

Supplementary information

Sky-blue phosphorescence from bis- and tris-cyclometalated iridium(III) complexes bearing carbazole-based dendrons: fabrication of non-doped multilayer organic light-emitting diodes by solution processing

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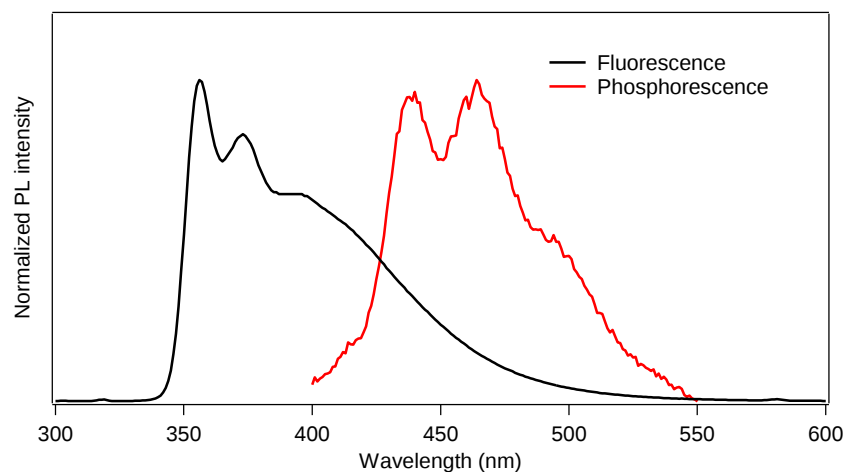


Fig. S1 Fluorescence and phosphorescence spectra of **Dn** in dichloromethane at rt and in grassy 2-methyltetrahydrofuran at 77 K (10 μ M).

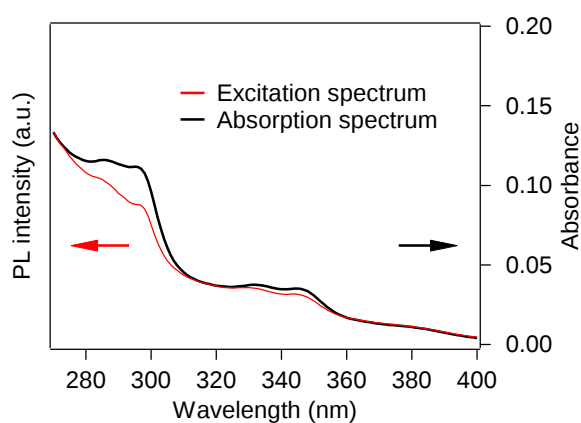


Fig. S2 UV-vis absorption and excitation spectra (λ_{PL} ; 462 nm) of the PMMA film doped with **Ir-1b** (10 μ mol g^{-1}).

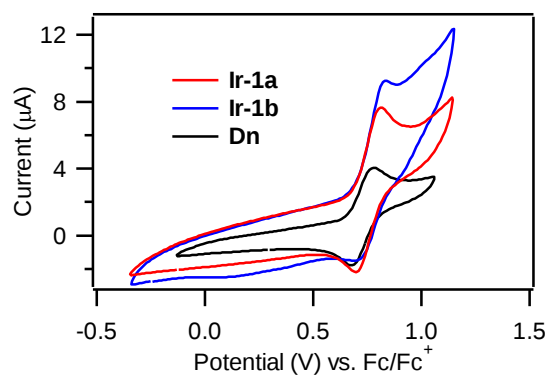


Fig. S3 Cyclic voltammograms of **Ir-1** and **Dn** in dichloromethane (0.50 mM) for oxidation potentials.

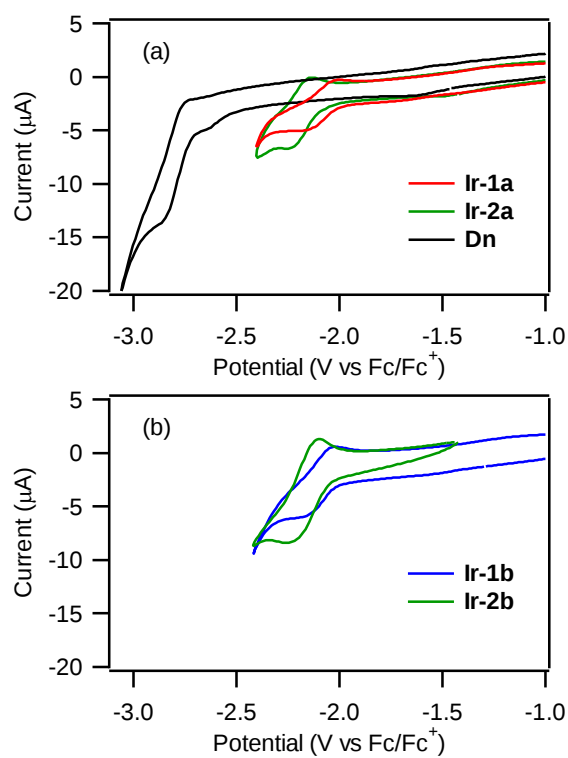


Fig. S4 Cyclic voltammograms of (a) **Ir-1a** (1.0 mM), **Ir-2a** (1.0 mM) and **Dn** (3.0 mM) (b) **Ir-1b** (1.0 mM) and **Ir-2b** (1.0 mM) in deaerated DMF for reduction potentials.

Table S1 PL quantum yields of films under a nitrogen atmosphere (film thickness, 80 nm ; excitation wavelength, 390 nm)

Film	Φ_{PL}
Ir-1a	0.33
Ir-1b	0.25
FIrpic	0.17
FIrpic + Dn (1:2, mol/mol)	0.63
Ir-1a + DPEPO (1:5, mol/mol)	0.49
Ir-1b + DPEPO (1:5, mol/mol)	0.63
FIrpic + Dn + DPEPO (1:2:5, mol/mol)	0.94

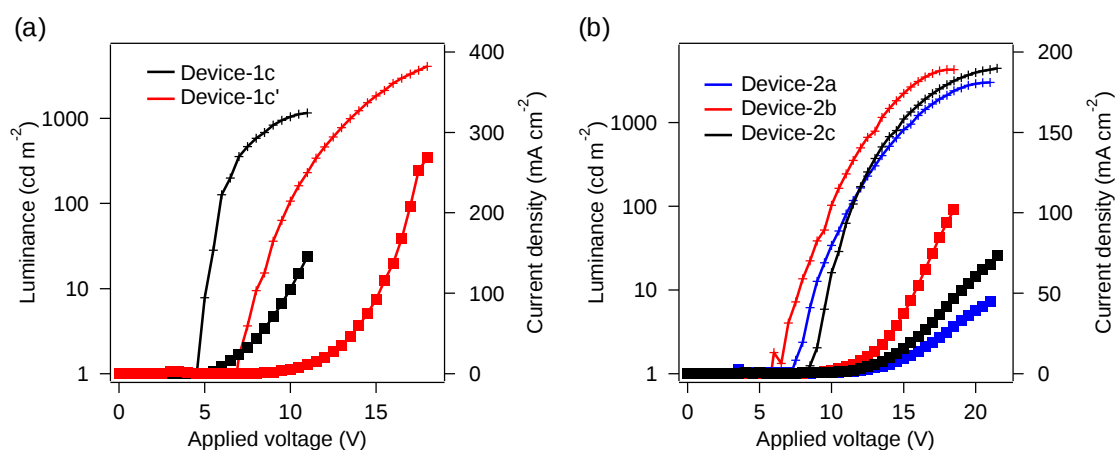


Fig. S5 Current density-voltage-luminance curves of (a) Device-1c and Device-1c', and (b) Device-2.

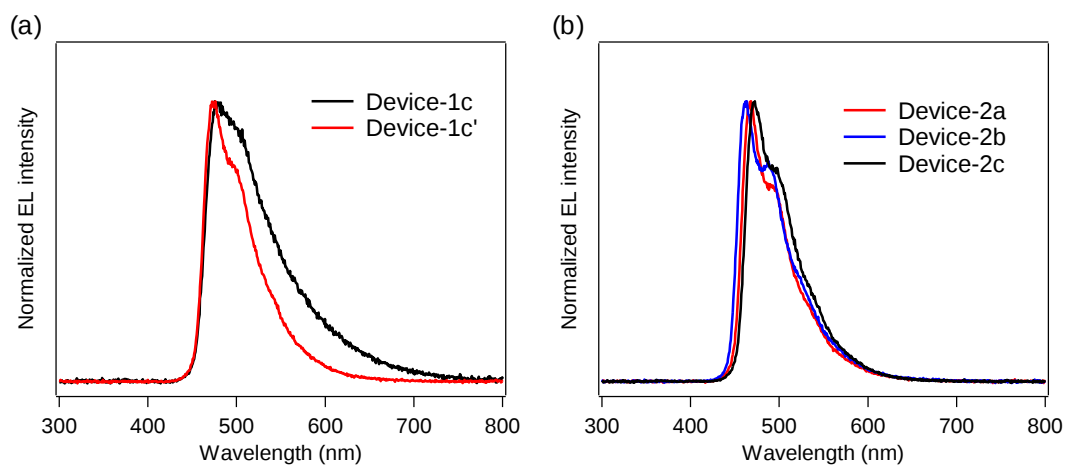


Fig. S6 EL spectra of (a) Device-1c and Device-1c', and (b) Device-2.

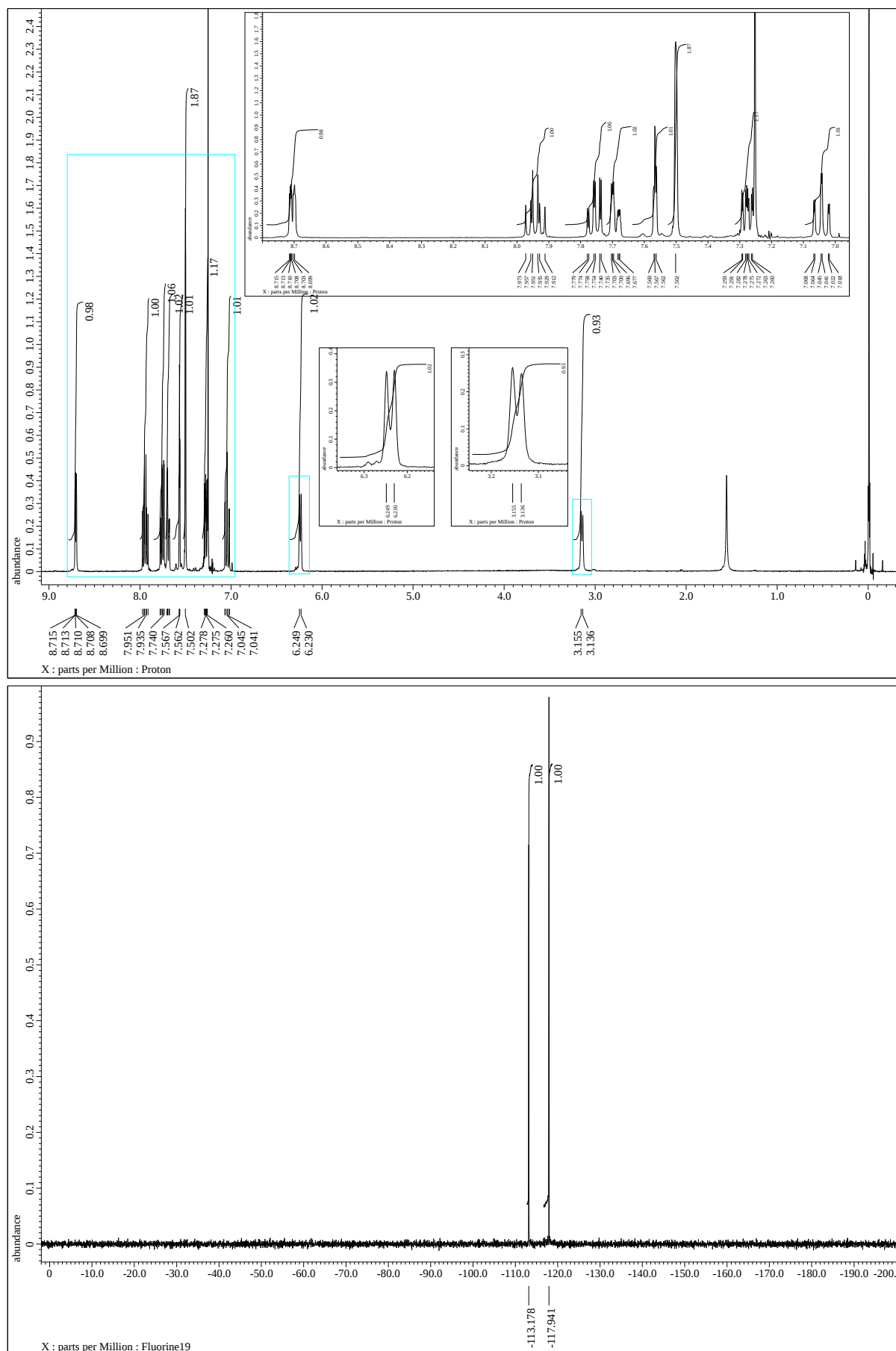


Fig. S7 ^1H (upper) and ^{19}F (lower) NMR spectra of **2**.

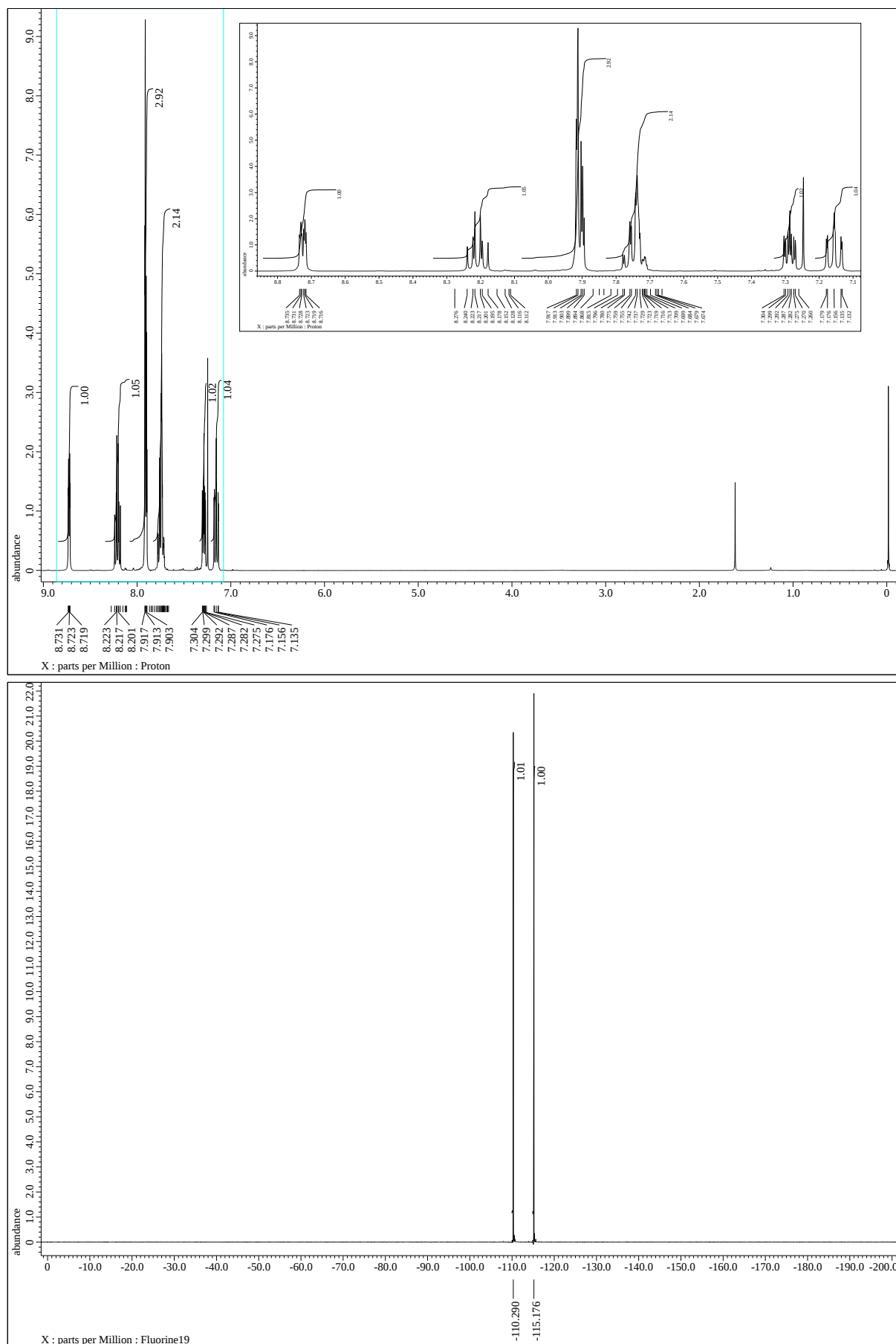


Fig. S8 ^1H (upper) and ^{19}F (lower) NMR spectra of **3**.

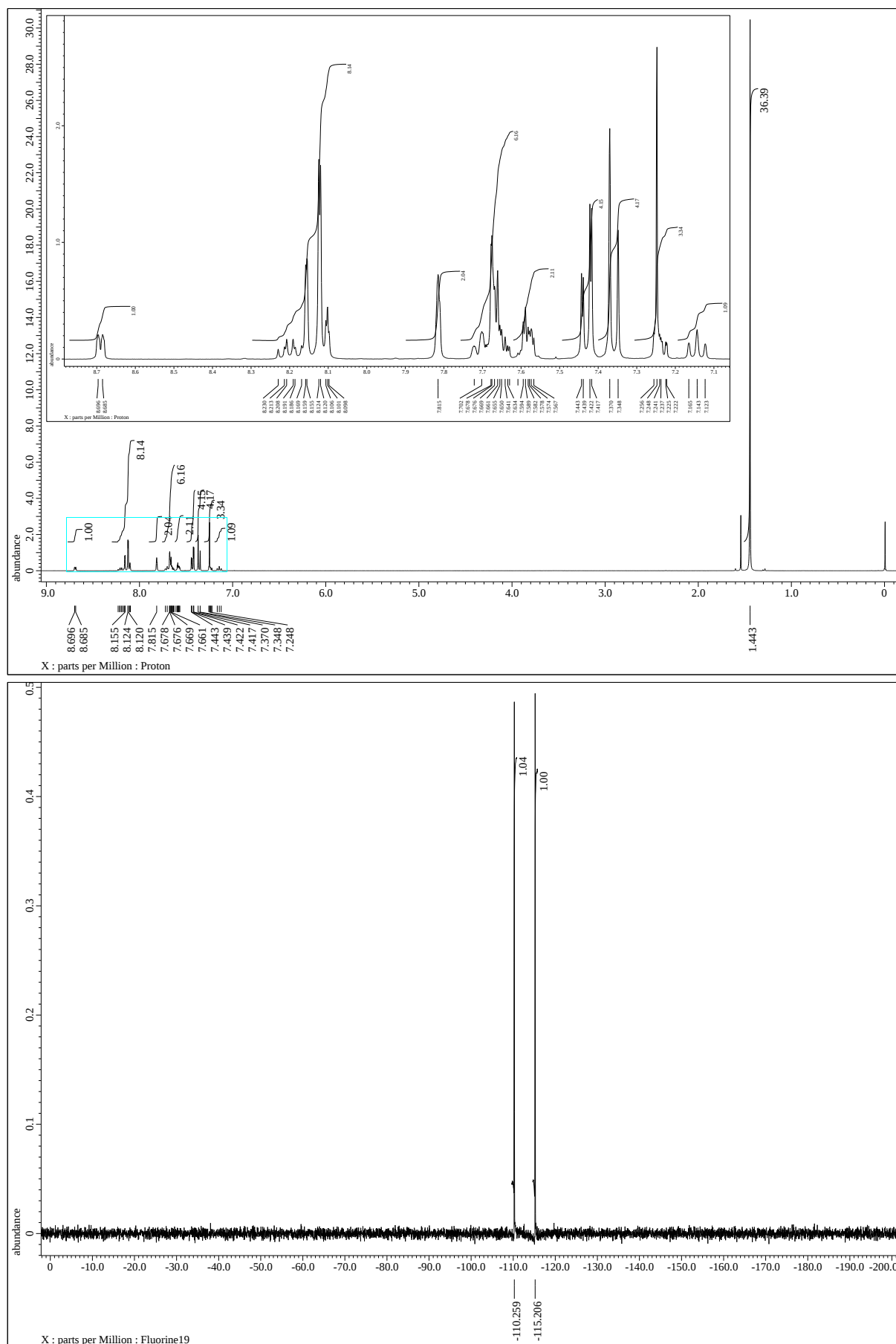


Fig. S9 ^1H (upper) and ^{19}F (lower) NMR spectra of $\text{HC}^{\text{N-1}}$.

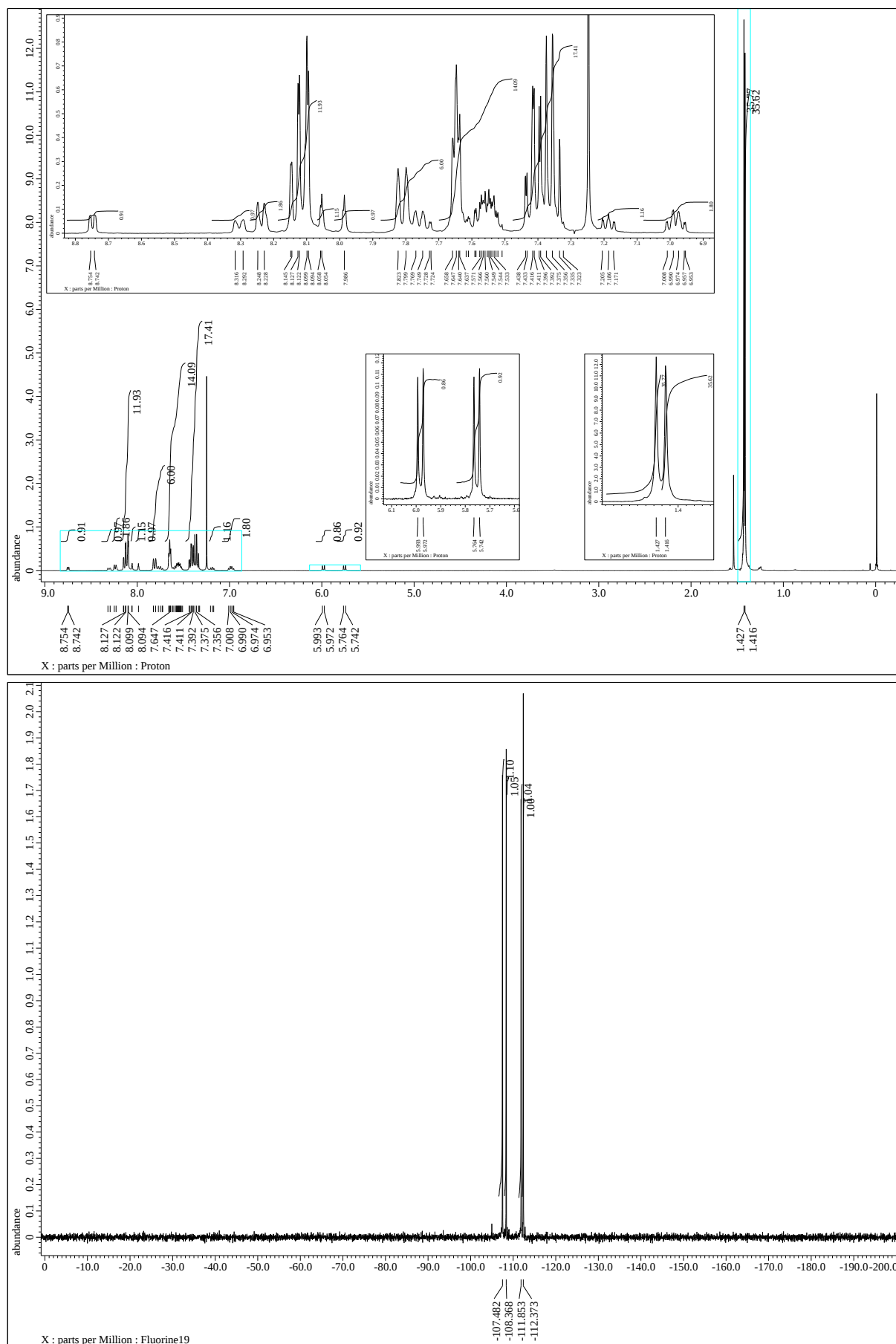


Fig. S10 ^1H (upper) and ^{19}F (lower) NMR spectra of Ir-1a.

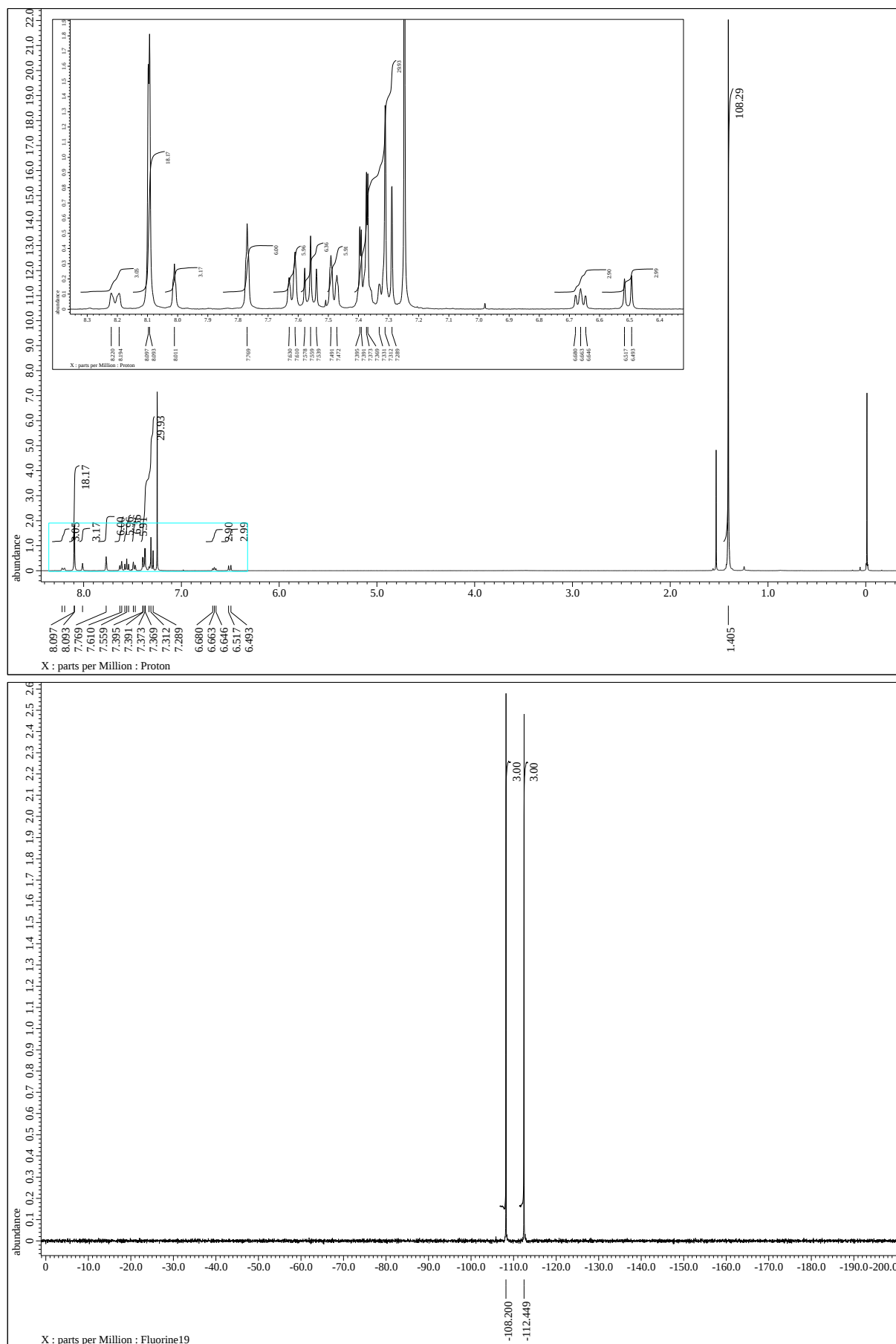


Fig. S11 ¹H (upper) and ¹⁹F (lower) NMR spectra of **Ir-1b**.

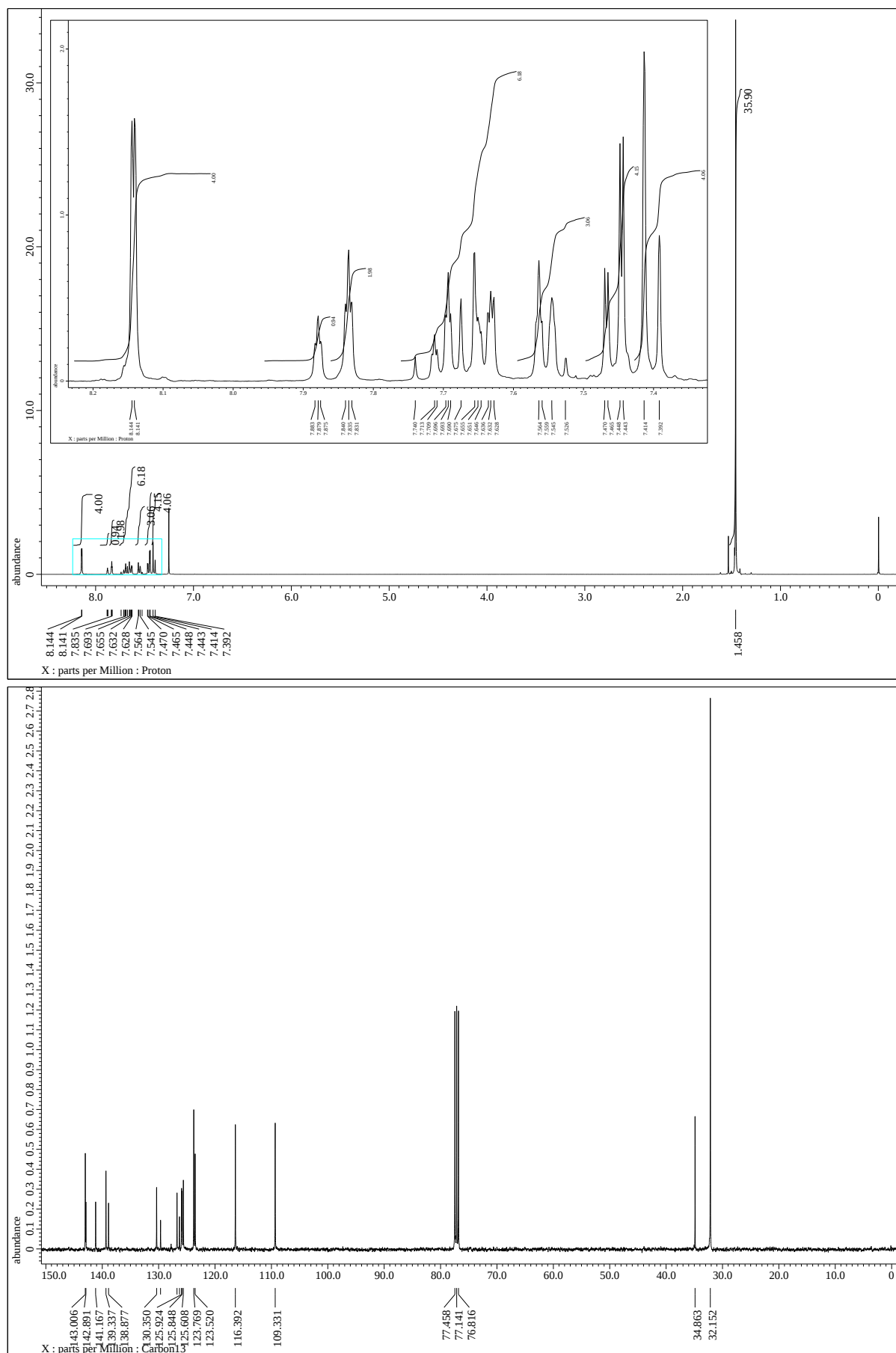


Fig. S12 ^1H (upper) and ^{13}C (lower) NMR spectra of **Dn**.