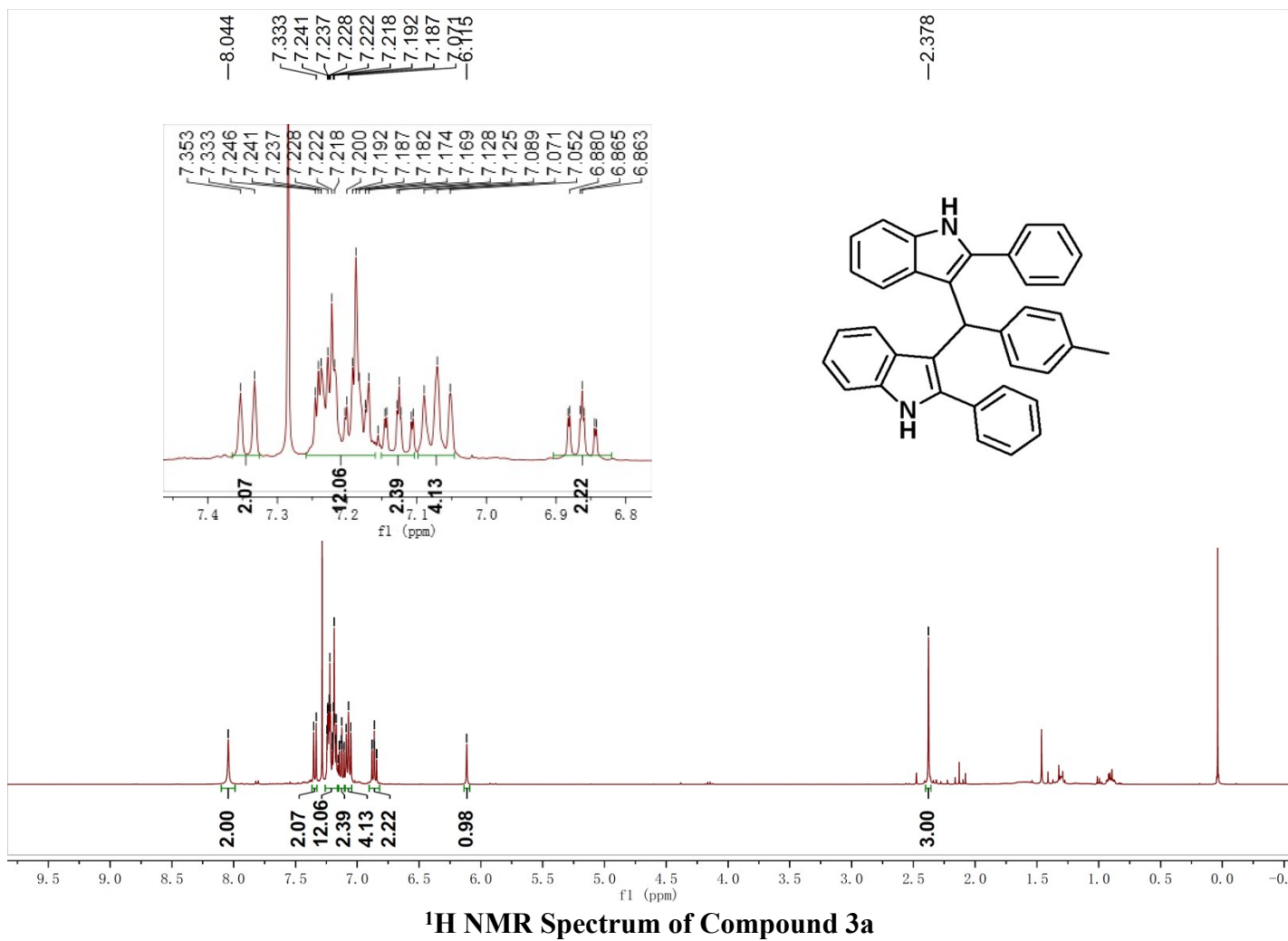
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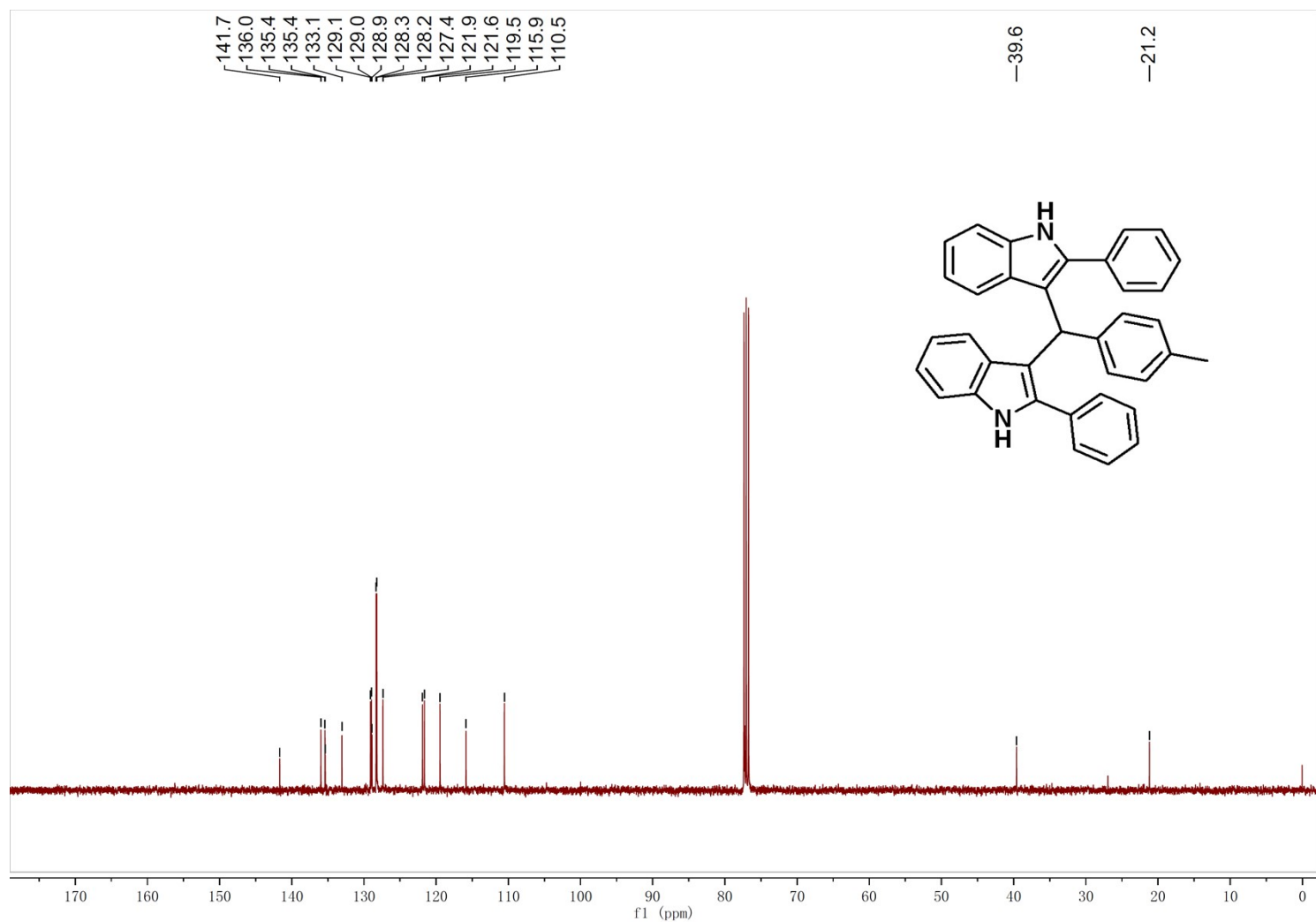
1. Mechanistic investigation



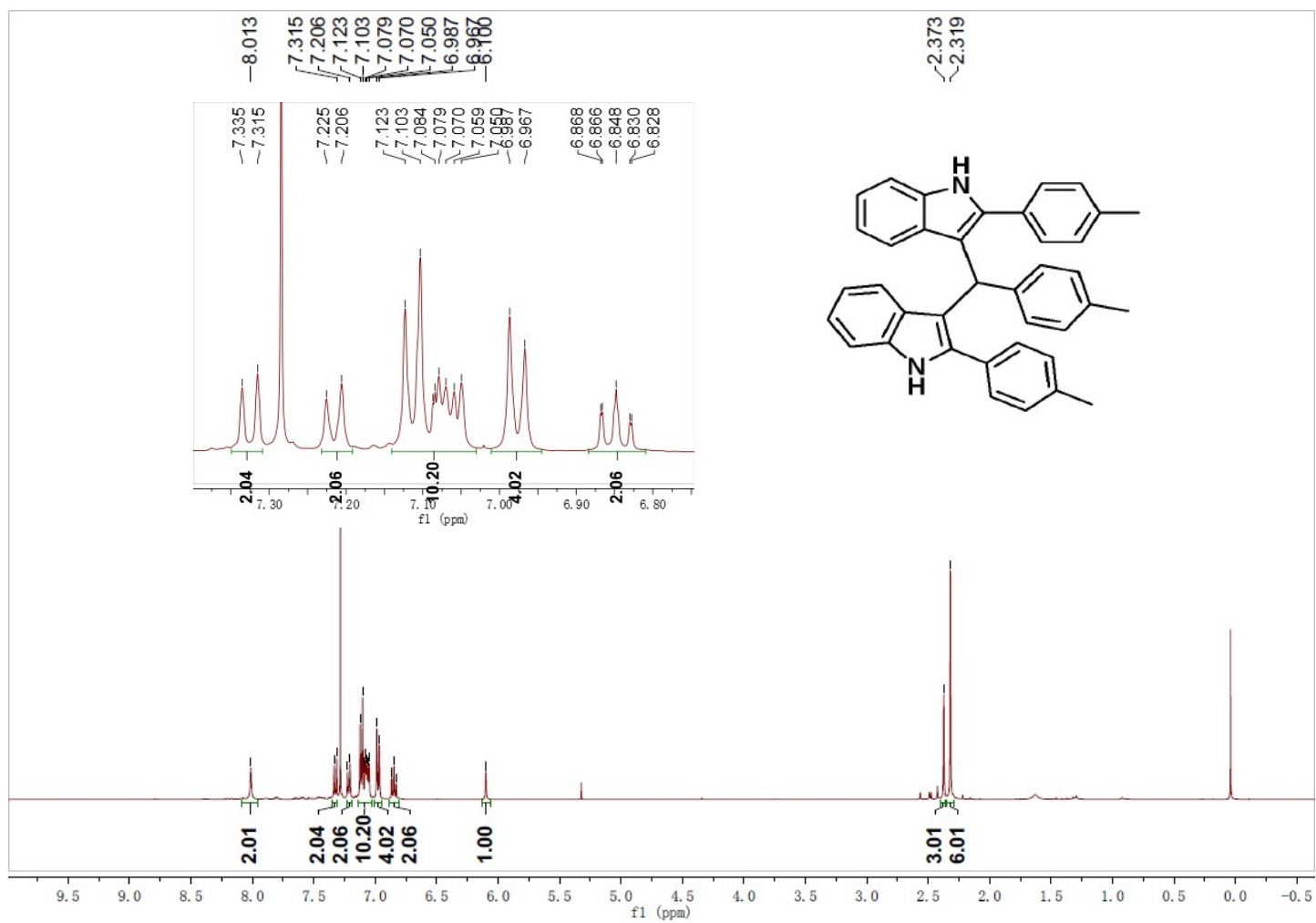
To a 25 mL sealed reaction tube, 4-methylbenzaldehyde (**1a**, 0.6 mmol, 72.1 mg), 2-phenylindole (**6a**, 1.0 mmol, 193.1 mg), HOAc (15 mol%, 4.5 mg) and DCM (5.0 mL) were added. The reaction mixture was heated at 100 °C under Ar conditions until TLC (petroleum ether/ethyl acetate, 10:1, v/v) revealed that the reaction completed (about 6 hours). Then the reaction mixture was cooled to room temperature and diluted with 10 mL water. The mixture was extracted with DCM. The combined organic layers were dried over Na₂SO₄ and concentrated in vacuum, and the resulting residue was purified by flash column chromatography (silica gel, mixtures of petroleum ether/ethyl acetate, 20:1, v/v) to afford the product **3a** (180.8 mg, 74%) as a white solid.

2. Copies of ^1H and ^{13}C NMR spectra of products 3 and 5a

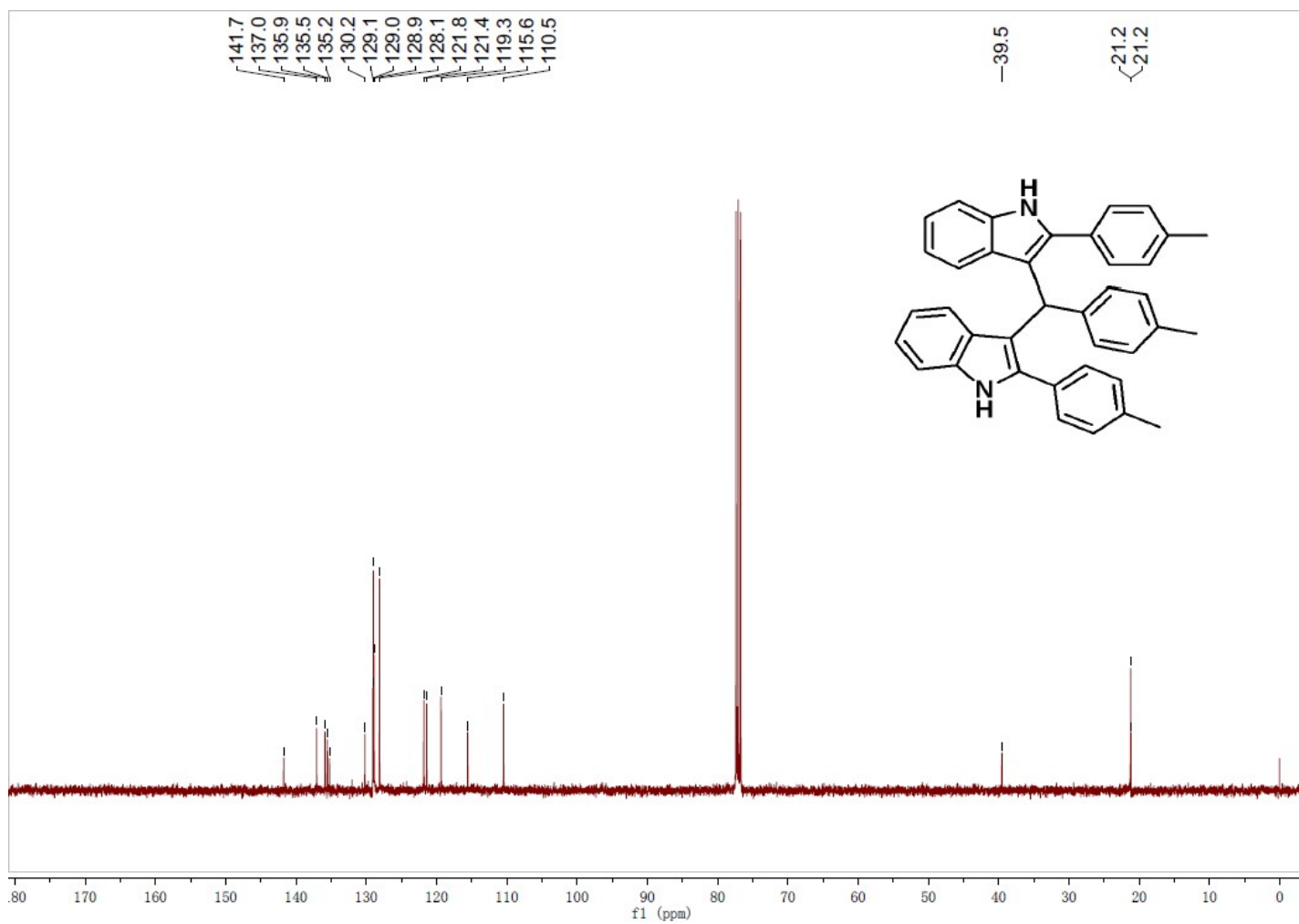




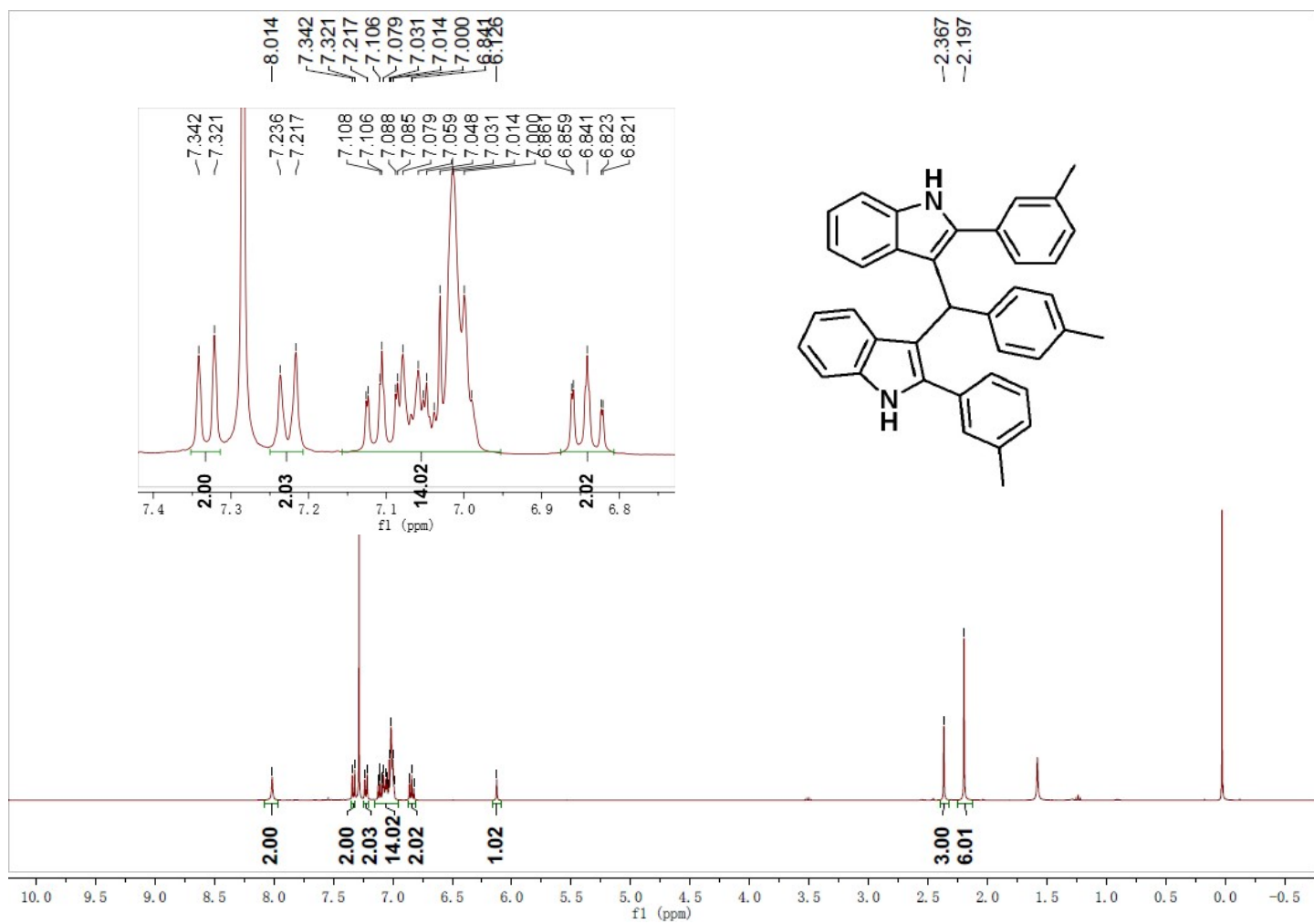
^{13}C NMR Spectrum of Compound 3a



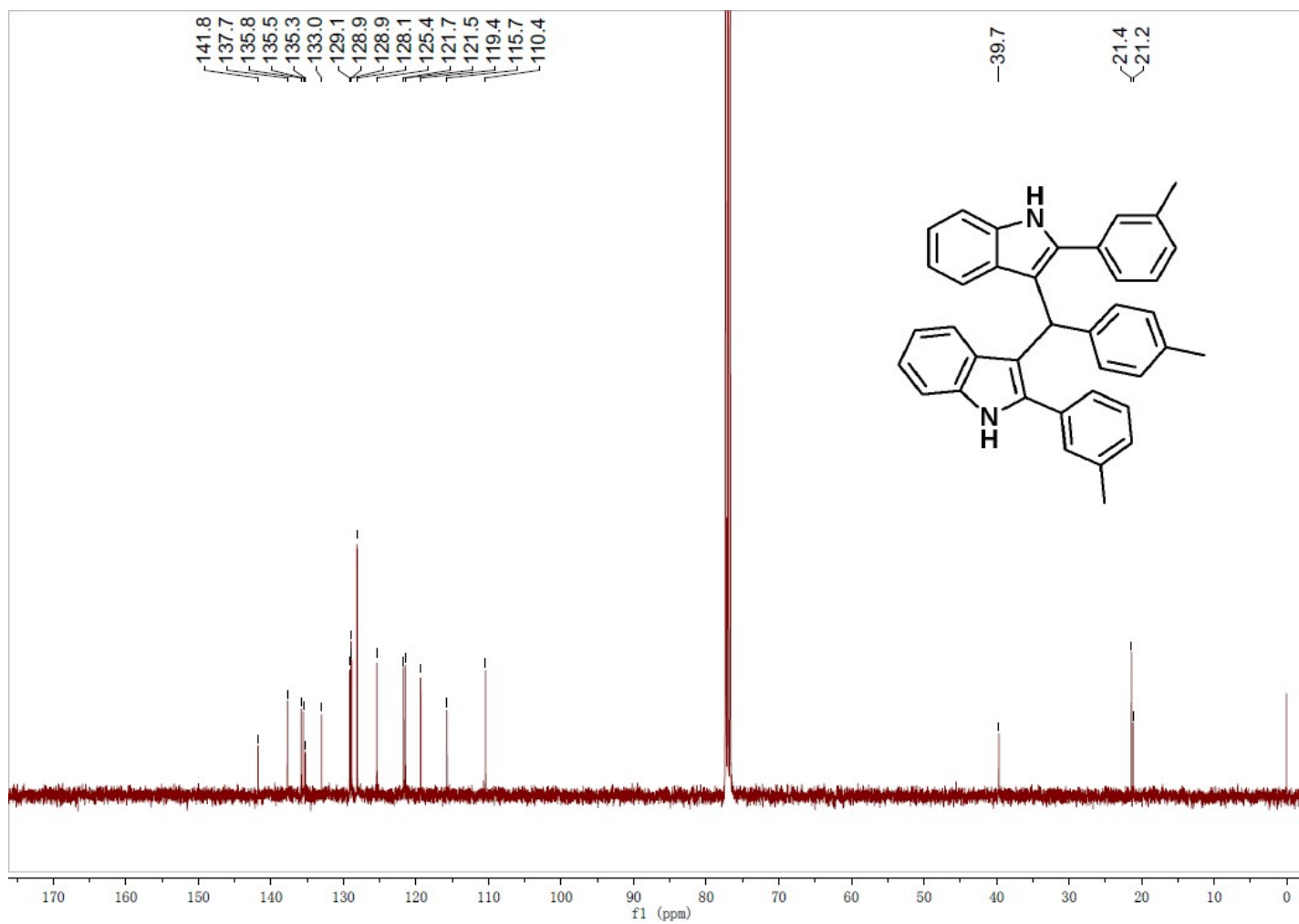
¹H NMR Spectrum of Compound 3b



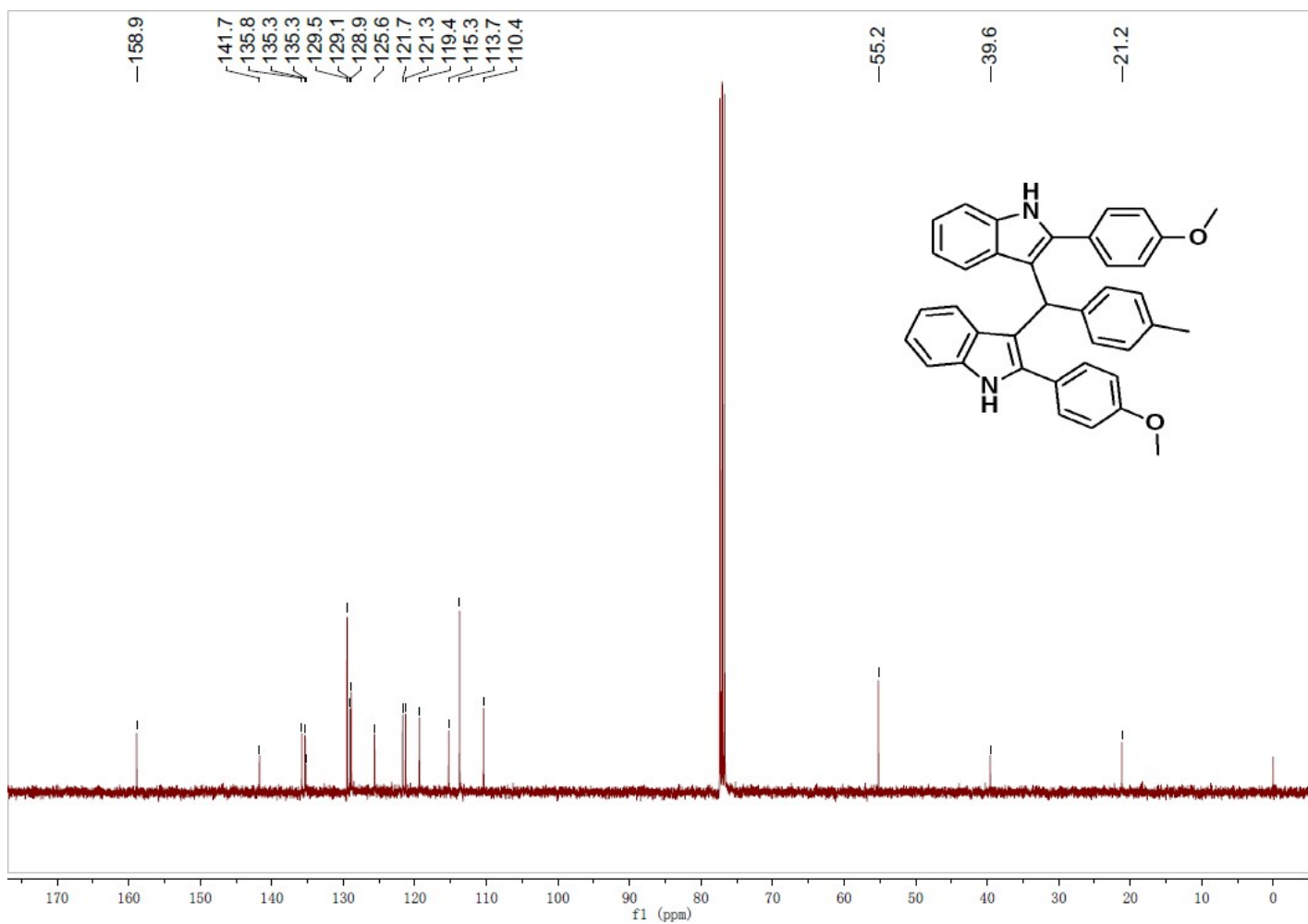
^{13}C NMR Spectrum of Compound 3b



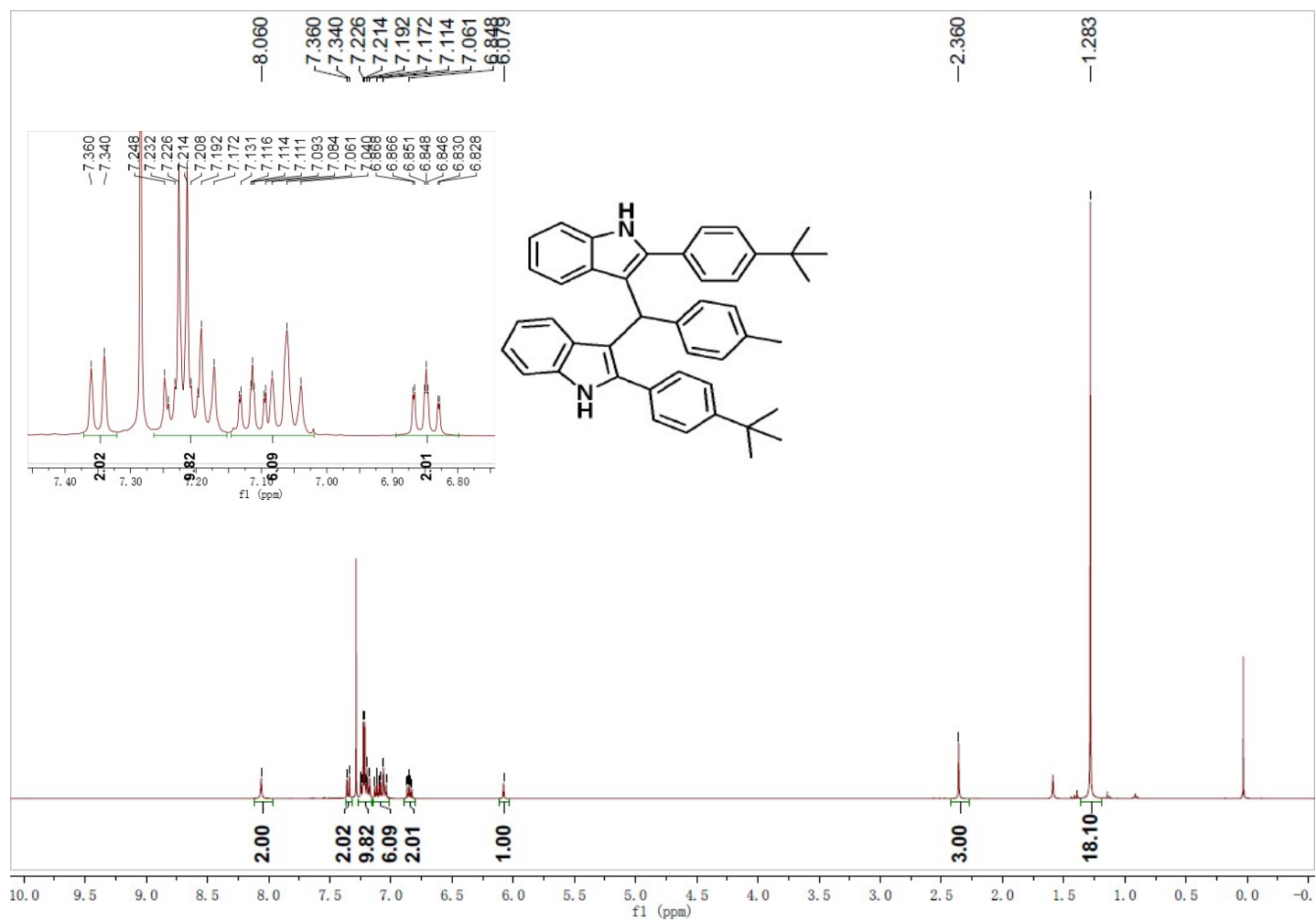
¹H NMR Spectrum of Compound 3c



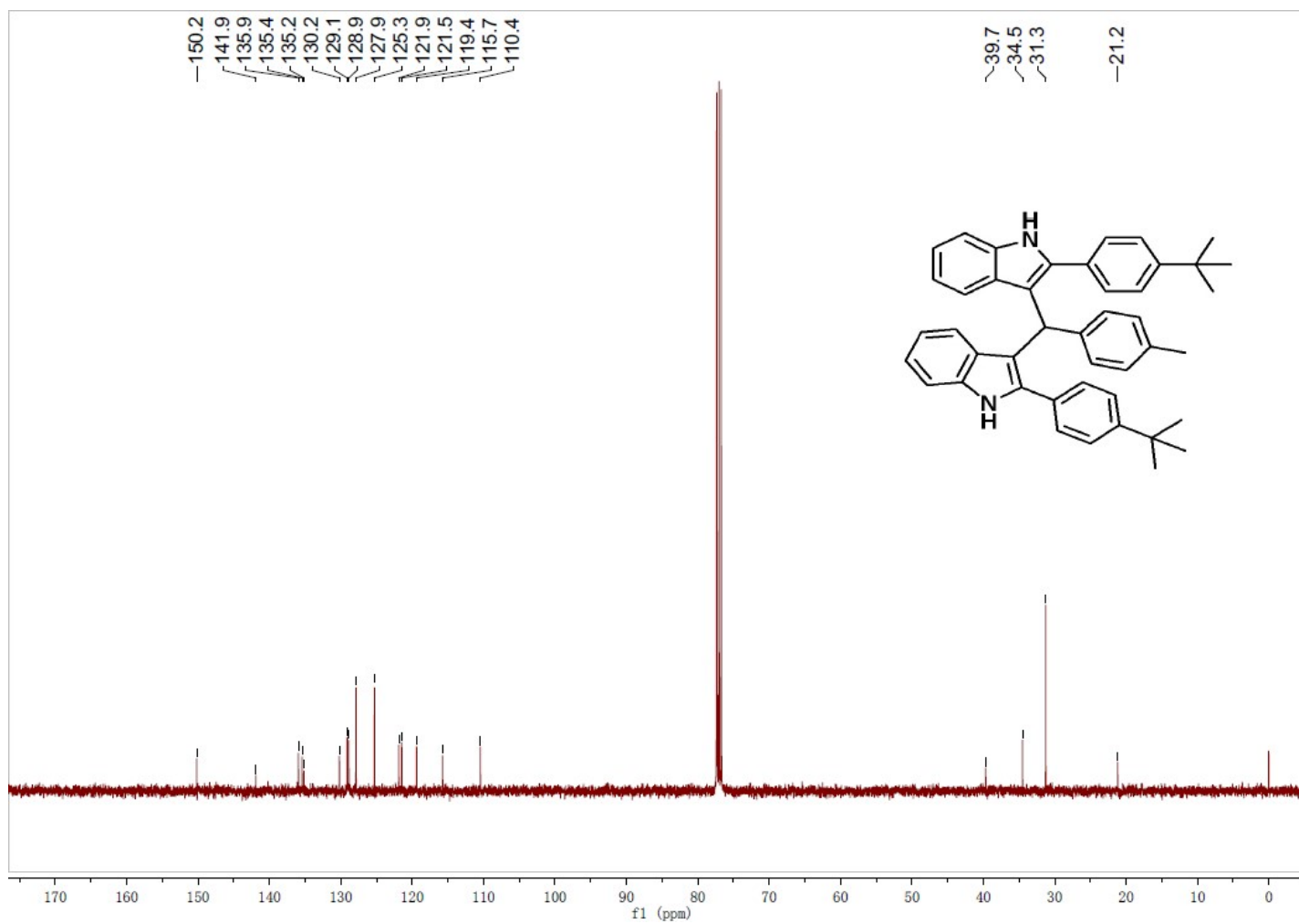
^{13}C NMR Spectrum of Compound 3c



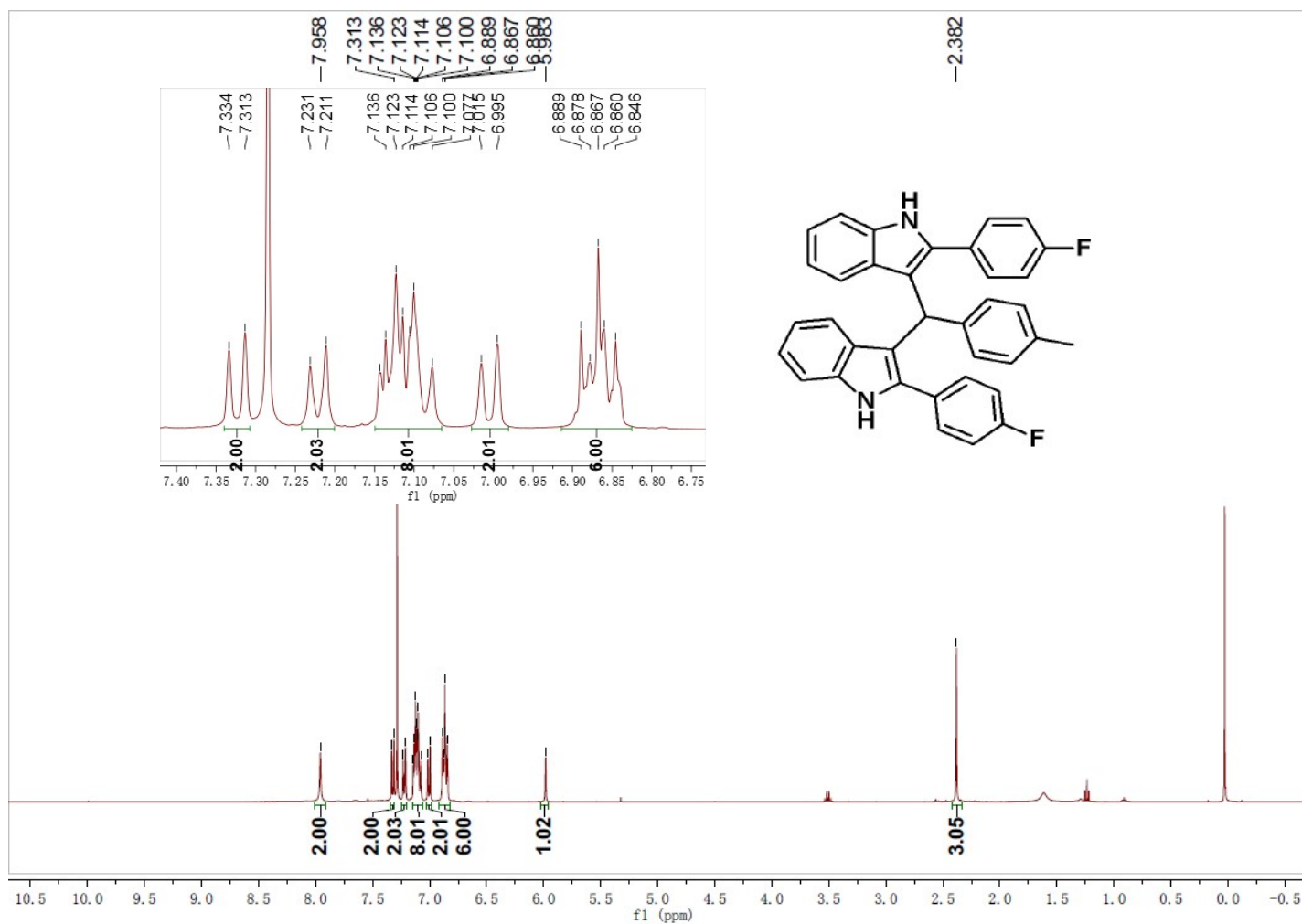
¹³C NMR Spectrum of Compound 3d



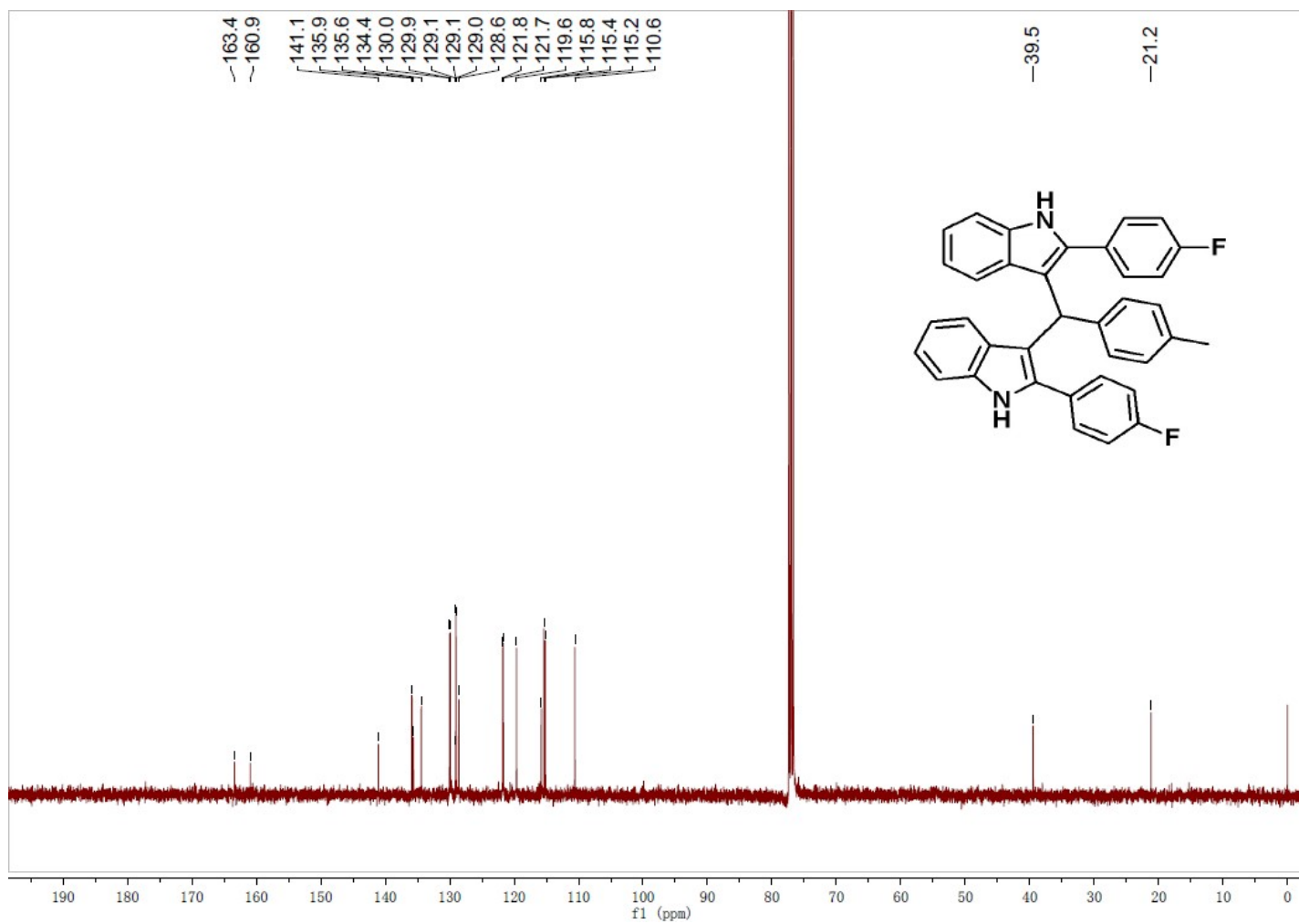
¹H NMR Spectrum of Compound 3e



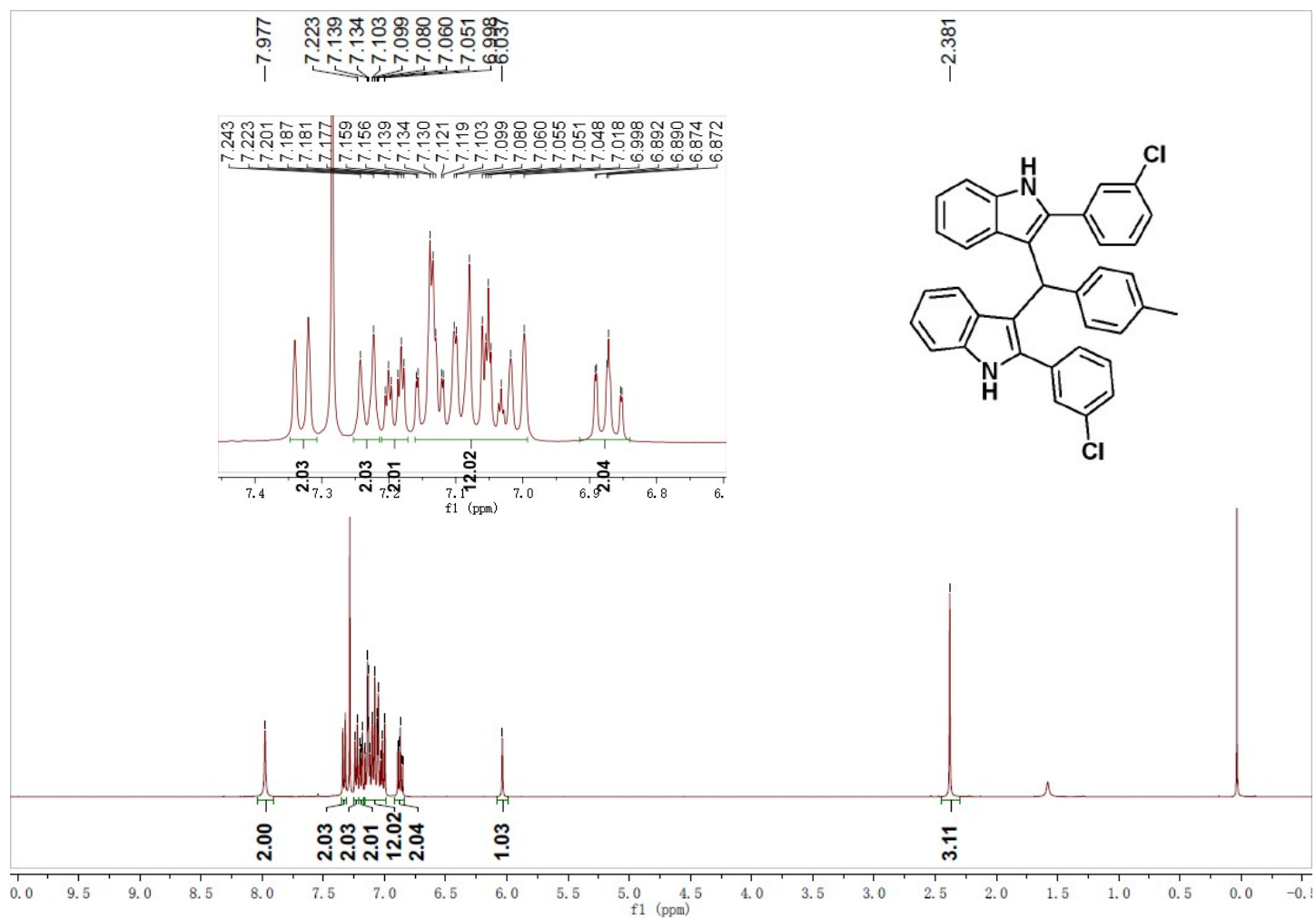
¹³C NMR Spectrum of Compound 3e



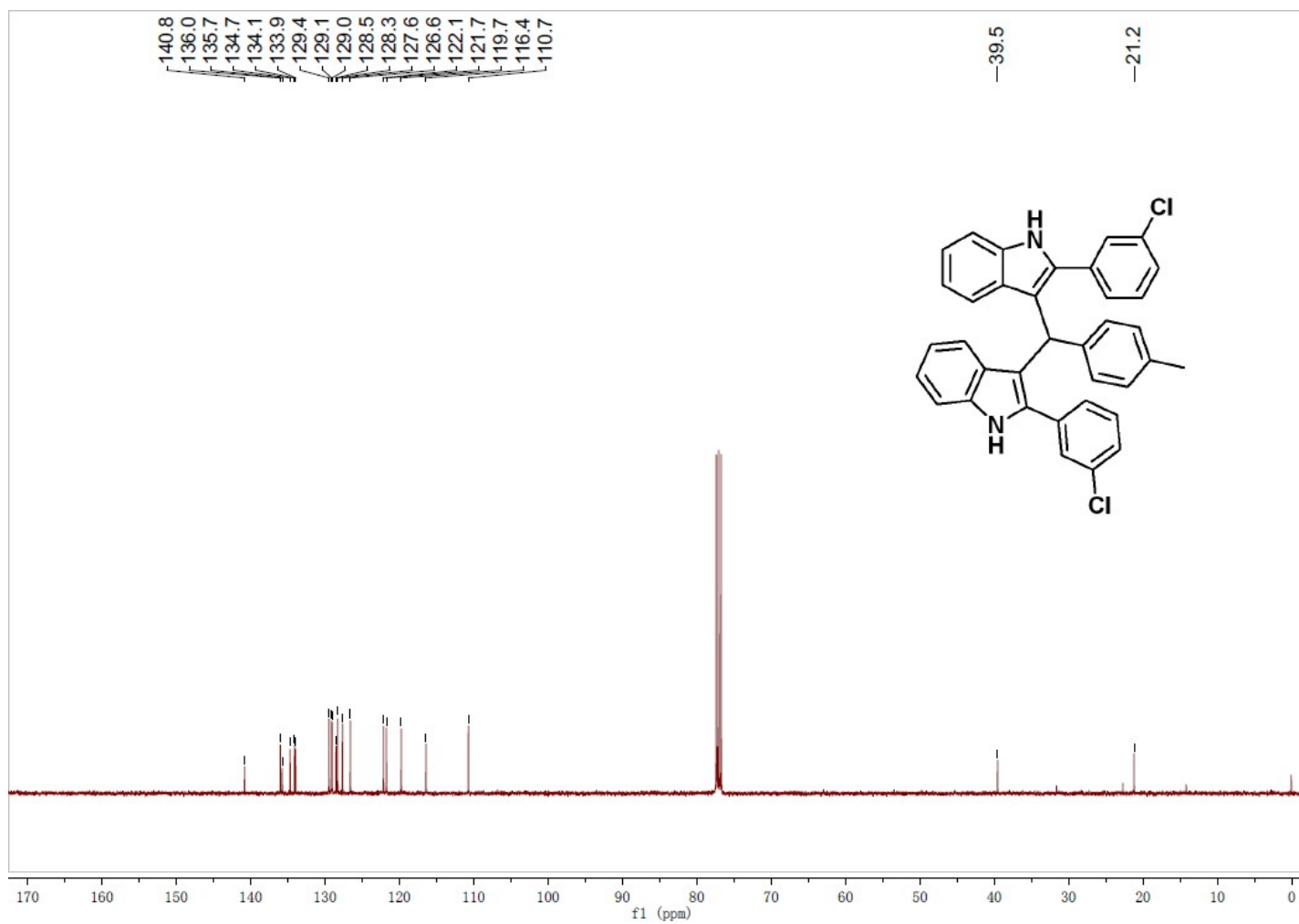
¹H NMR Spectrum of Compound 3f



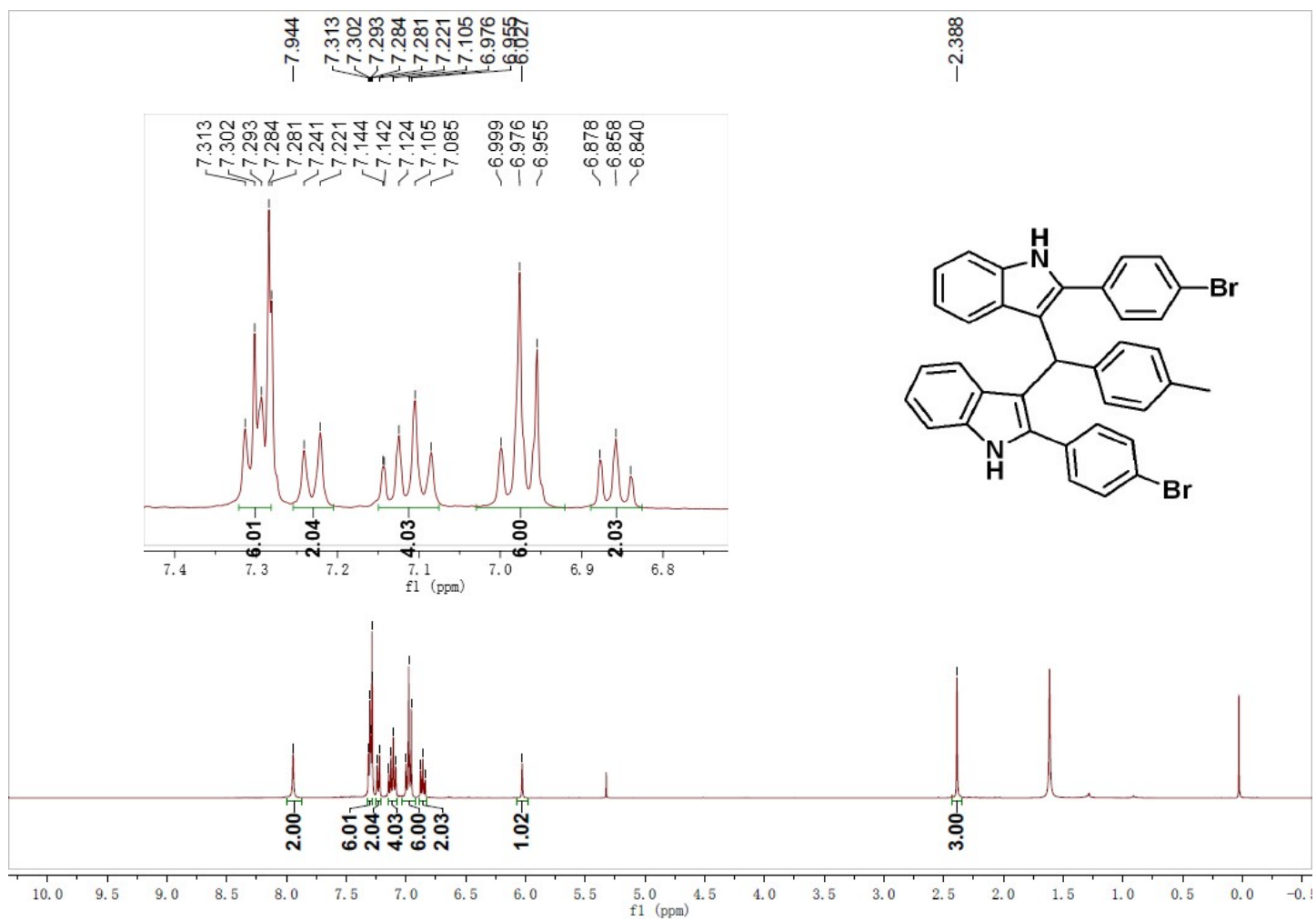
¹³C NMR Spectrum of Compound 3f



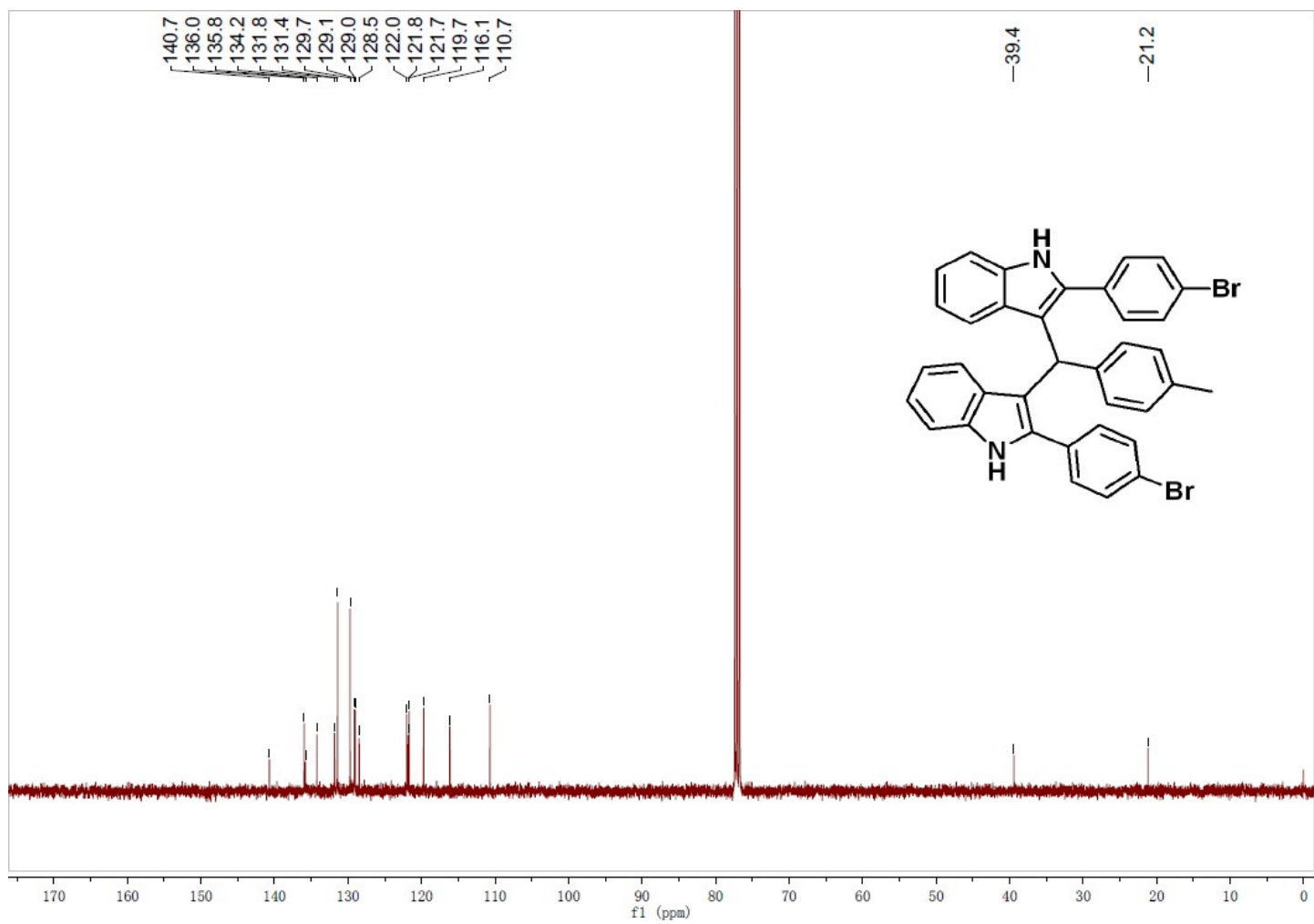
¹H NMR Spectrum of Compound 3g



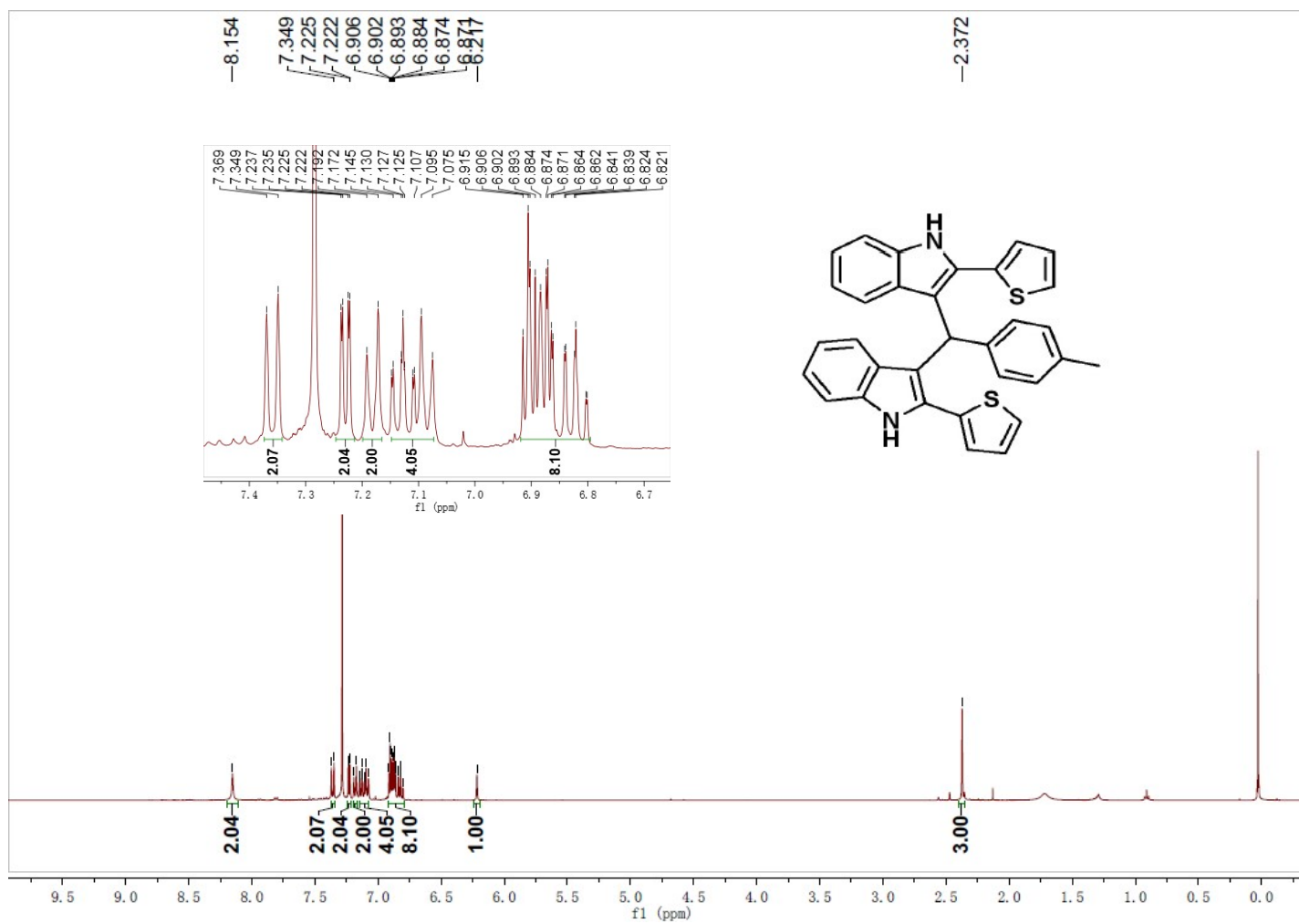
¹³C NMR Spectrum of Compound 3g



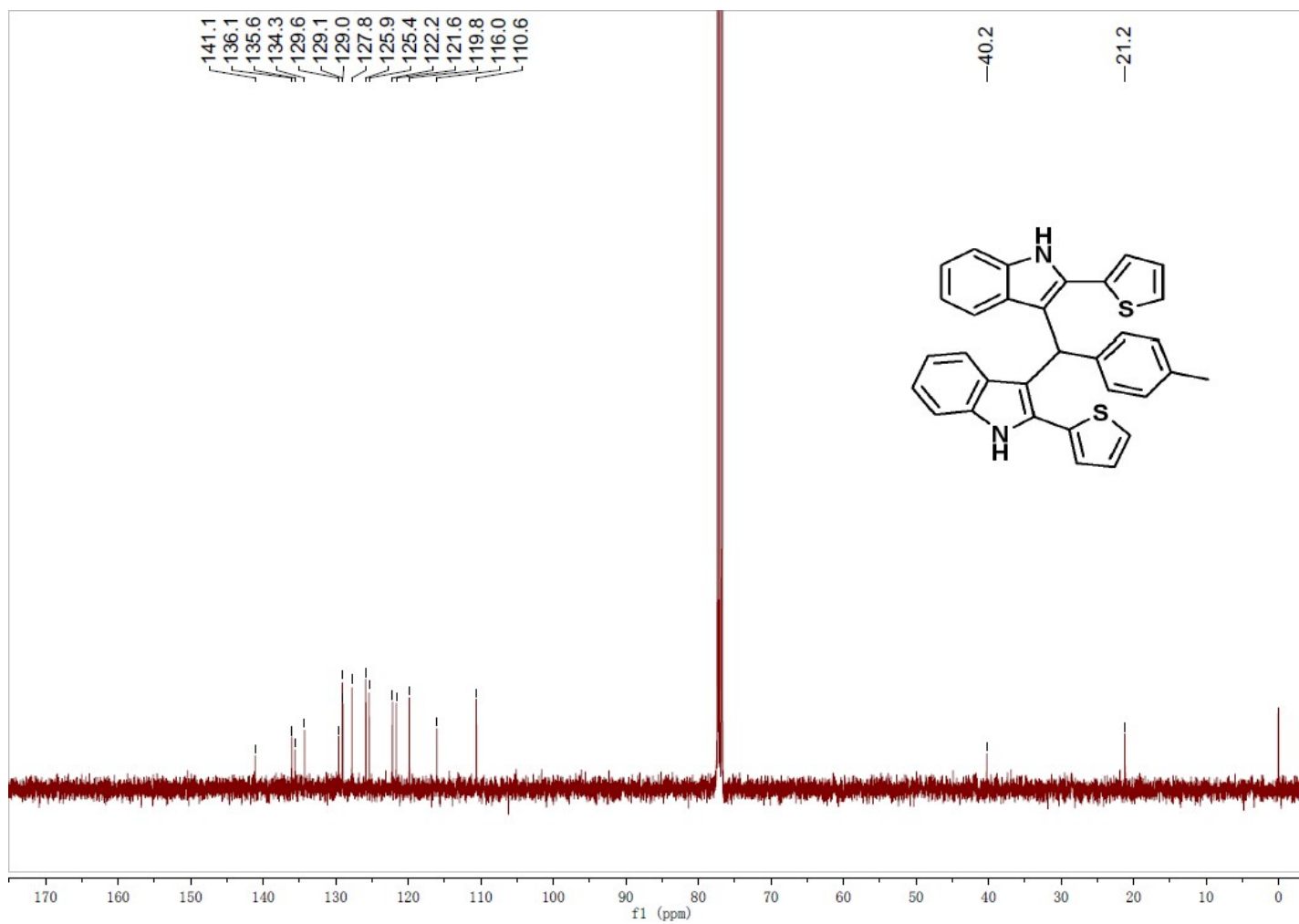
¹H NMR Spectrum of Compound 3h



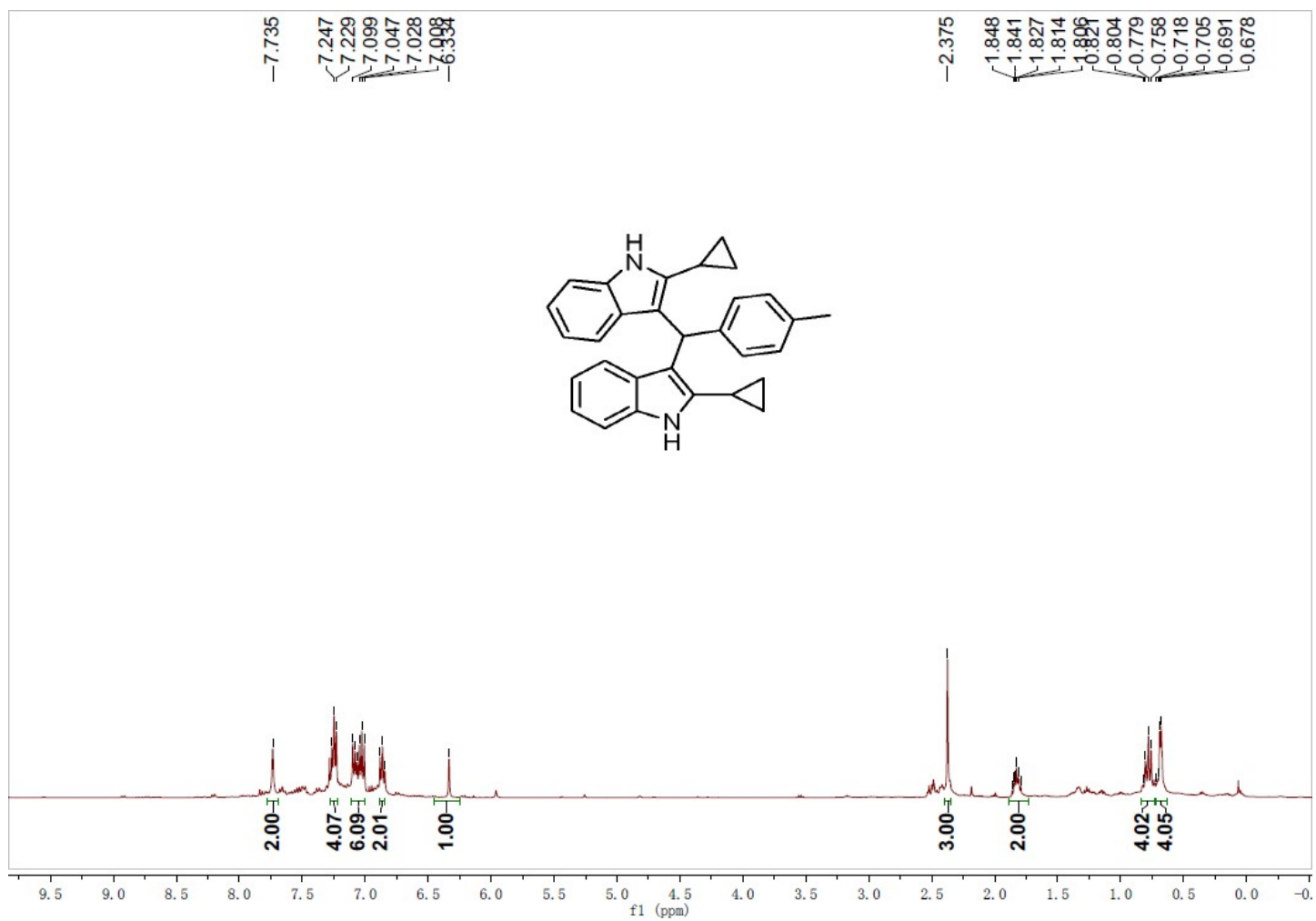
¹³C NMR Spectrum of Compound 3h



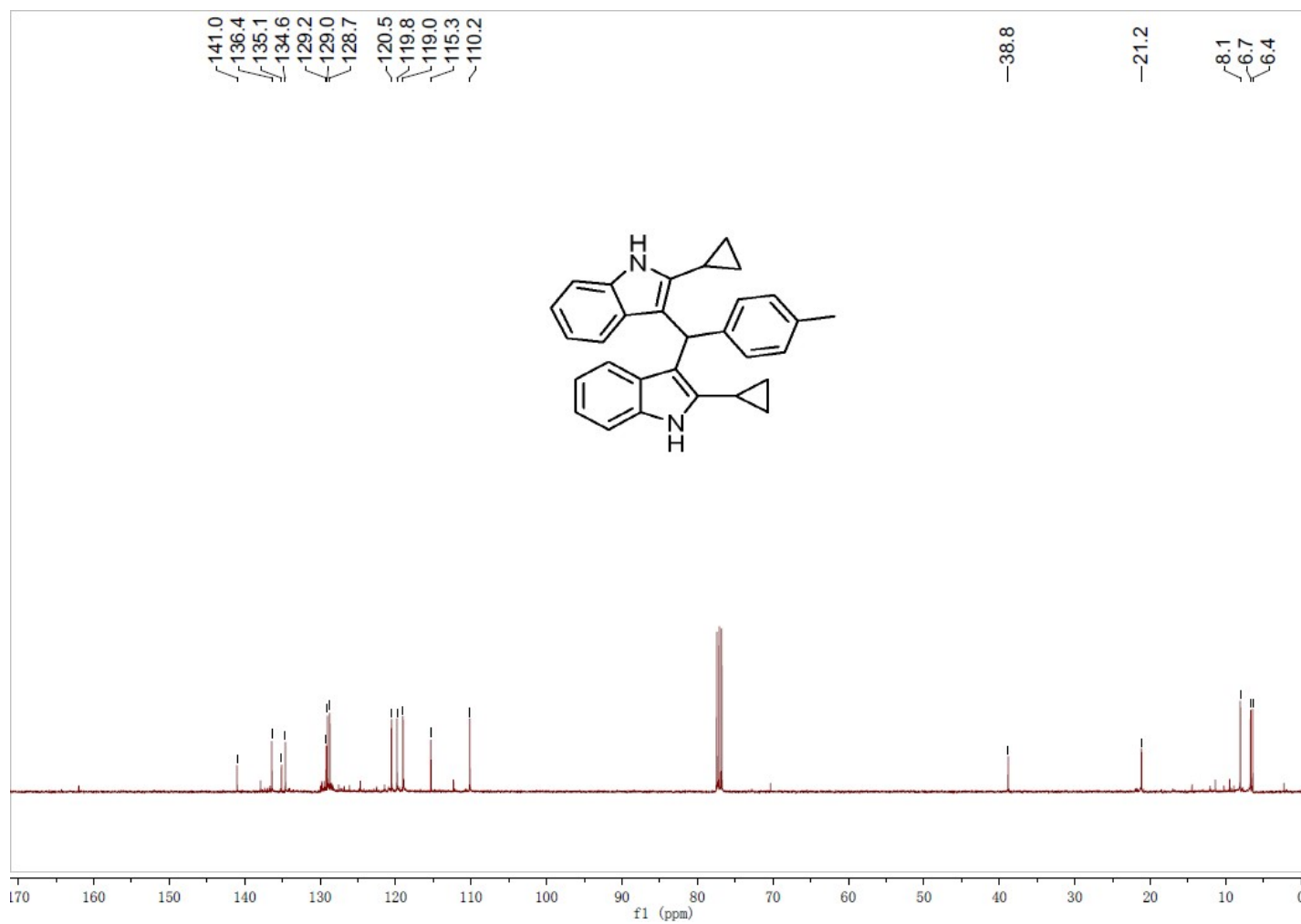
¹H NMR Spectrum of Compound 3i



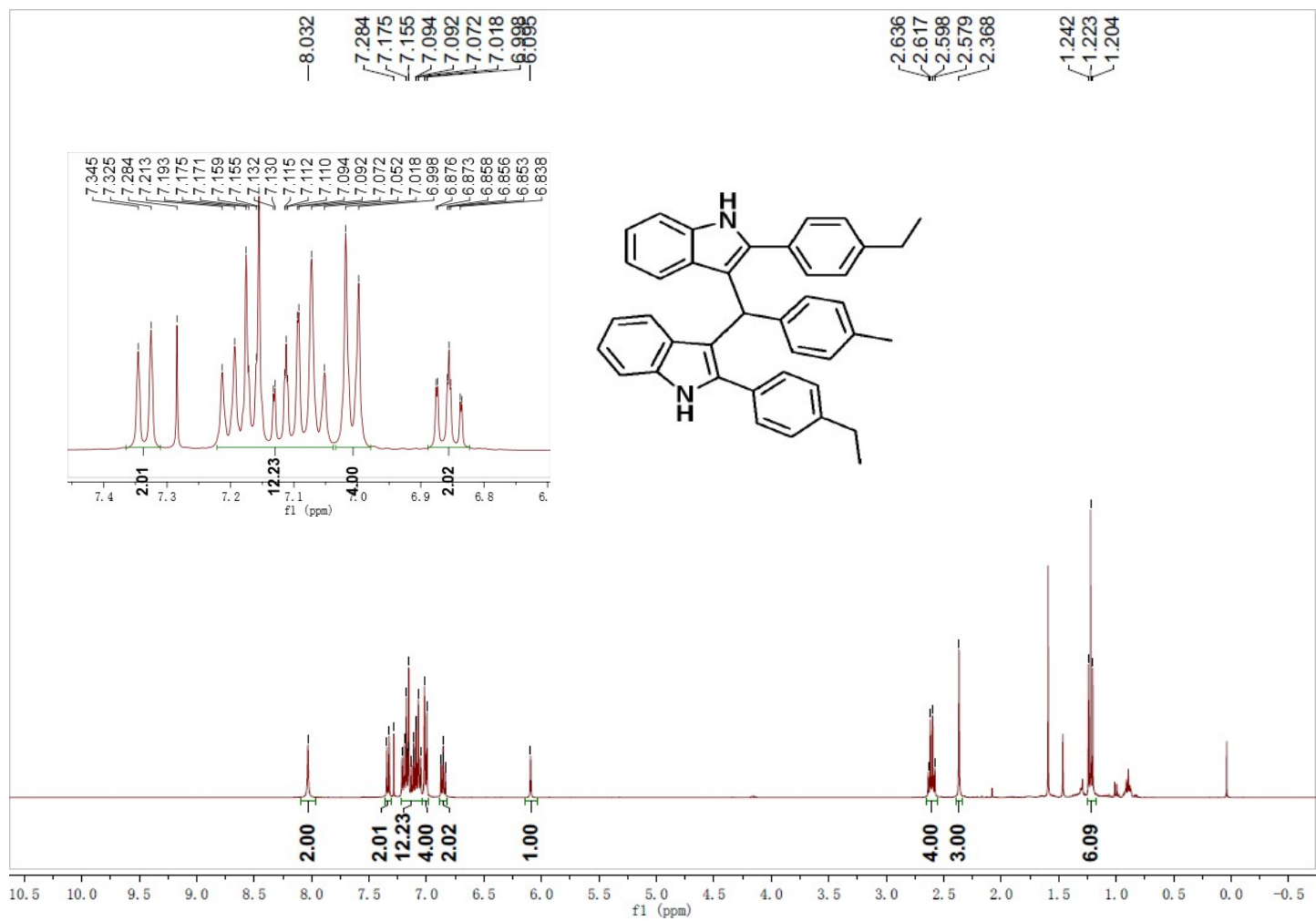
^{13}C NMR Spectrum of Compound 3i



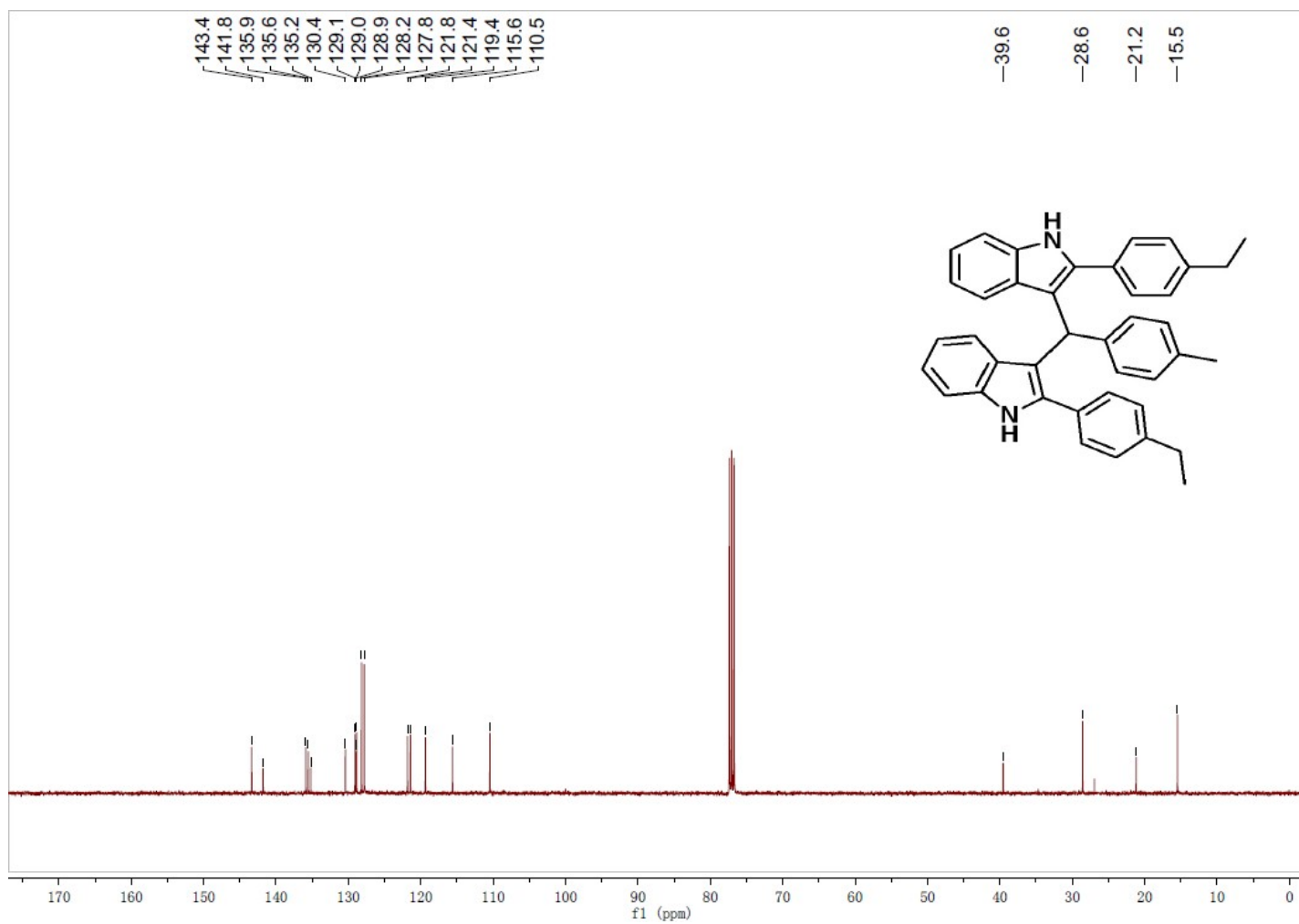
¹H NMR Spectrum of Compound 3j



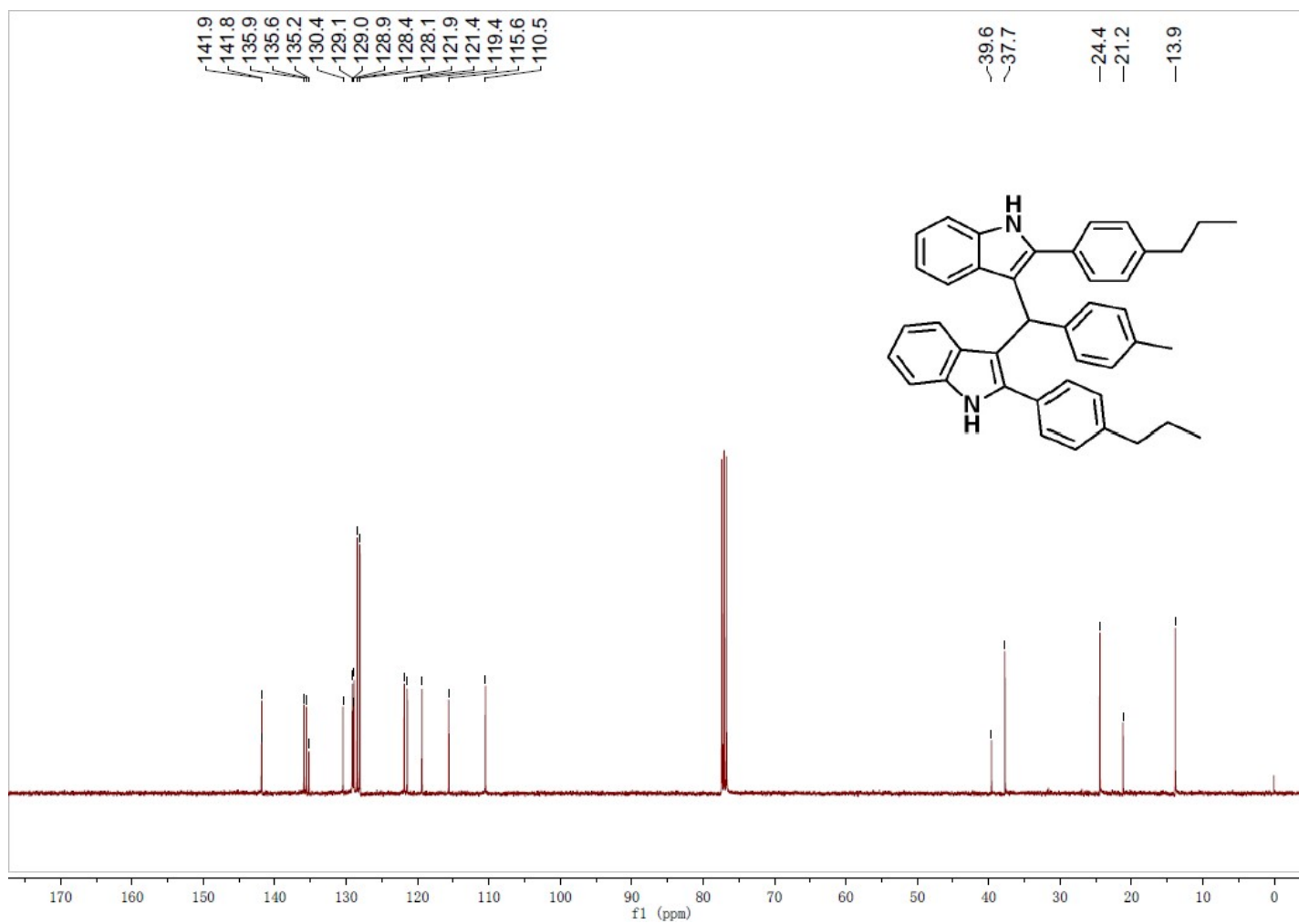
¹³C NMR Spectrum of Compound 3j



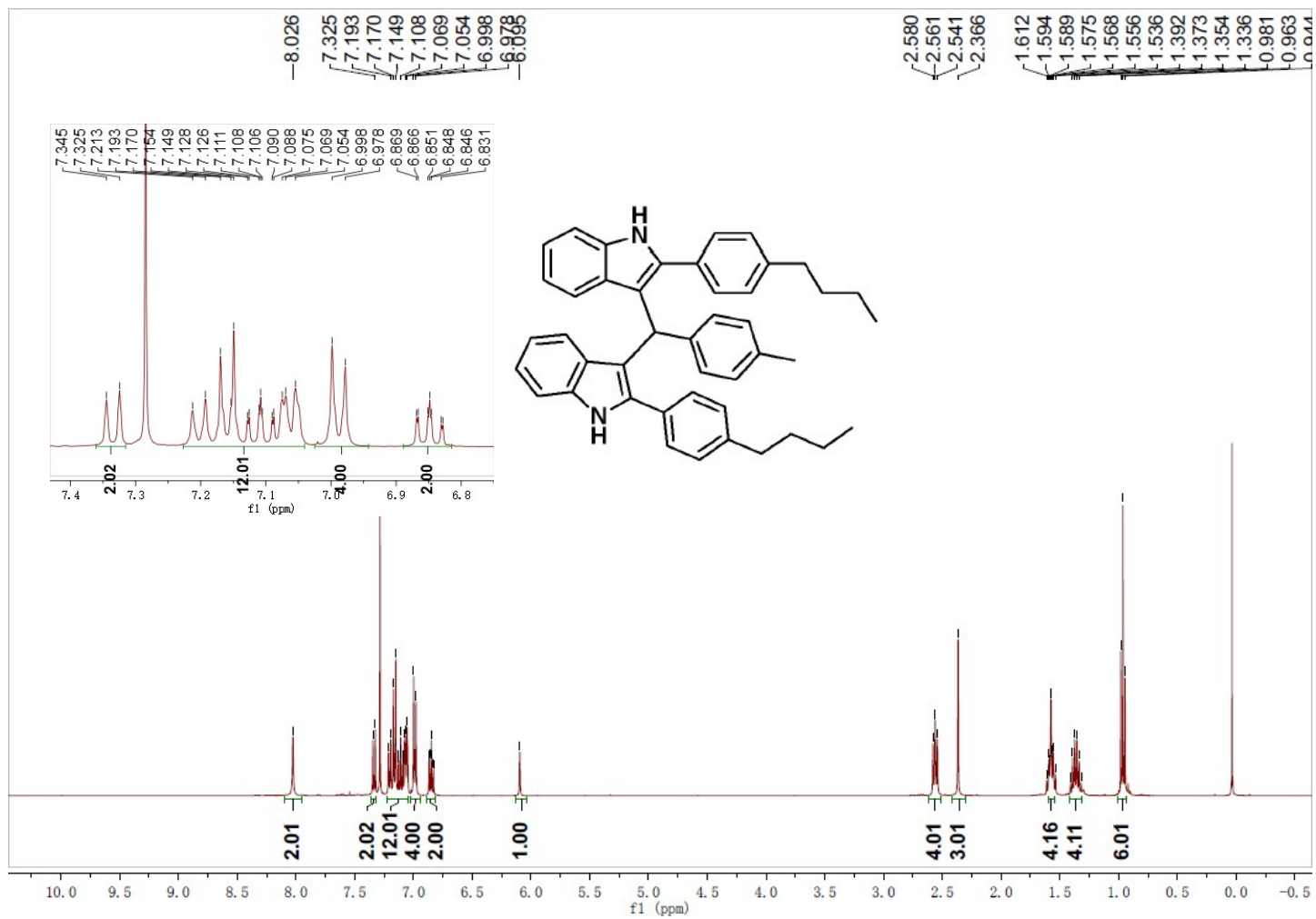
¹H NMR Spectrum of Compound 3k



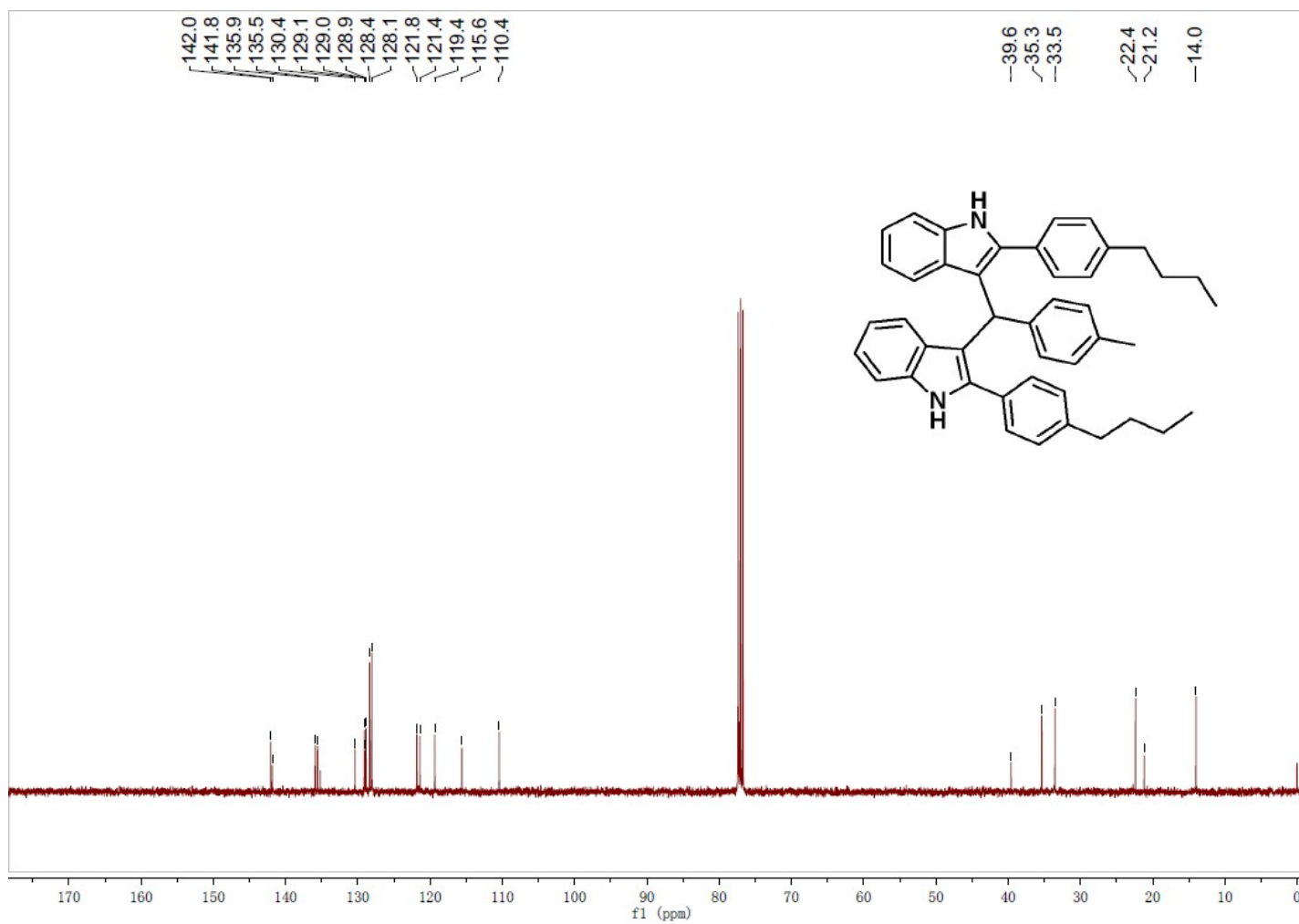
¹³C NMR Spectrum of Compound 3k



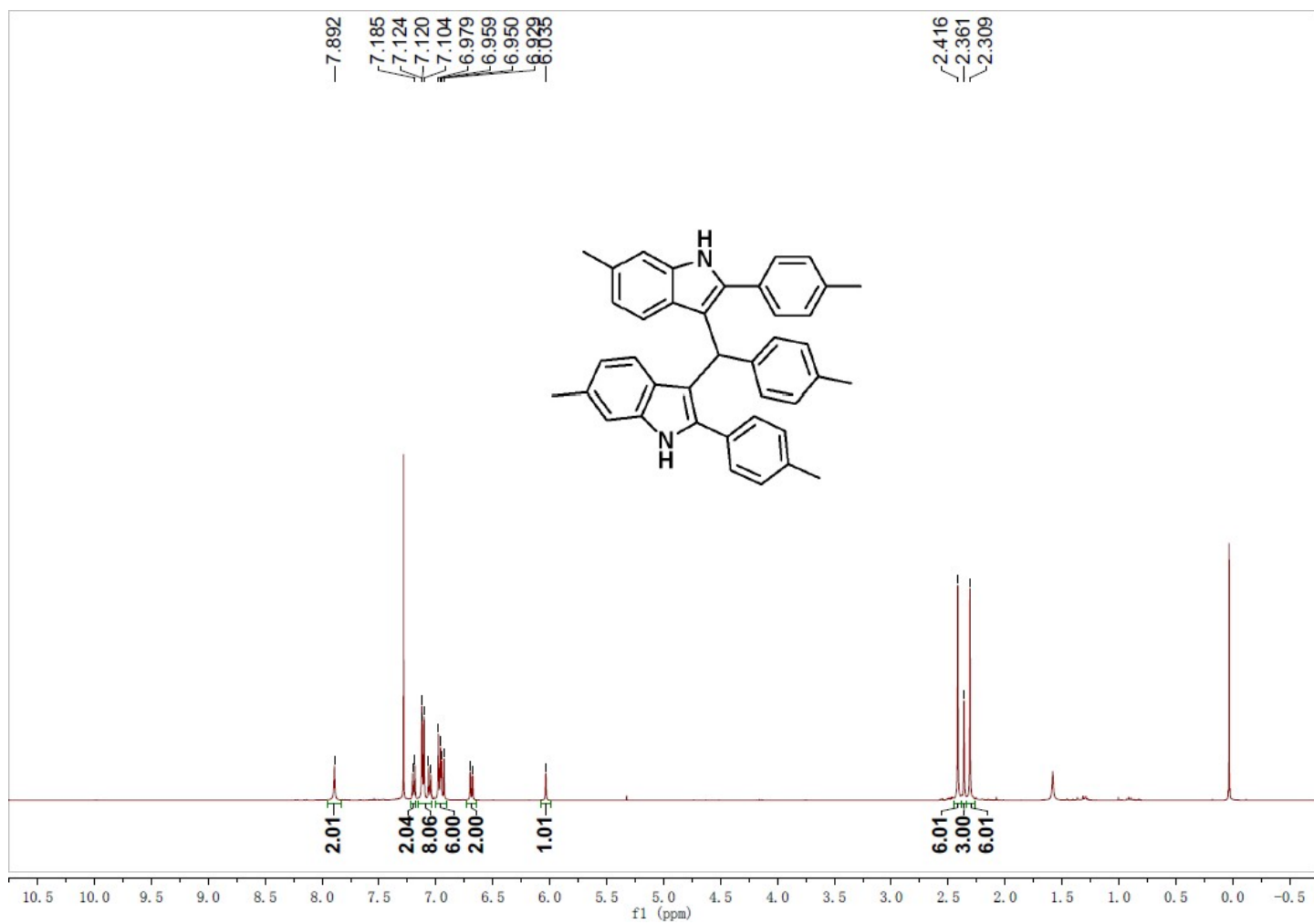
^{13}C NMR Spectrum of Compound 31



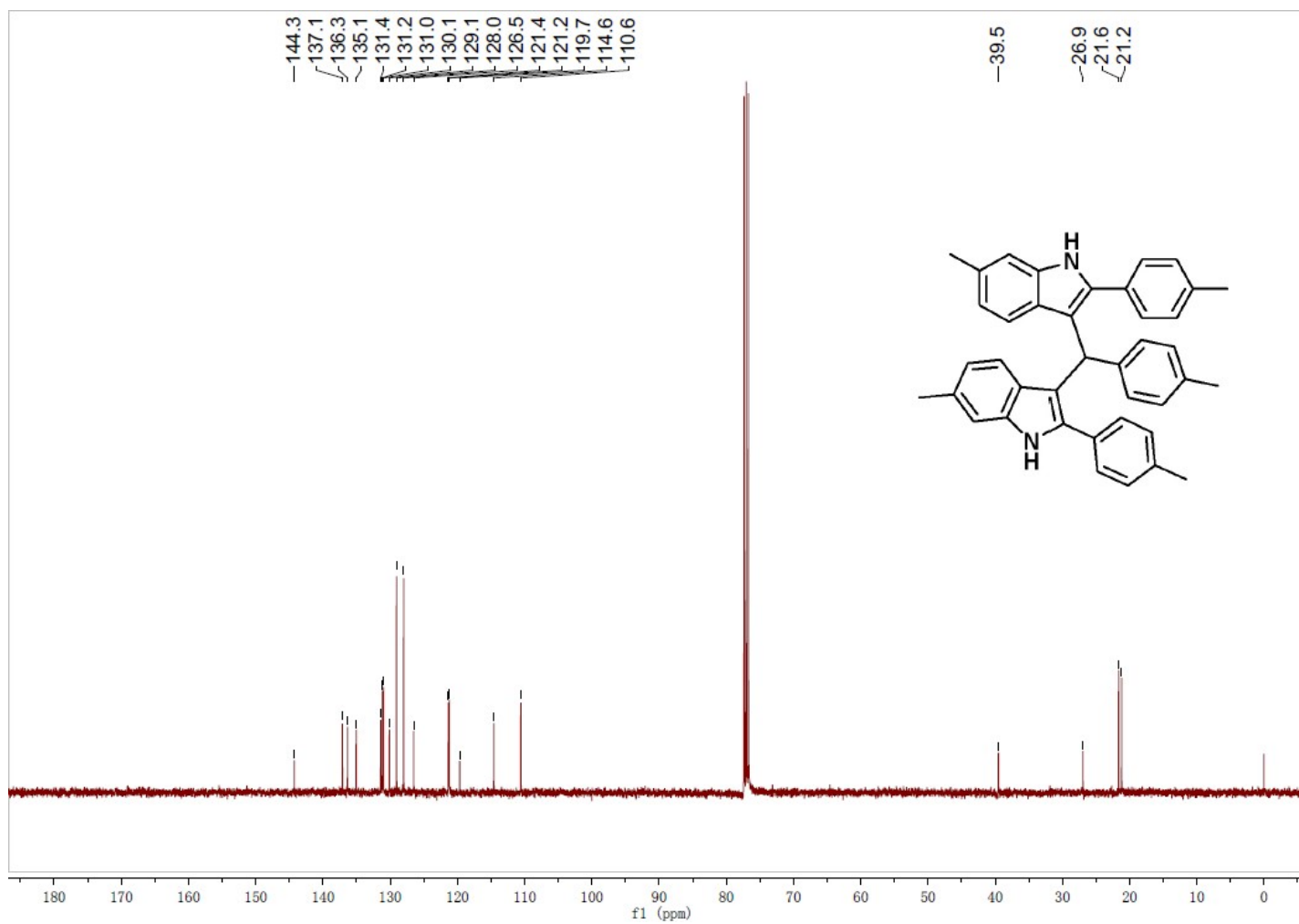
¹H NMR Spectrum of Compound 3m



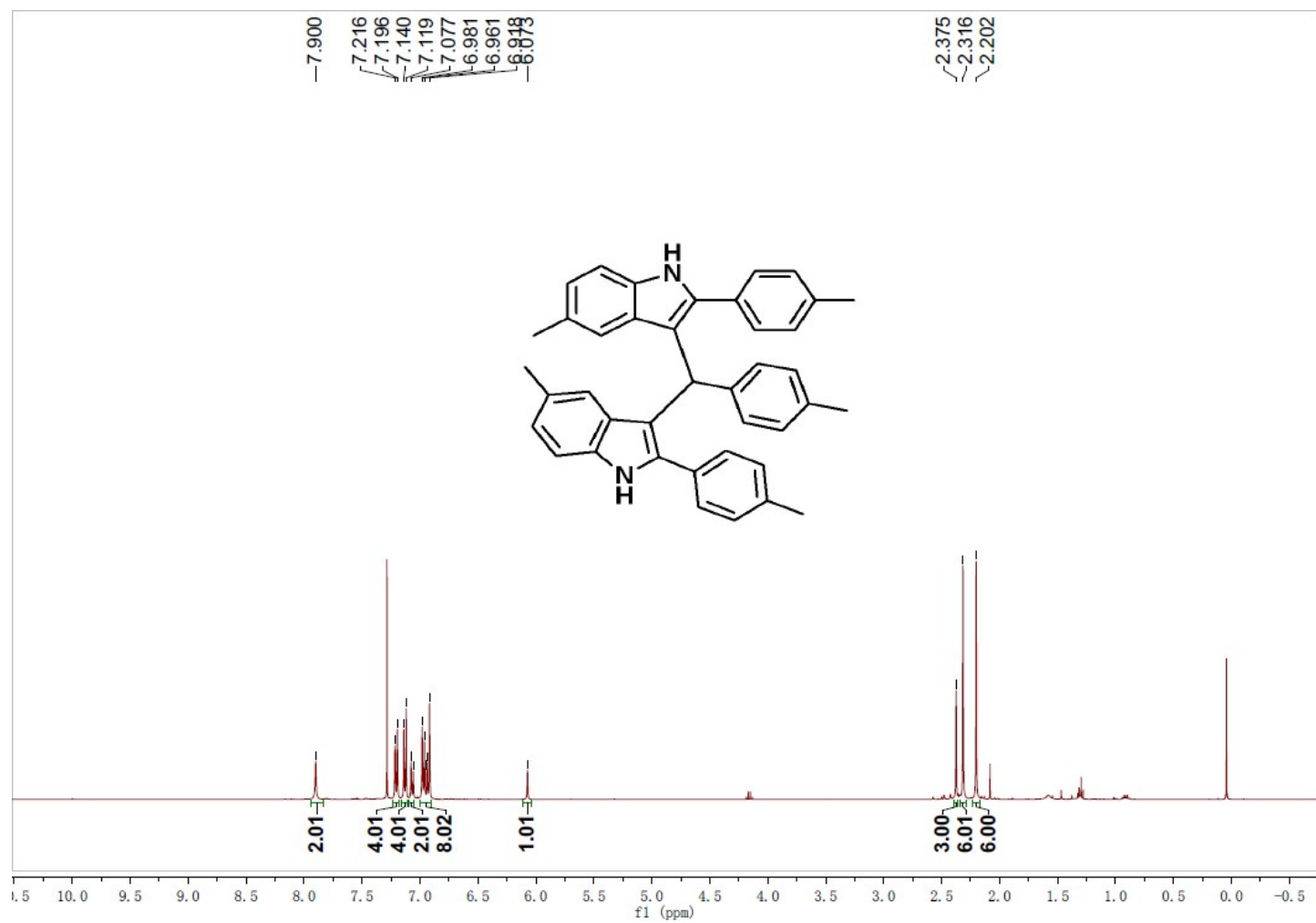
¹³C NMR Spectrum of Compound 3m



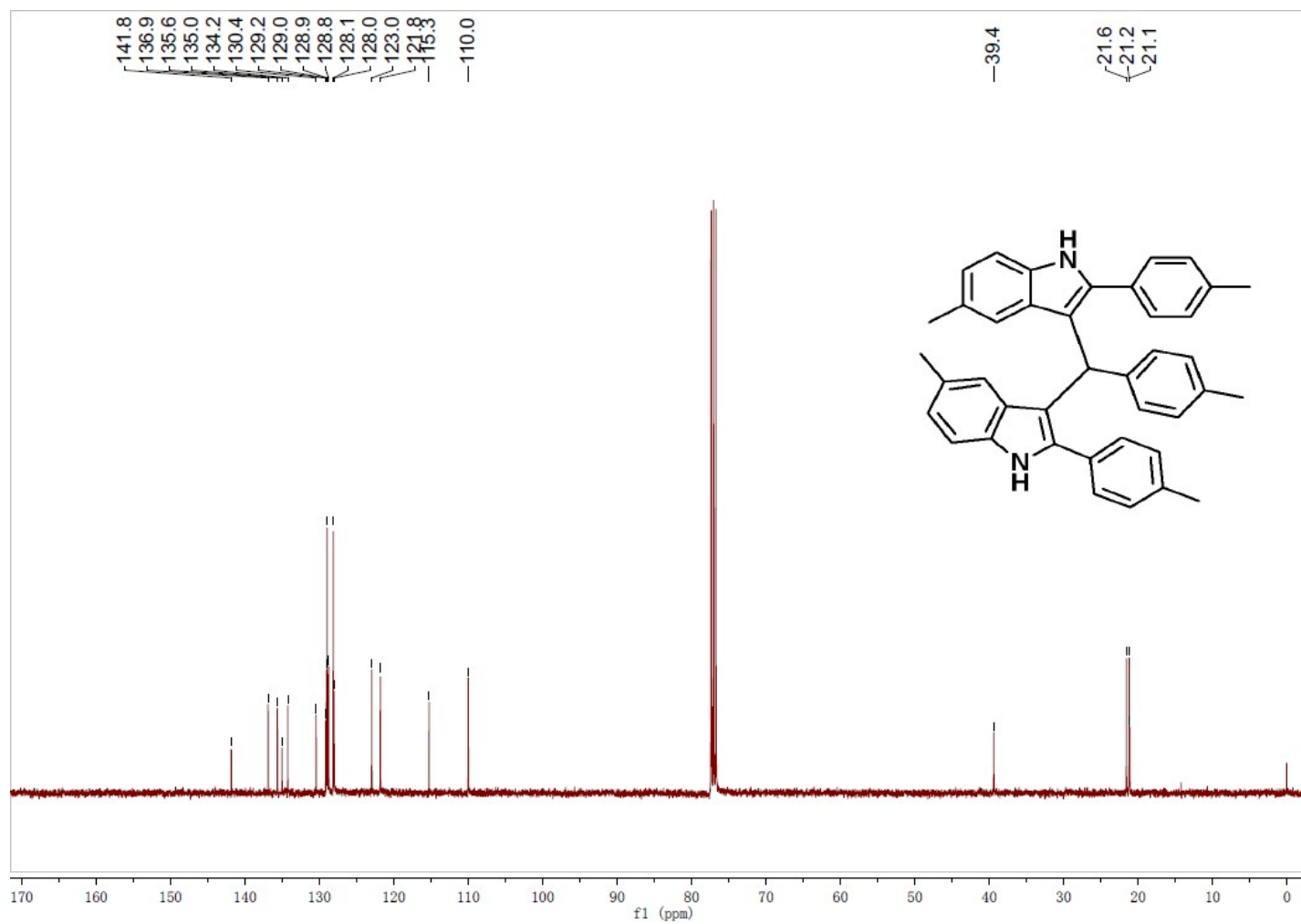
^1H NMR Spectrum of Compound 3n



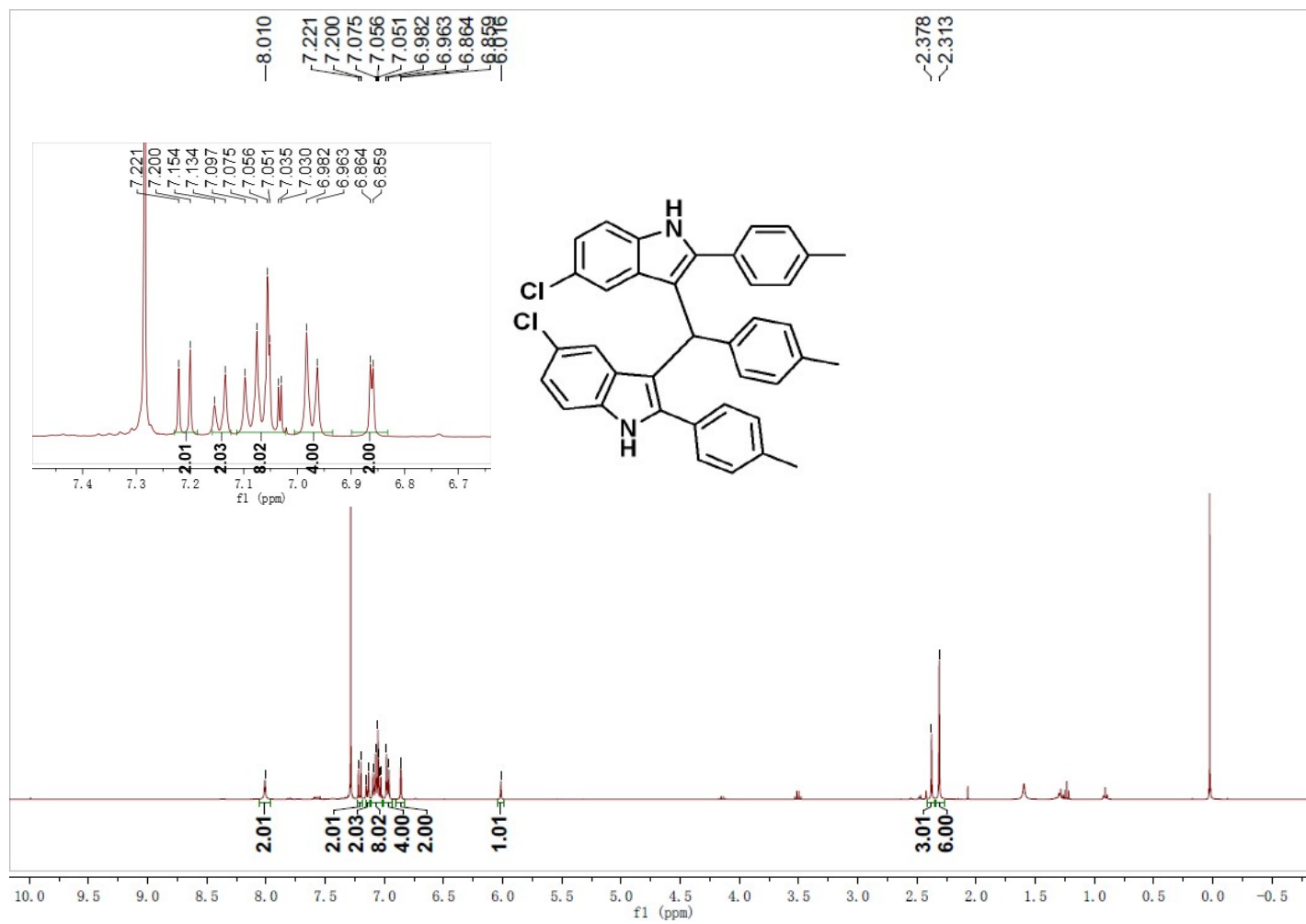
¹³C NMR Spectrum of Compound 3n



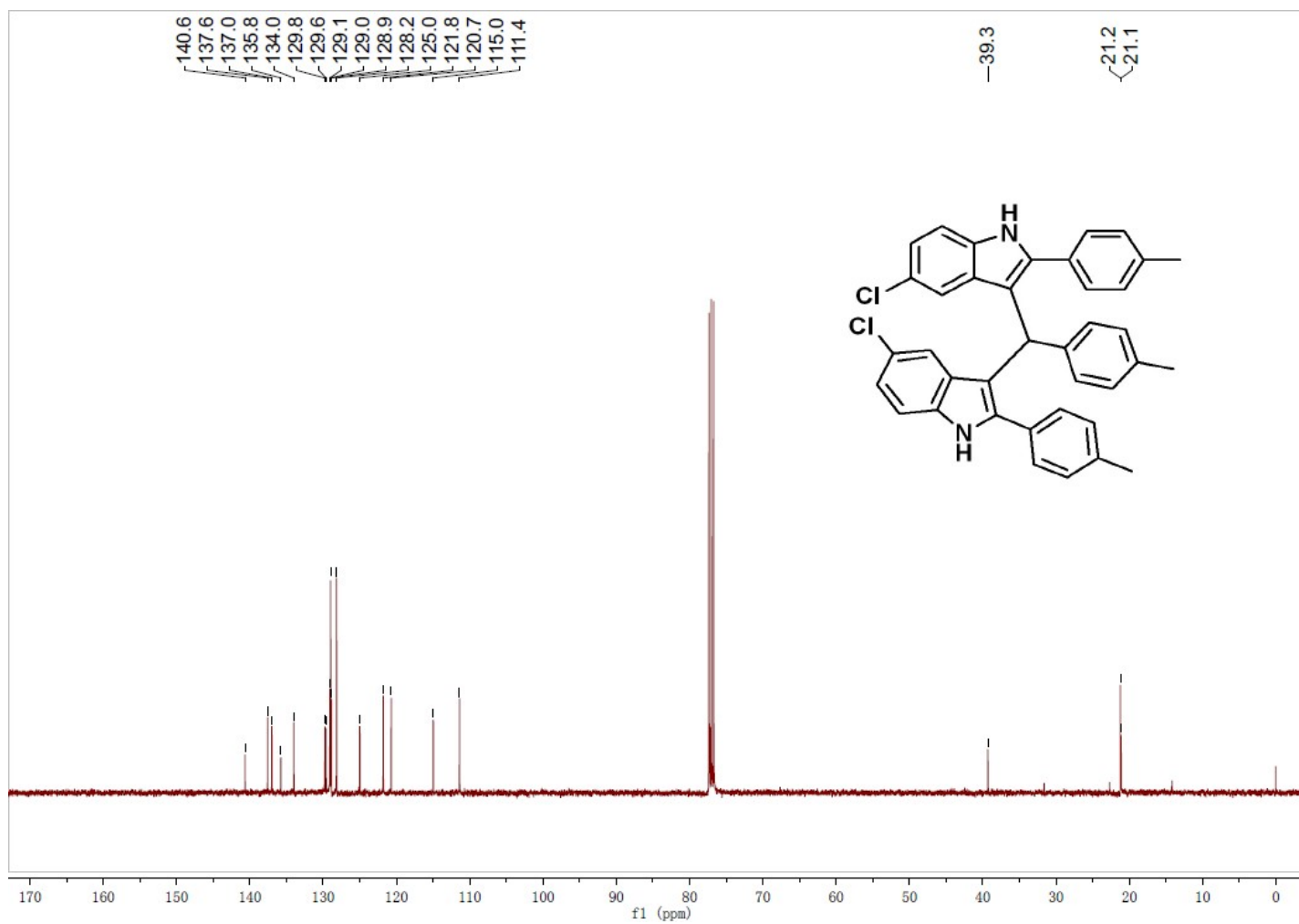
¹H NMR Spectrum of Compound 30



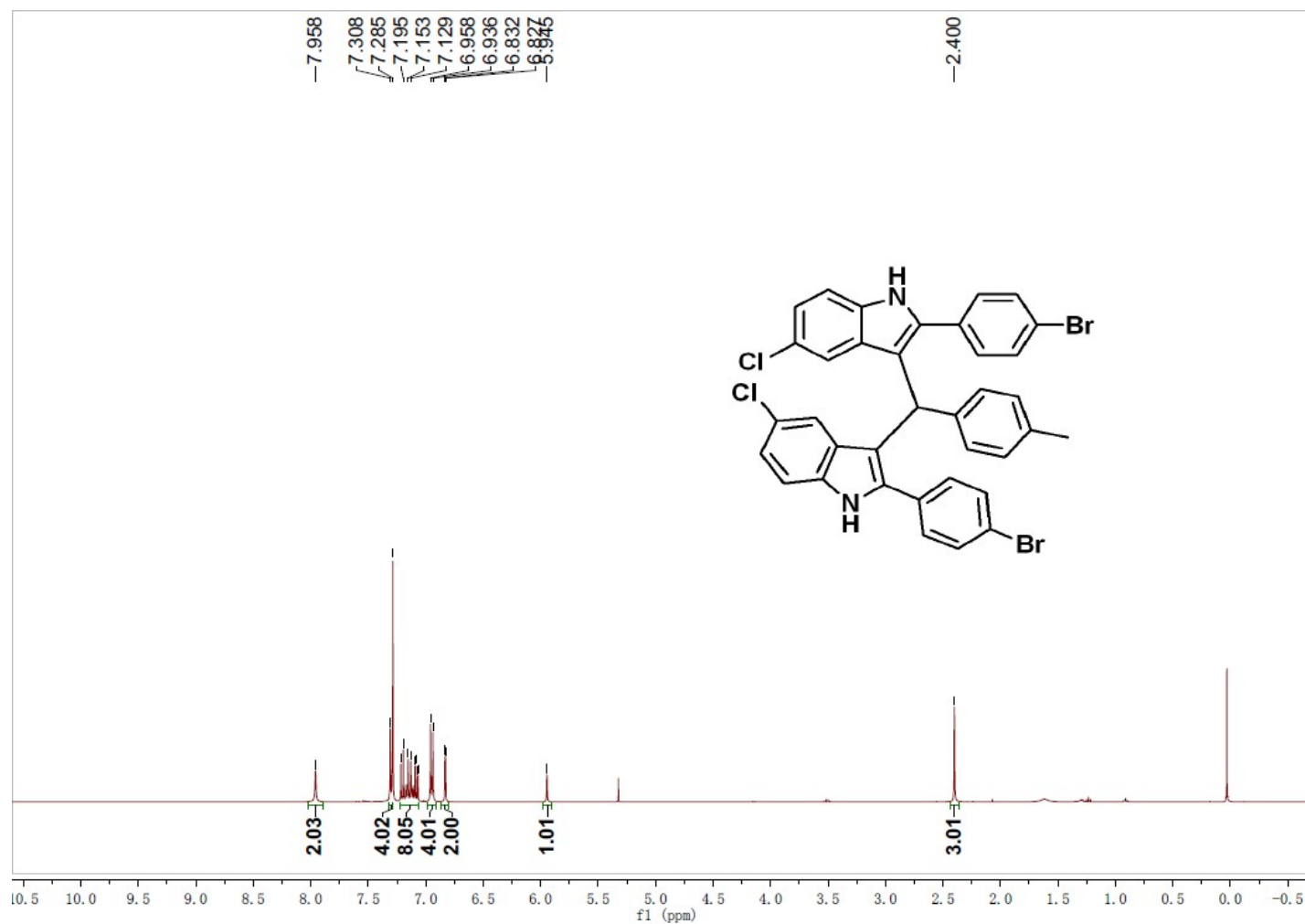
^{13}C NMR Spectrum of Compound 30



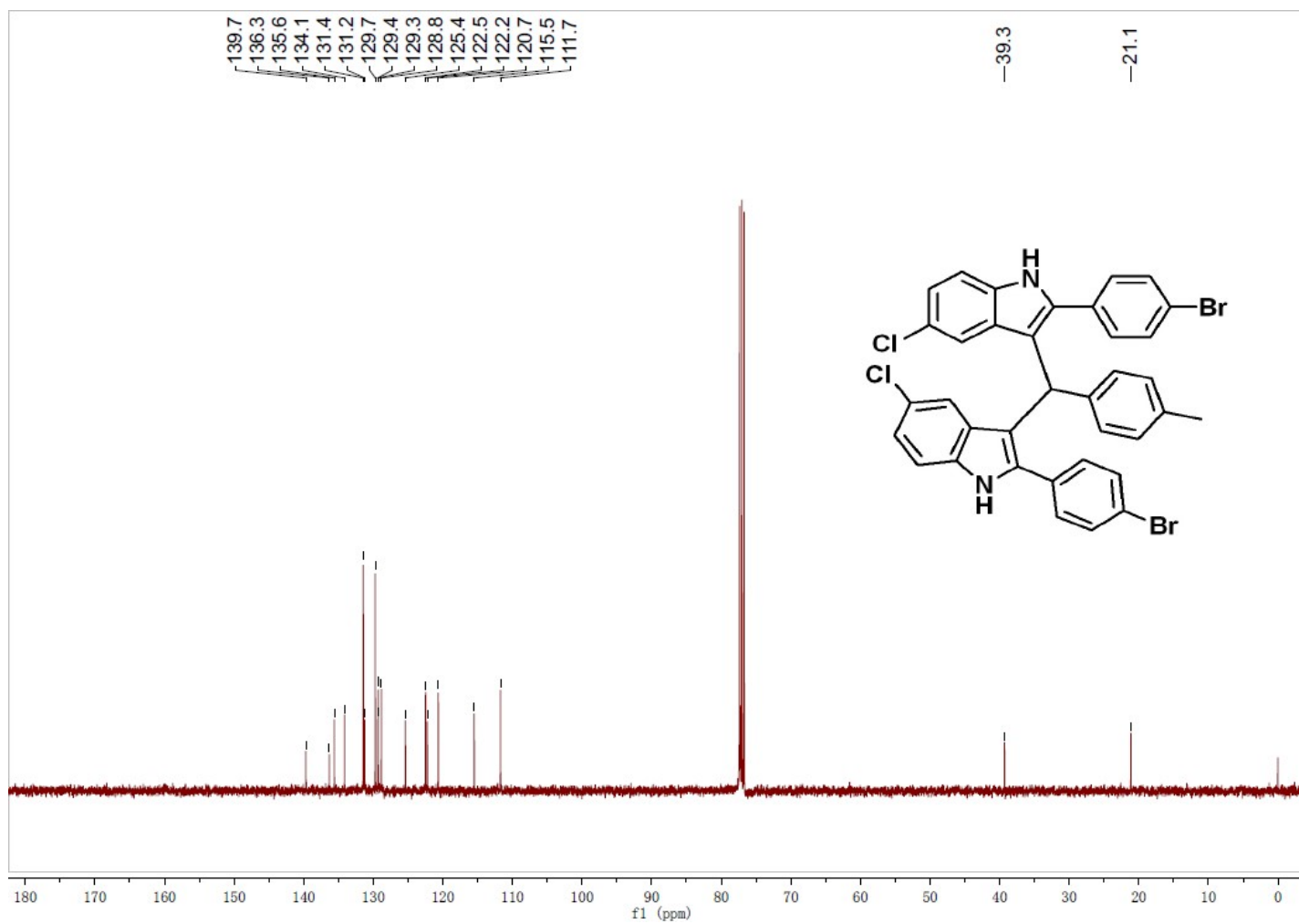
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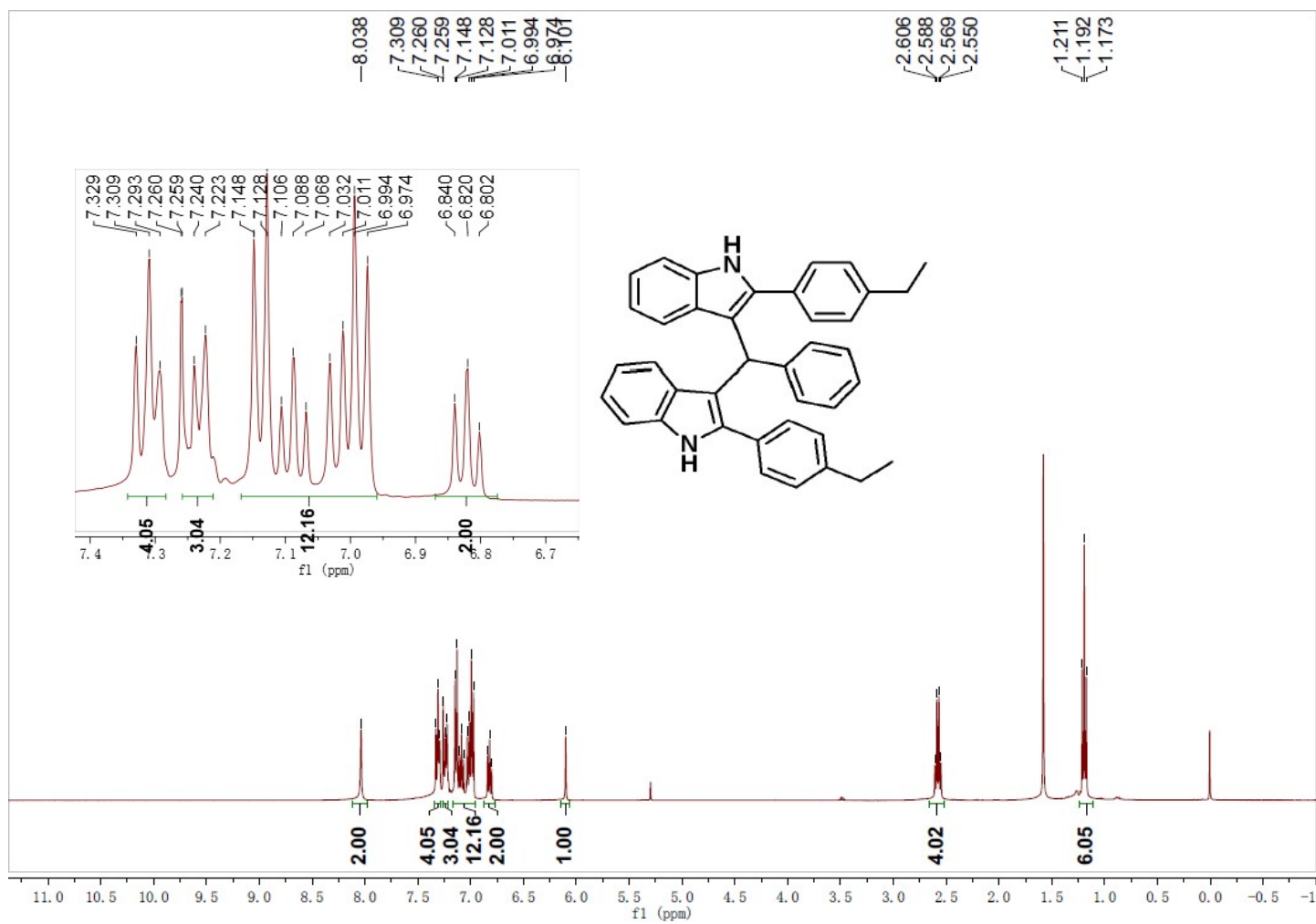
¹³C NMR Spectrum of Compound 3p



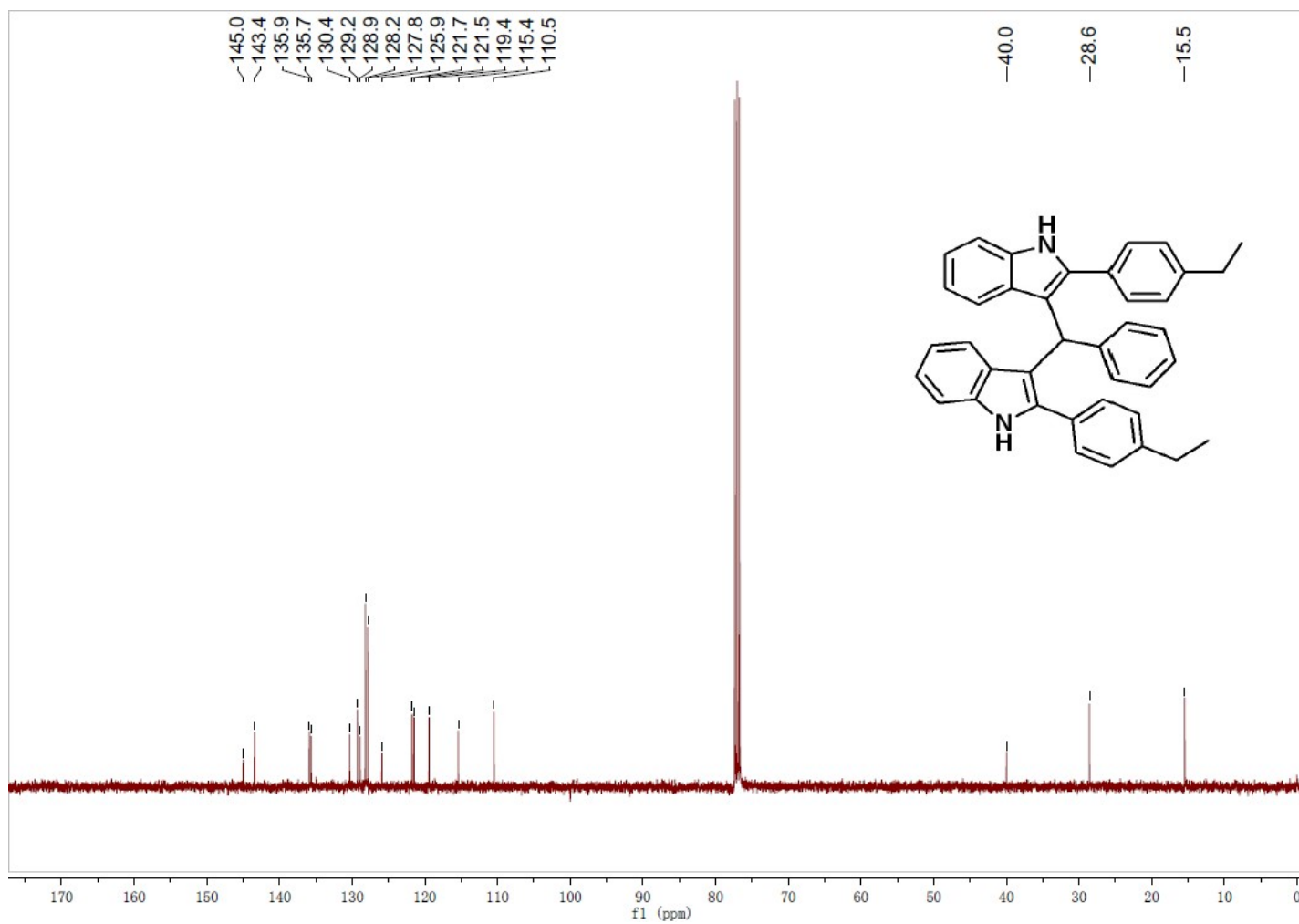
¹H NMR Spectrum of Compound 3q



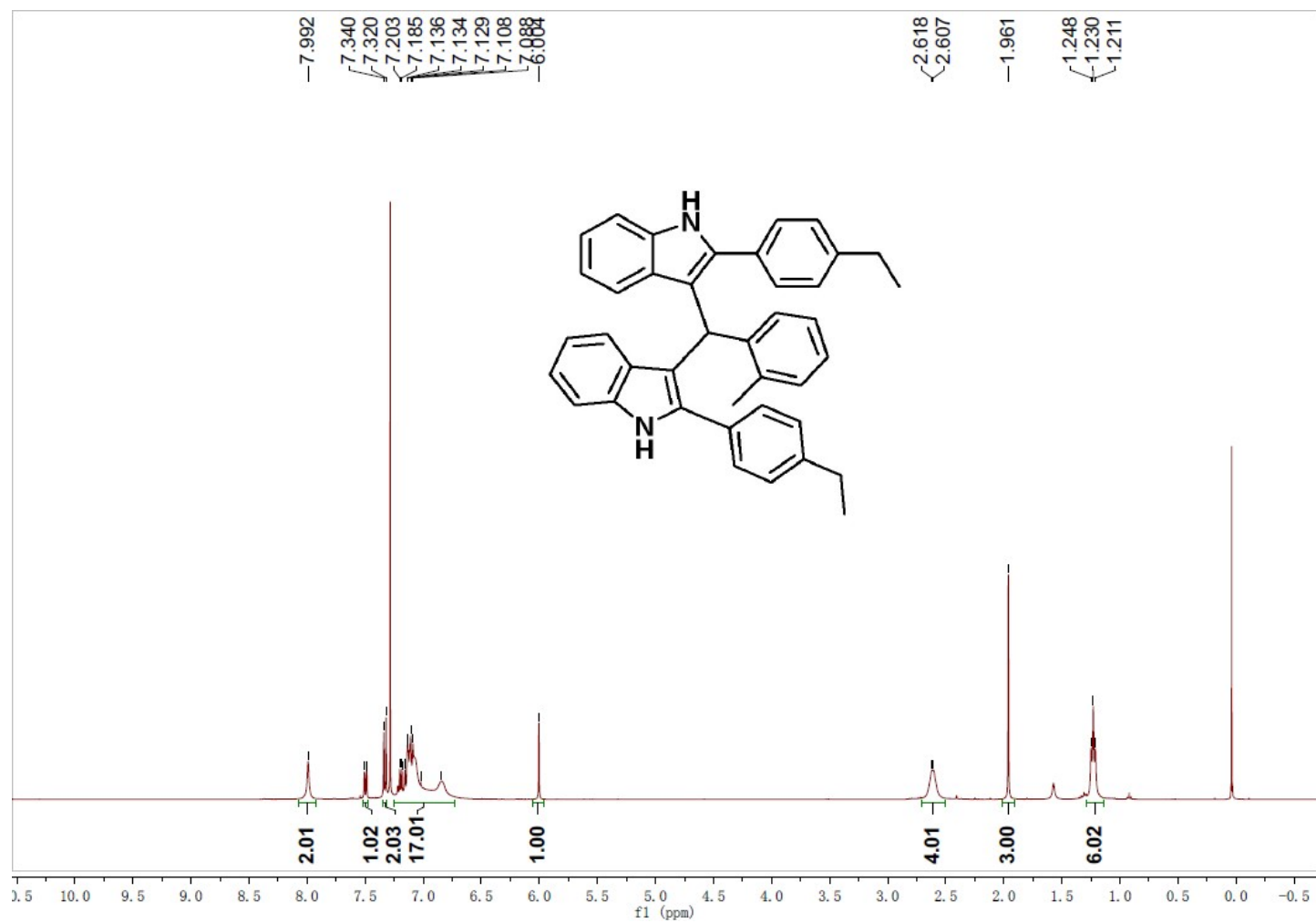
¹³C NMR Spectrum of Compound 3q



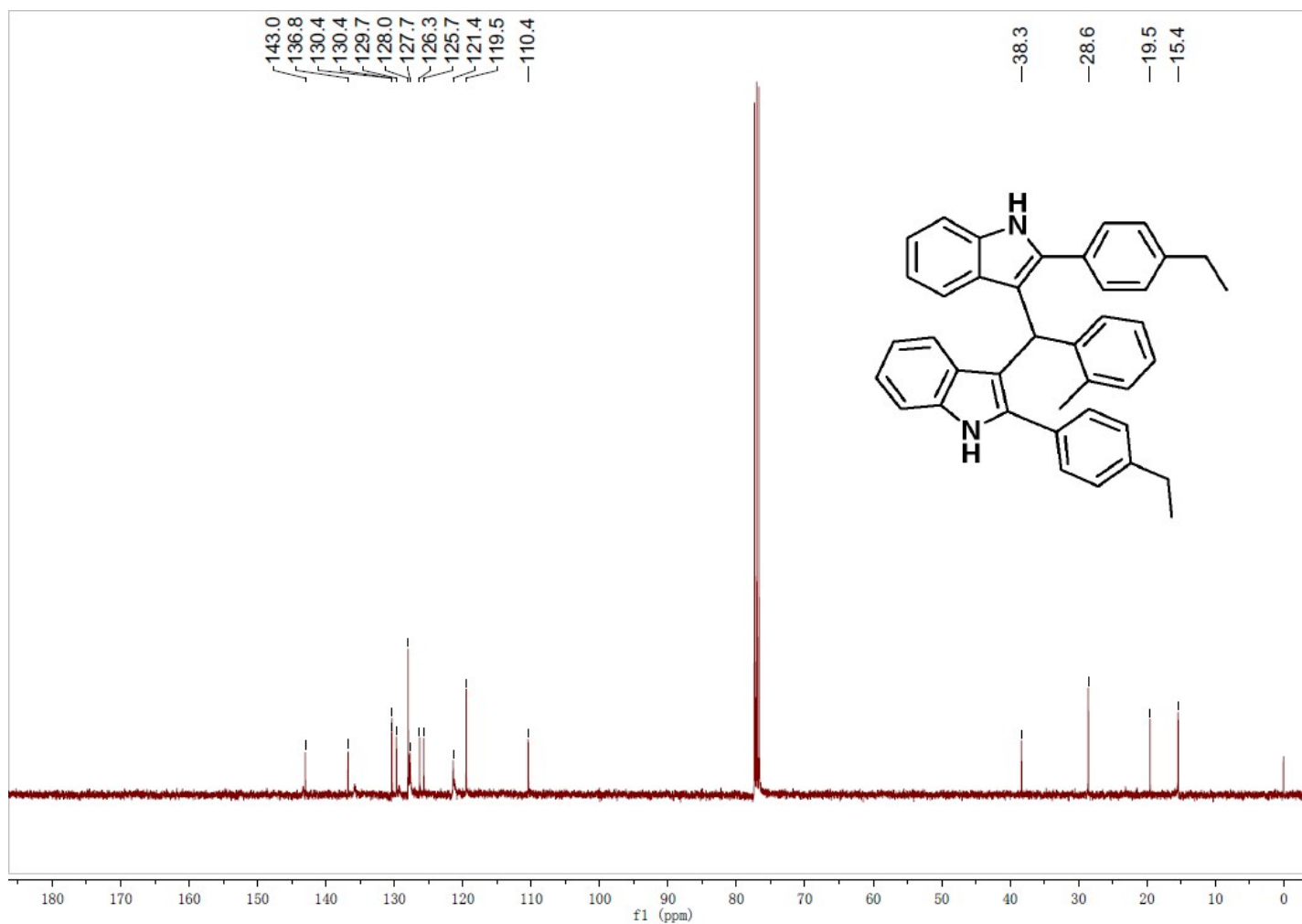
¹H NMR Spectrum of Compound 3r



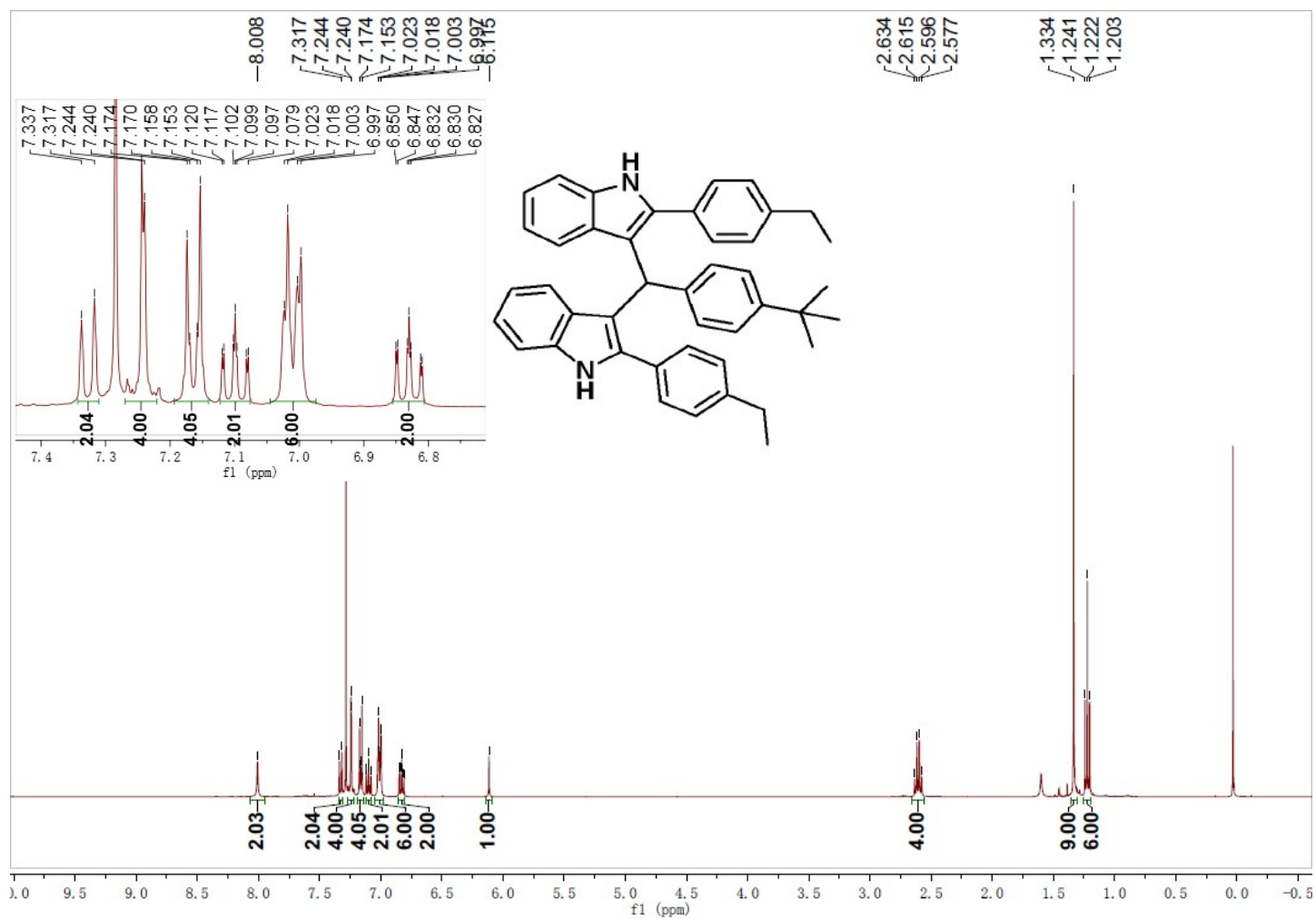
¹³C NMR Spectrum of Compound 3r



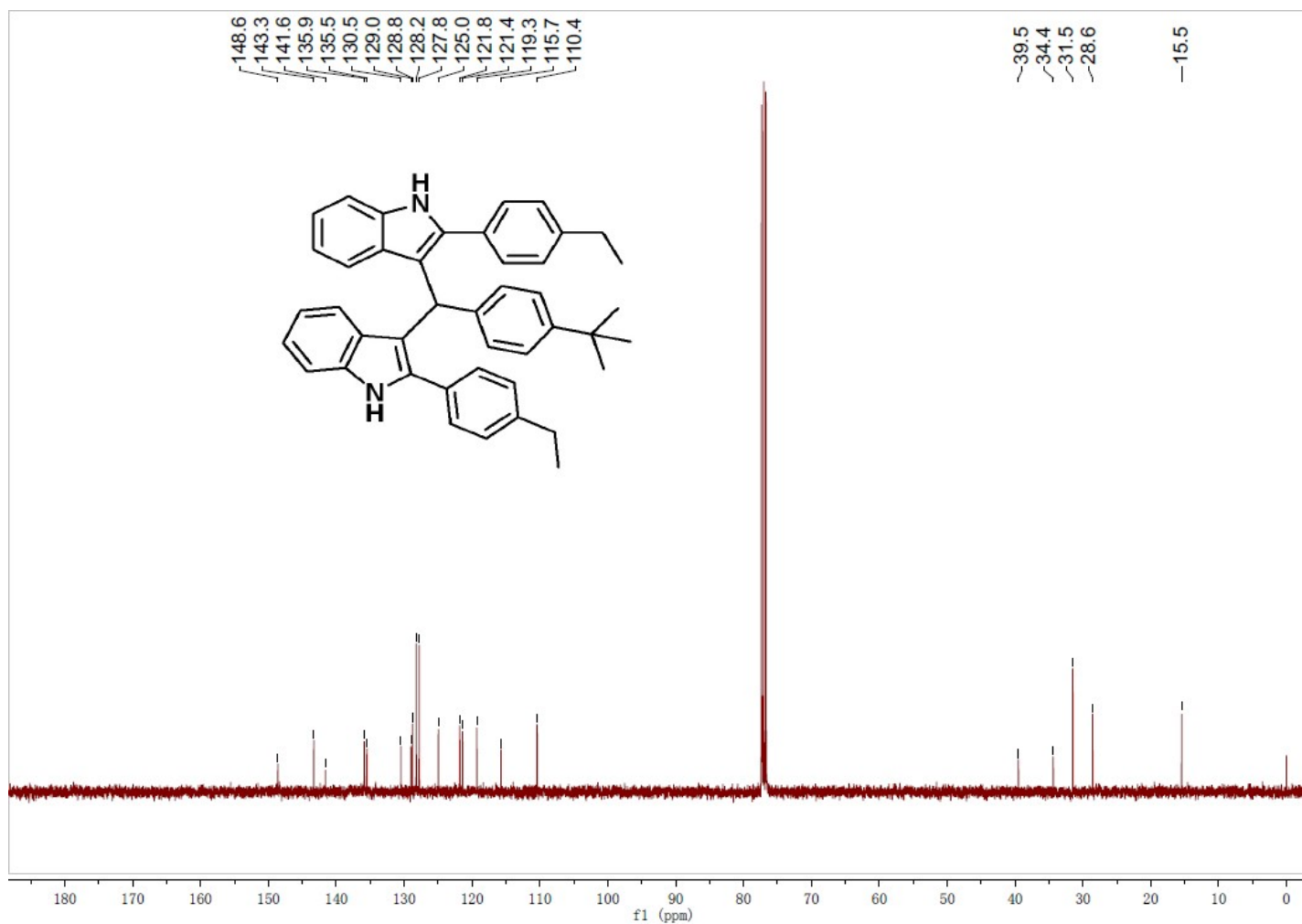
¹H NMR Spectrum of Compound 3s



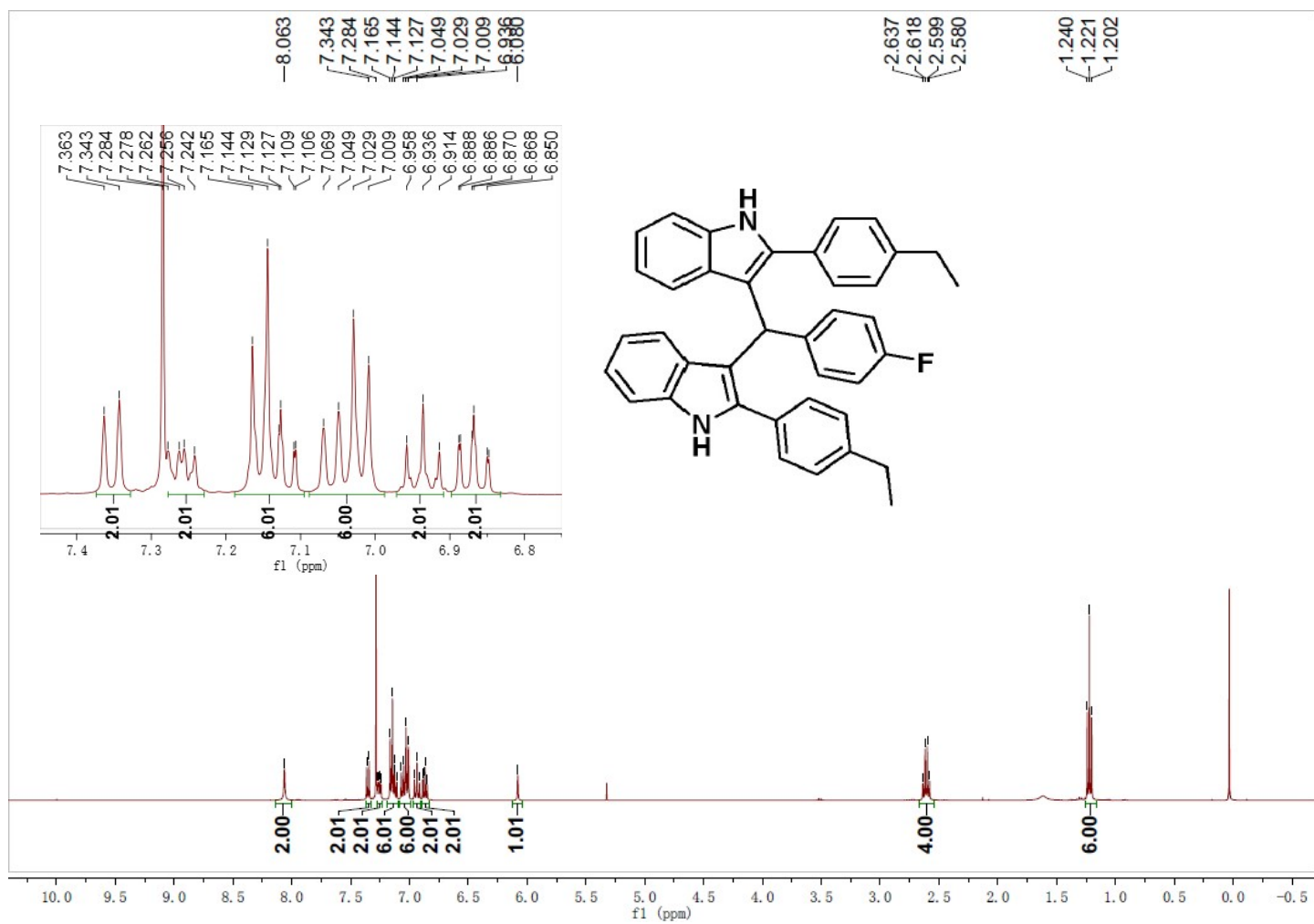
^{13}C NMR Spectrum of Compound 3



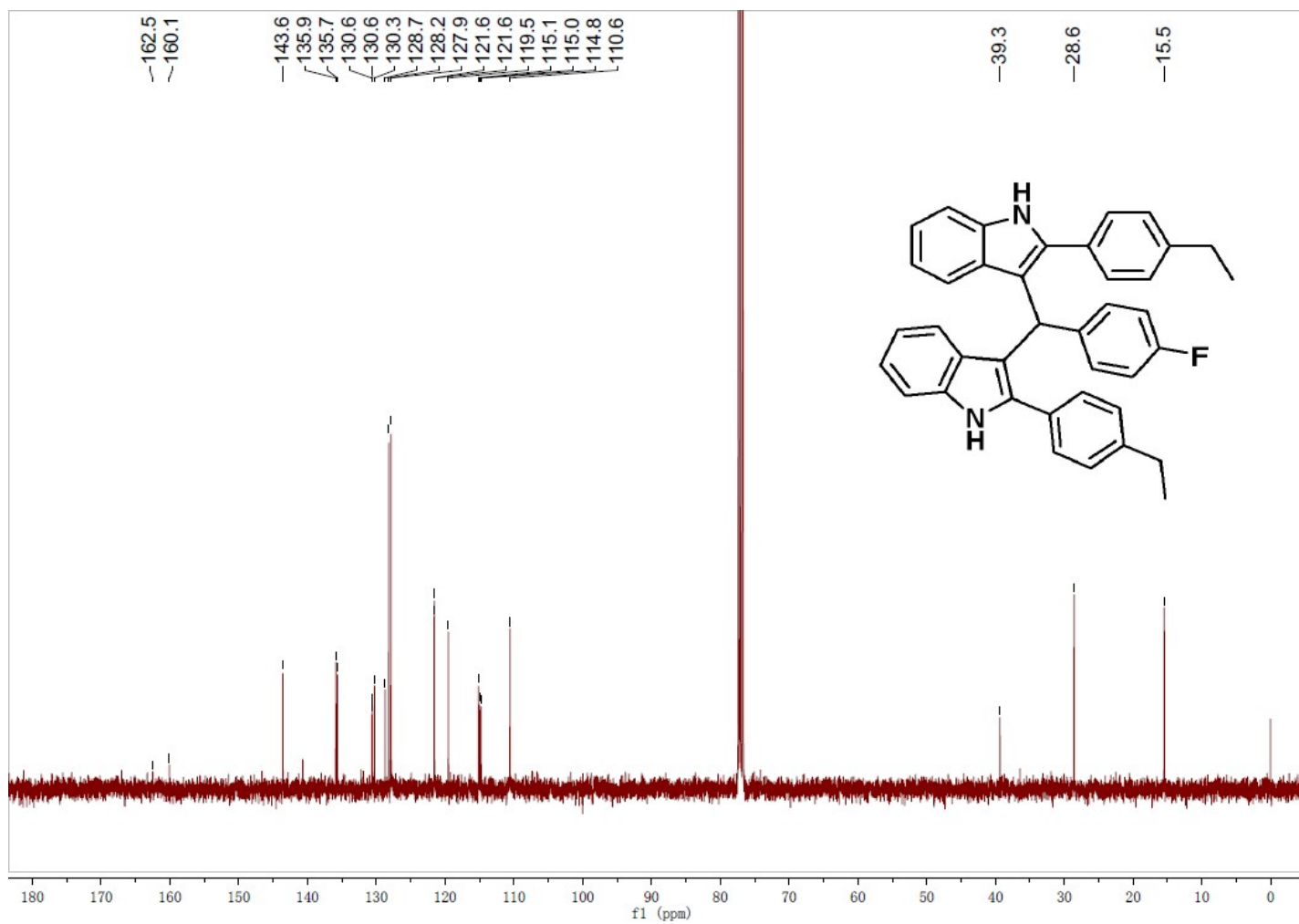
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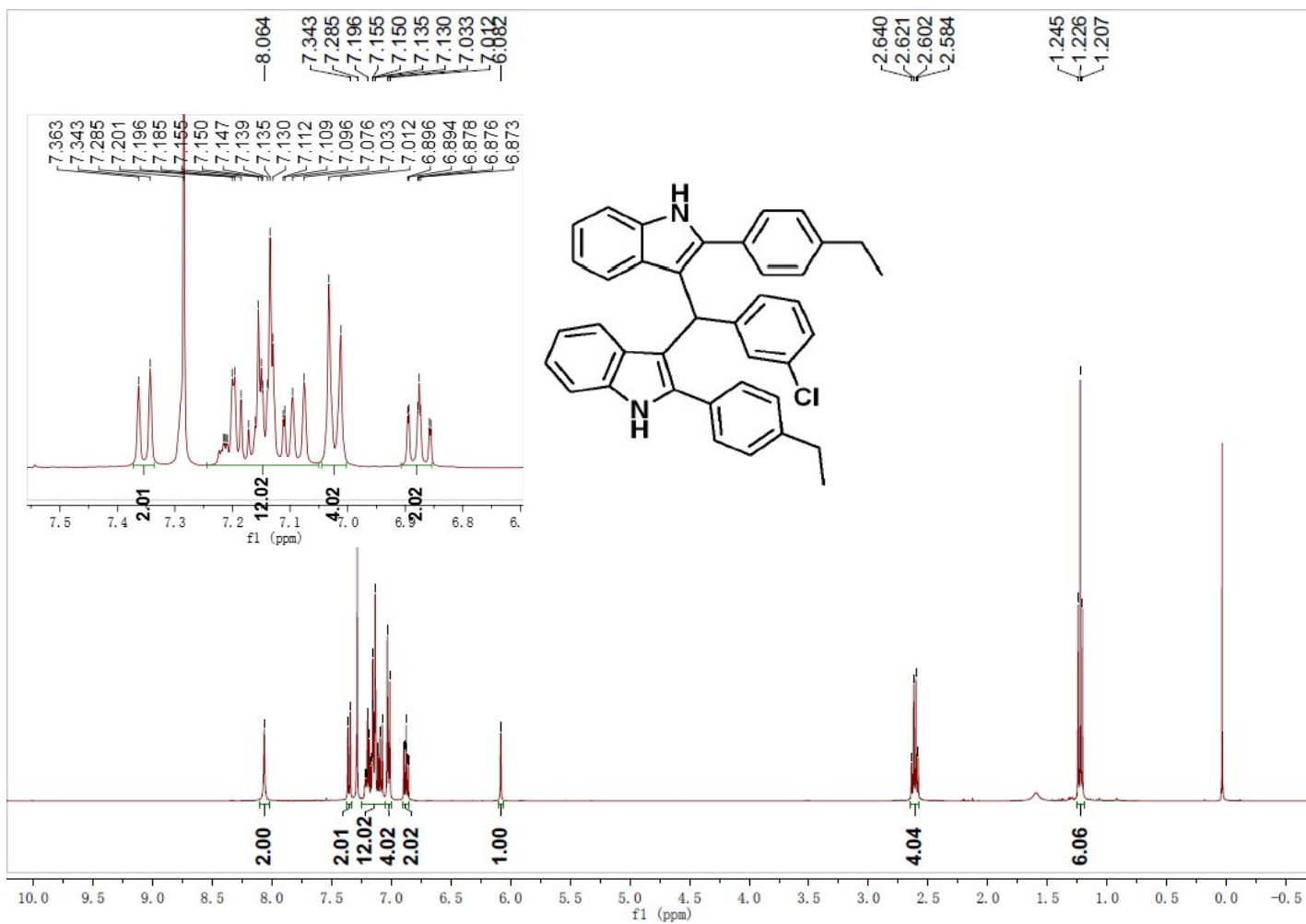
¹³C NMR Spectrum of Compound 3t



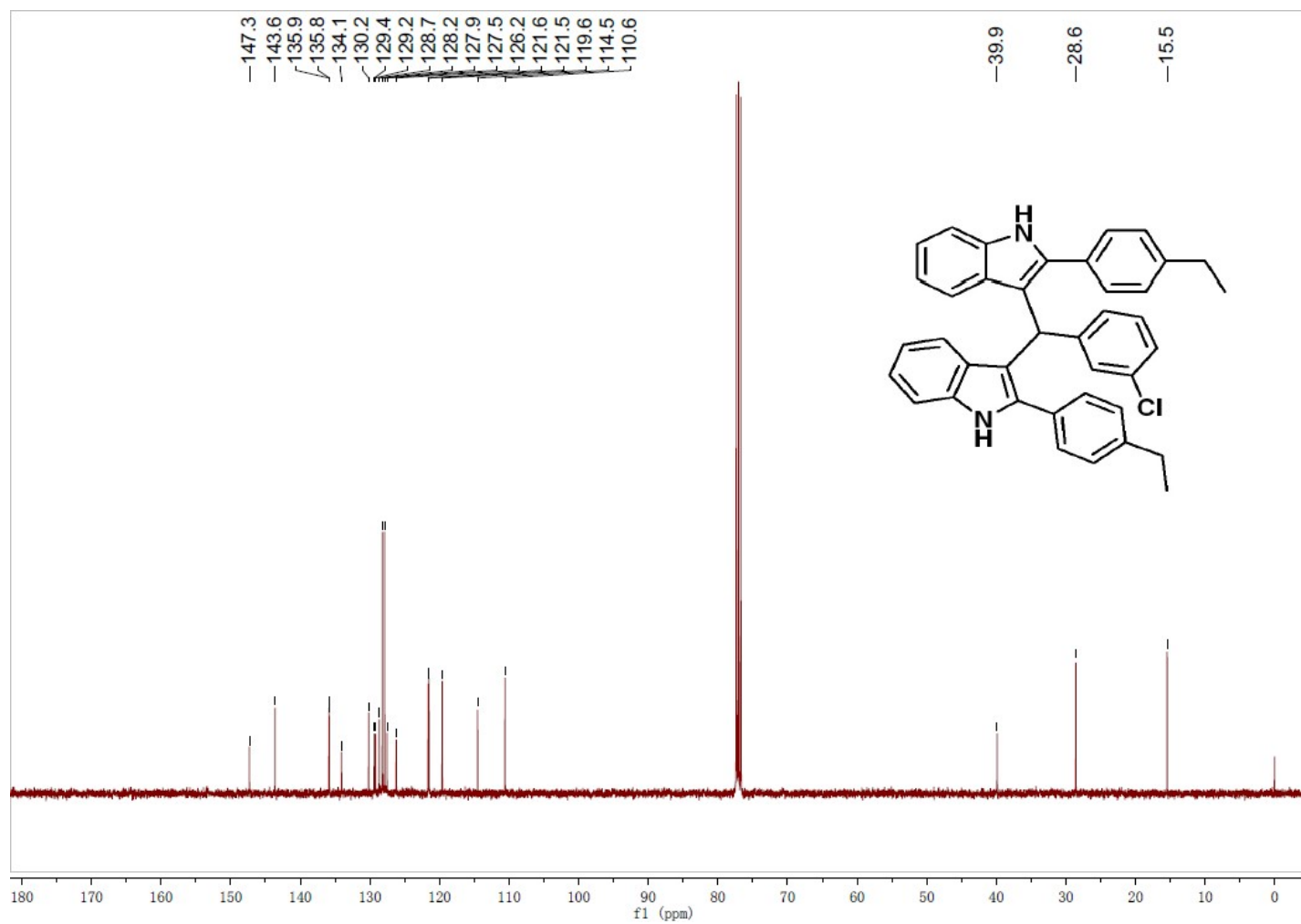
¹H NMR Spectrum of Compound 3u



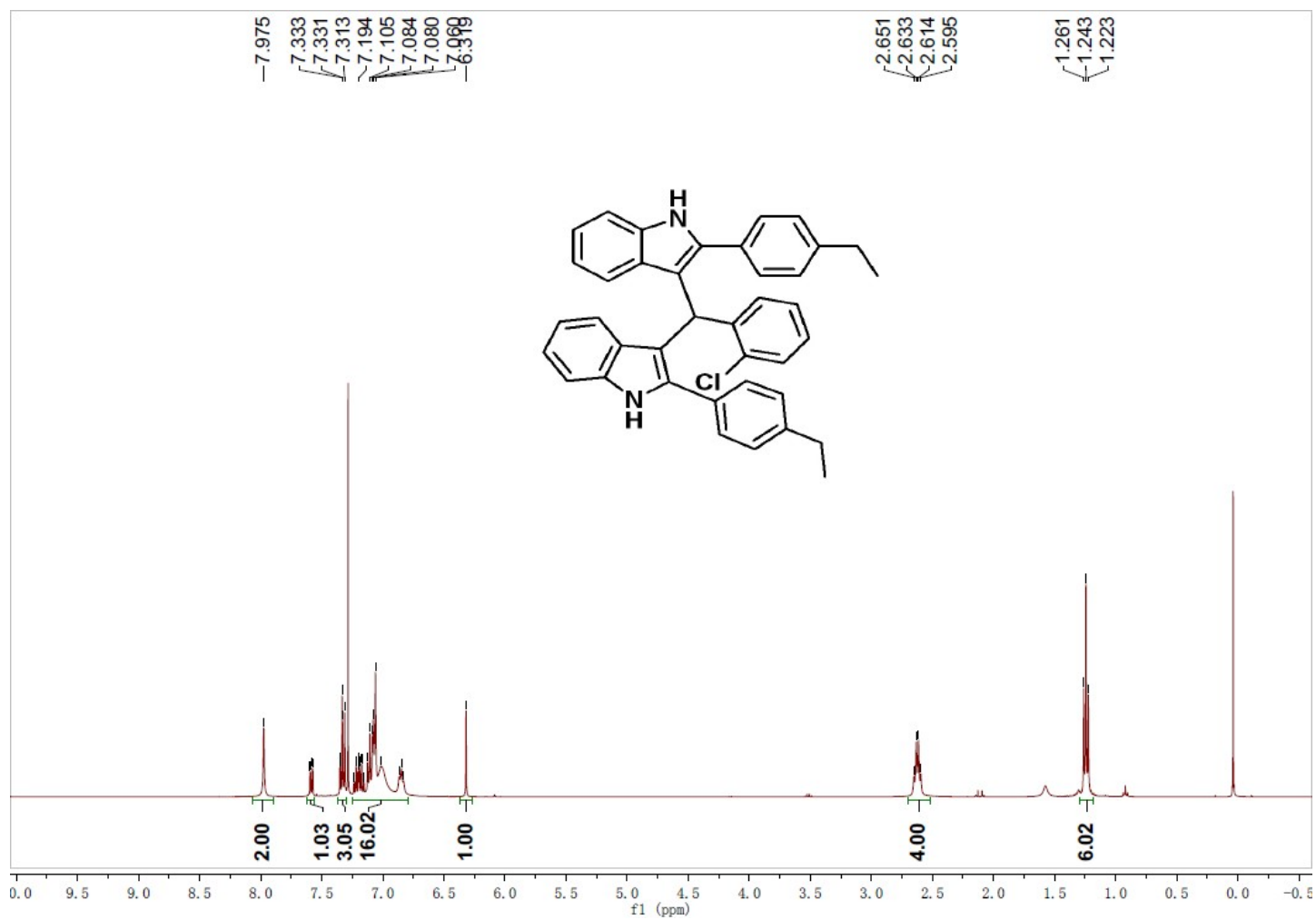
^{13}C NMR Spectrum of Compound 3u



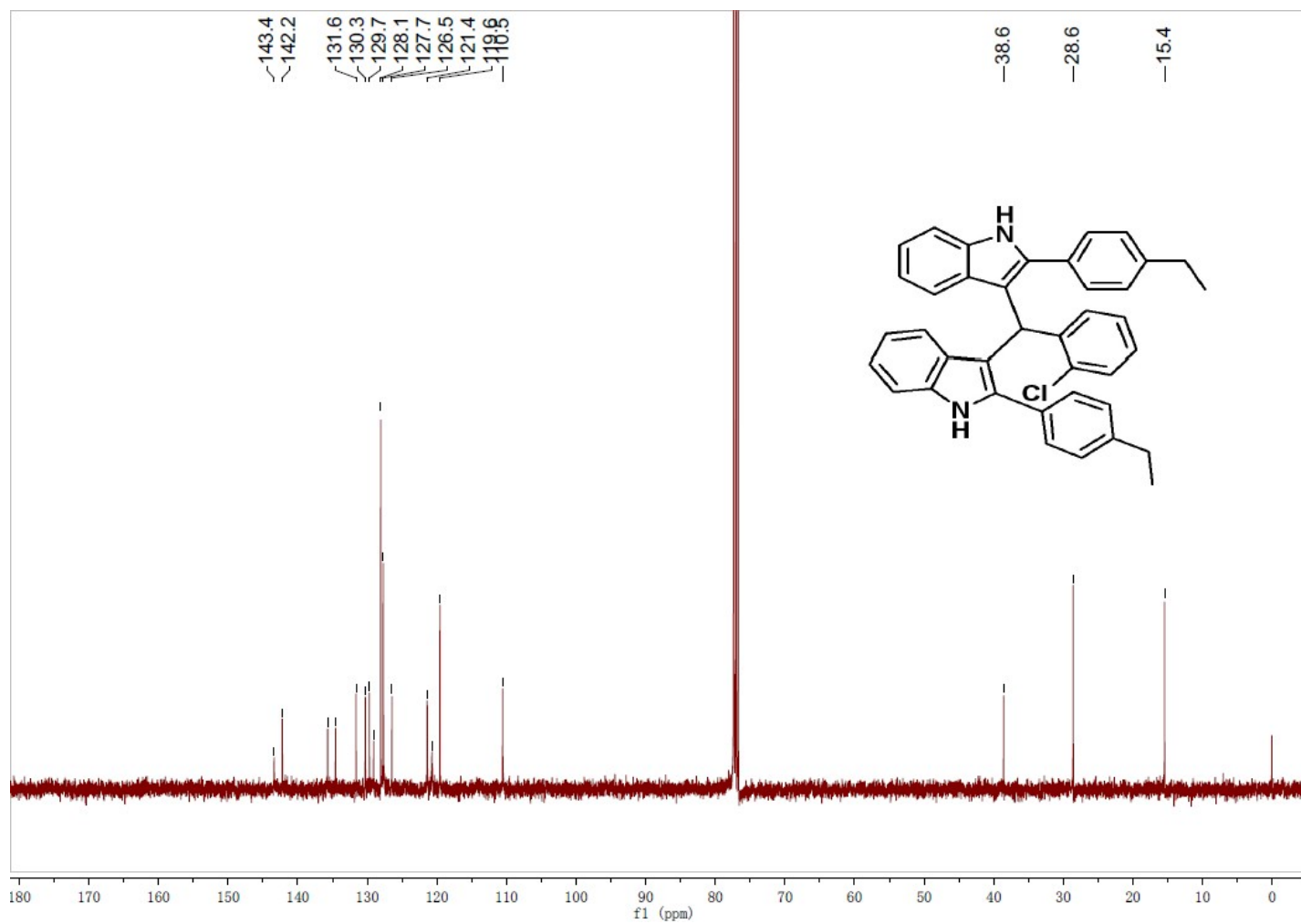
¹H NMR Spectrum of Compound 3v



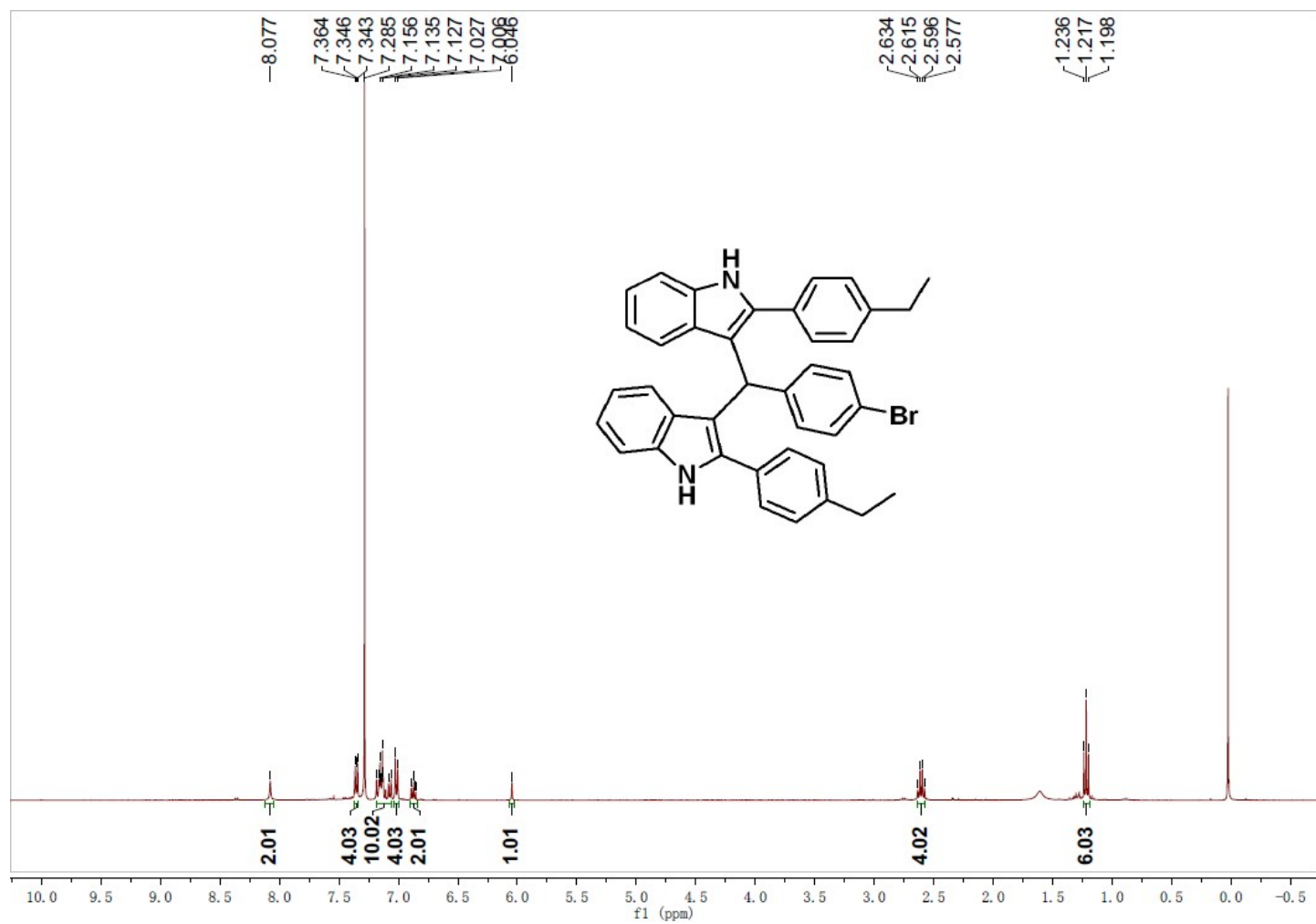
¹³C NMR Spectrum of Compound 3v



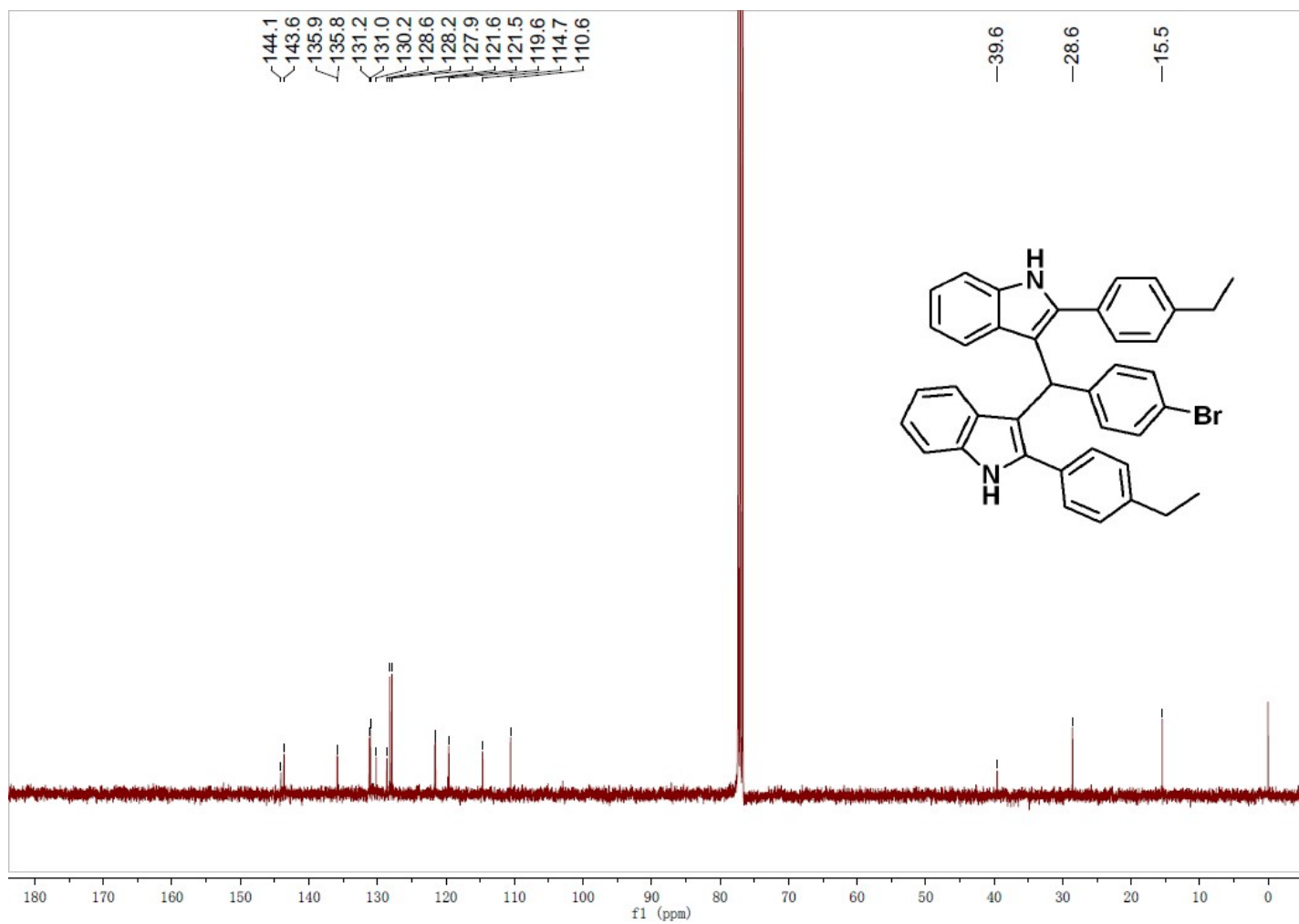
¹H NMR Spectrum of Compound 3w



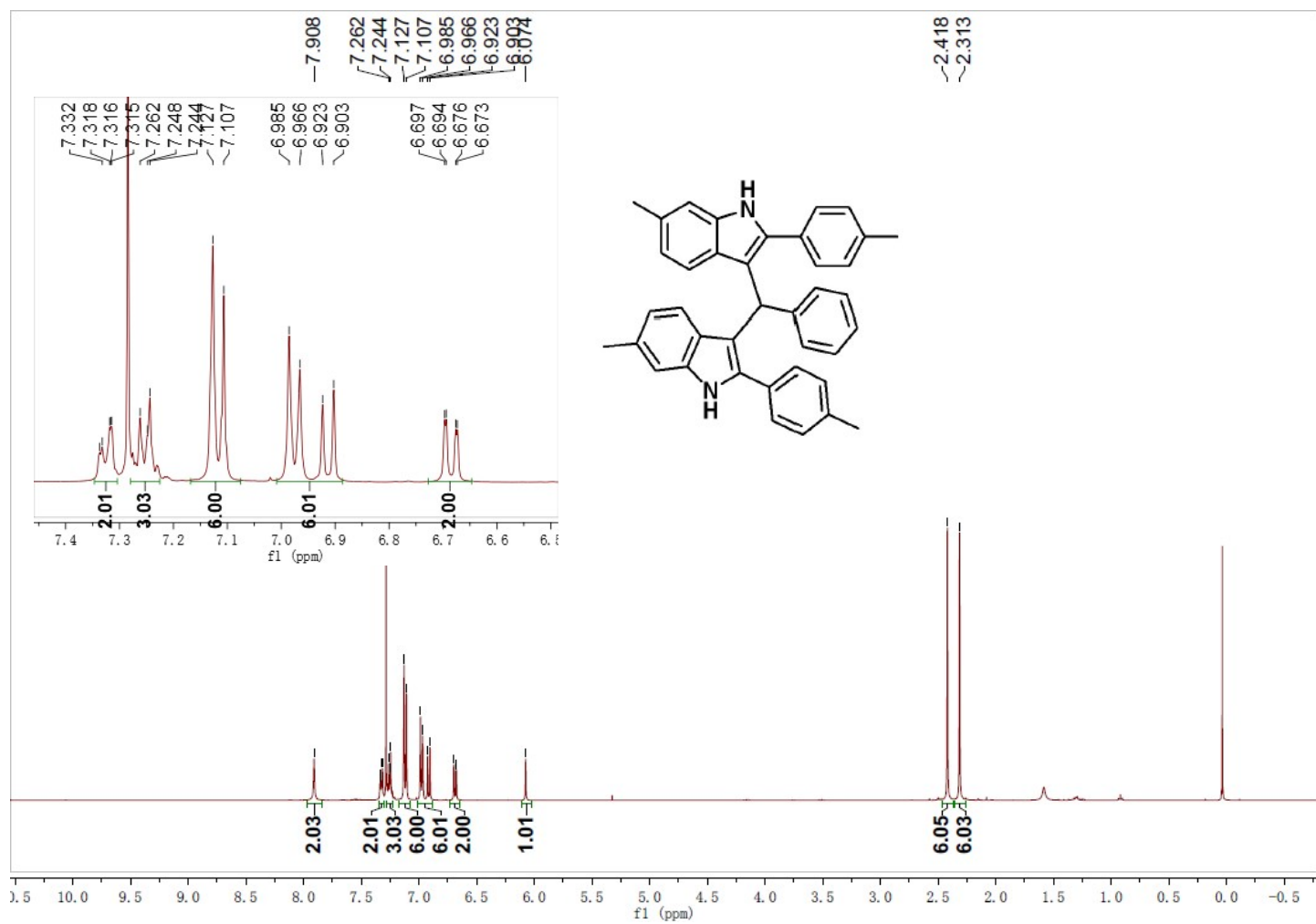
¹³C NMR Spectrum of Compound 3w



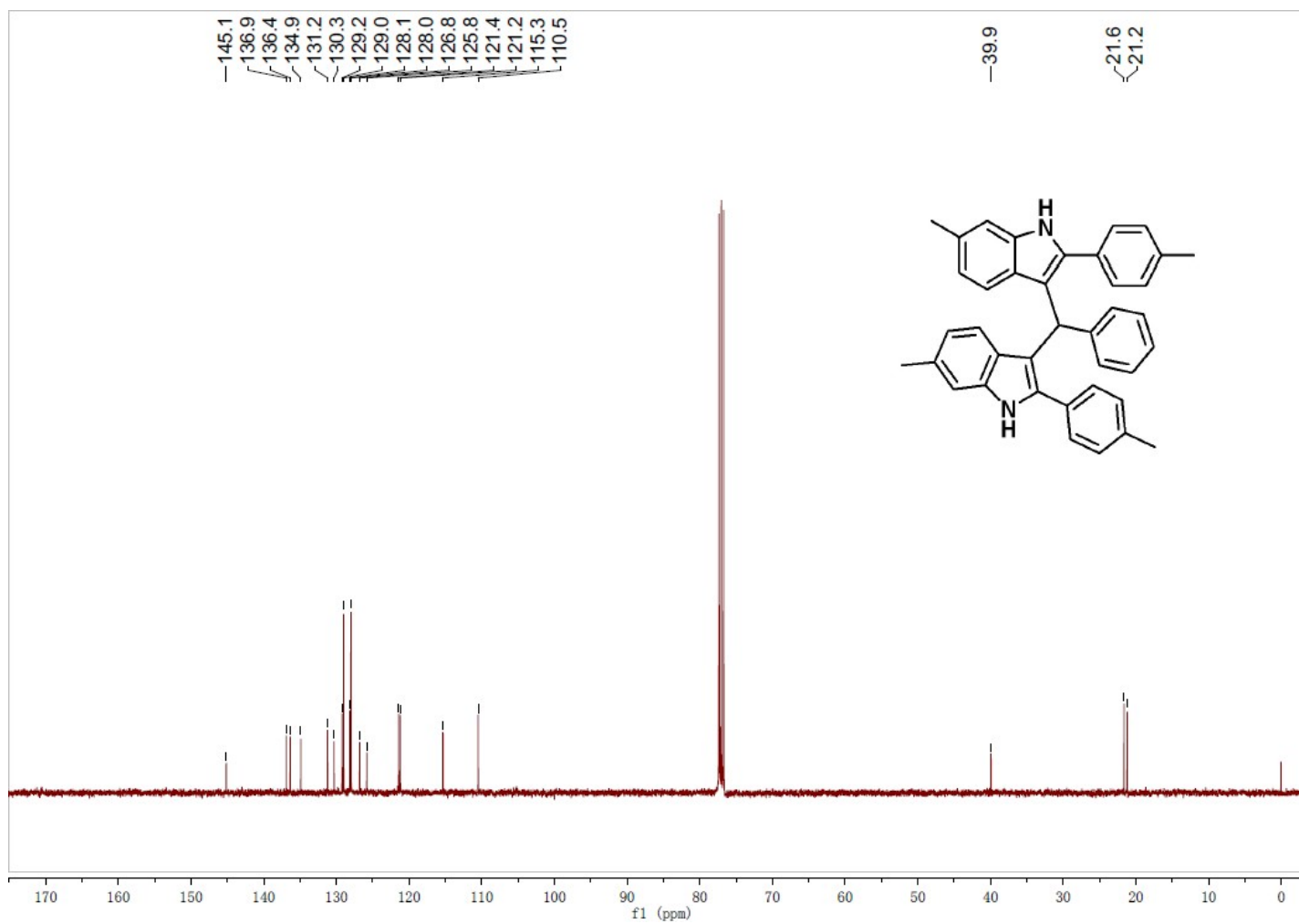
¹H NMR Spectrum of Compound 3x



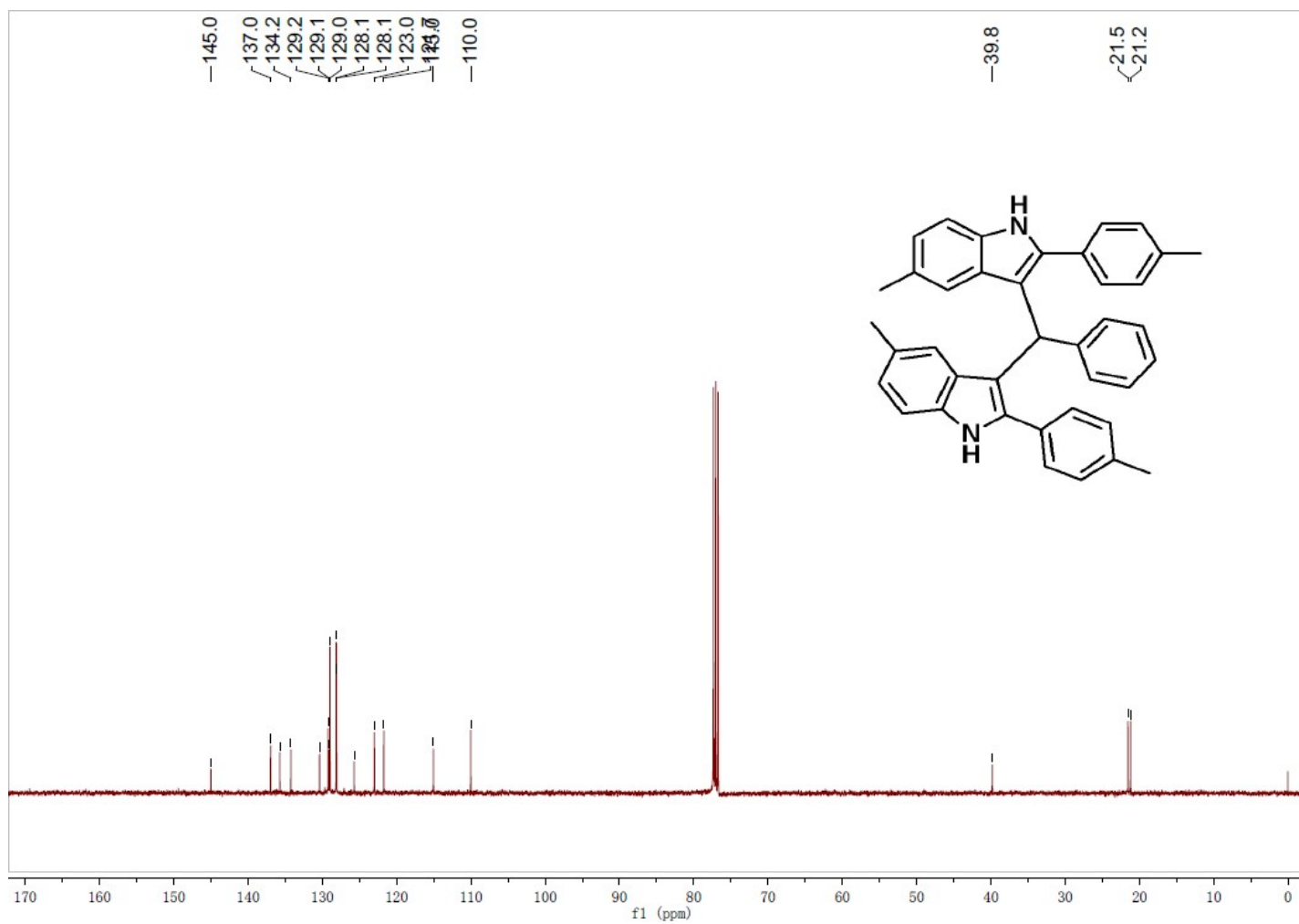
^{13}C NMR Spectrum of Compound 3x



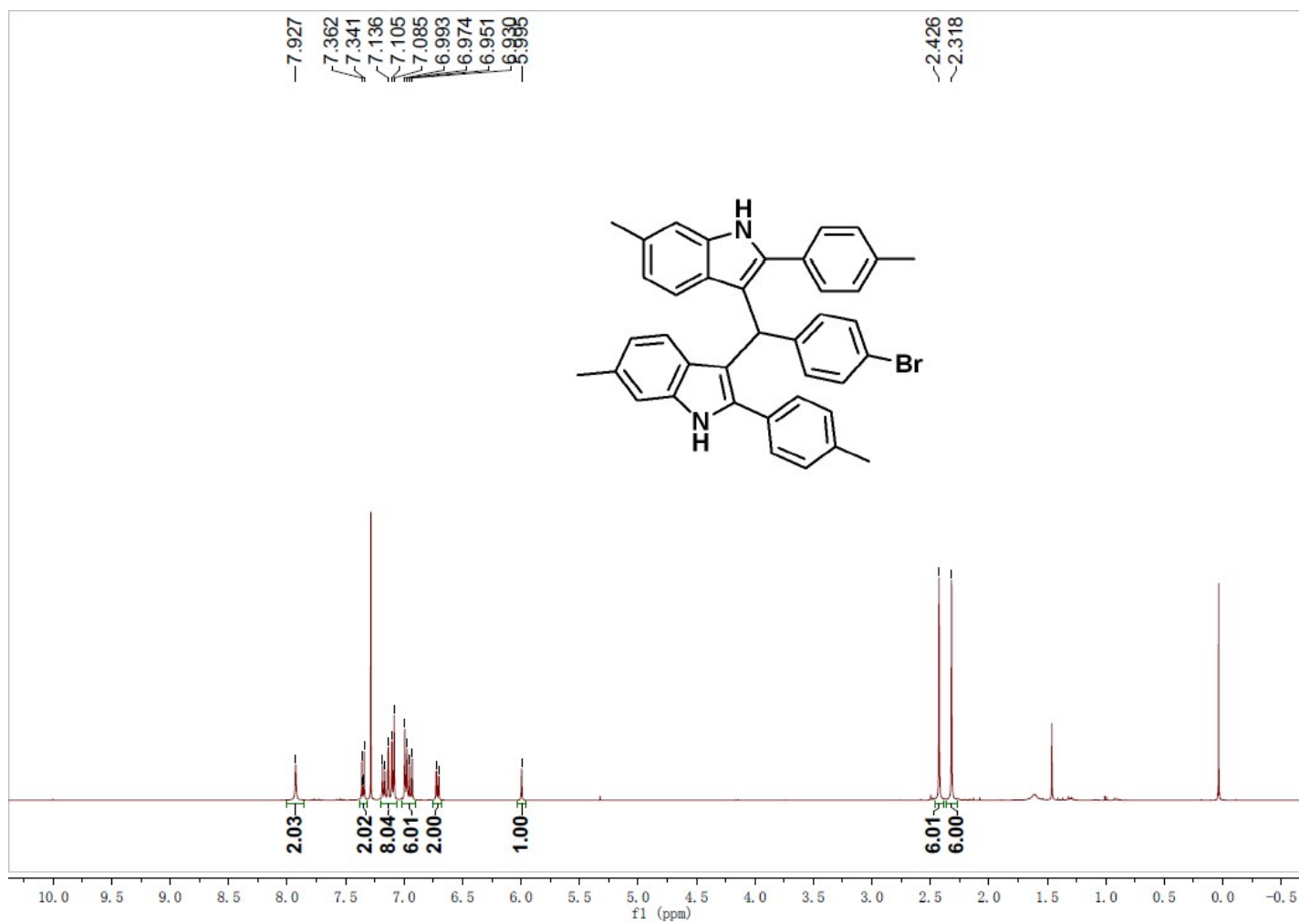
¹H NMR Spectrum of Compound 3y



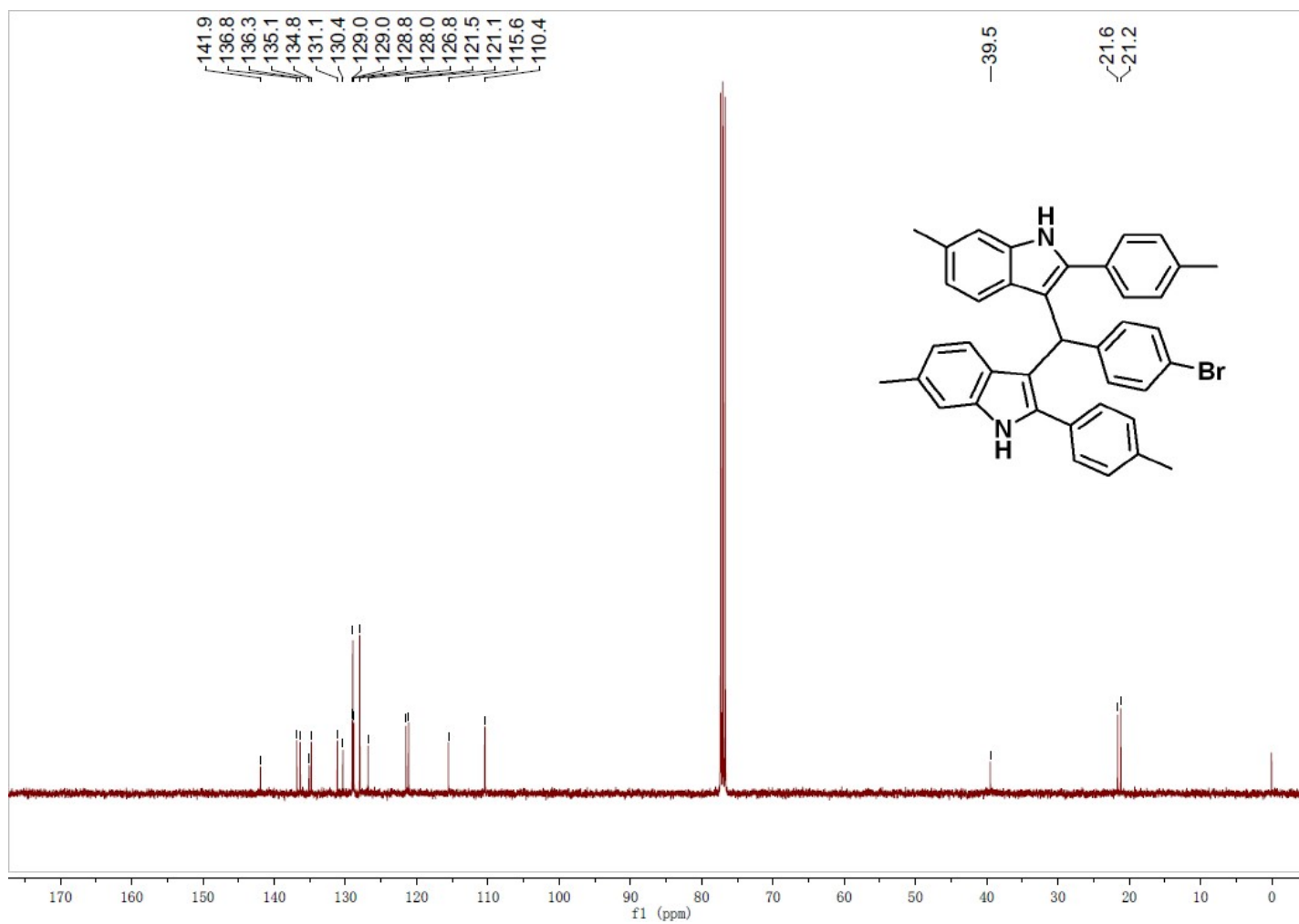
^{13}C NMR Spectrum of Compound 3y



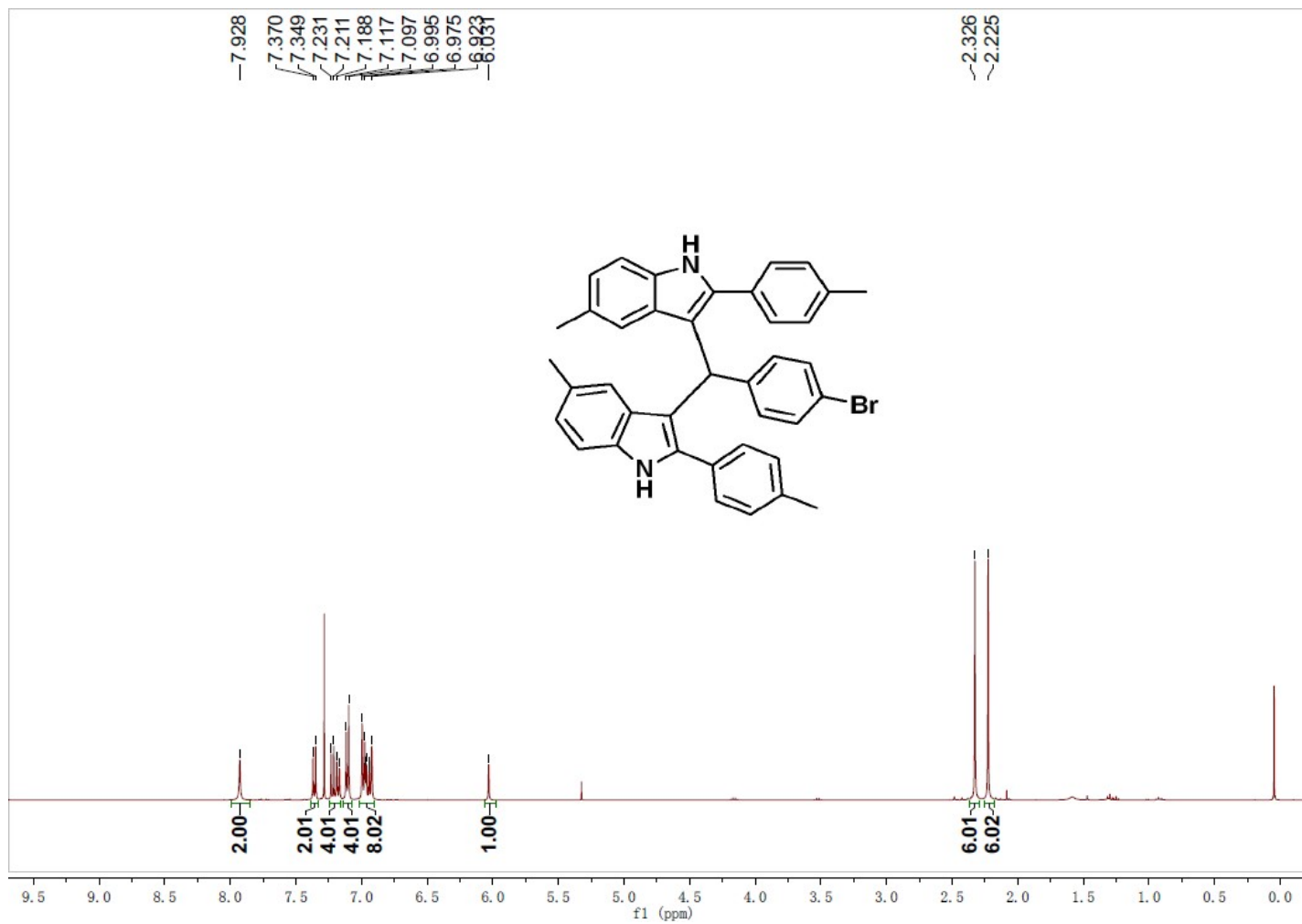
^{13}C NMR Spectrum of Compound 3z



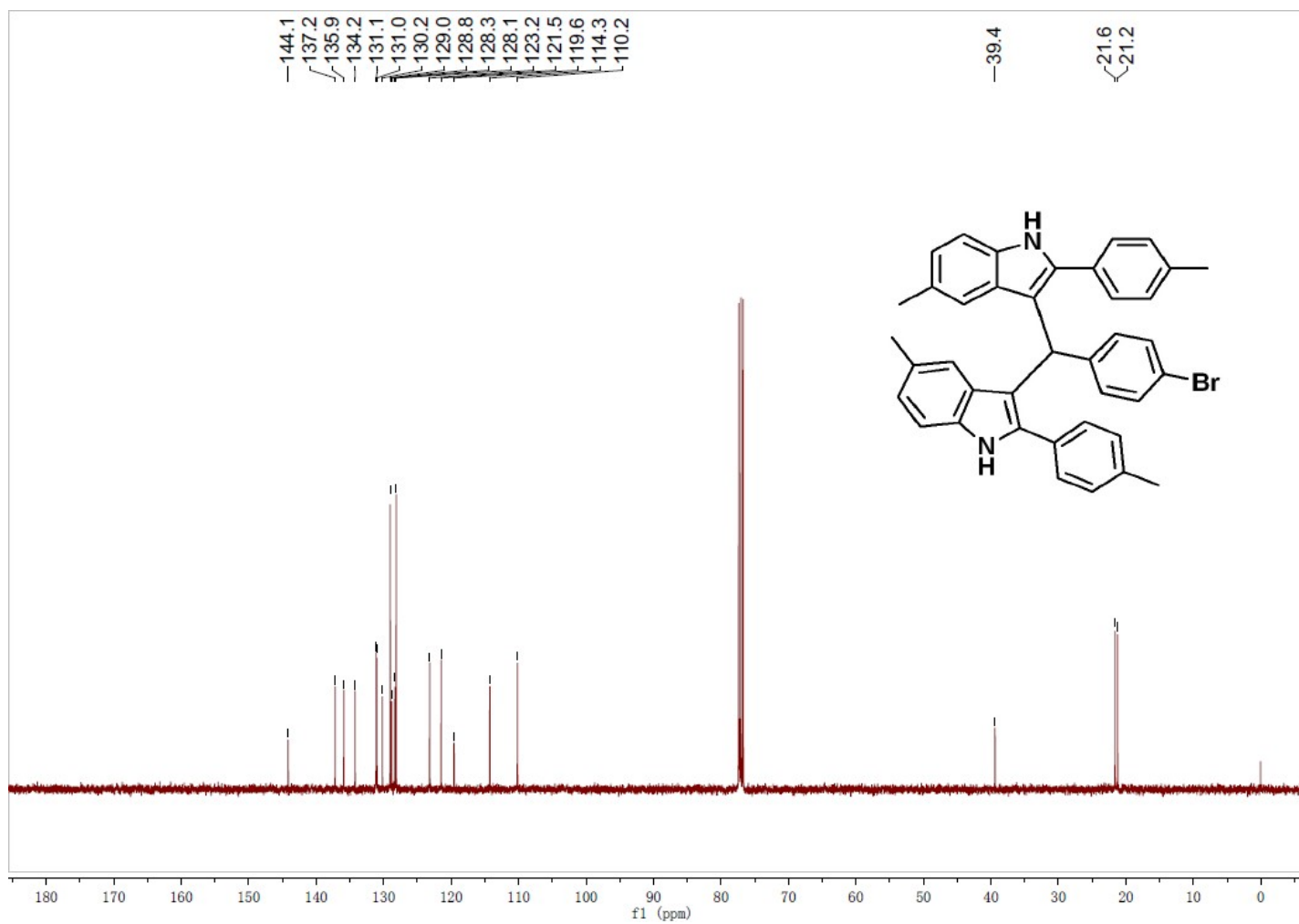
¹H NMR Spectrum of Compound 3aa



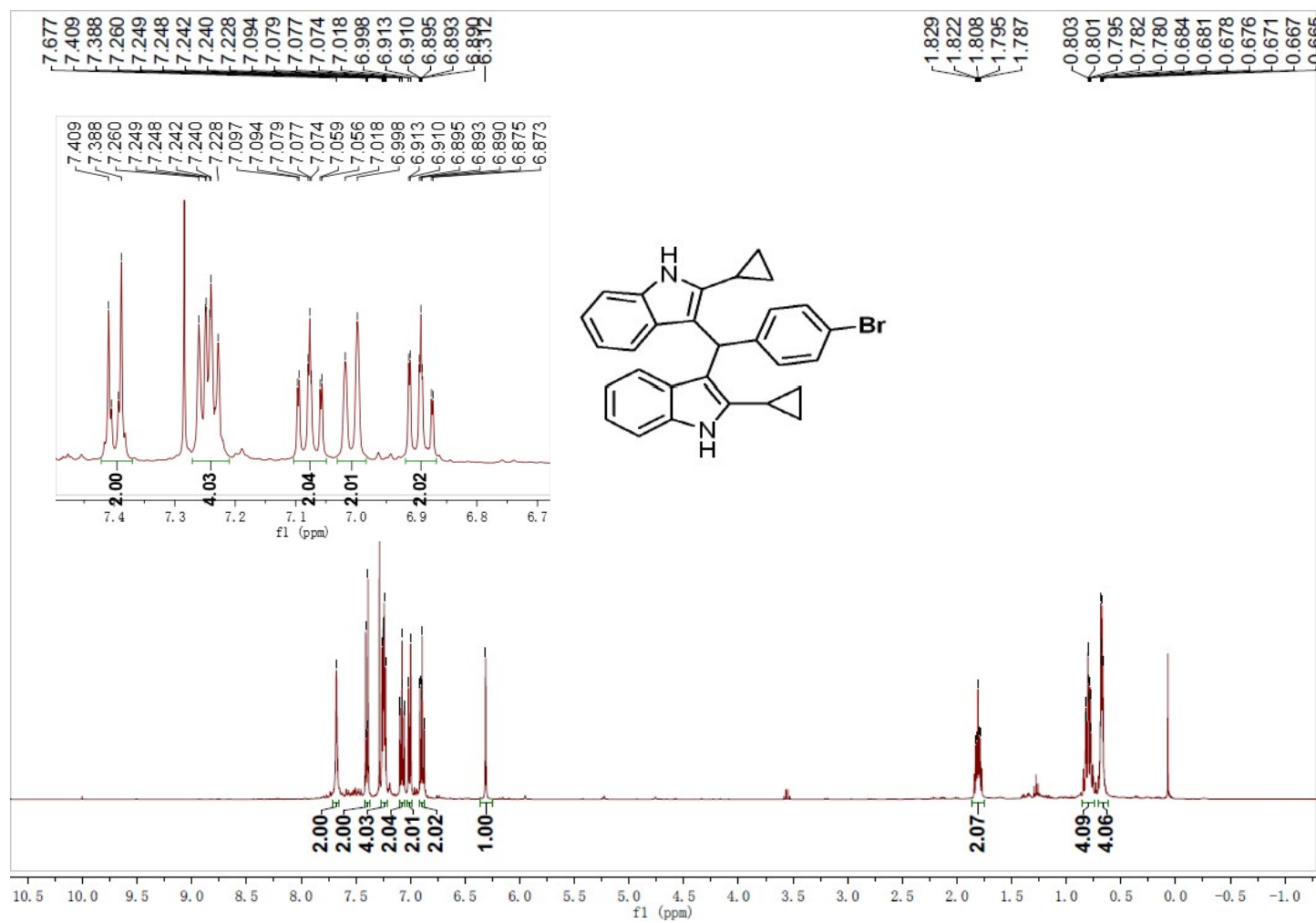
¹³C NMR Spectrum of Compound 3aa



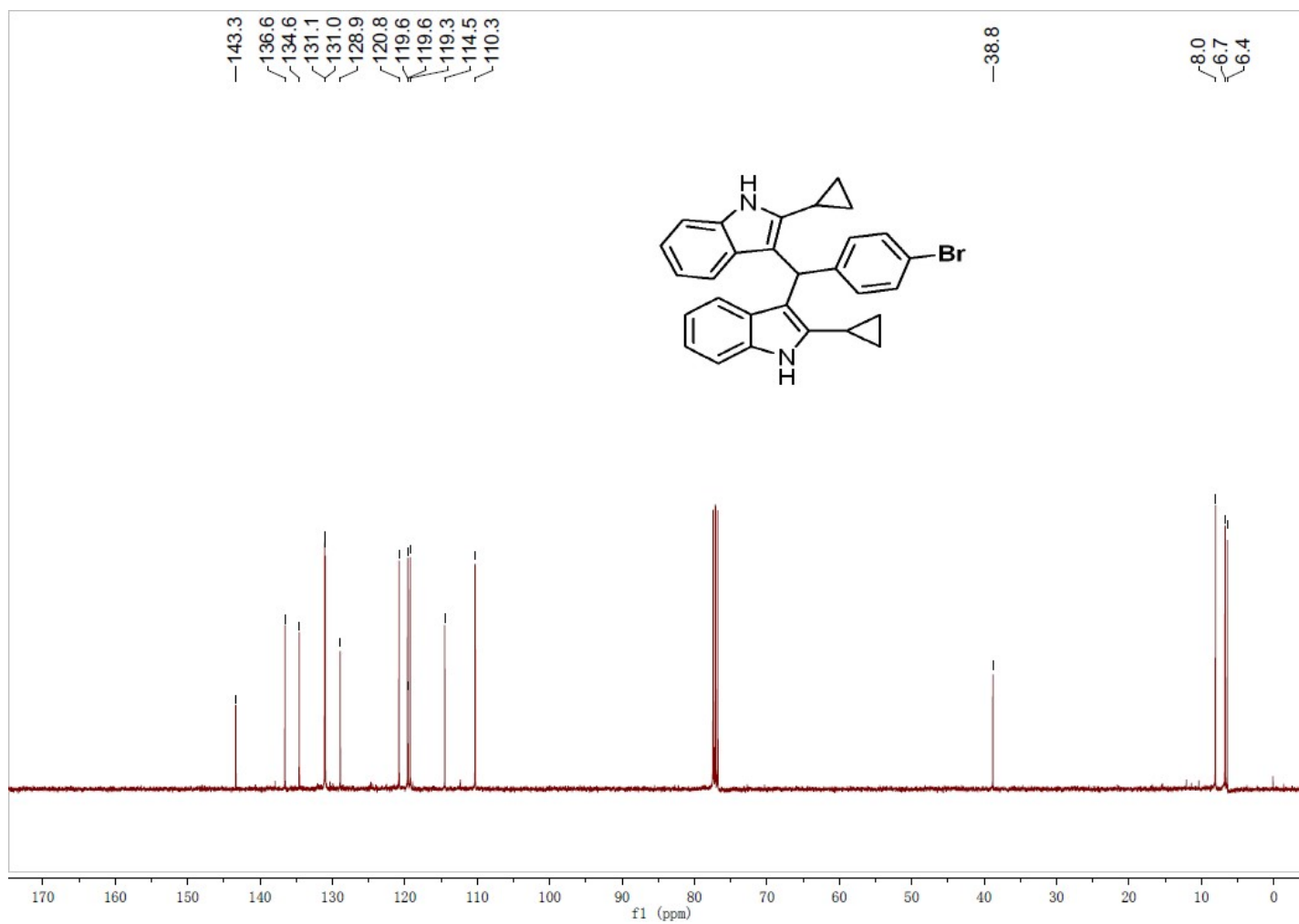
¹H NMR Spectrum of Compound 3ab



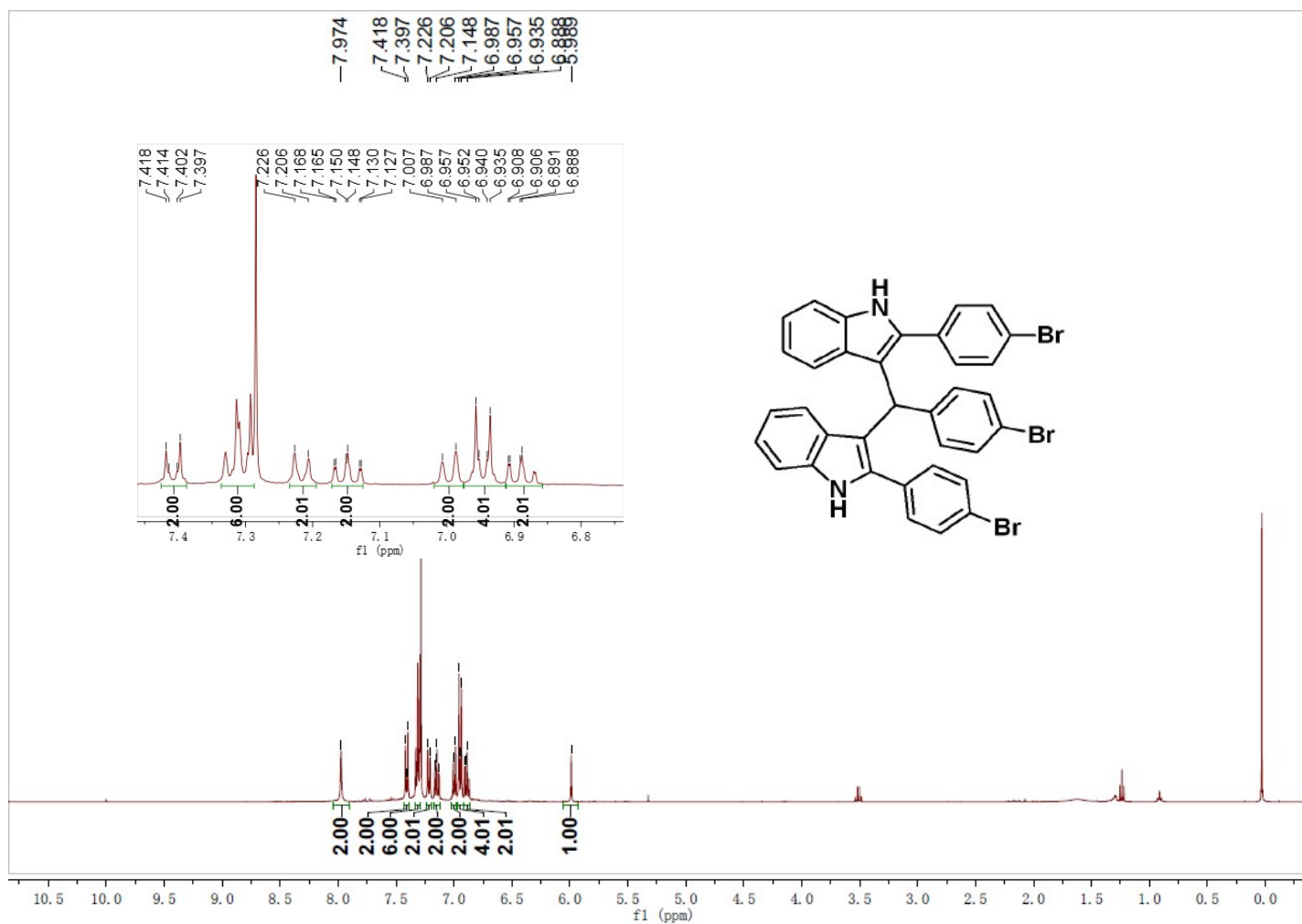
^{13}C NMR Spectrum of Compound 3ab



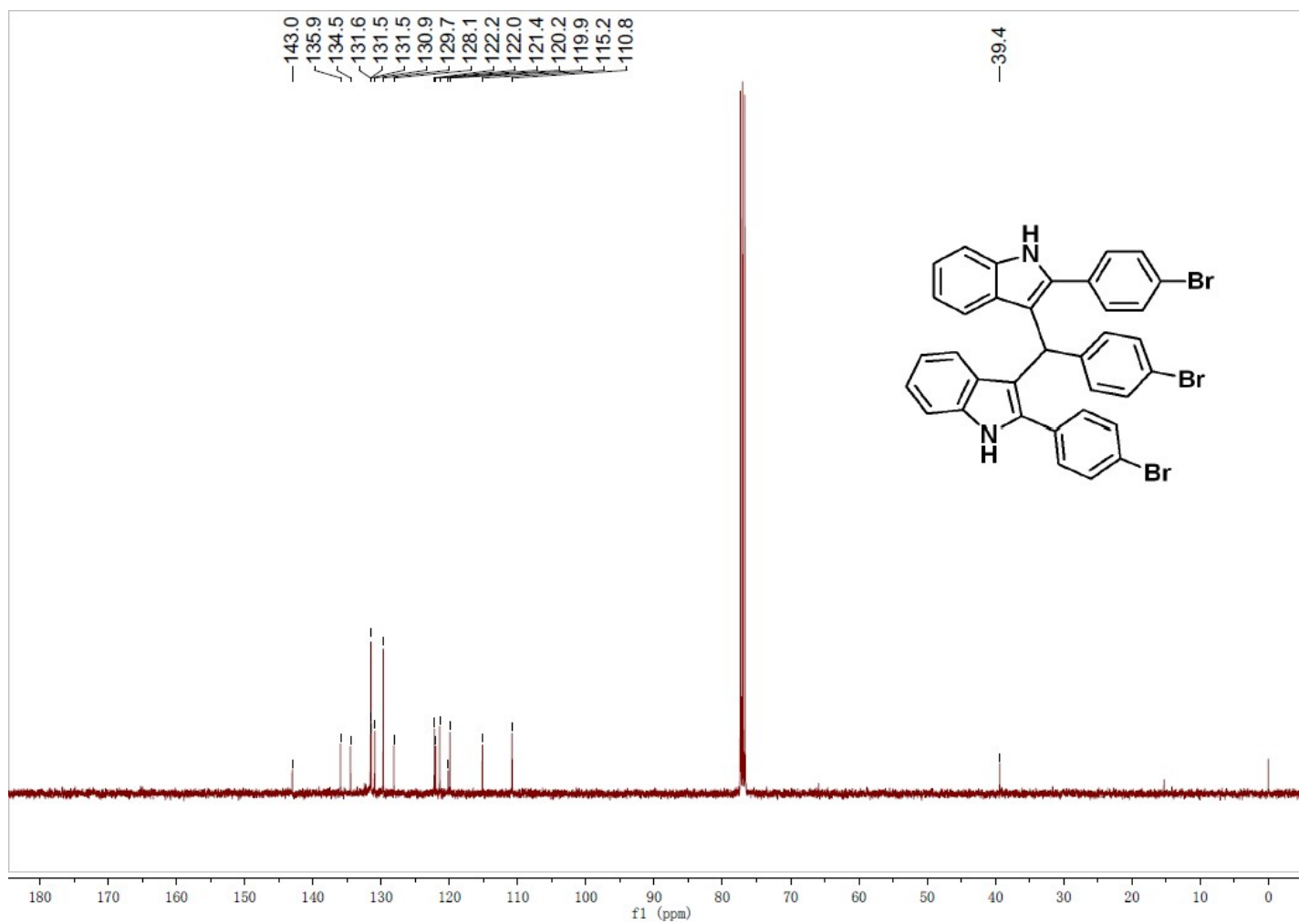
¹H NMR Spectrum of Compound 3ac



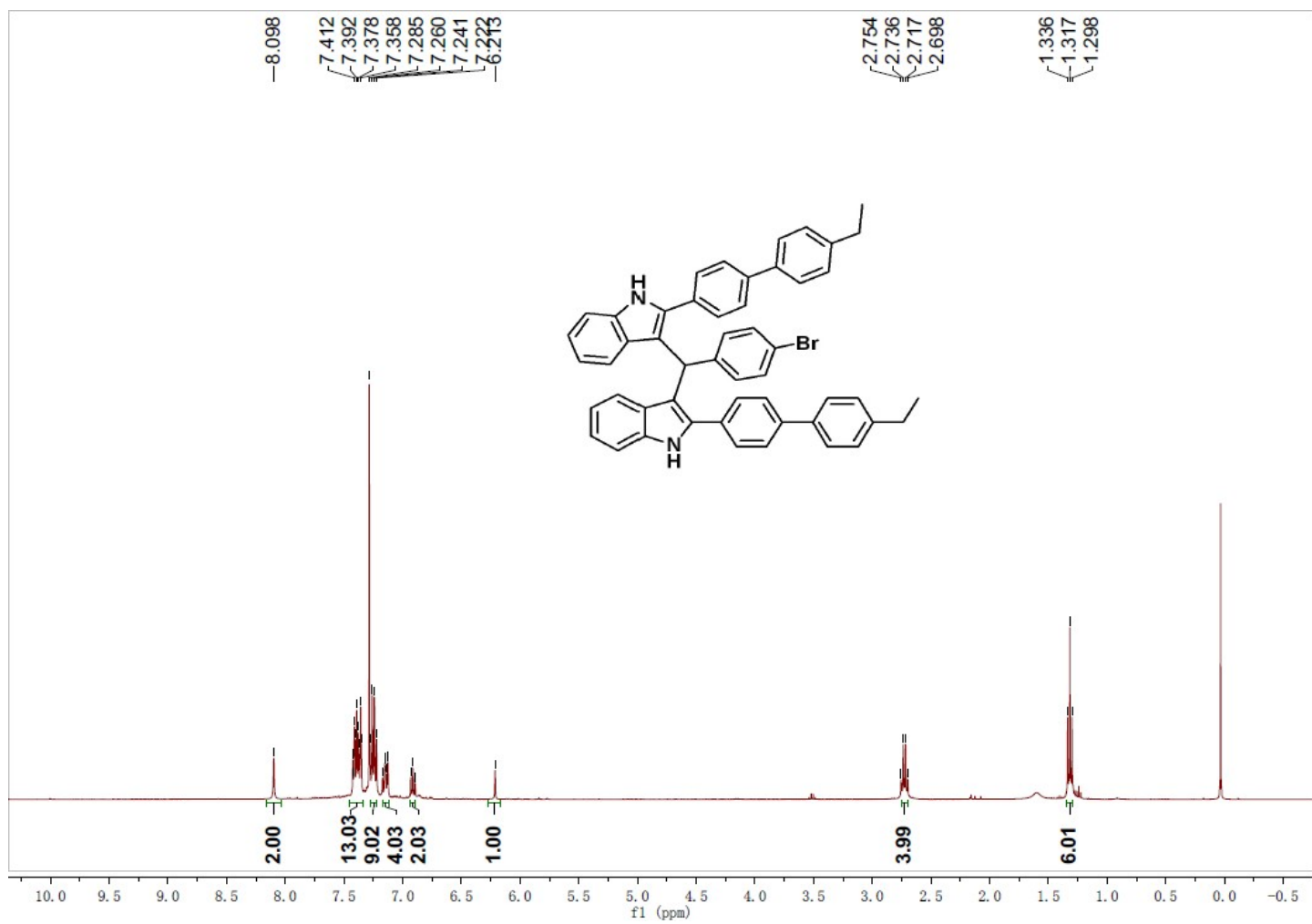
^{13}C NMR Spectrum of Compound 3ac



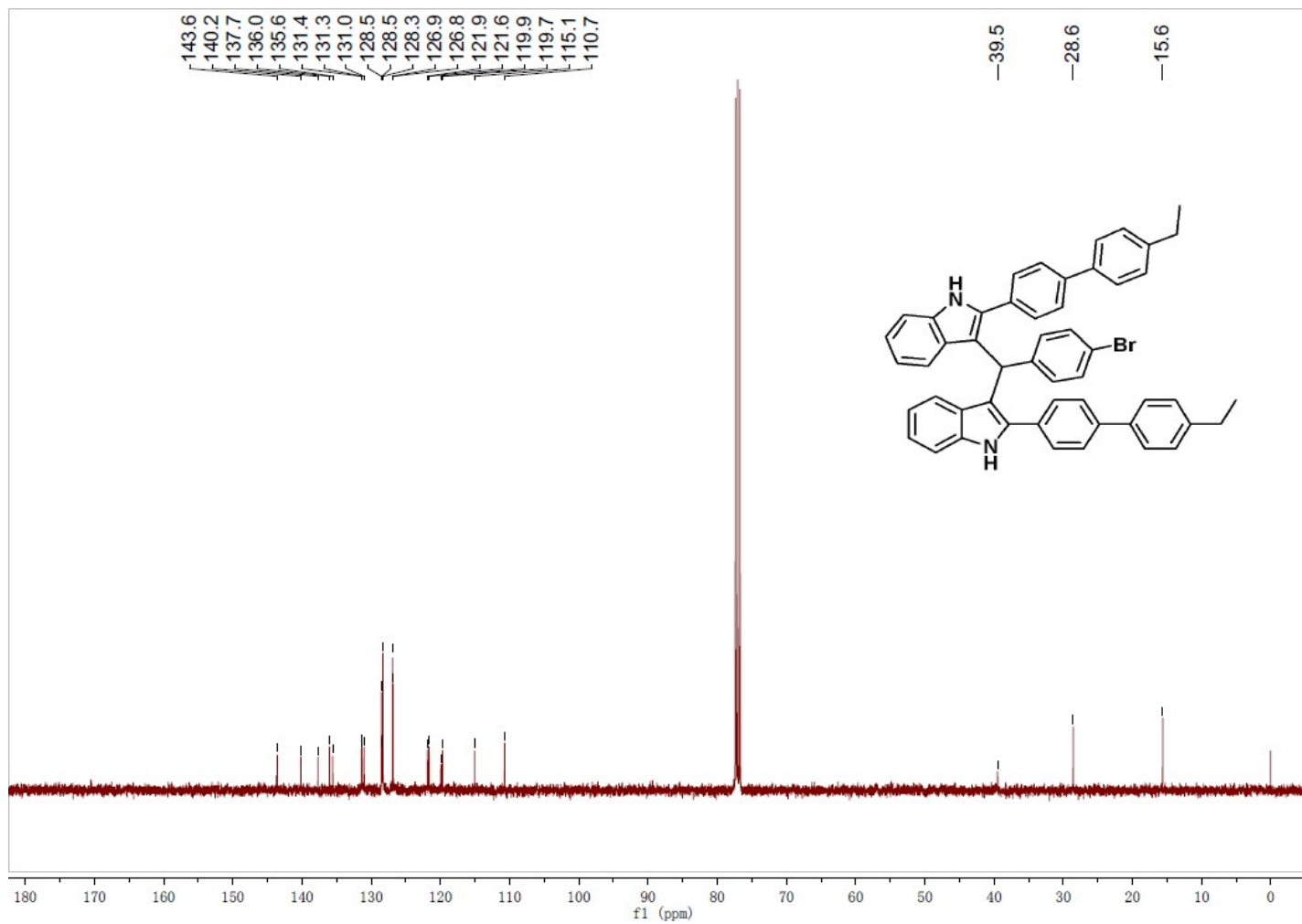
^1H NMR Spectrum of Compound 3ad



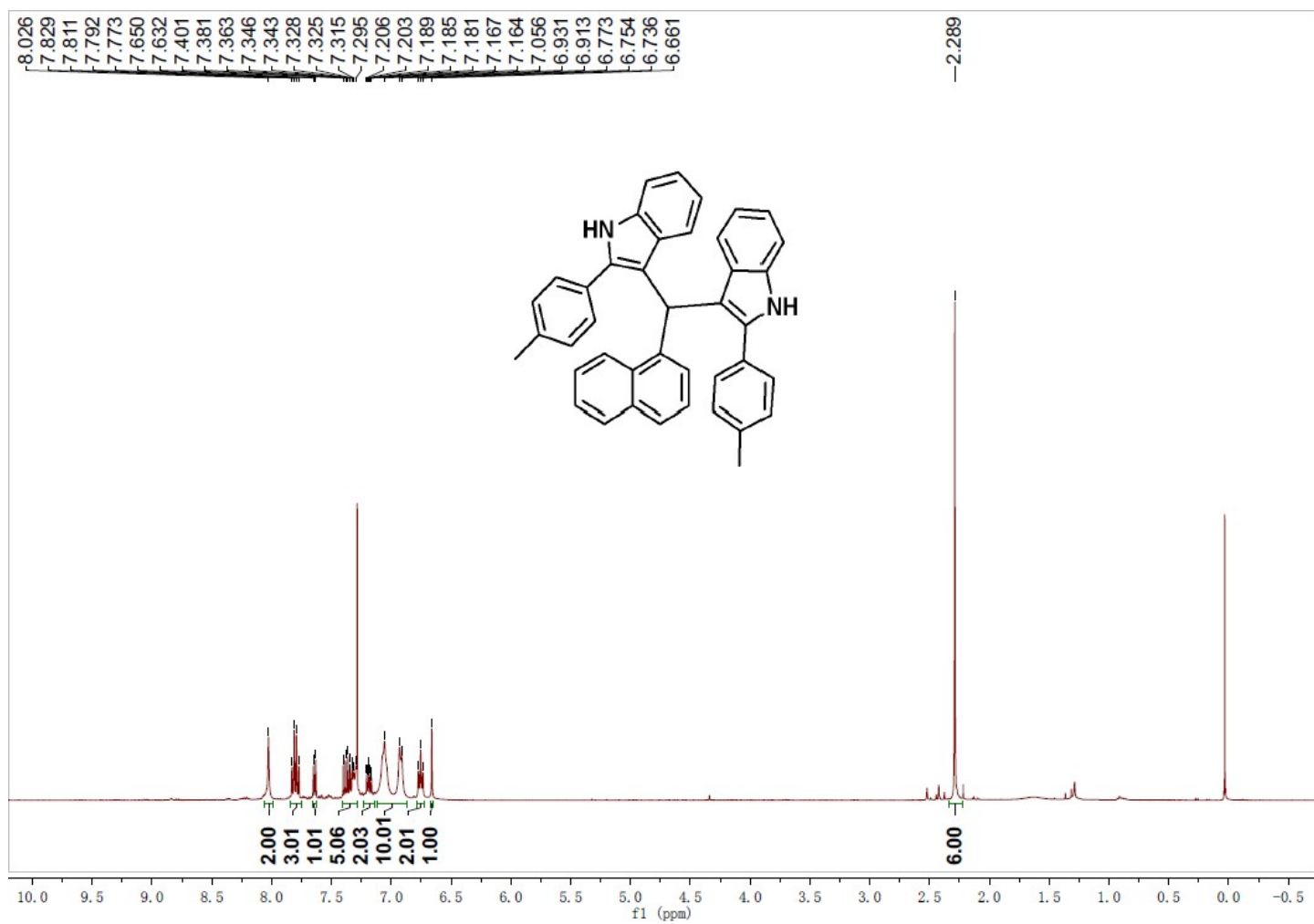
^{13}C NMR Spectrum of Compound 3ad



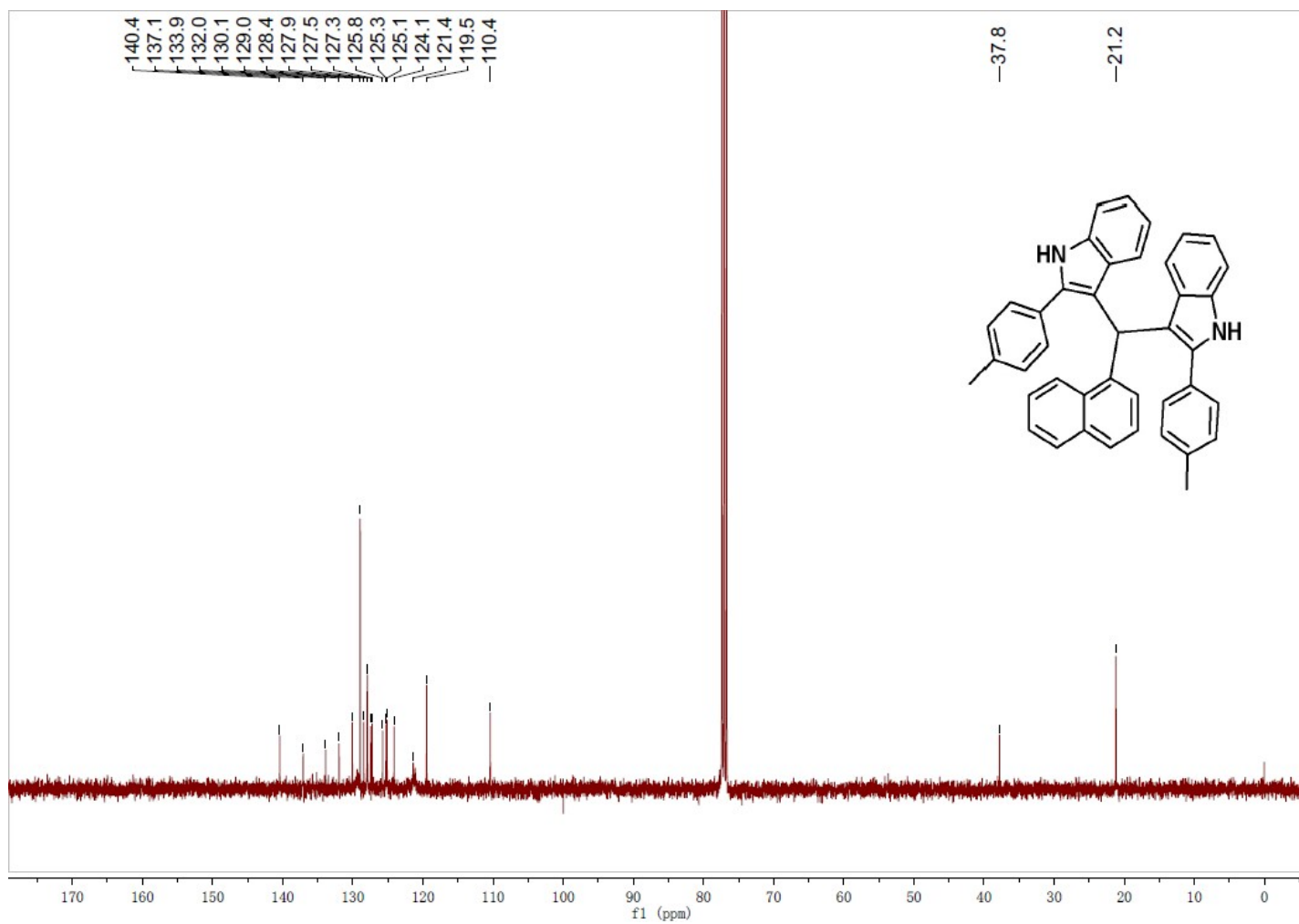
¹H NMR Spectrum of Compound 3ae



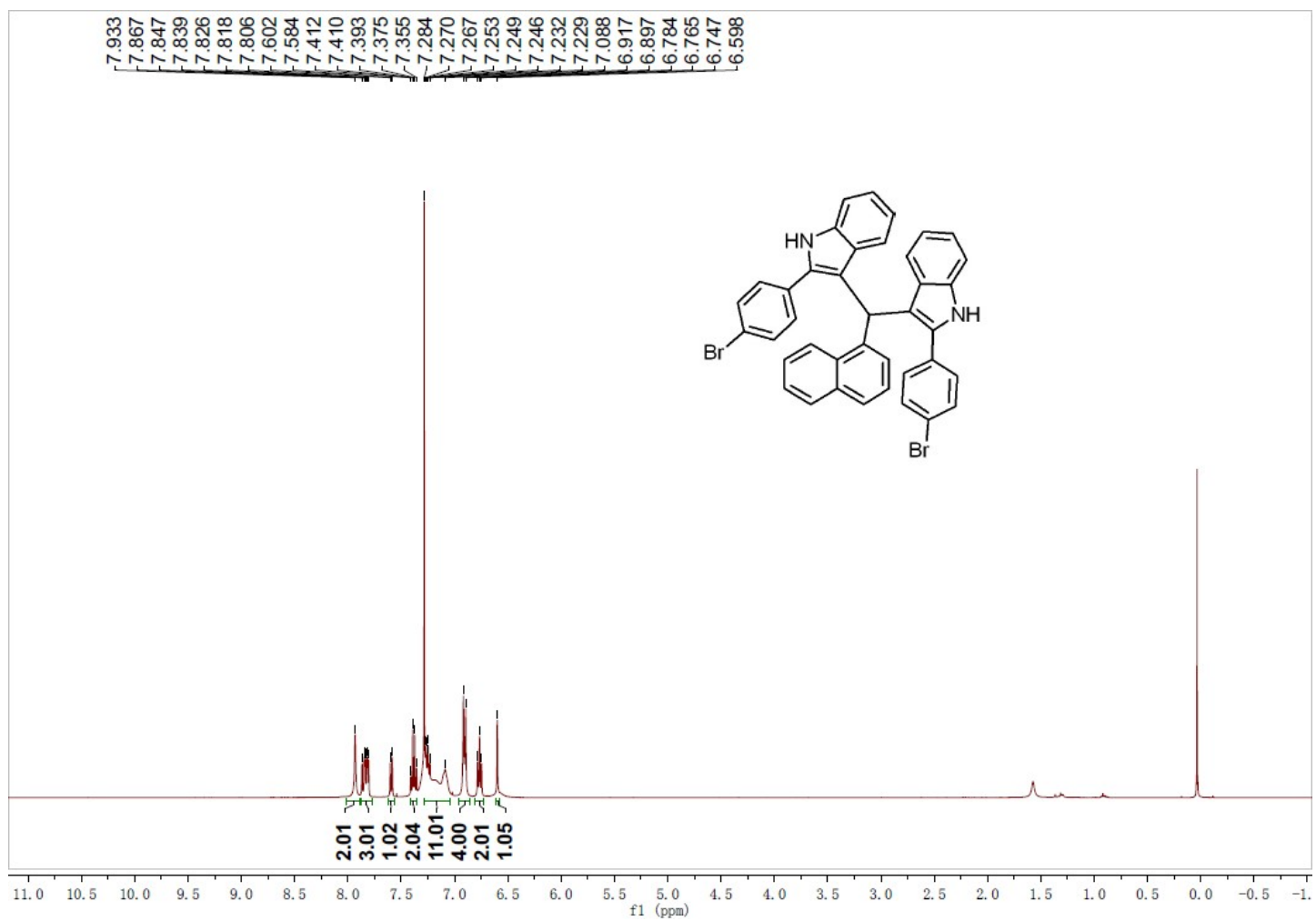
¹³C NMR Spectrum of Compound 3ae



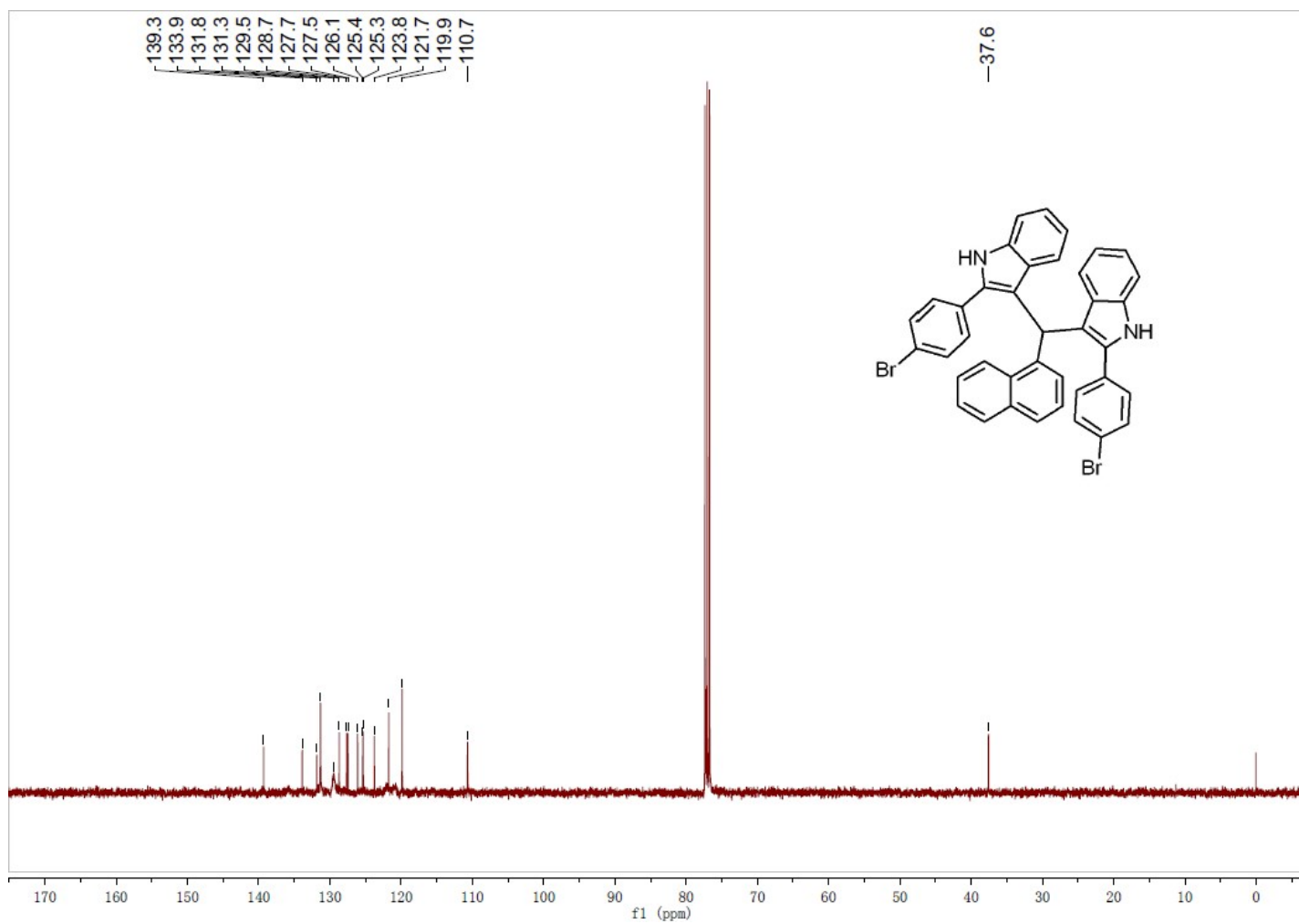
¹H NMR Spectrum of Compound 3af



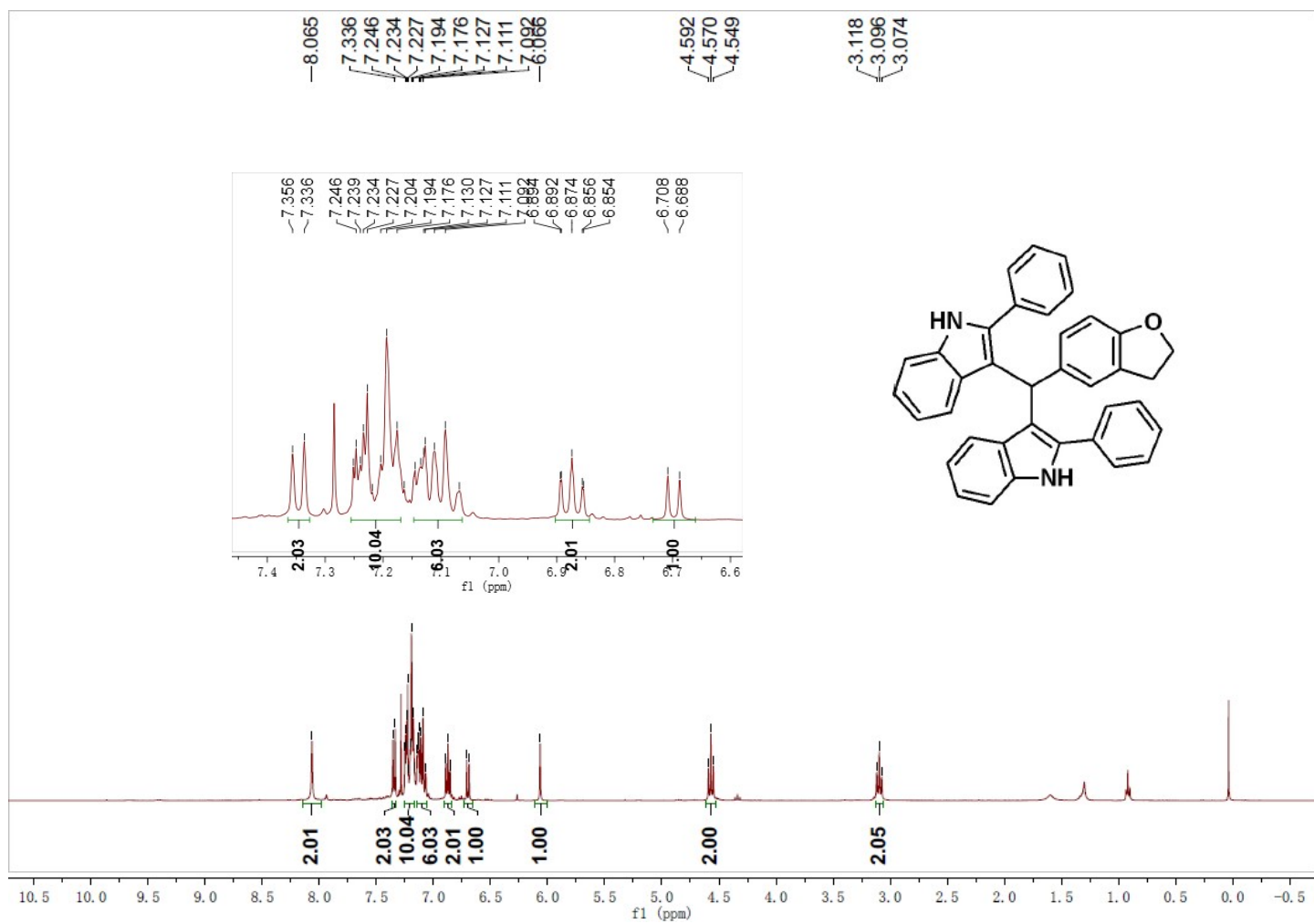
^{13}C NMR Spectrum of Compound 3af



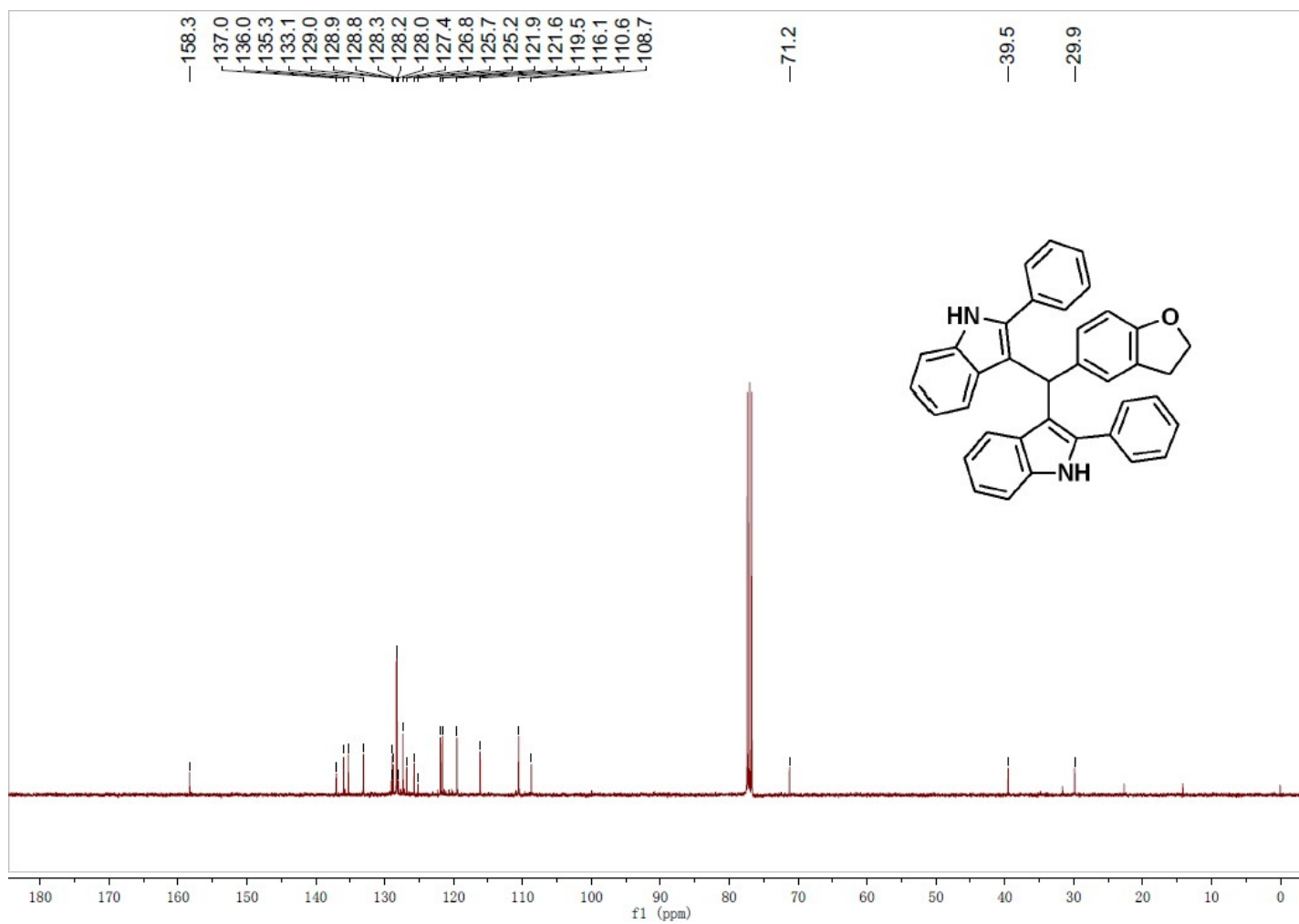
¹H NMR Spectrum of Compound 3ag



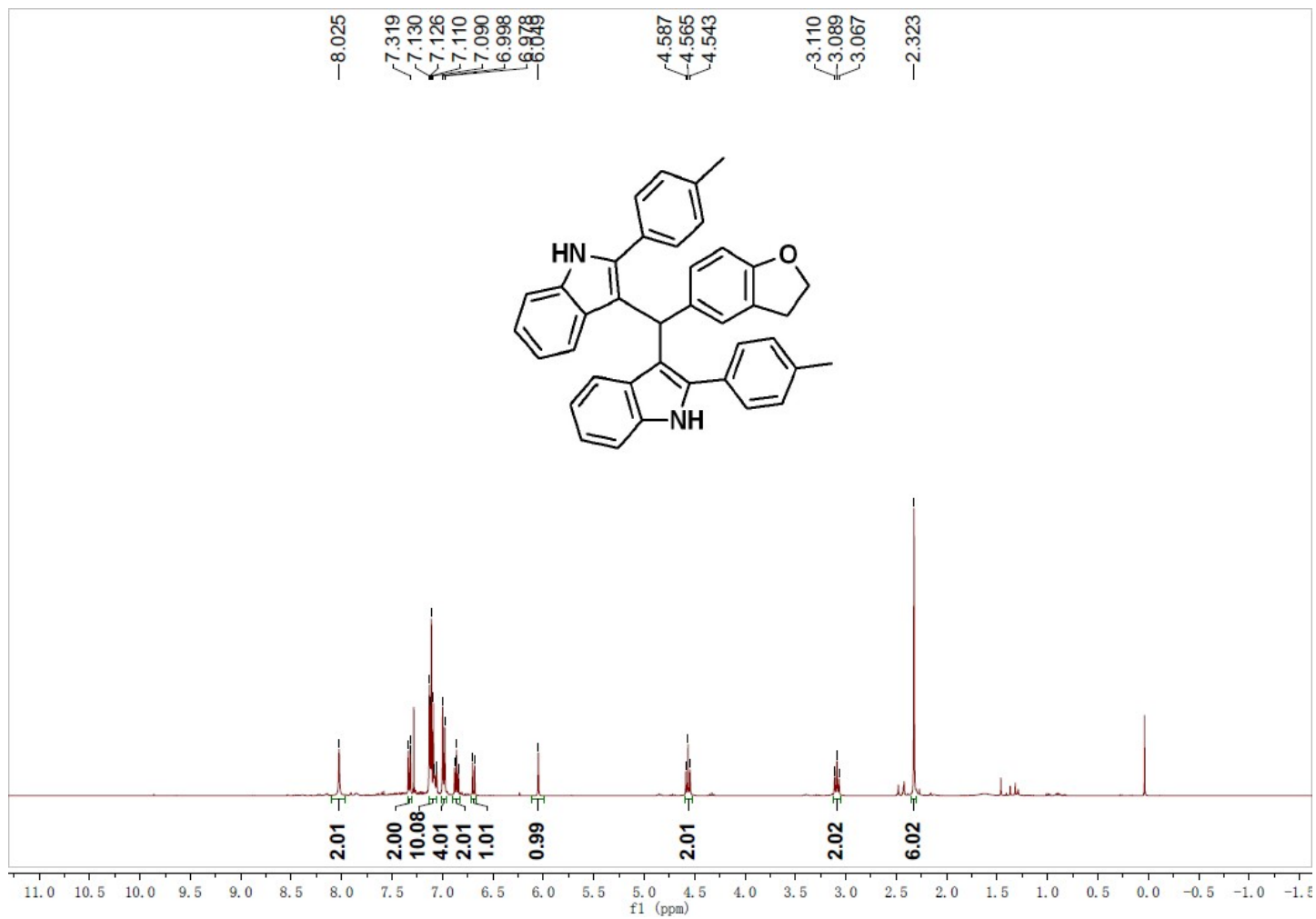
^{13}C NMR Spectrum of Compound 3ag



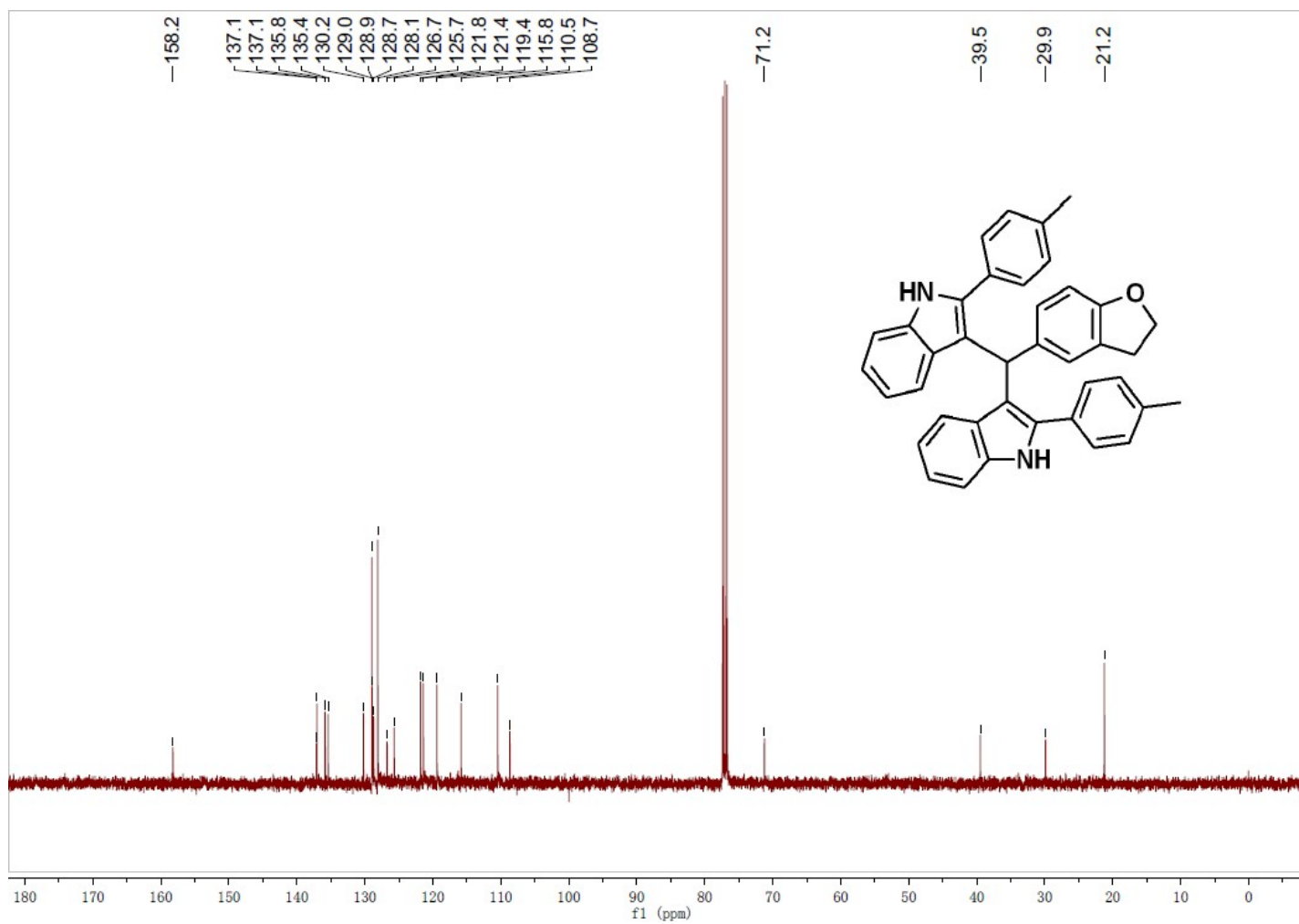
¹H NMR Spectrum of Compound 3ah



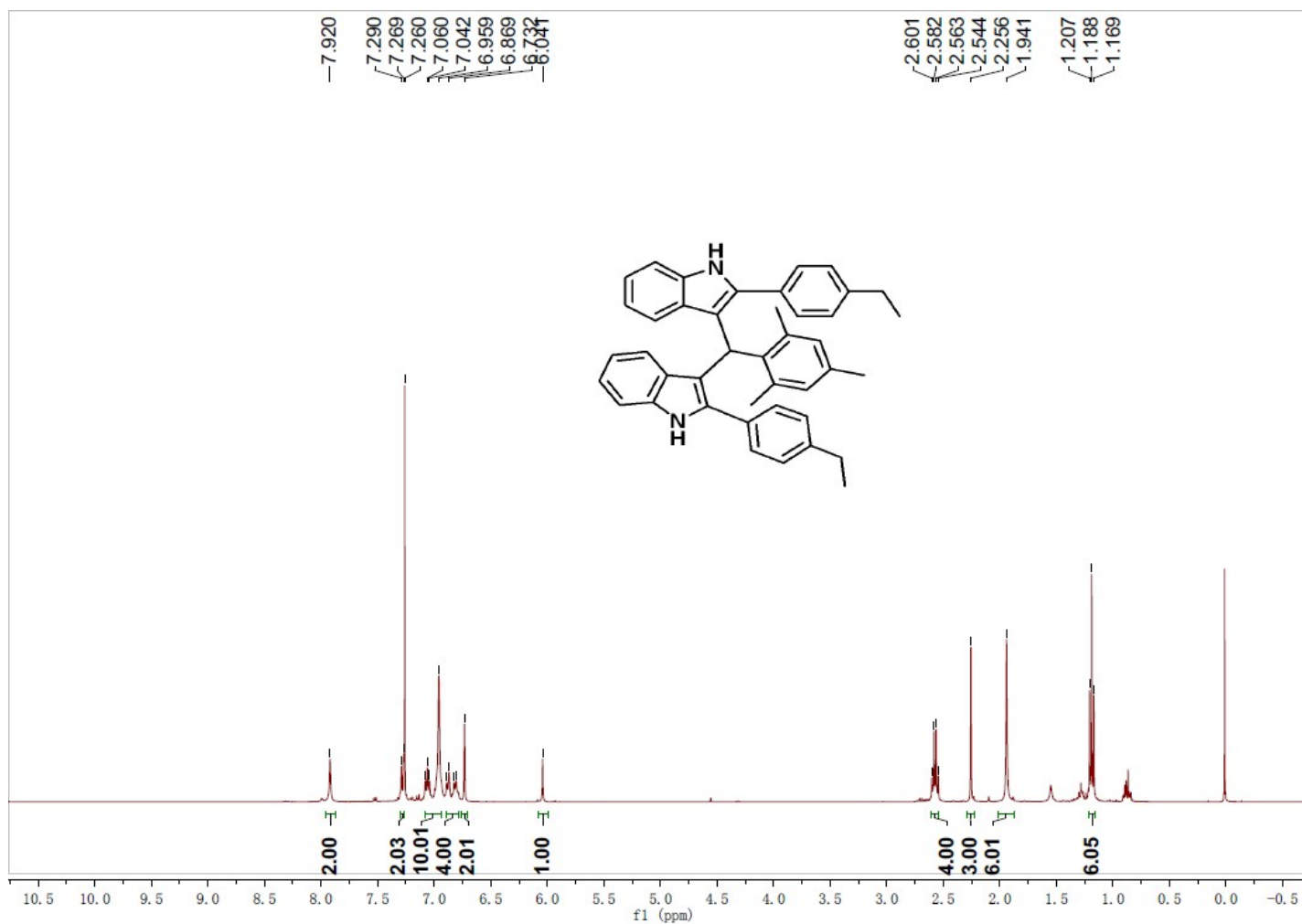
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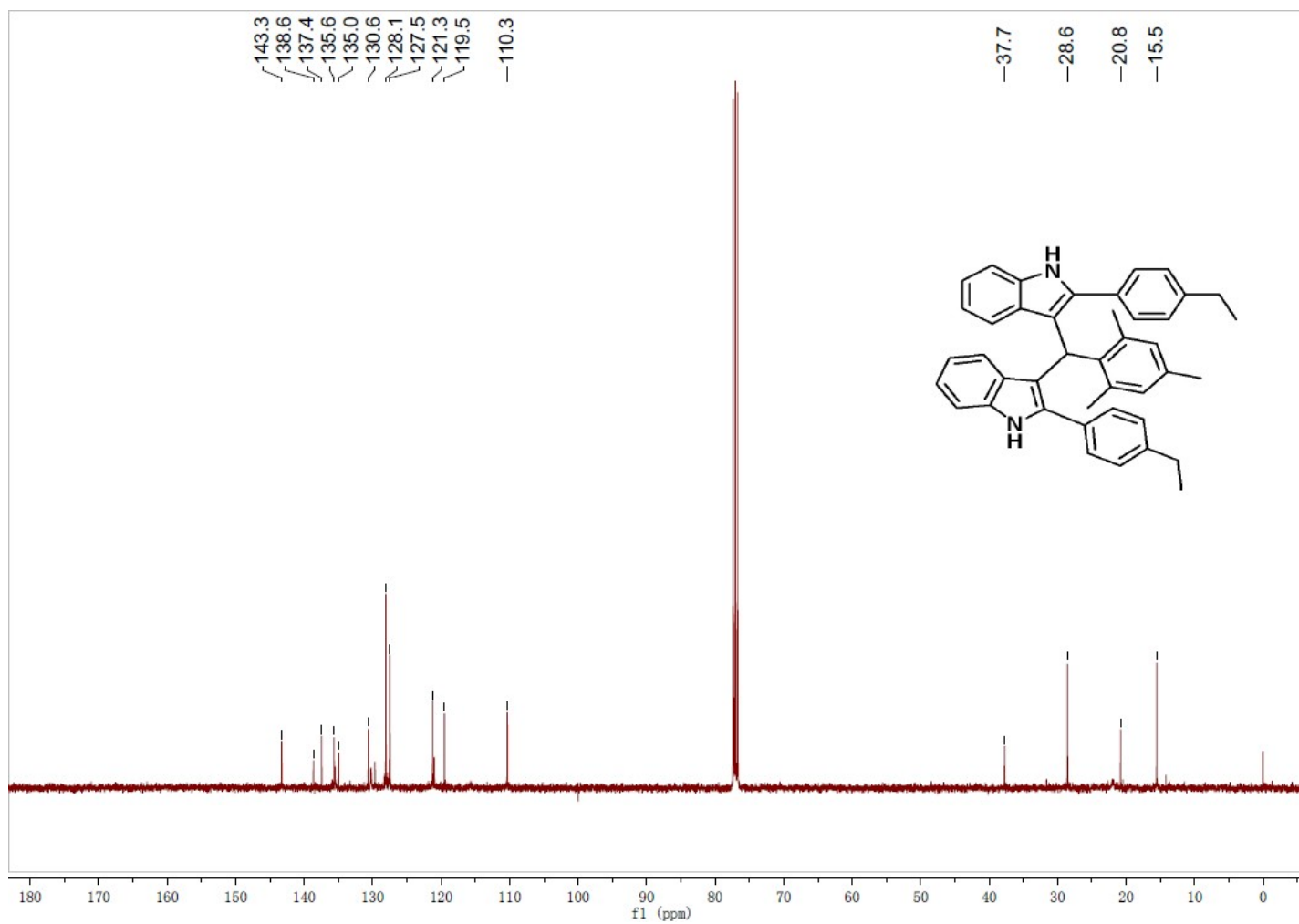
¹H NMR Spectrum of Compound 3ai



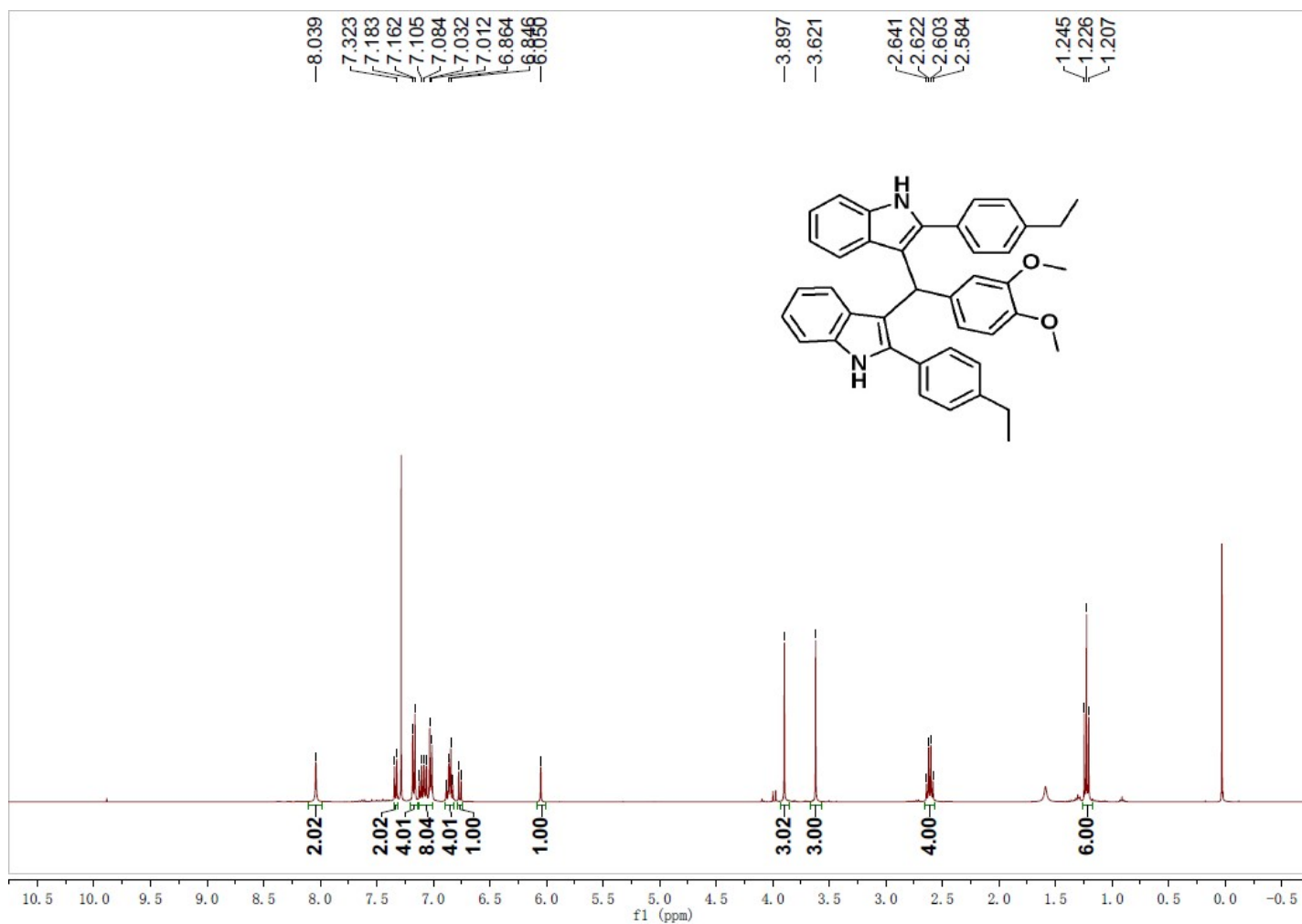
^{13}C NMR Spectrum of Compound 3ai



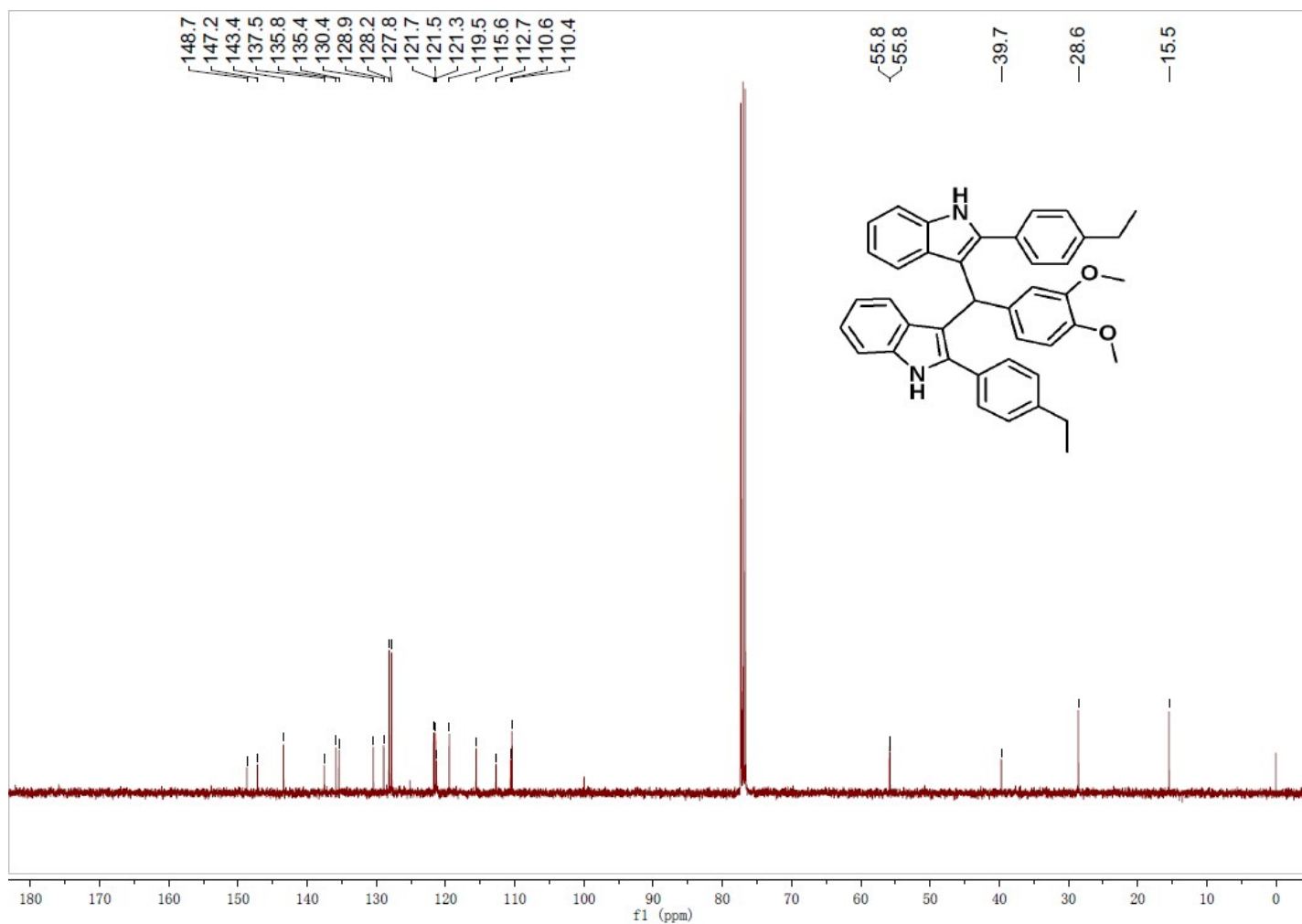
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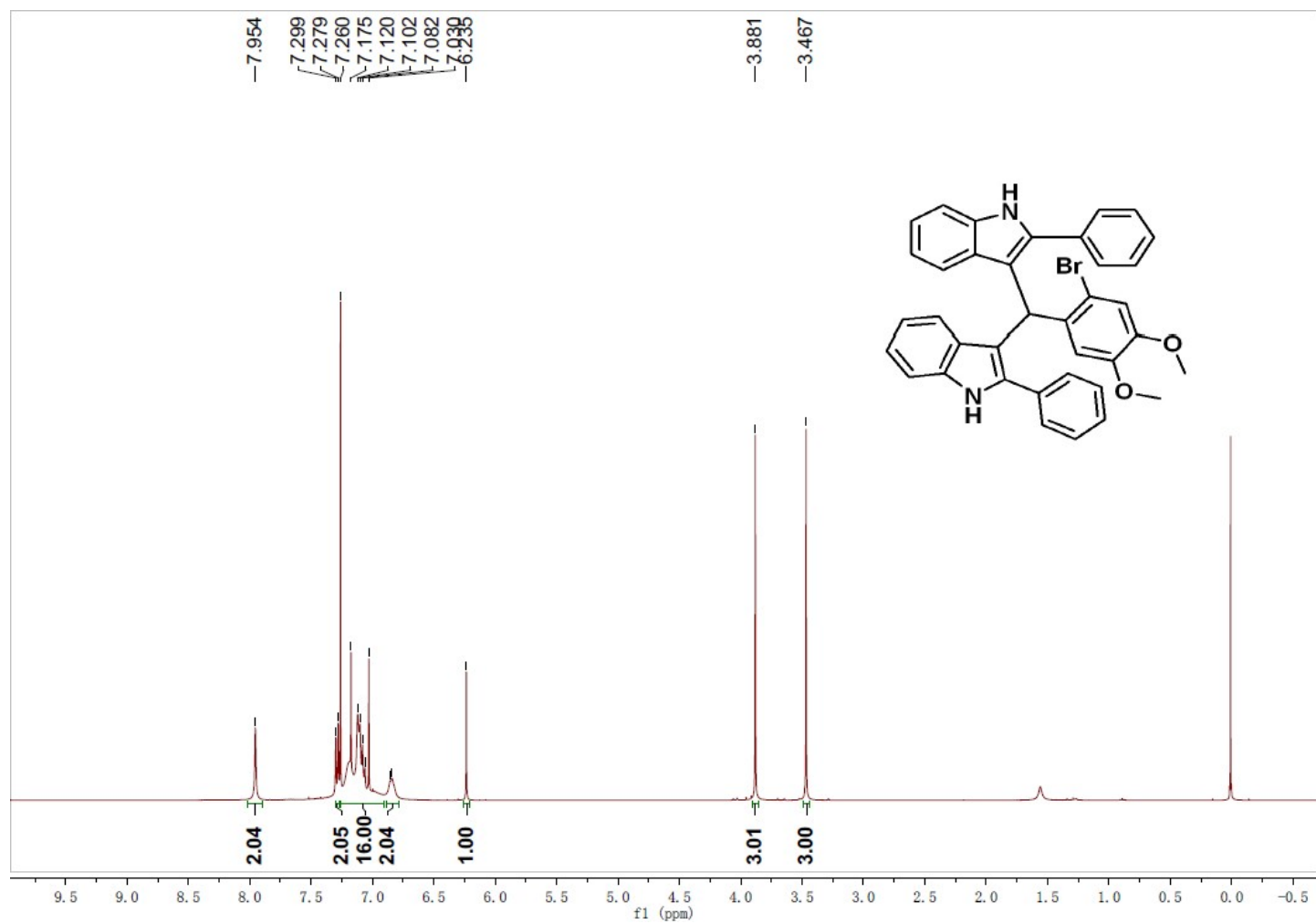
¹³C NMR Spectrum of Compound 3aj



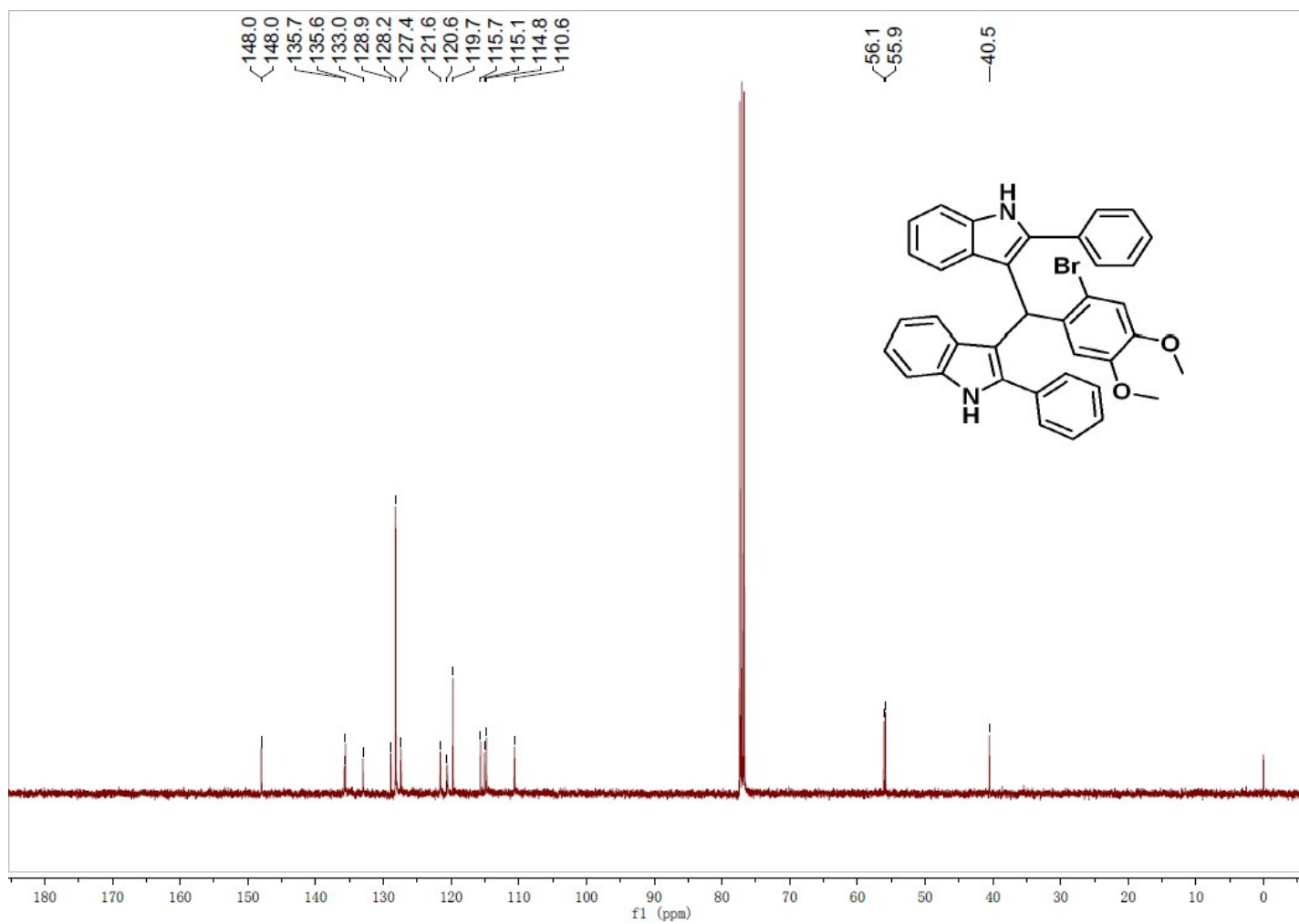
¹H NMR Spectrum of Compound 3ak



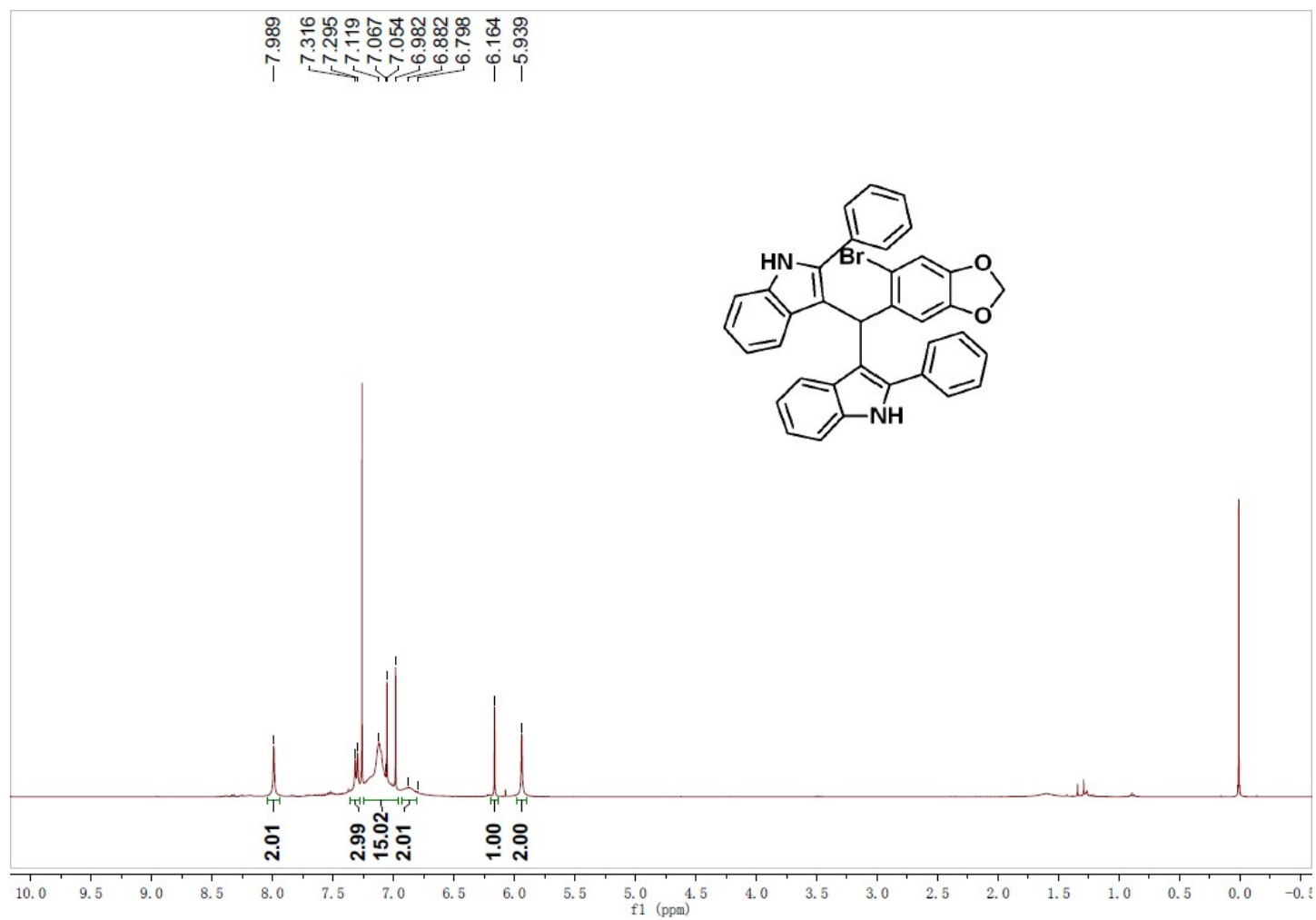
¹³C NMR Spectrum of Compound 3ak



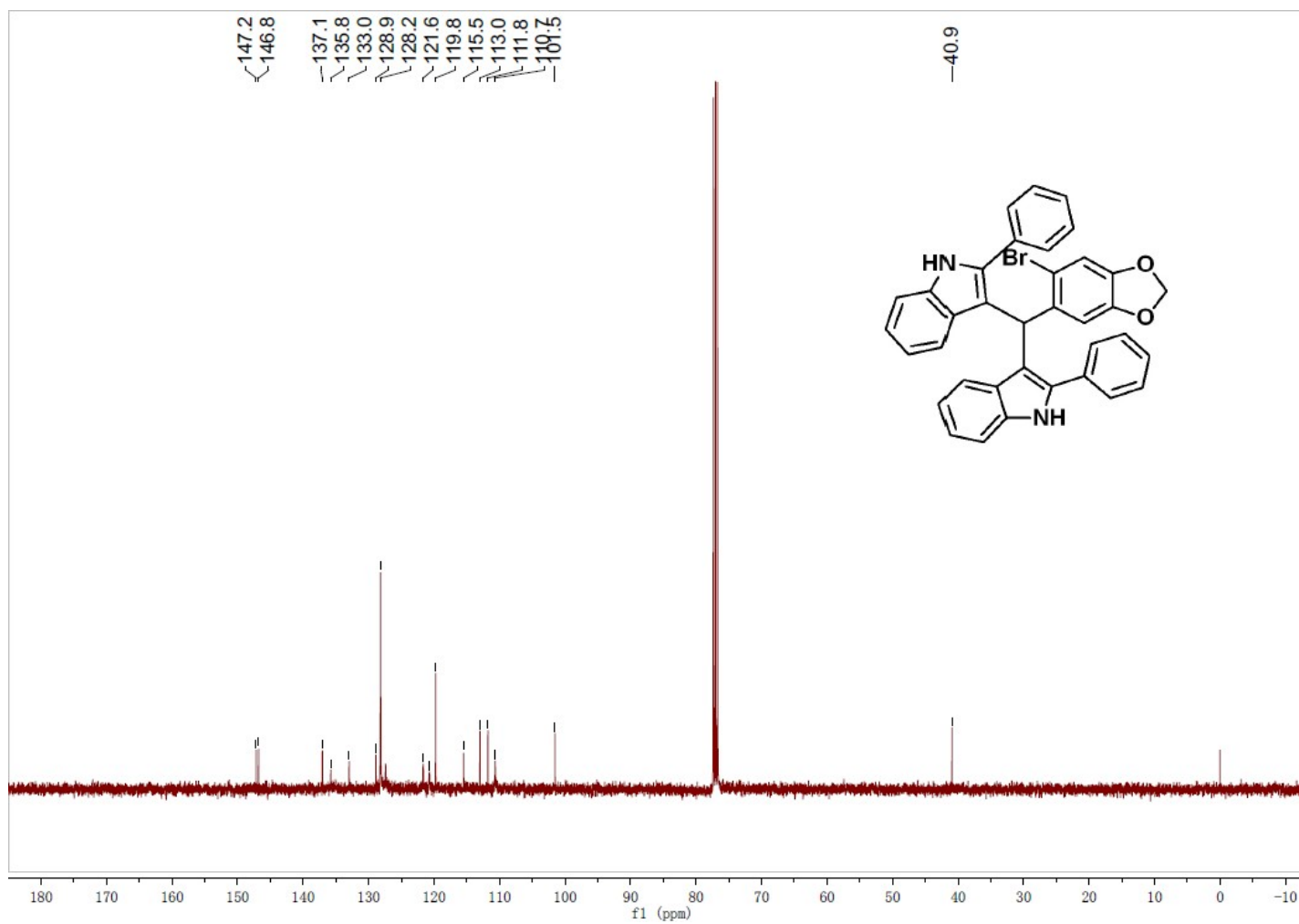
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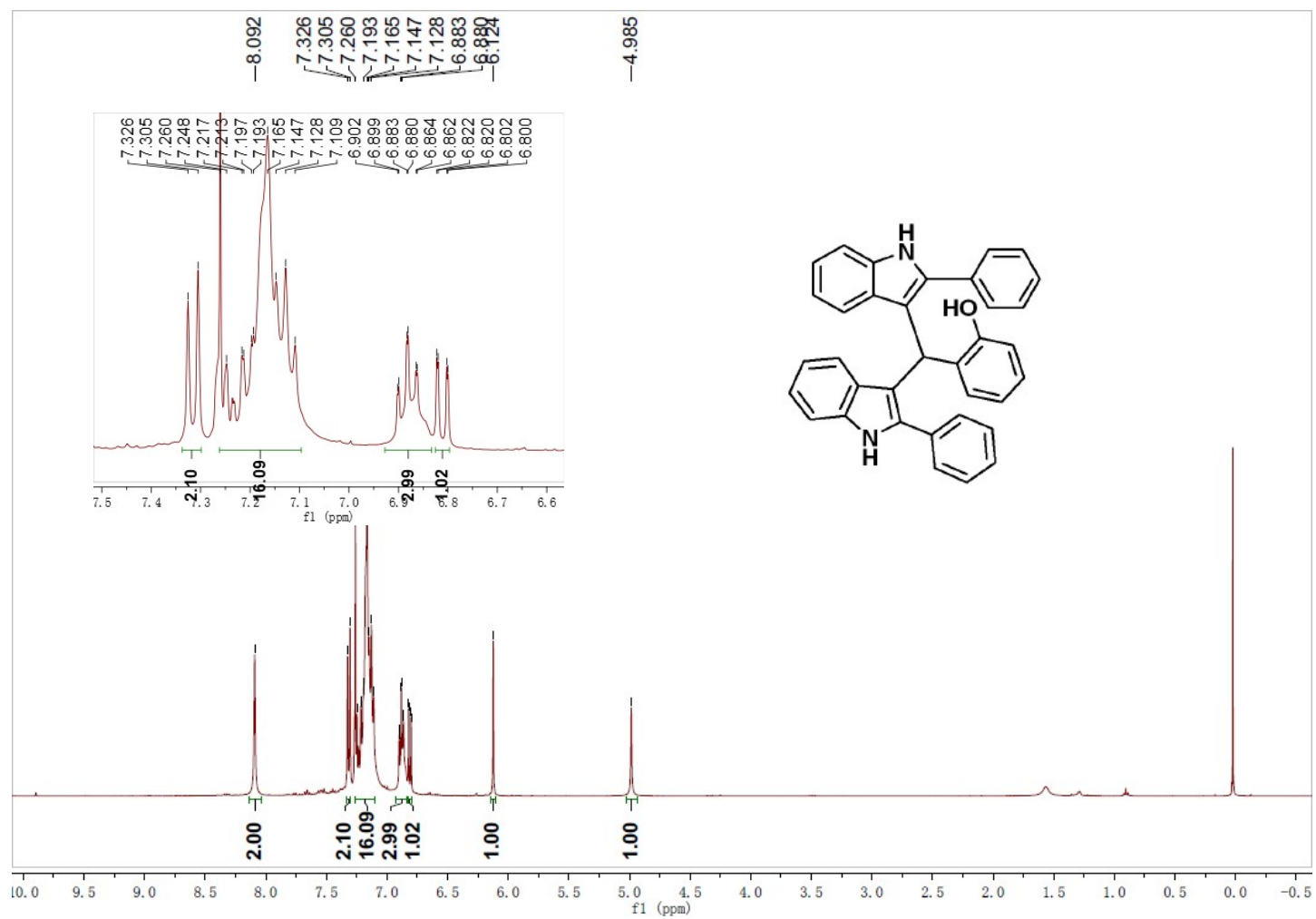
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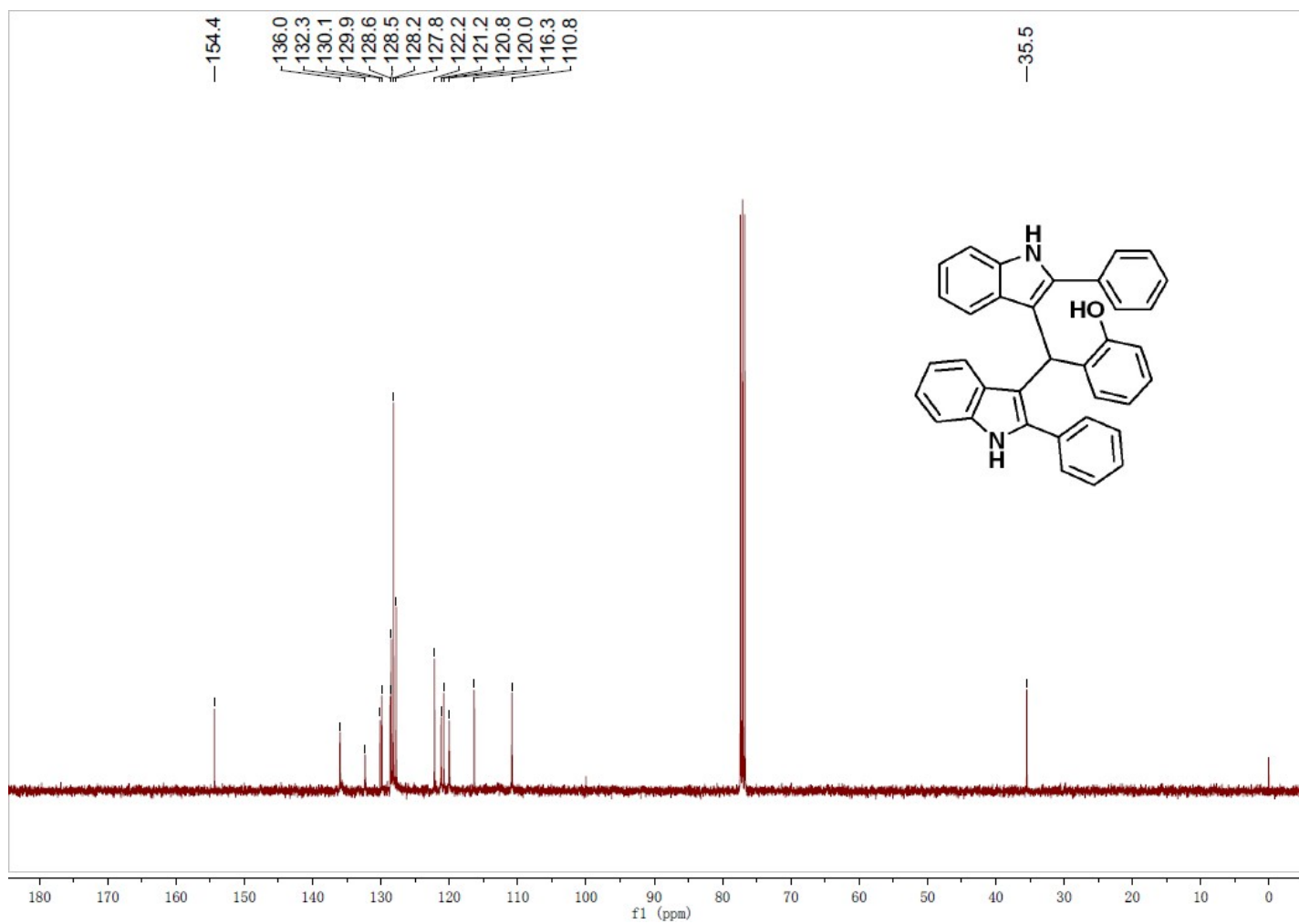
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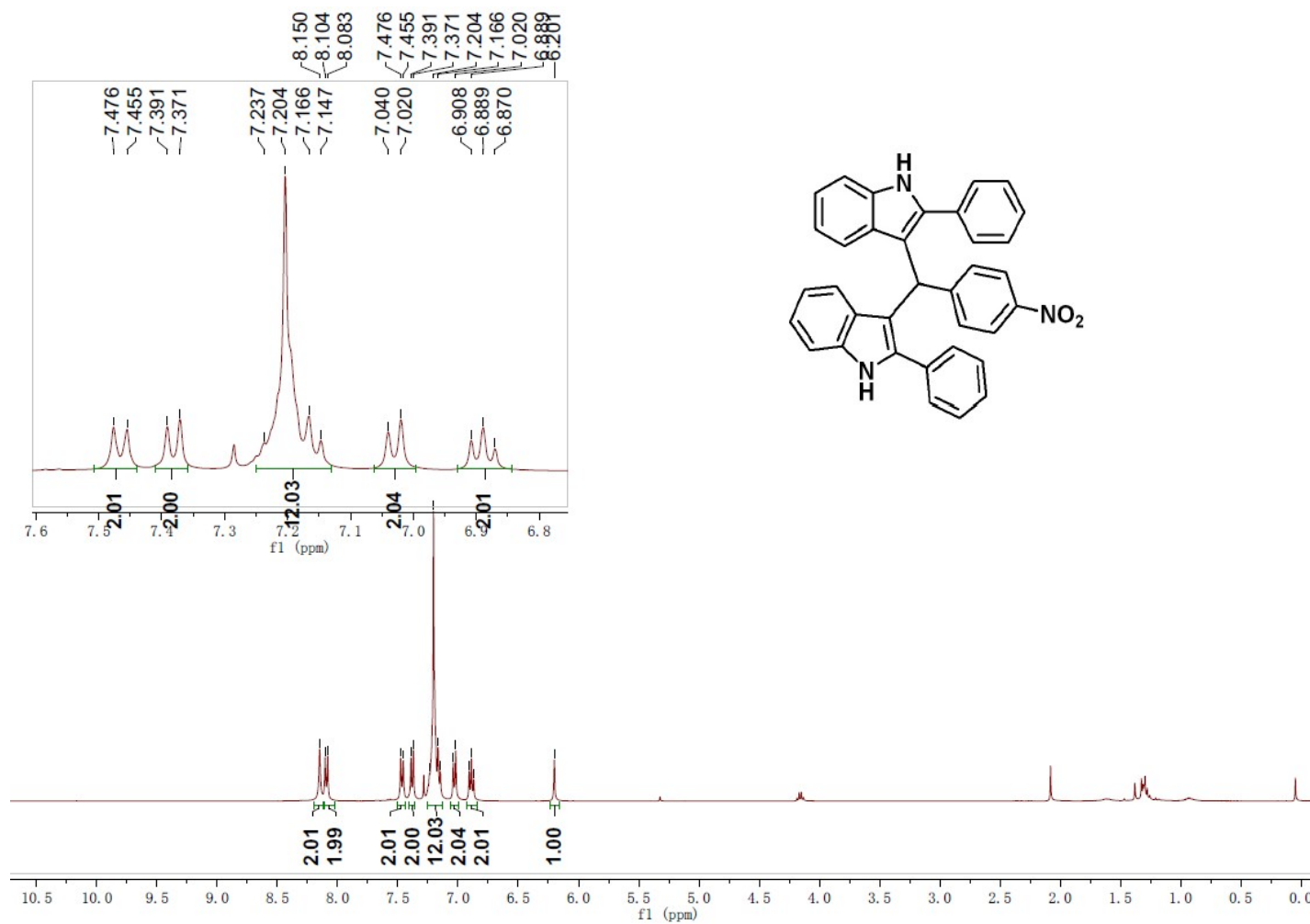
^{13}C NMR Spectrum of Compound 3am



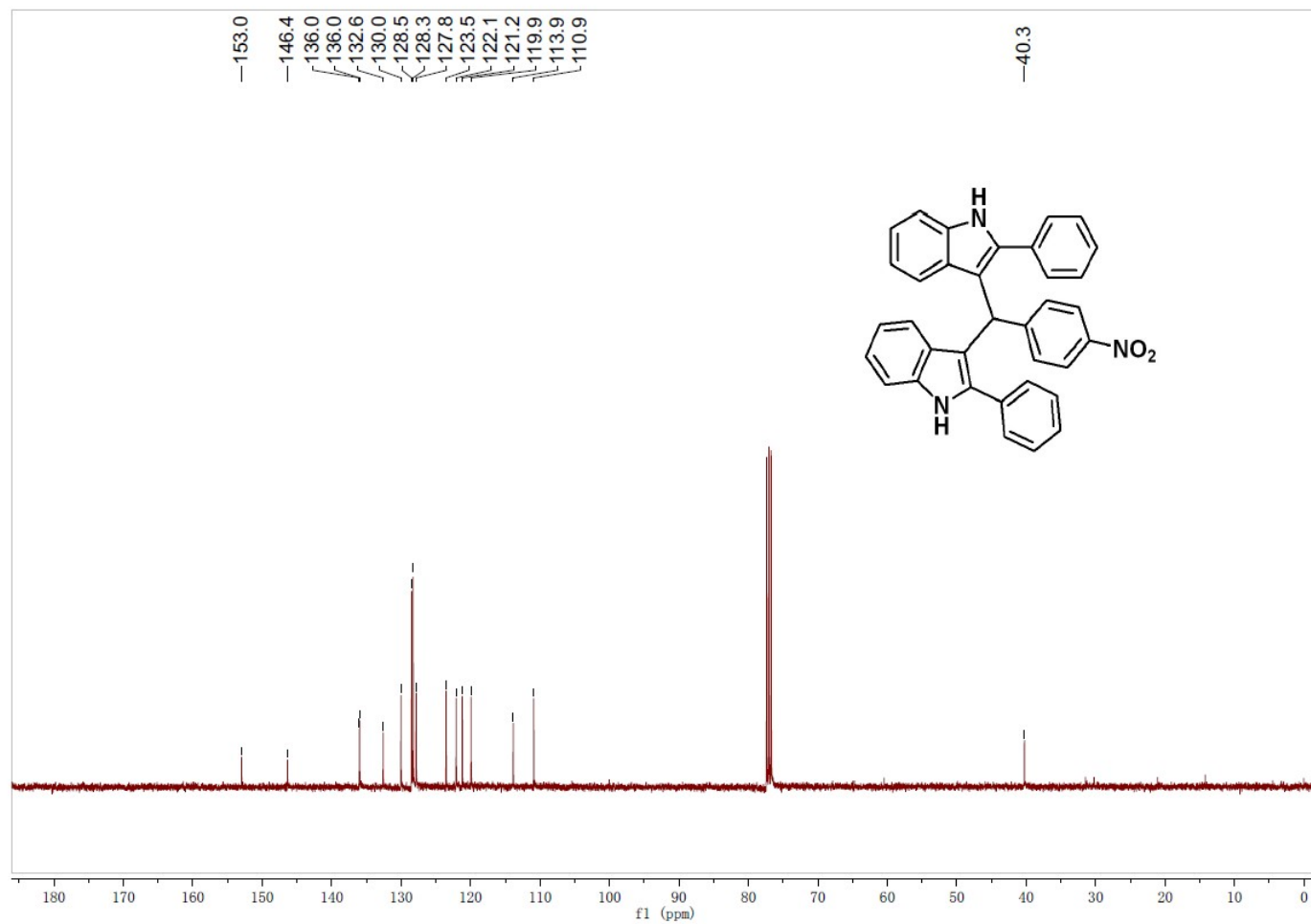
¹H NMR Spectrum of Compound 3an



^{13}C NMR Spectrum of Compound 3an

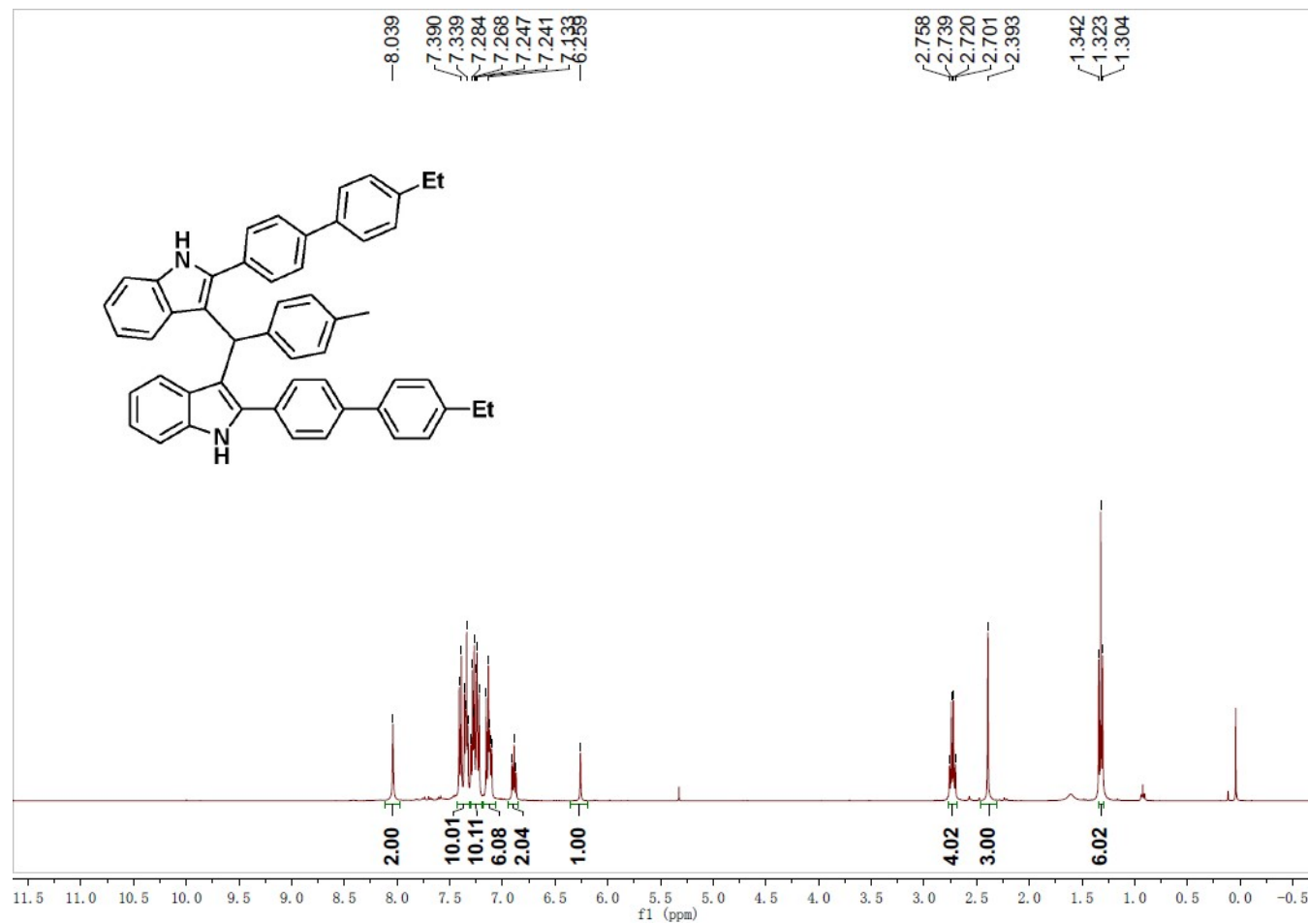


¹H NMR Spectrum of Compound 3ao

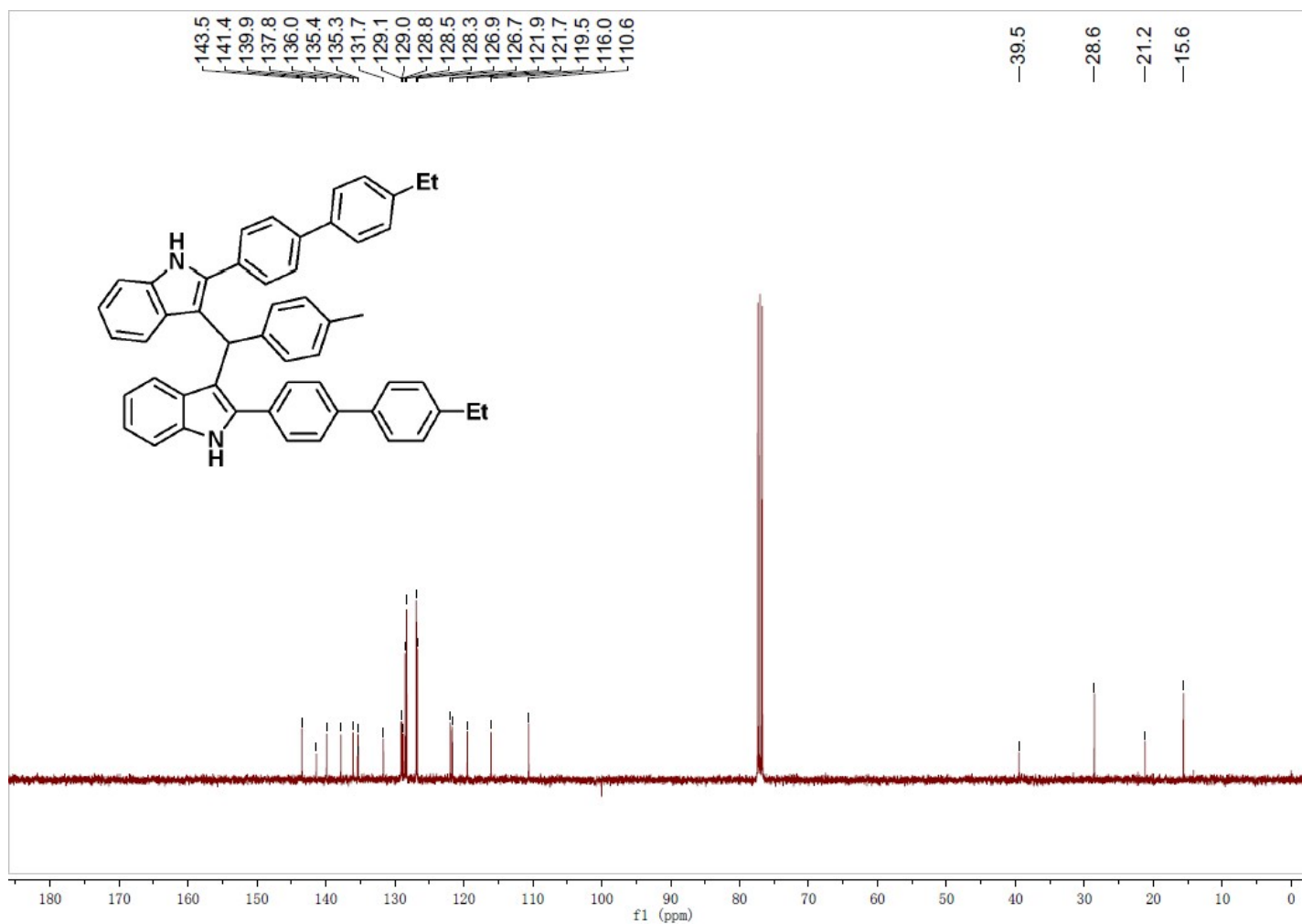


¹³C NMR Spectrum of Compound 3ao

Copies of ^1H and ^{13}C NMR Spectra for Compound 5a



^1H NMR Spectrum of Compound 5a



¹³C NMR Spectrum of Compound 5a