

Supporting Information

A Novel Synthesis of β -Lactam Fused Cyclic Enediynes By Intramolecular Kinugasa Reaction**

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Page No. 13: Figure S23 and S24: ^1H and ^{13}C NMR spectra of compound **6**.

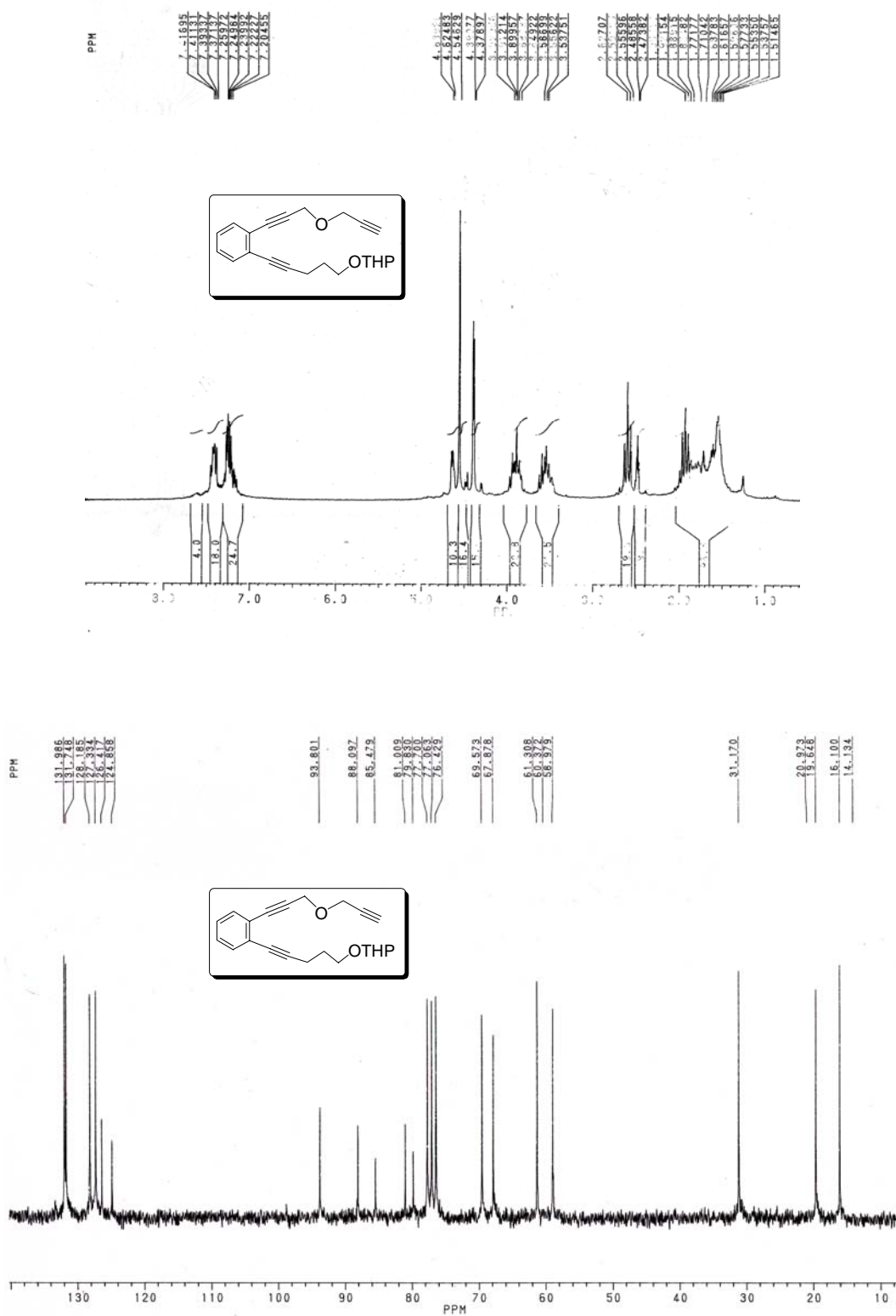
Page No. 14: Figure S25 and S26: ^1H and ^{13}C NMR spectra of compound **1**.

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Page No. 17: Figure S31 to S34: Decoupling spectra of **1, 2, 5 & 6**.

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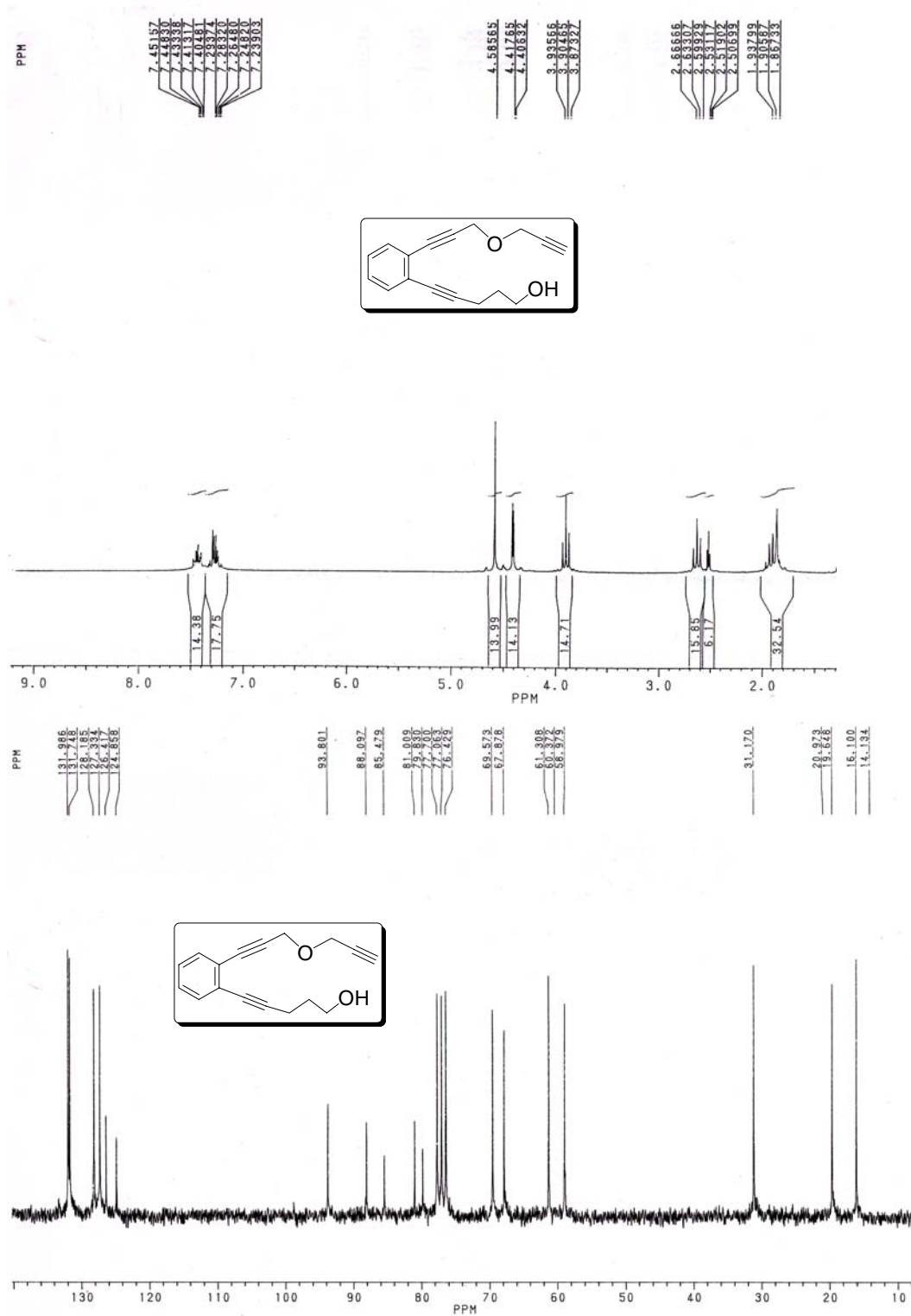


Figure S3 & S4: ¹H & ¹³C NMR Spectrum of compound 10 in CDCl₃

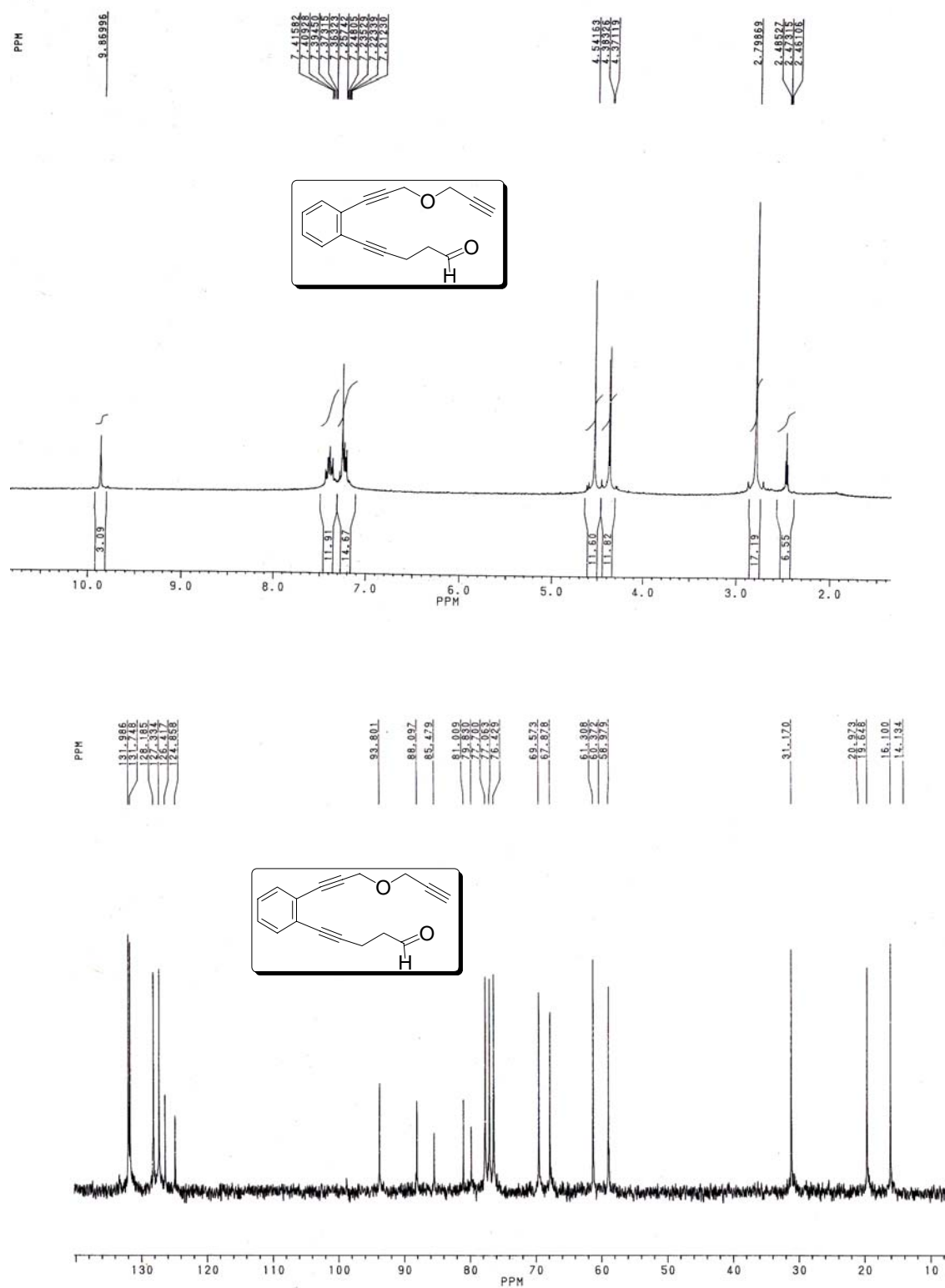


Figure S5 & S6: ¹H & ¹³C NMR Spectrum of compound 11 in CDCl₃

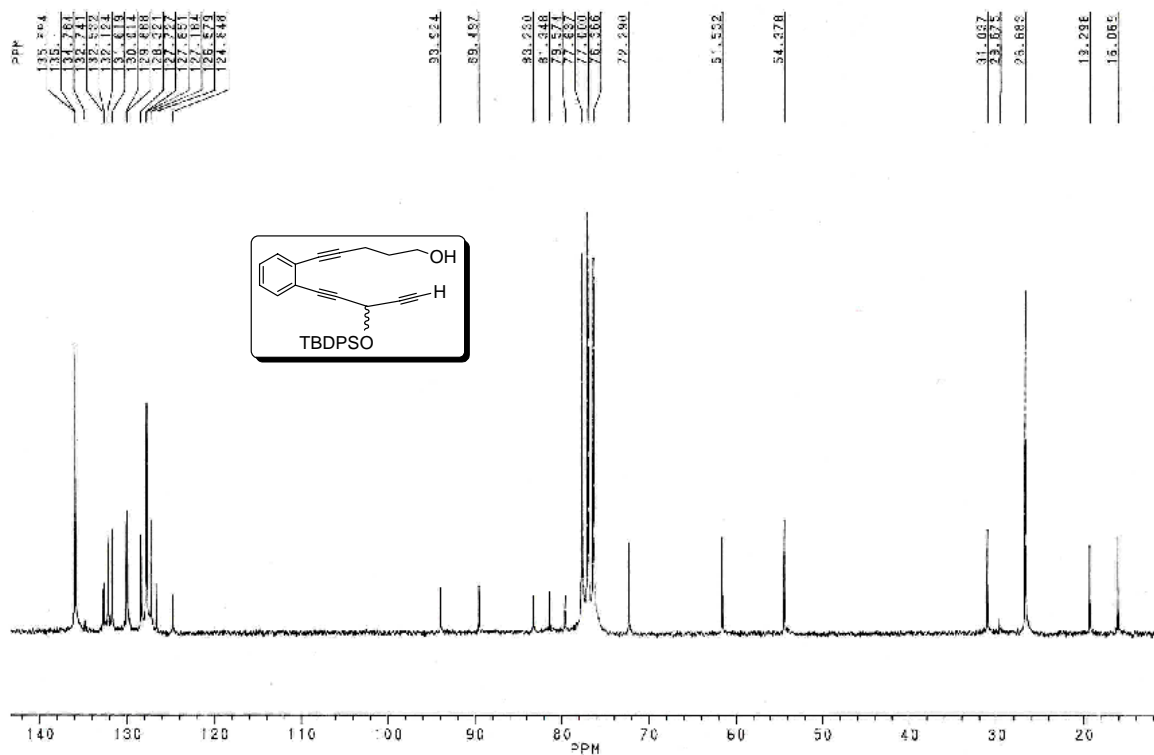


Figure S17 & S18: ^1H & ^{13}C NMR Spectrum of compound 27 in CDCl_3

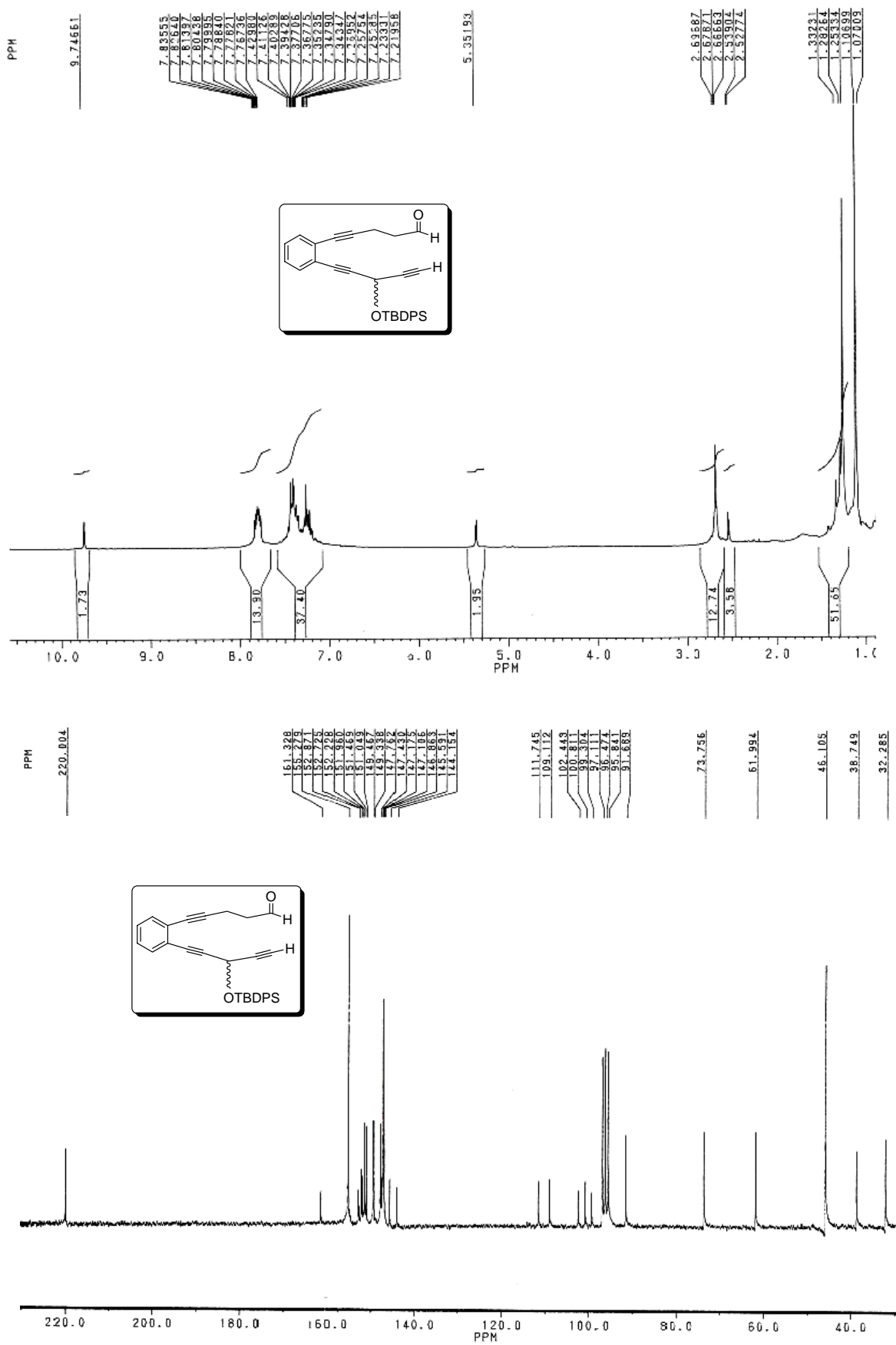


Figure S19 & S20: ¹H & ¹³C NMR Spectrum of compound 28 in CDCl₃

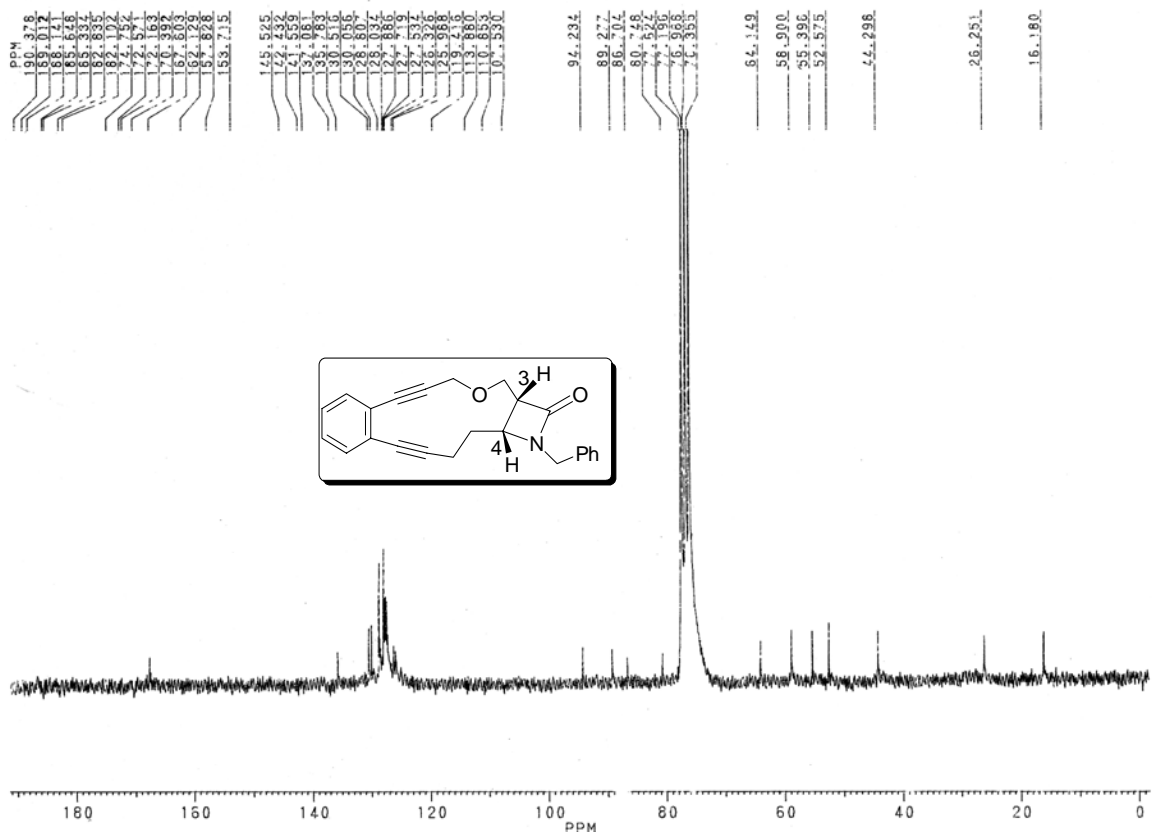
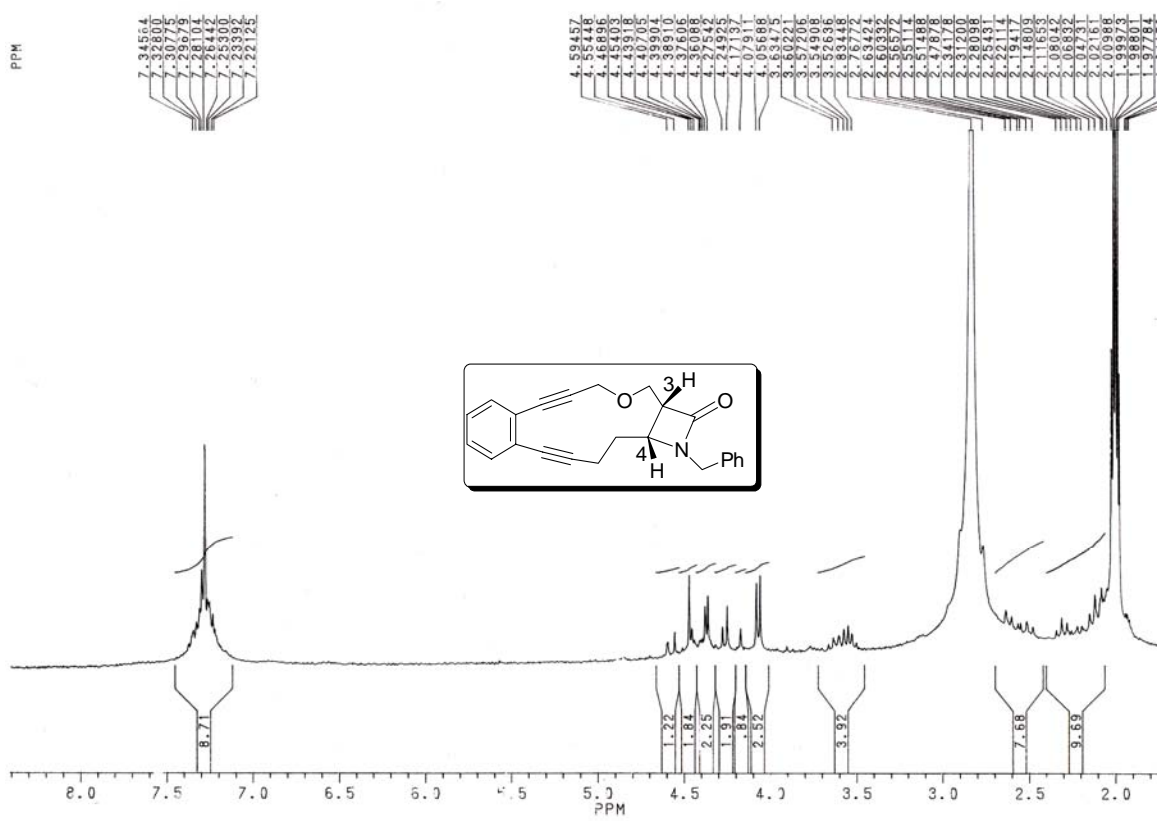


Figure S25 & S26: ^1H & ^{13}C NMR Spectrum of compound 1 in d_6 -acetone & CDCl_3

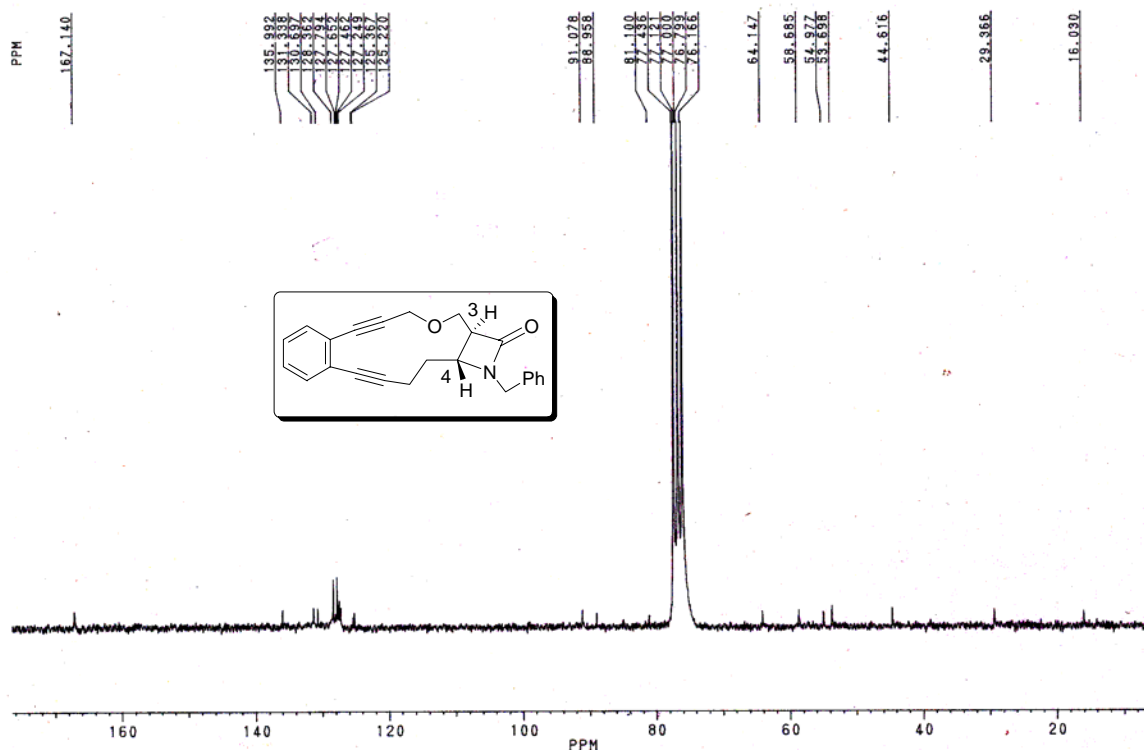
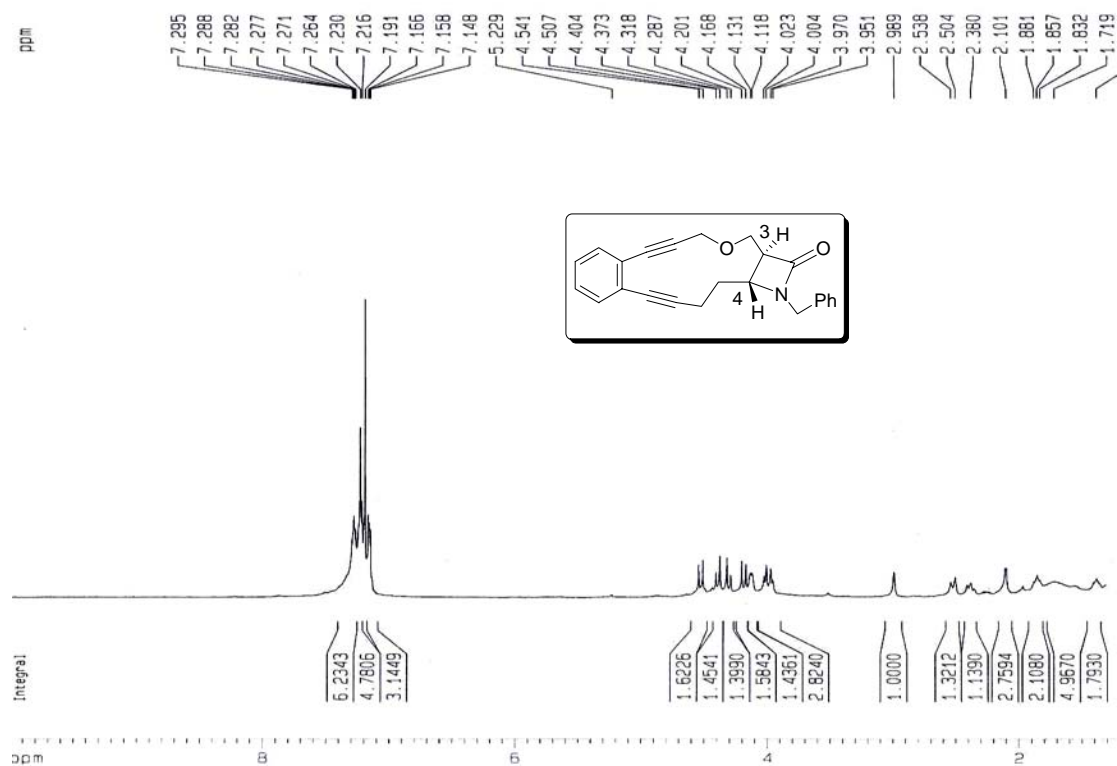
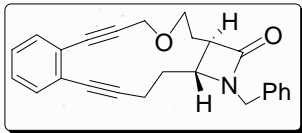


Figure S27 & S28: ¹H & ¹³C NMR Spectrum of compound 2 in CDCl₃



Chemical structure of compound 10 is shown in a box above the spectrum. The structure is a bicyclic compound with a benzene ring fused to a cyclohexene ring, which is further substituted with a phenyl group and a carbonyl group.

The ^1H NMR spectrum (CDCl₃) shows the following peaks and integration values:

- Aromatic region (7.5-7.2 ppm): Integration 9.9
- Aliphatic region (4.0-2.0 ppm): Integration 10.2, 11.5, 10.5, 16.6, 18.6, 9.5, 4.2, 7.6

Figure S30: ^1H NMR Spectrum of compound 3 in CDCl_3

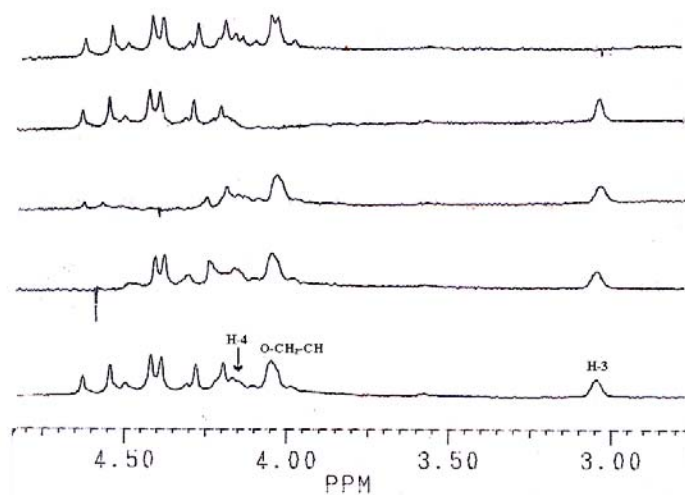


Figure S31: Decoupling experiments on Compound 2

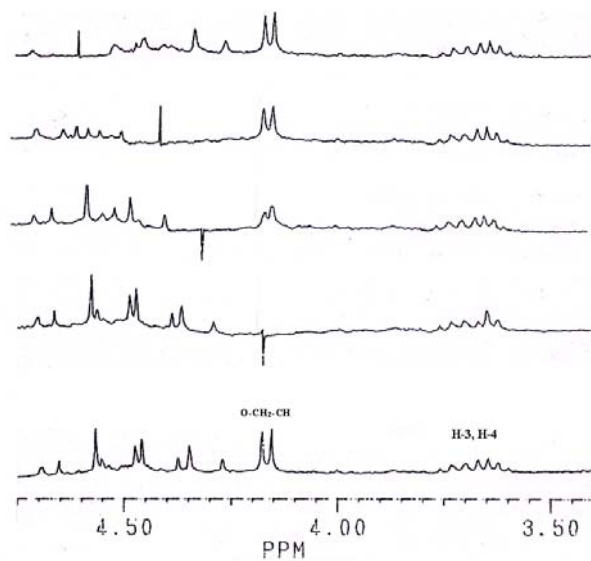


Figure S32: Decoupling experiments on Compound 1

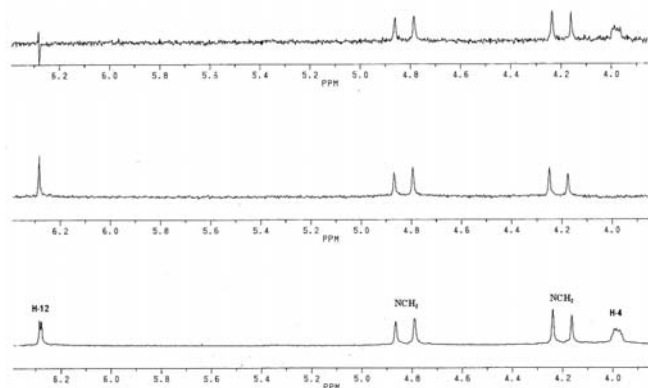


Figure S33: Decoupling experiments on Compound 6

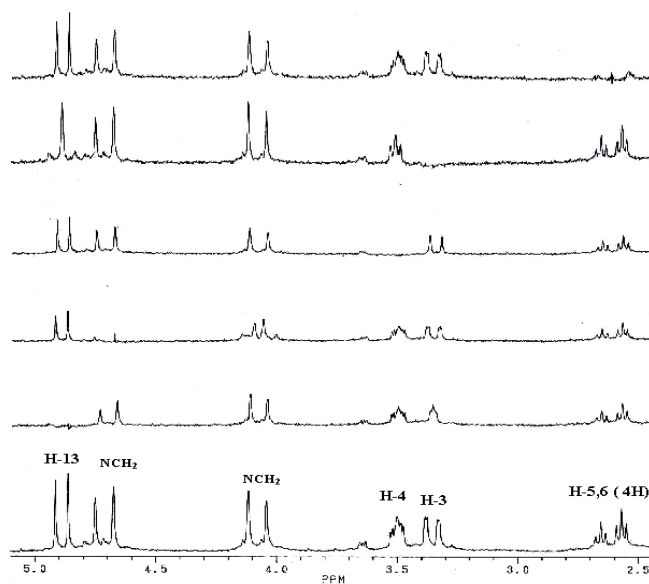


Figure S34: Decoupling experiments on Compound 5

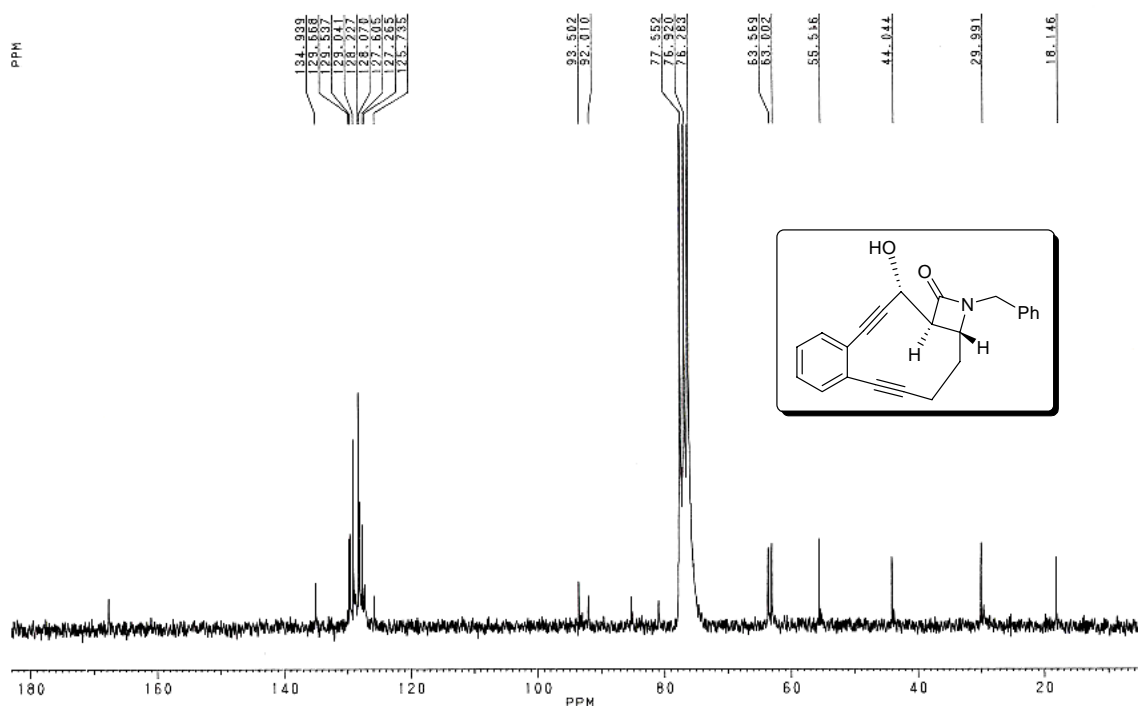


Figure S35: ^{13}C NMR Spectrum of compound 5 in CDCl_3

Additional Spectral Data

For 2 δ_{H} 7.38-7.12 (9H, m), 4.60, 4.25 (2H, ABq, $J = 16.9$ Hz), 4.46, 4.36 (2H, ABq, $J = 15.6$ Hz), 4.17-4.14 (1H, m), 4.07-4.03 (2H, m), 3.06-3.04 (1H, m), 2.58-2.43 (2H, m), 1.91-1.83 (2H, m); δ_{C} 167.1, 136.0, 131.3, 130.7, 128.4, 127.8, 127.7, 127.5, 127.3, 125.4, 125.2, 91.1, 89.0, 85.0, 81.1, 64.2, 58.7, 54.9, 53.7, 44.6, 29.4, 16.0; HRMS calcd for $\text{C}_{24}\text{H}_{21}\text{NO}_2 + \text{H}^+$ 356.1651 found 356.1642.

For 4 δ_{H} 7.39-7.20 (9H, m), 4.46, 4.30 (2H, ABq, $J = 15.3$ Hz), 4.44, 4.28 (2H, d, $J = 16.3$ Hz), 4.17-4.05 (2H, m), 3.85-3.79 (1H, m), 3.55-3.50 (1H, m), 2.90-2.82 (1H, m), 2.53-1.90 (6H, m); δ_{C} 169.7, 136.5, 131.7, 131.2, 128.8, 128.7, 128.1, 127.6, 127.0, 126.4, 125.4, 93.0, 92.2, 88.7, 66.8, 58.4, 57.5, 52.7, 44.9, 31.0, 27.6, 16.3; HRMS calcd for $\text{C}_{25}\text{H}_{23}\text{NO}_2 + \text{H}^+$ 370.1808 found 370.1821.