Supporting Information

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

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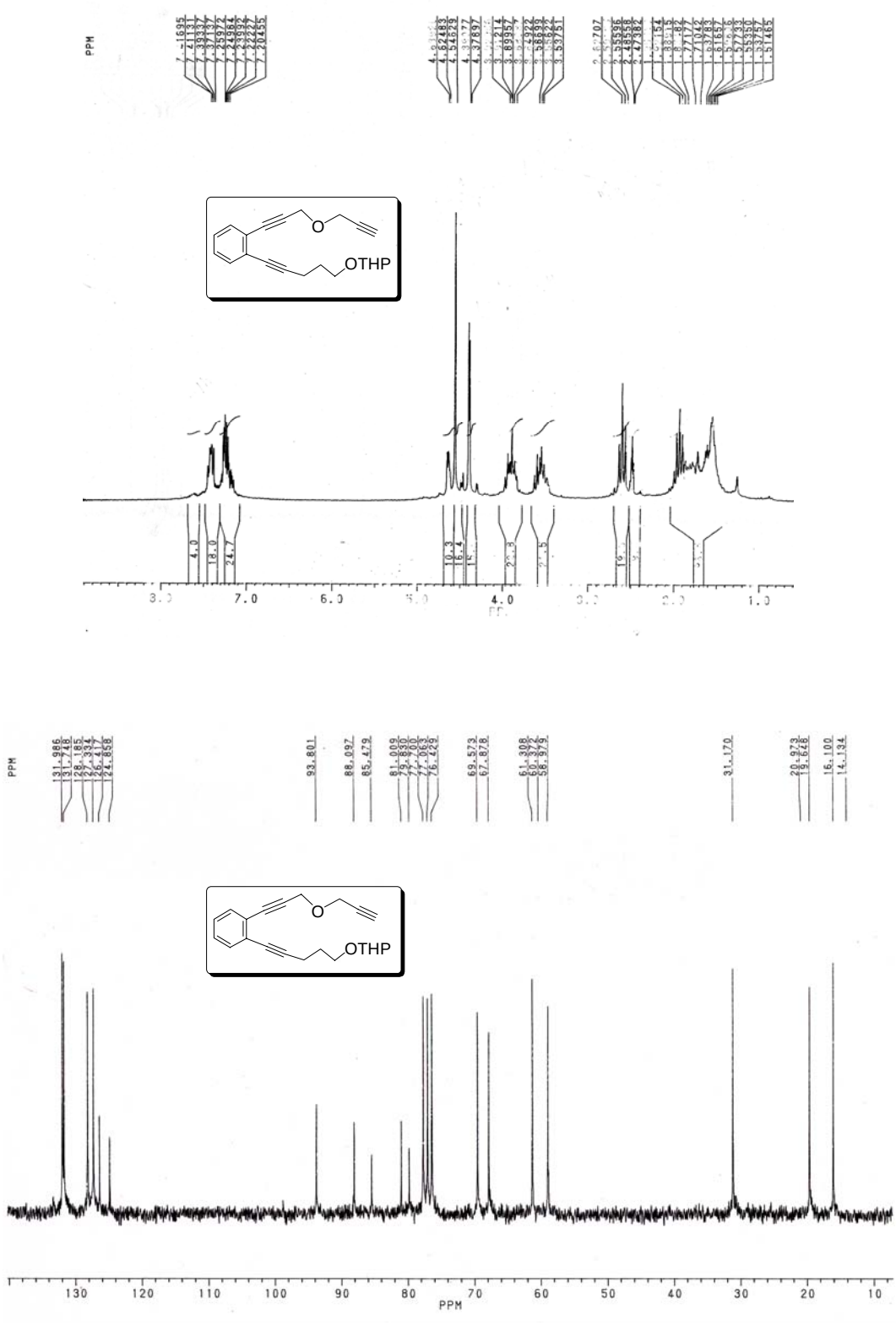

Figure S1 & S2: ^{1}H & ^{13}C NMR Spectrum of 9A in $CDCl_3$

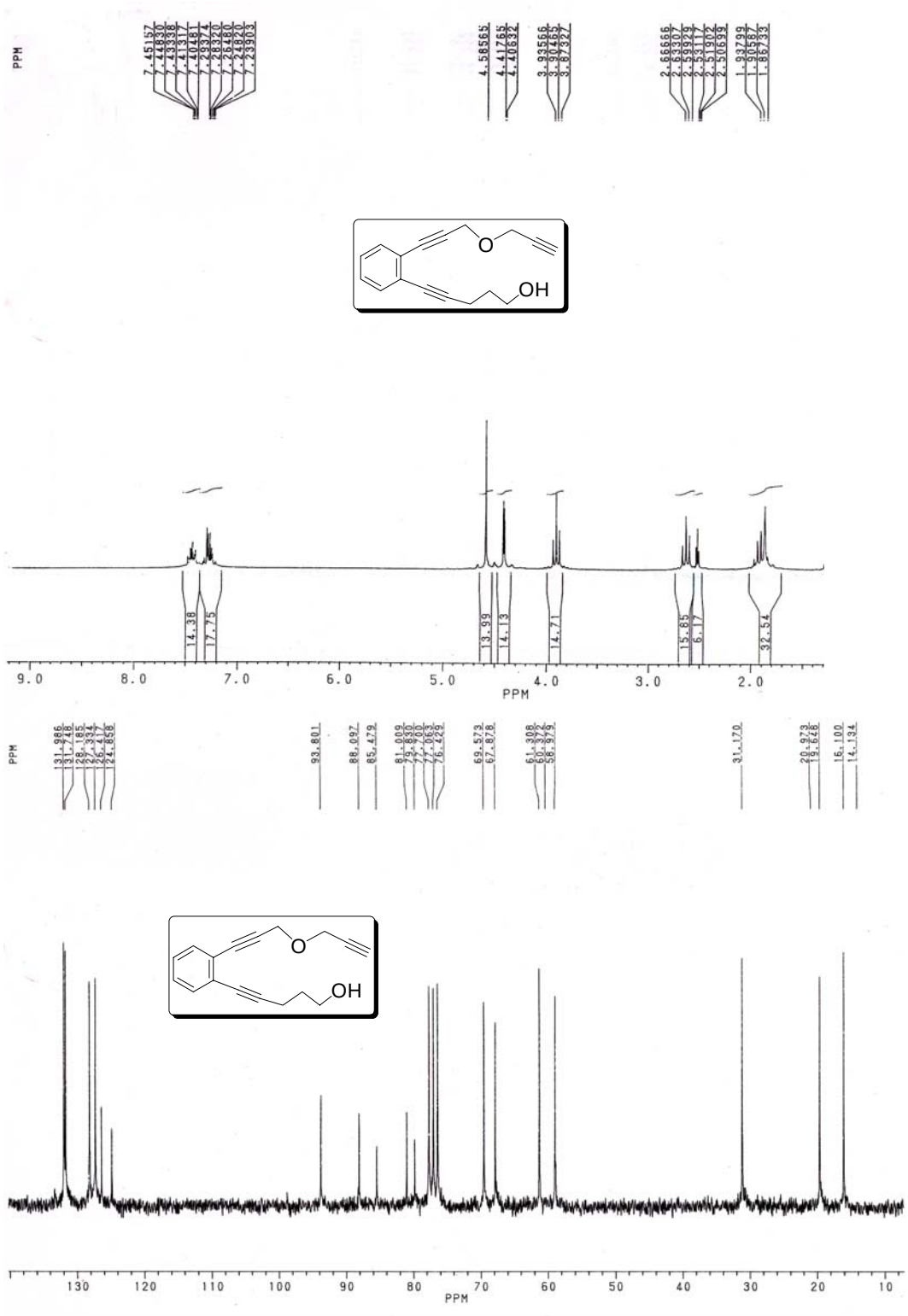

Figure S3 & S4: ^{1}H & ^{13}C NMR Spectrum of compound 10 in $CDCl_3$

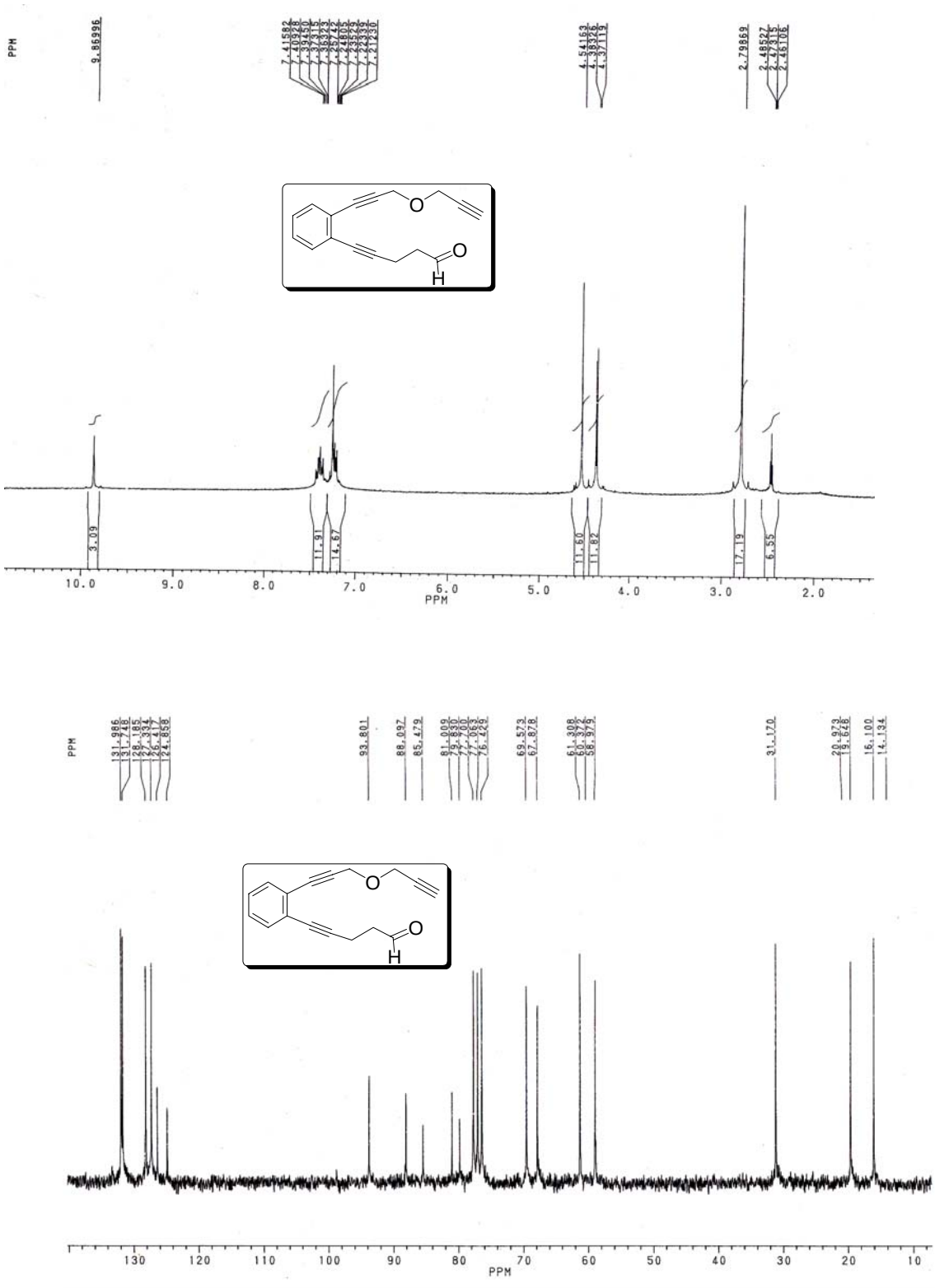

Figure S5 & S6: ^{1}H & ^{13}C NMR Spectrum of compound 11 in $CDCl_3$

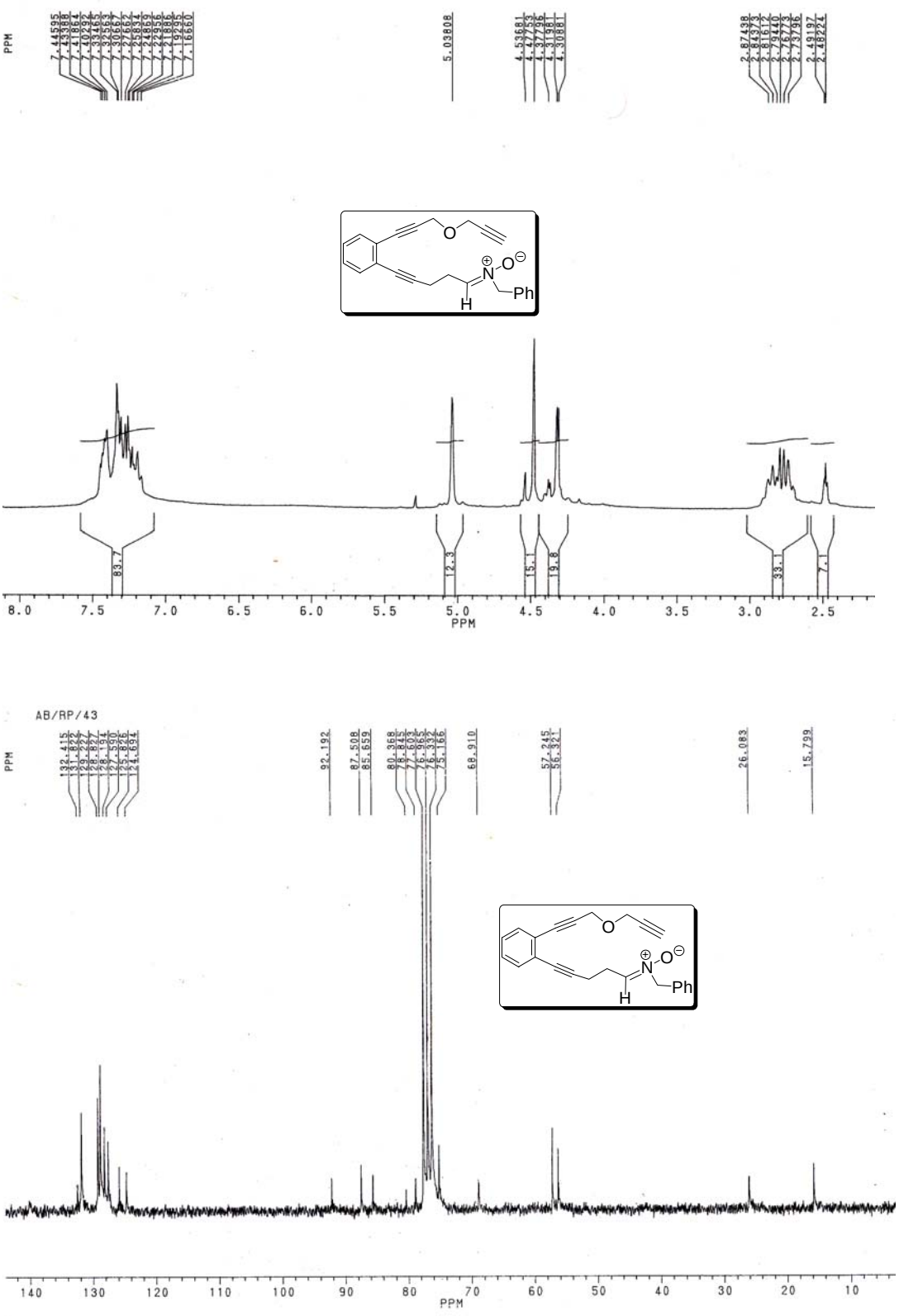

Figure S7 & S8: ^{1}H & ^{13}C NMR Spectrum of compound 12 in $CDCl_3$

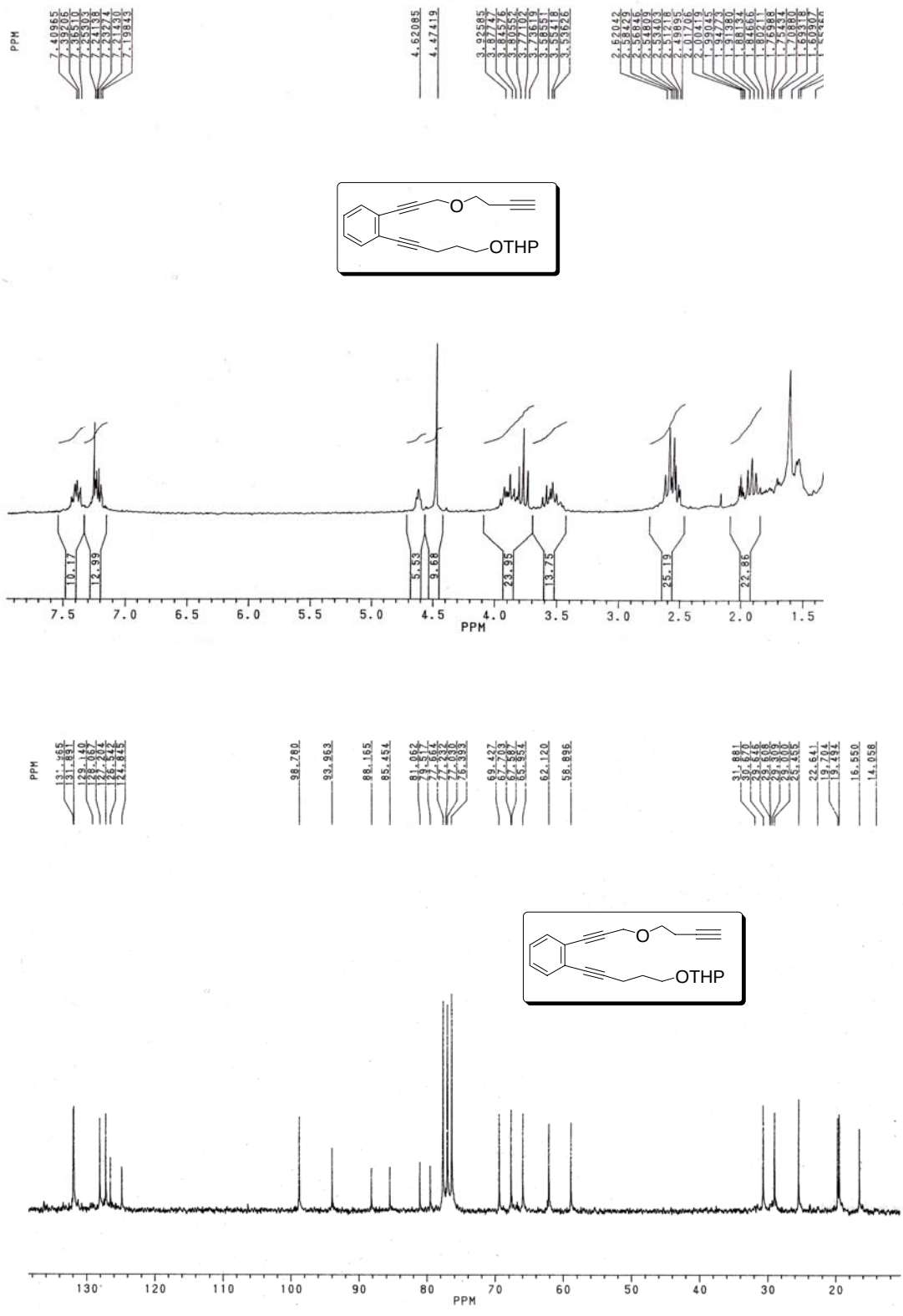

Figure S9 & S10: ^{1}H & ^{13}C NMR Spectrum of compound 13A in $CDCl_3$

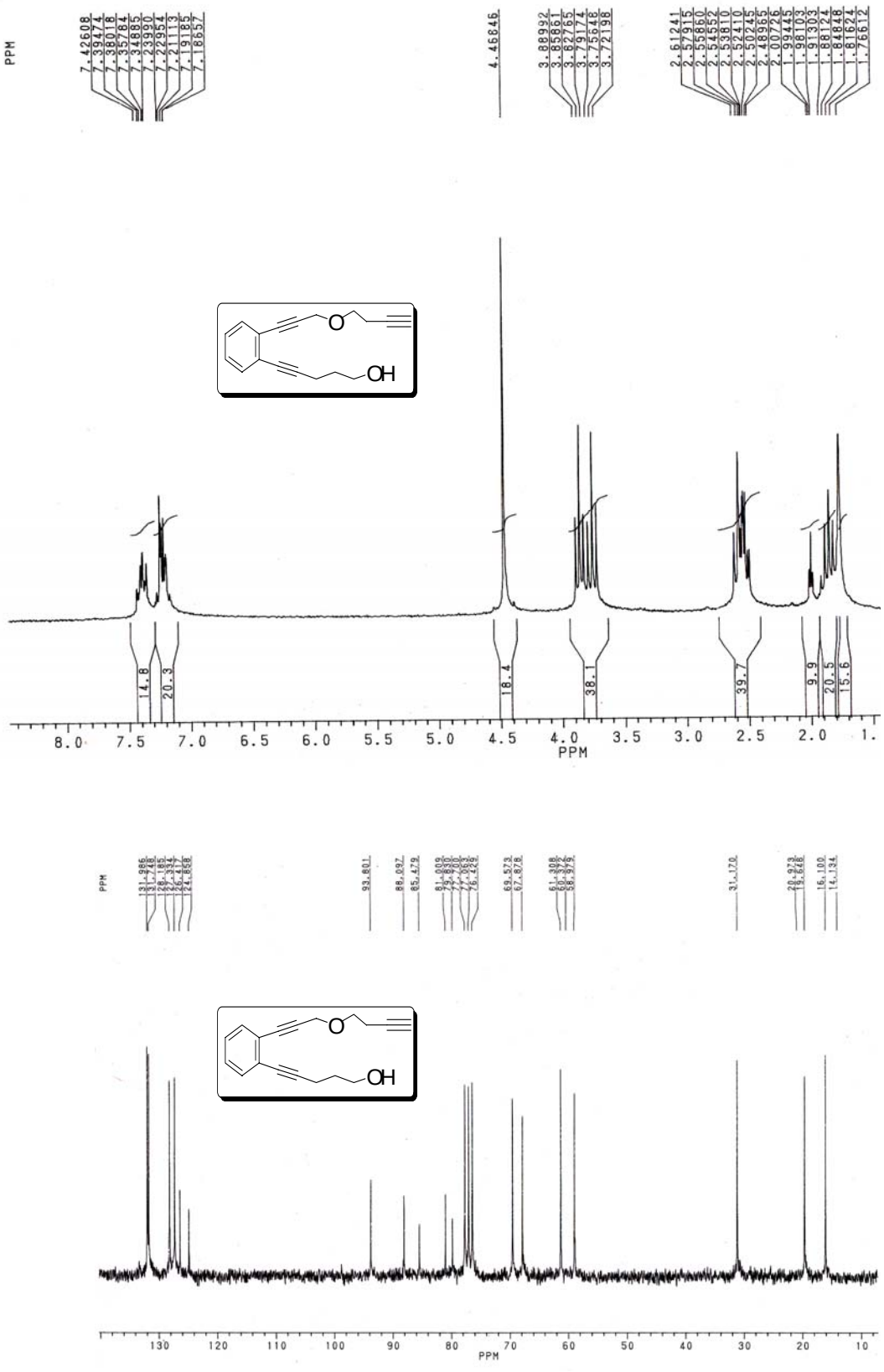

Figure S11 & S12: ^{1}H & ^{13}C NMR Spectrum of compound 14 in $CDCl_3$

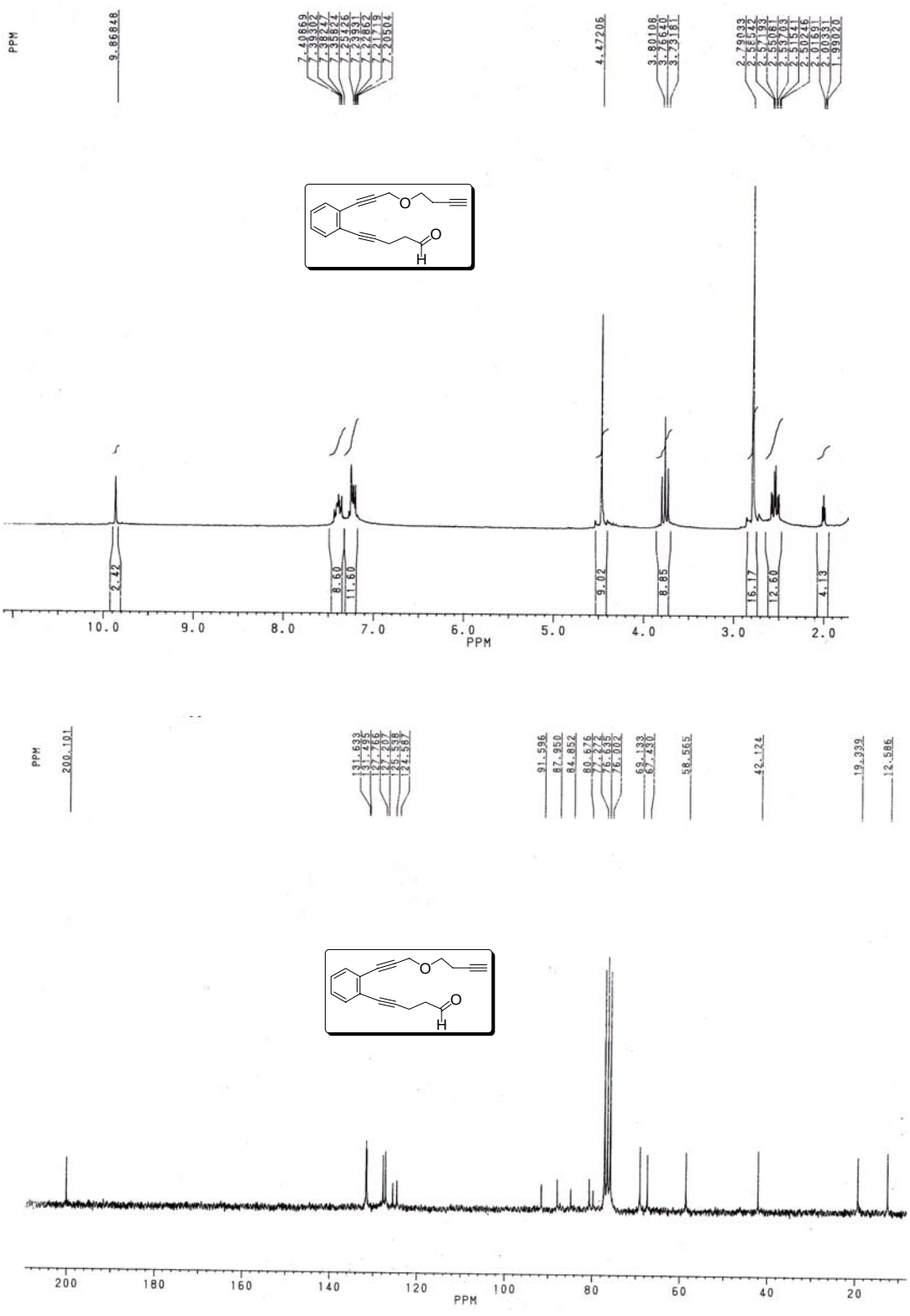

Figure S13 & S14: ^{1}H & ^{13}C NMR Spectrum of compound 15 in $CDCl_3$

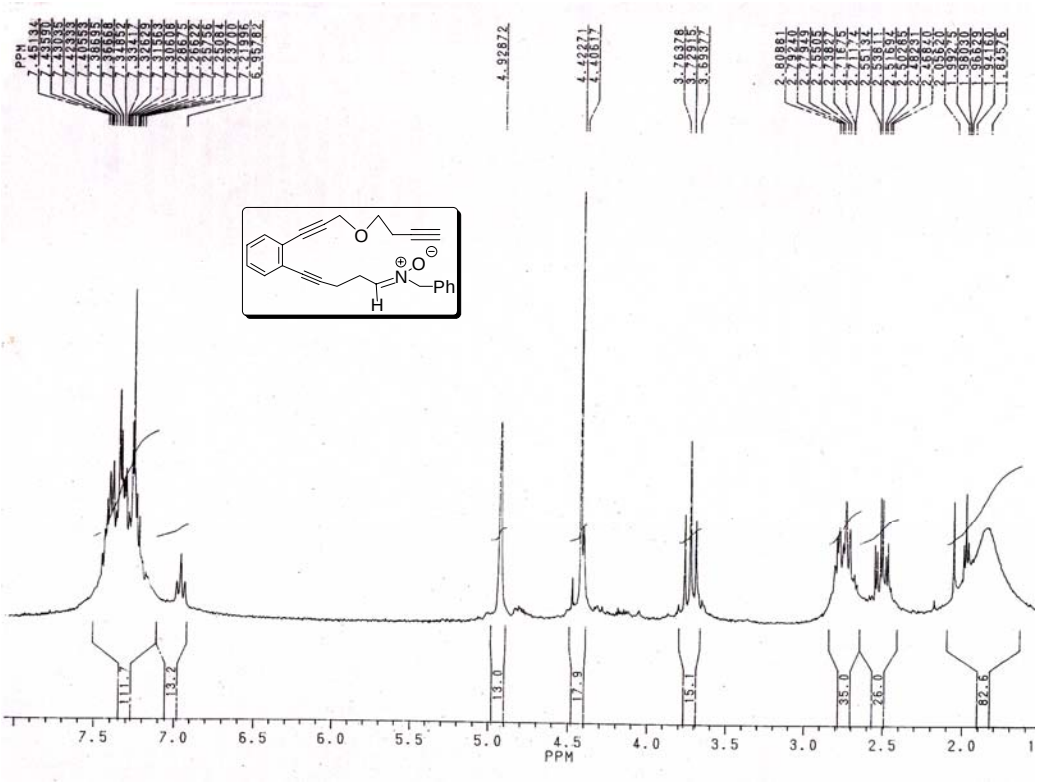

Figure S15: ^{1}H NMR Spectrum of compound 16 in $CDCl_3$

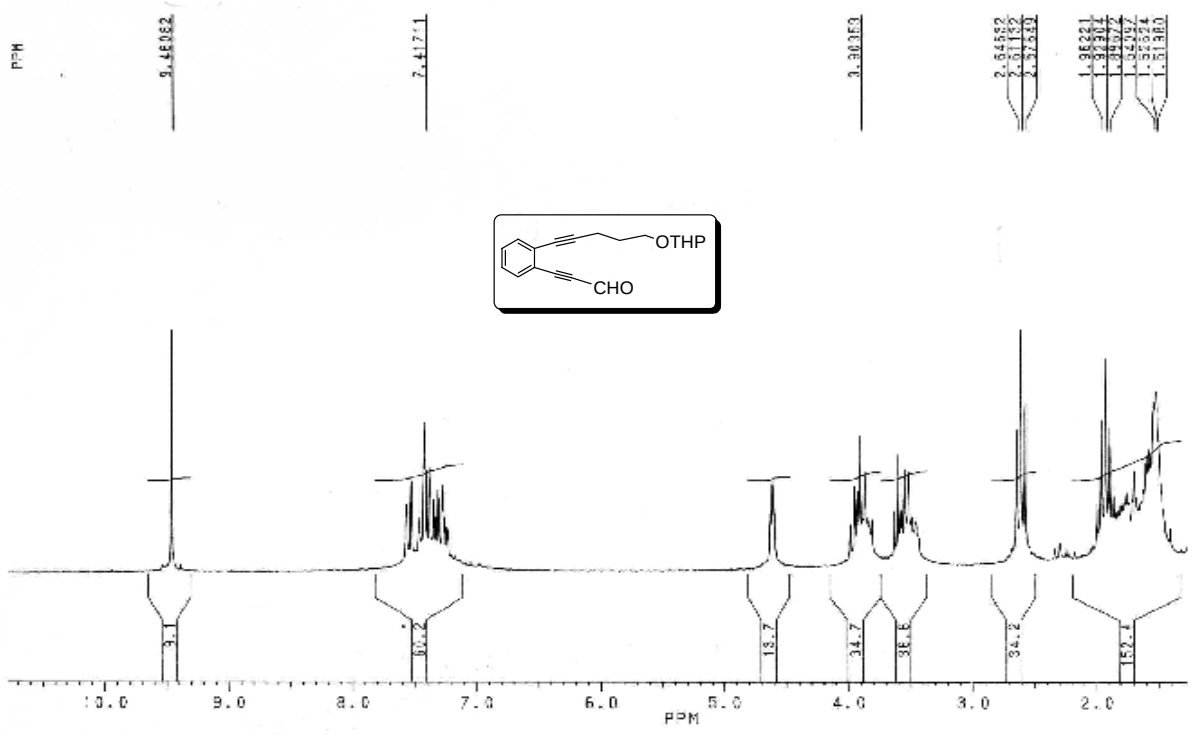

Figure S16: ^{1}H NMR Spectrum of compound 23 in $CDCl_3$

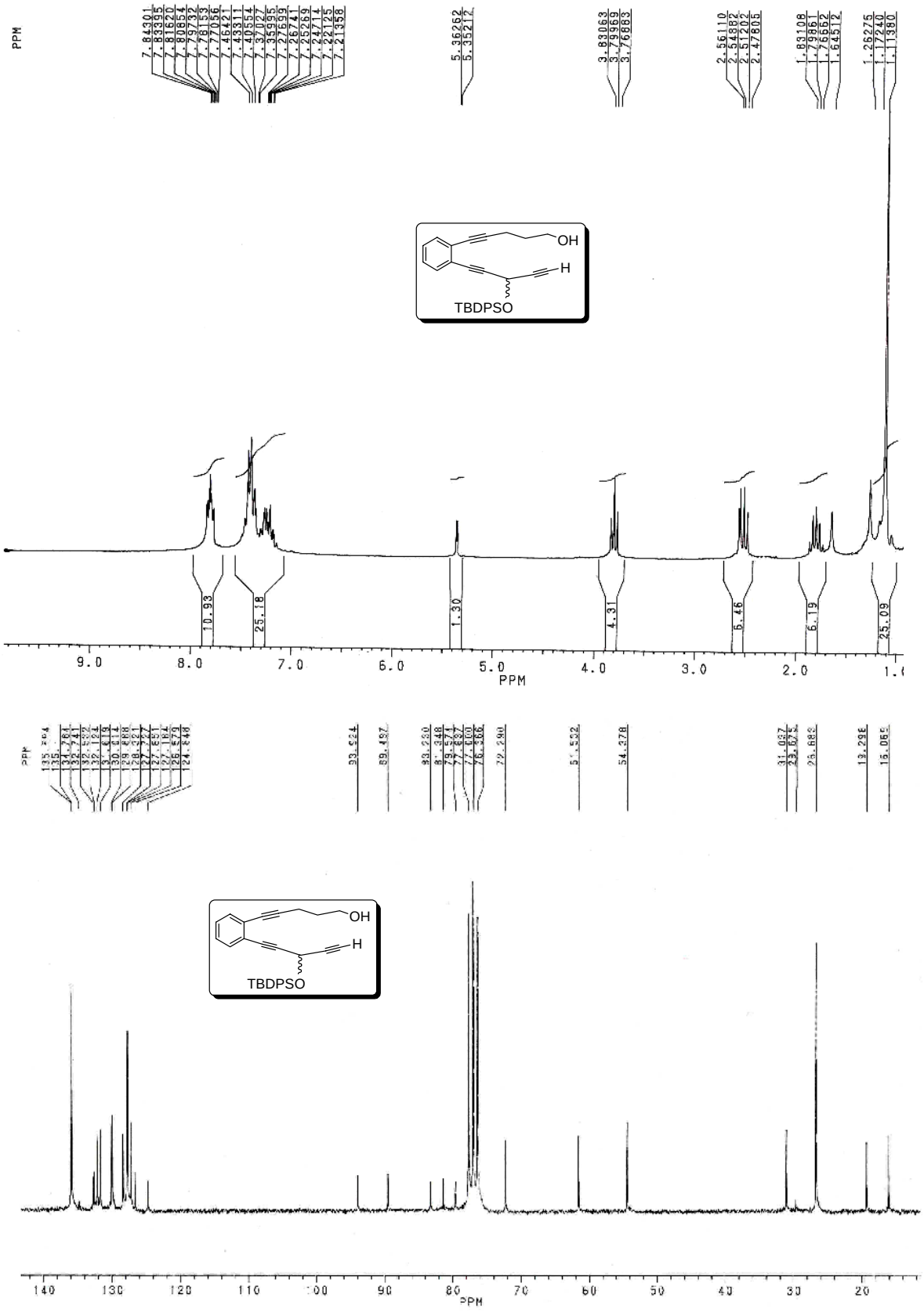

Figure S17 & S18: ^{1}H & ^{13}C NMR Spectrum of compound 27 in $CDCl_3$

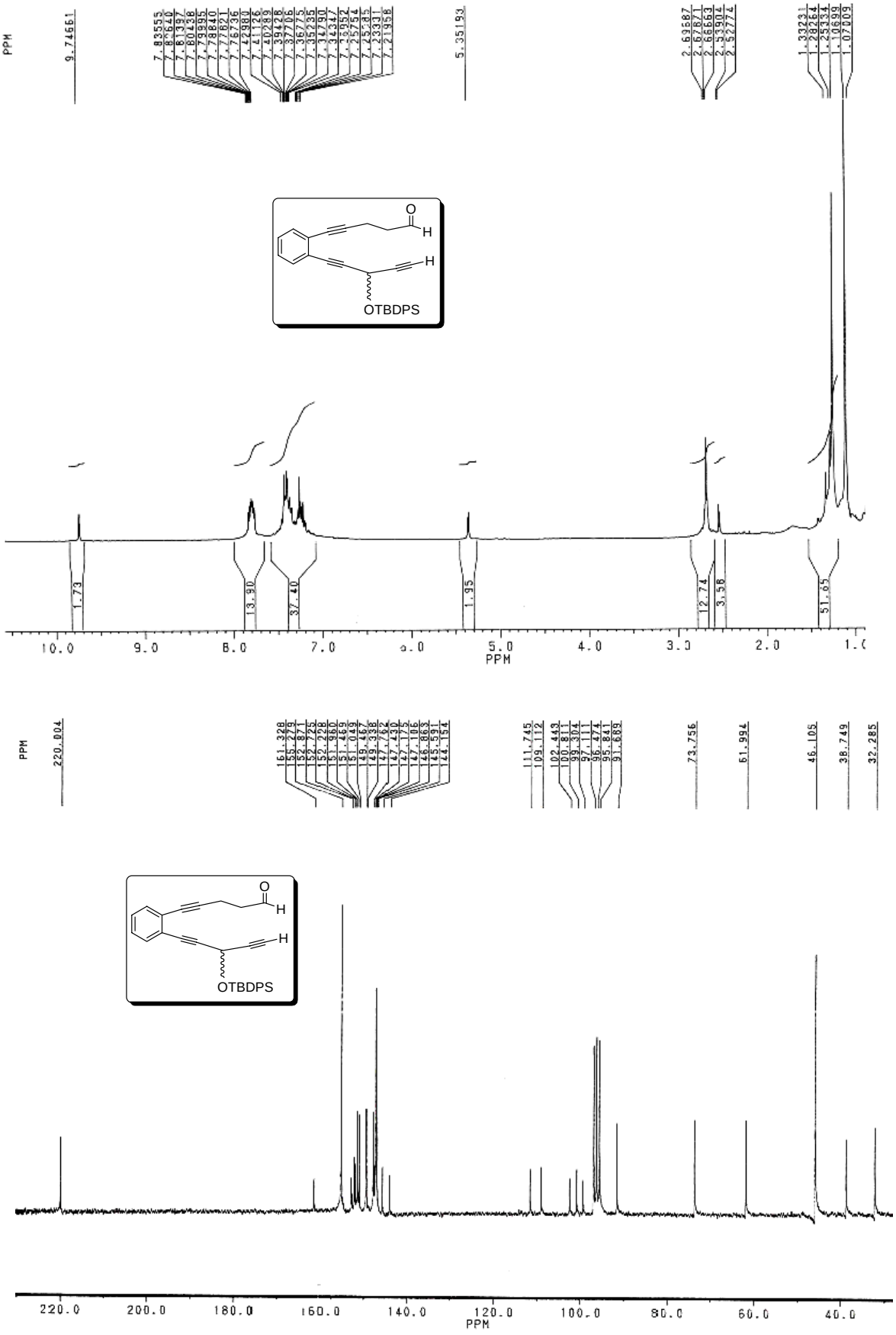

Figure S19 & S20: ^{1}H & ^{13}C NMR Spectrum of compound 28 in $CDCl_3$

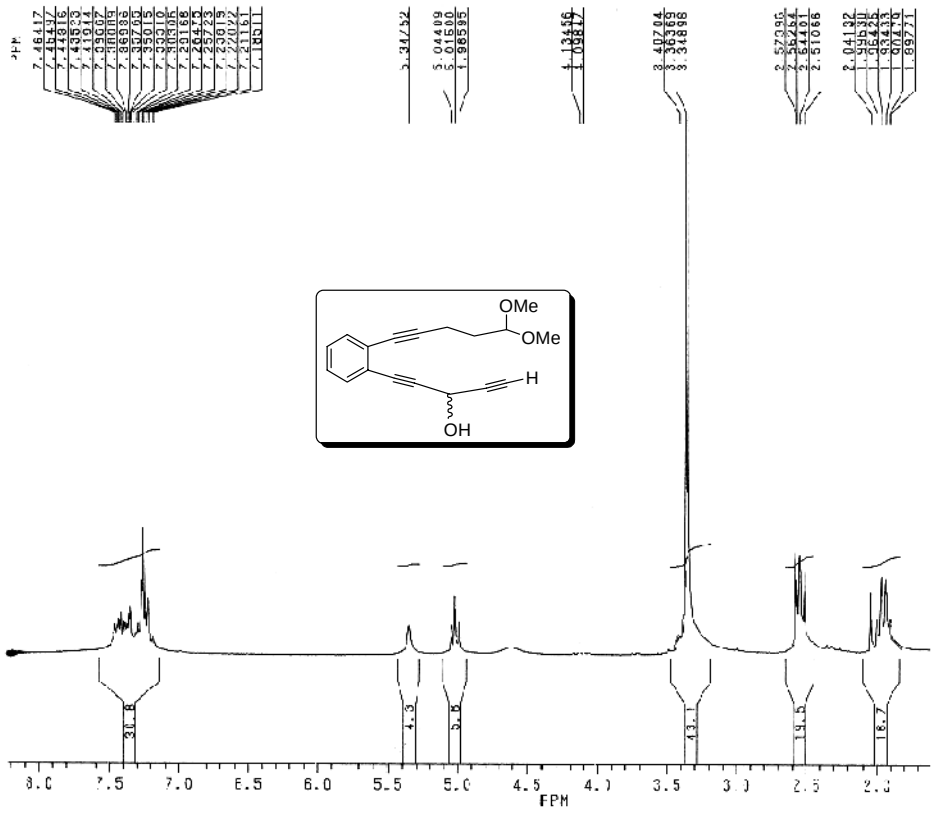

Figure S21: ^{1}H NMR Spectrum of compound 29 in $CDCl_3$

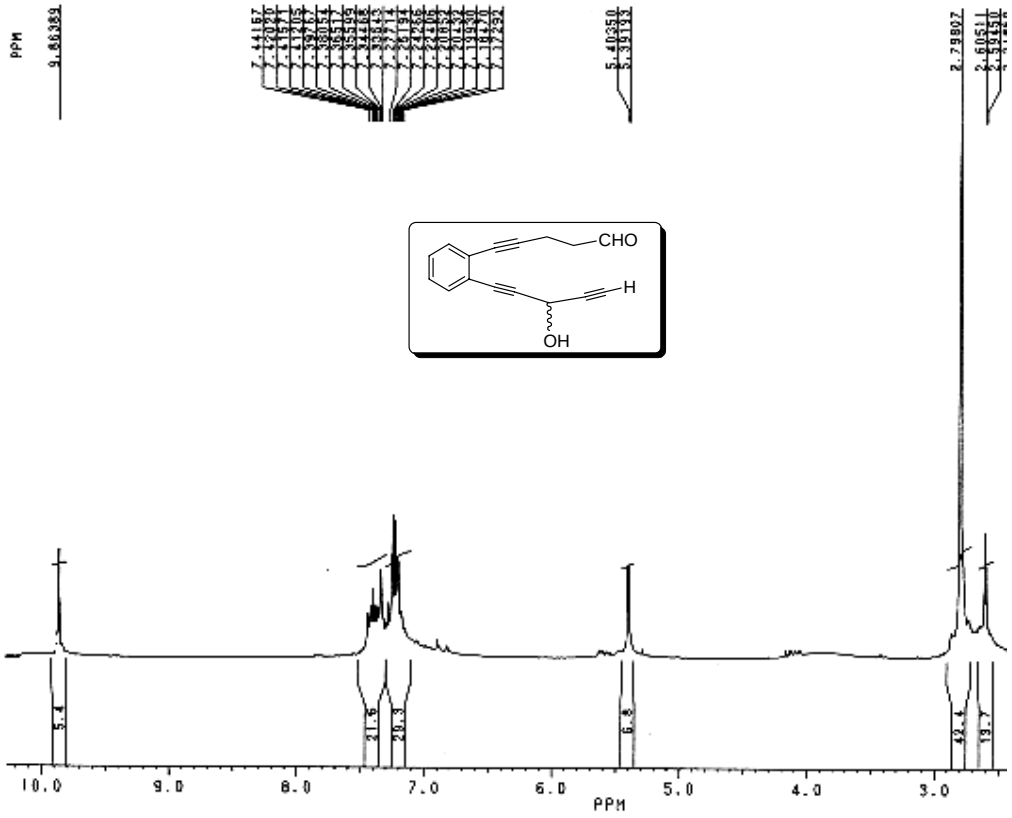

Figure S22: ^{1}H NMR Spectrum of compound 30 in $CDCl_3$

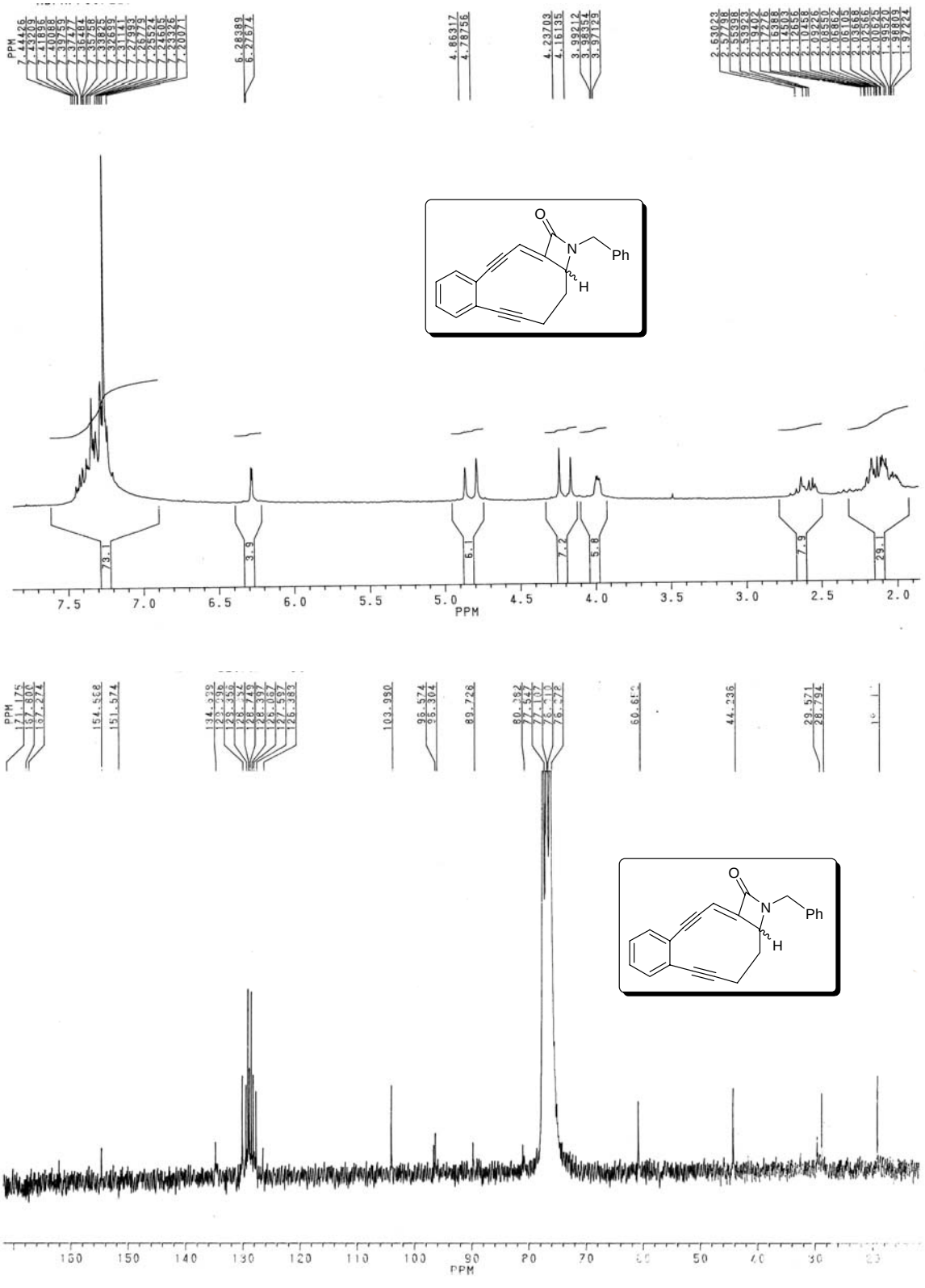

Figure S23 & S24: ^{1}H & ^{13}C NMR Spectrum of compound 6 in $CDCl_3$

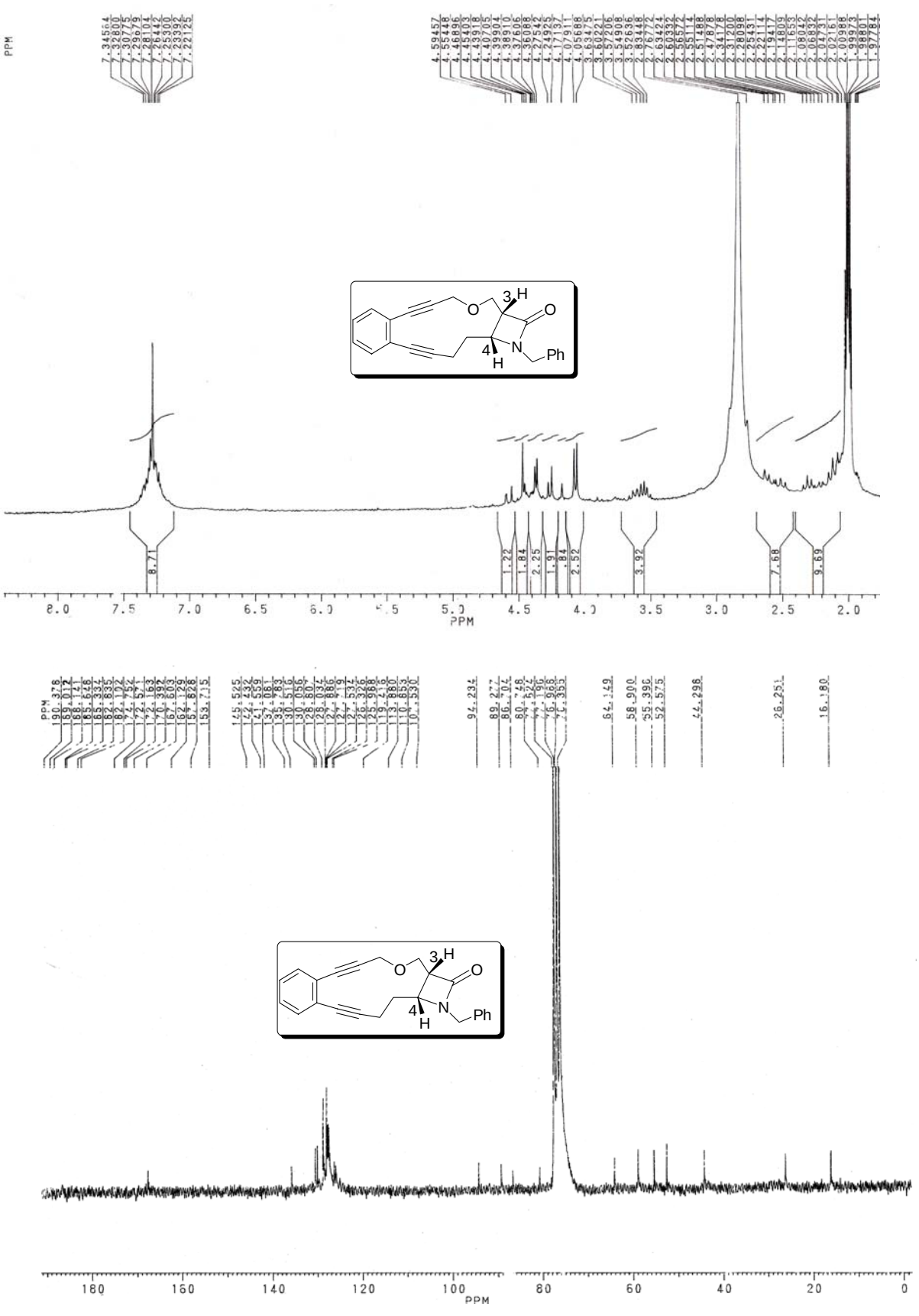

Figure S25 & S26: ^{1}H & ^{13}C NMR Spectrum of compound 1 in d_6-acetone &$CDCl_3$

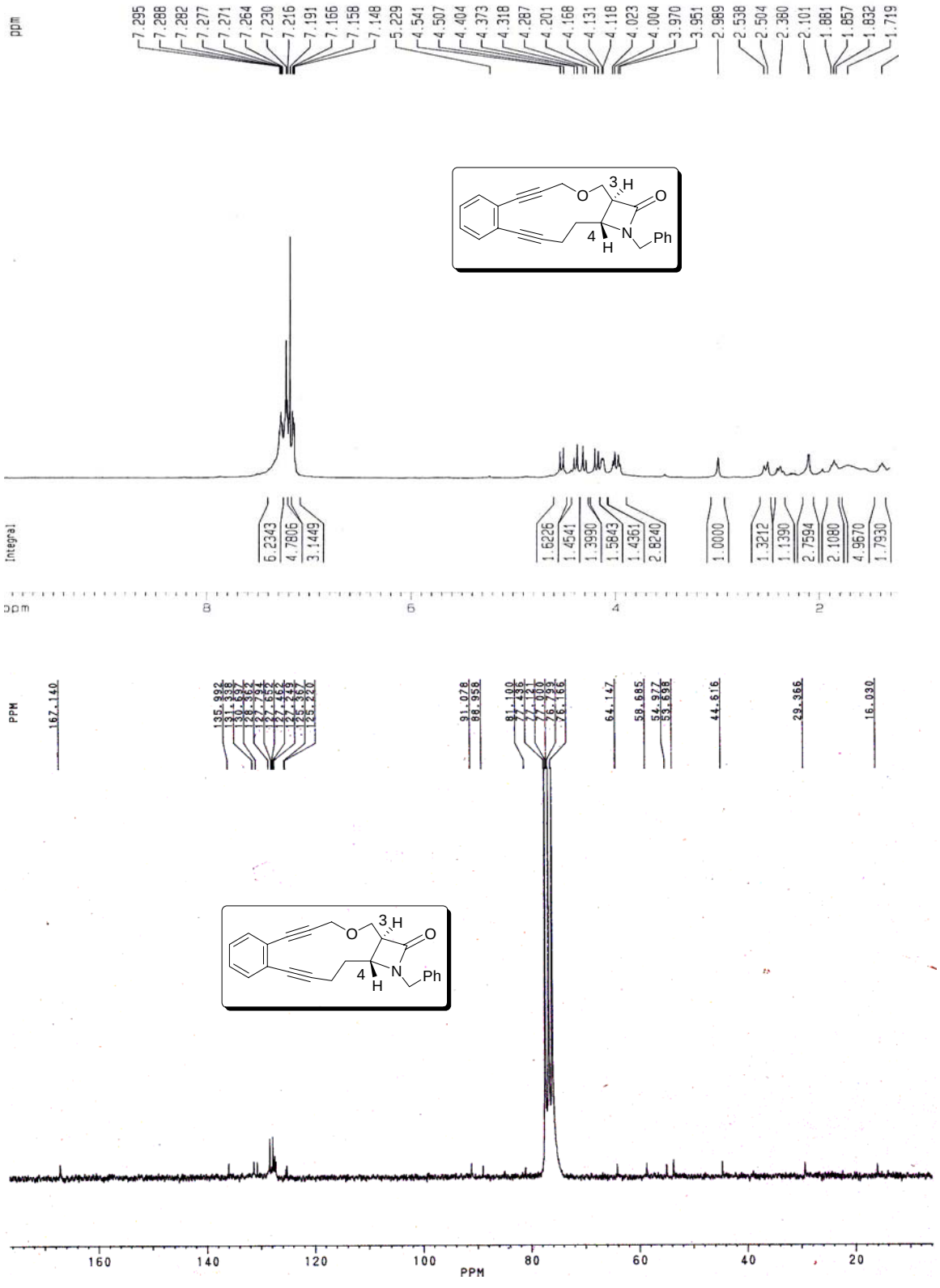

Figure S27 & S28: ^{1}H & ^{13}C NMR Spectrum of compound 2 in $CDCl_3$

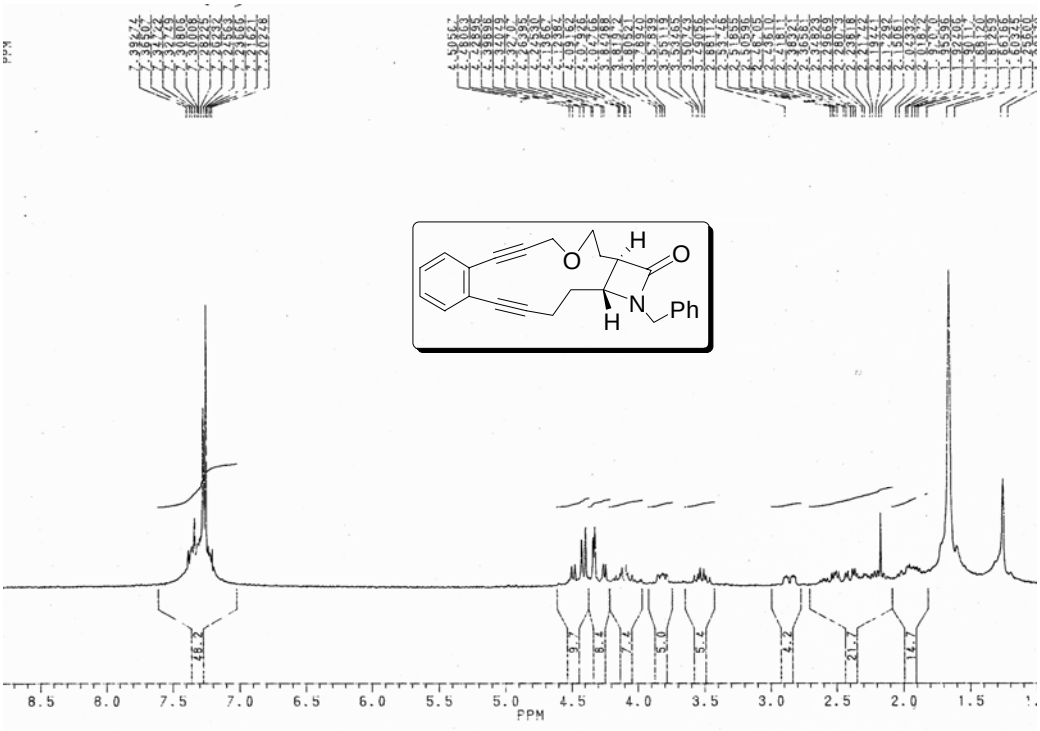

Figure S29: ^{1}H NMR Spectrum of compound 4 in $CDCl_3$

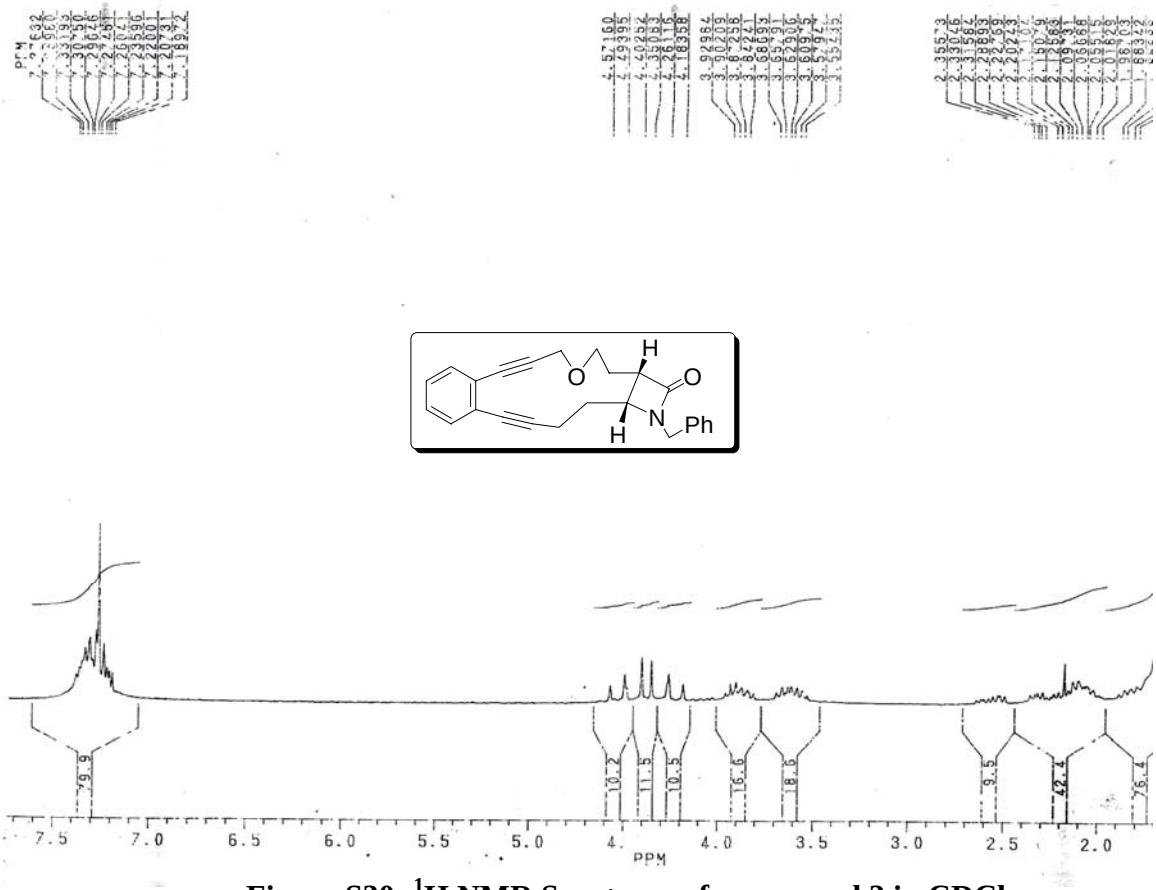

Figure S30: ^{1}H NMR Spectrum of compound 3 in $CDCl_3$

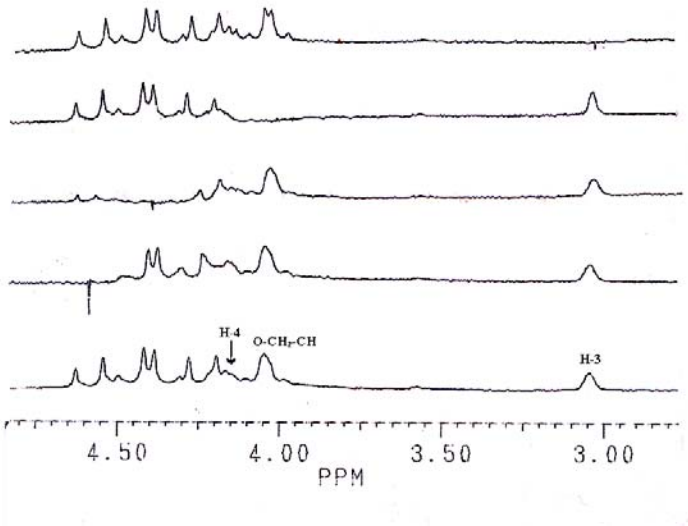

Figure S31: **Decoupling experiments on Compound 2**

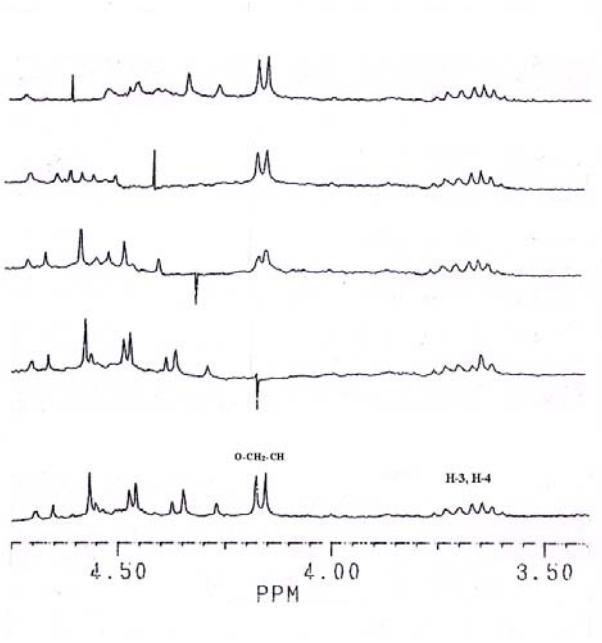

Figure S32: **Decoupling experiments on Compound 1**

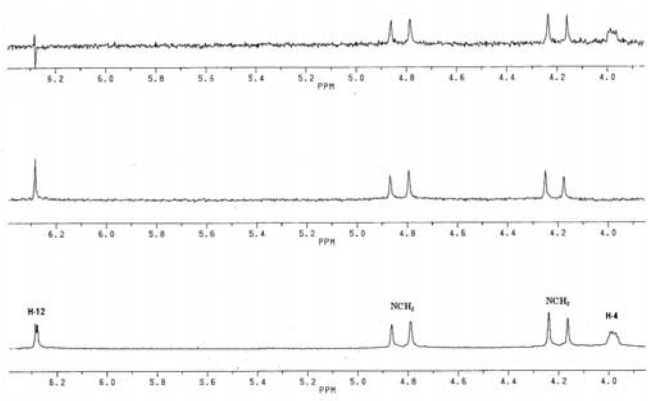

Figure S33: Decoupling experiments on Compound 6

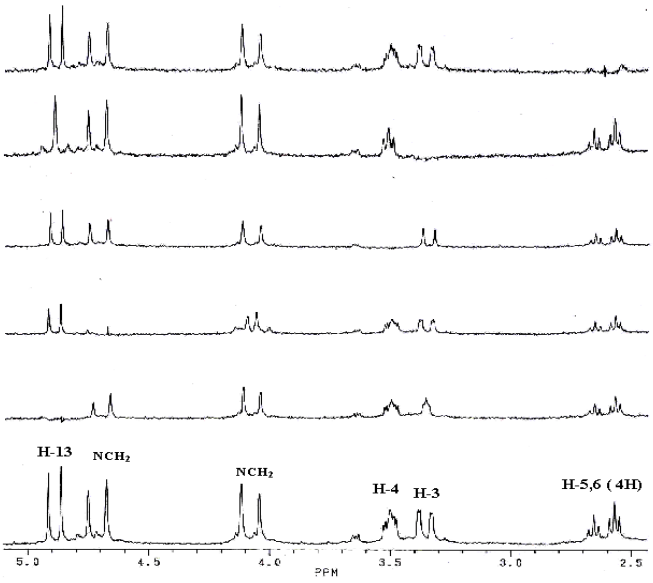

Figure S34: Decoupling experiments on Compound 5

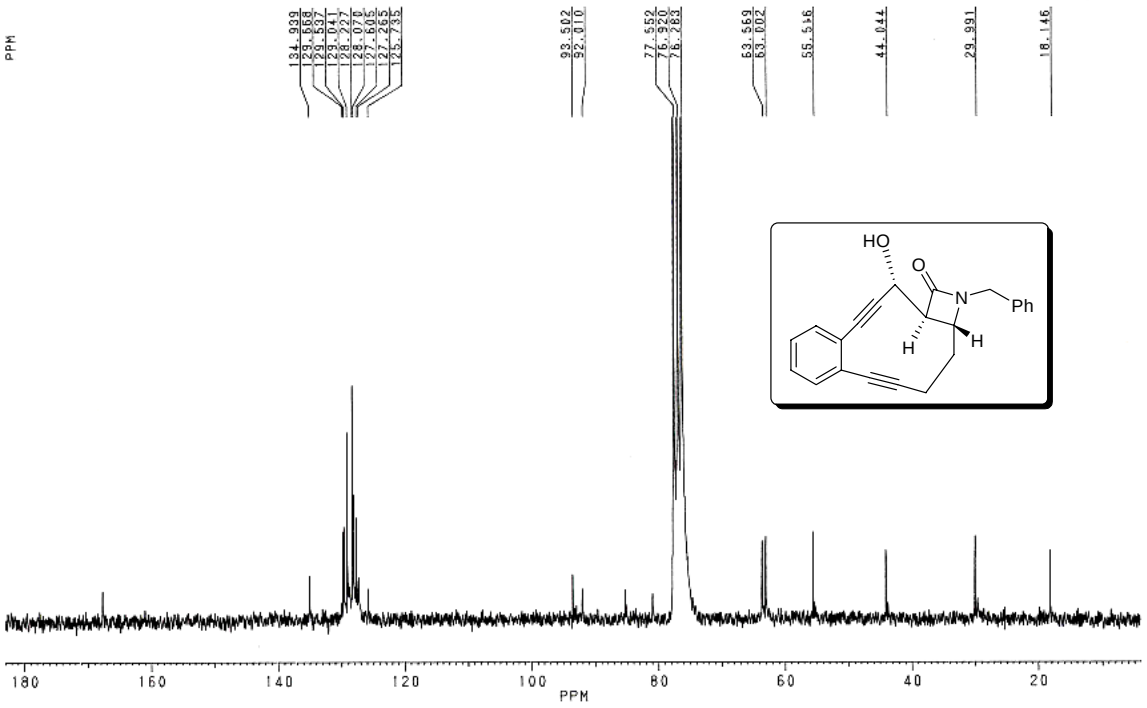

Figure S35: ^{13}C NMR Spectrum of compound 5 in $CDCl_3$

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 $C_{24}H_{21}NO_2 + H^+$ 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 $C_{25}H_{23}NO_2 + H^+$ 370.1808 found 370.1821.