Electronic Supplementary Material (ESI) for RSC Advances

Electronic Supporting Information:

Efficient blue-emitting electrophosphorescent organic light-emitting diodes using 2-(3,5-di(carbazol-9-yl)phenyl)-5-phenyl-1,3,4-oxadiazole as an ambipolar host

Yadong Zhang, Wojciech Haske, Dengke Cai, Stephen Barlow, Bernard Kippelen*, and Seth R. Marder*

Center for Organic Photonics and Electronics (COPE), School of Chemistry and Biochemistry, and School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, Georgia 30332, USA

Contents:

*1. **Figure Showing Thermal Data:***

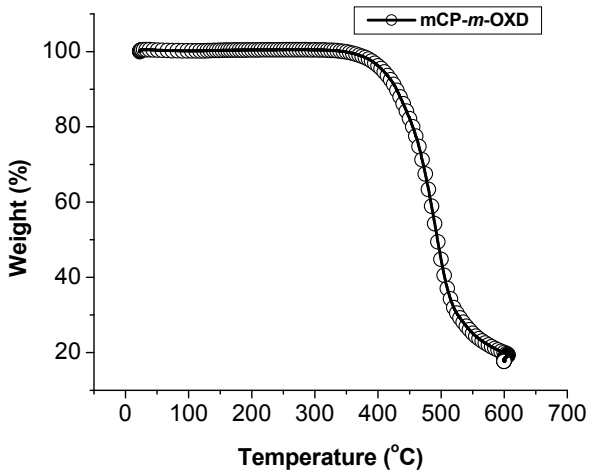

Fig S1 Thermogravimetric data for mCP*m*OXD2 obtained at a heating rate of 20 °C min^{-1} under inert atmosphere.

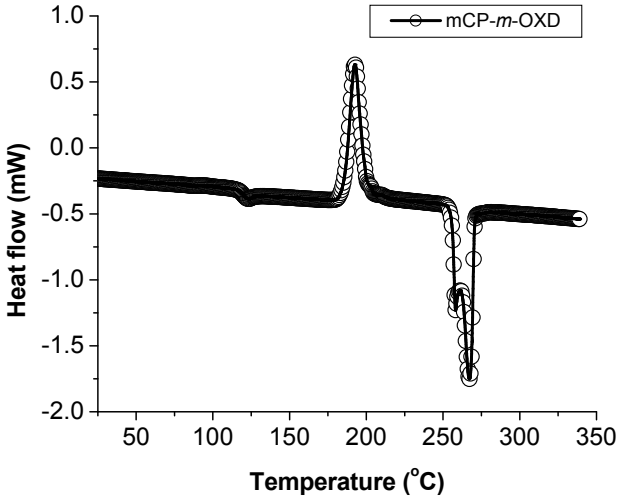

Fig S2 DSC data for **1** obtained at a heating rate of 10 °C min^{-1}, showing a T_g at around 120 °C, followed by a recrystallization and melt at higher temperatures.

2. Figure and Table of Optical Data:

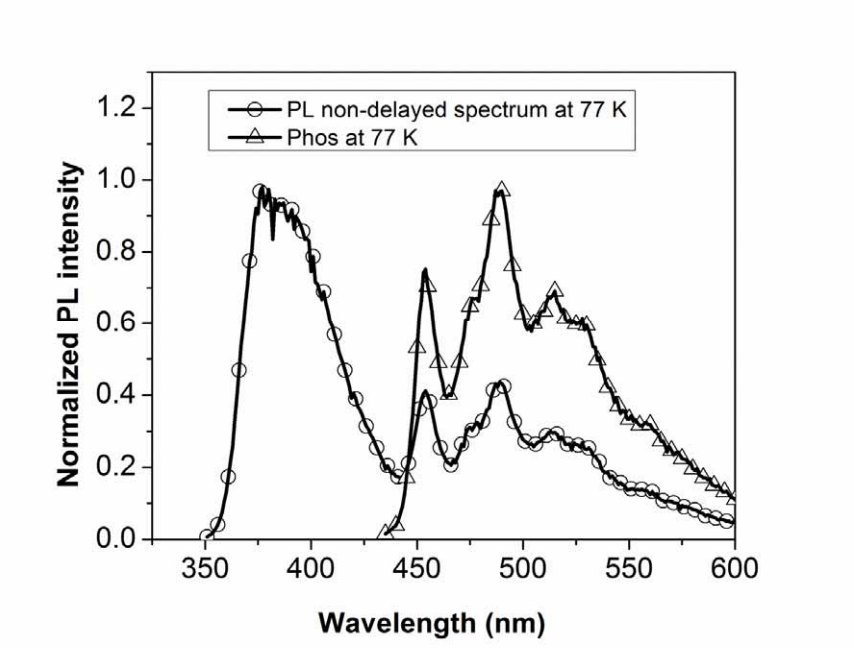

Fig S3 Comparison of photoluminescence spectra of 1 (77 K, 2-methyltetrahydrofuran) and without a 50 μs detector delay.

Table S1 Experimental Optical Data for **1** and the closely related previously reported[1] compound **V**.

	absorption[a]			fluorescence[a]		phosphorescence[b]	
	λ_{max} / nm	E_{max} / eV	E_{onset} / eV	λ_{max} / nm	E_{max} / eV	$\lambda_{0,0}$ / nm	E_T / eV
1	234, 292, 337	4.30, 4.25, 3.68	3.31	434	2.86	454	2.73
V	234, 292, 337	4.30, 4.25, 3.68.	3.31	434	2.86	456	2.72

[a]In dichloromethane at room temperature. [b]The highest energy feature in a spectrum recorded in 2-methyltetrahydrofuran at 77 K and taken as an estimate of the adiabatic triplet energy.

1 Y. Zhang, C. Zuniga, S.-J. Kim, D. Cai, S. Barlow, S. Salman, V. Coropceanu, J.-L. Brédas, B. Kippelen and S. Marder, *Chem. Mater.* 2011, **23**, 4002.

3. Figure Showing Electrochemical Data:

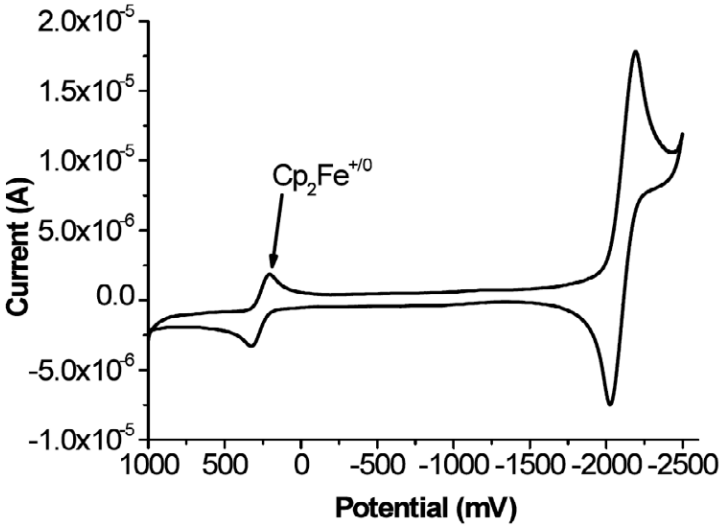

Fig S4 Reductive cyclic voltammogram of **1** in THF / 0.1 M $^{n}Bu_4NPF_6$ with internal ferrocene.

4. NMR Spectra of New Compounds

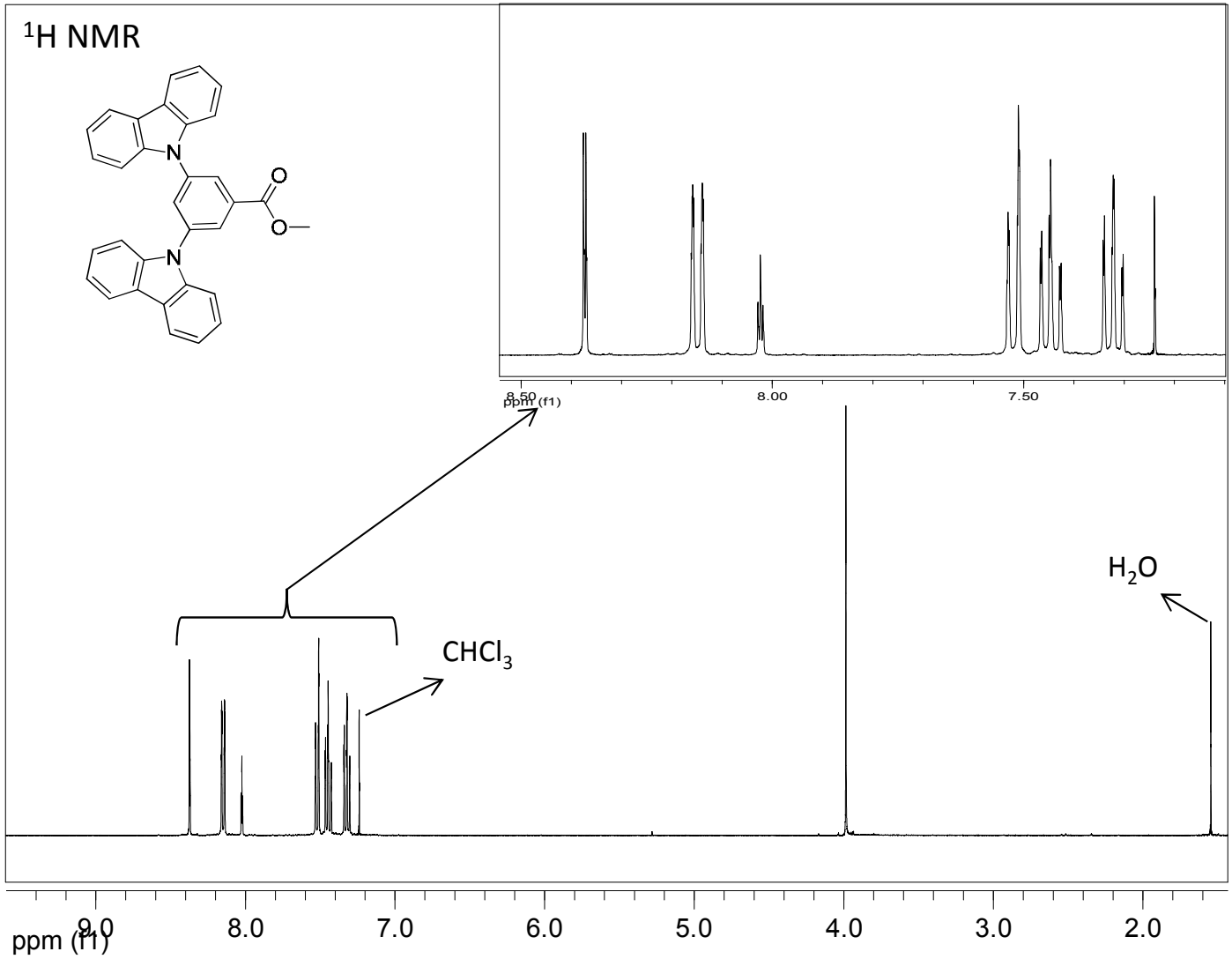

Fig S5 ^{1}H NMR spectrum of methyl 3,5-di(carbazol-9-yl)benzoate in $CDCl_3$.

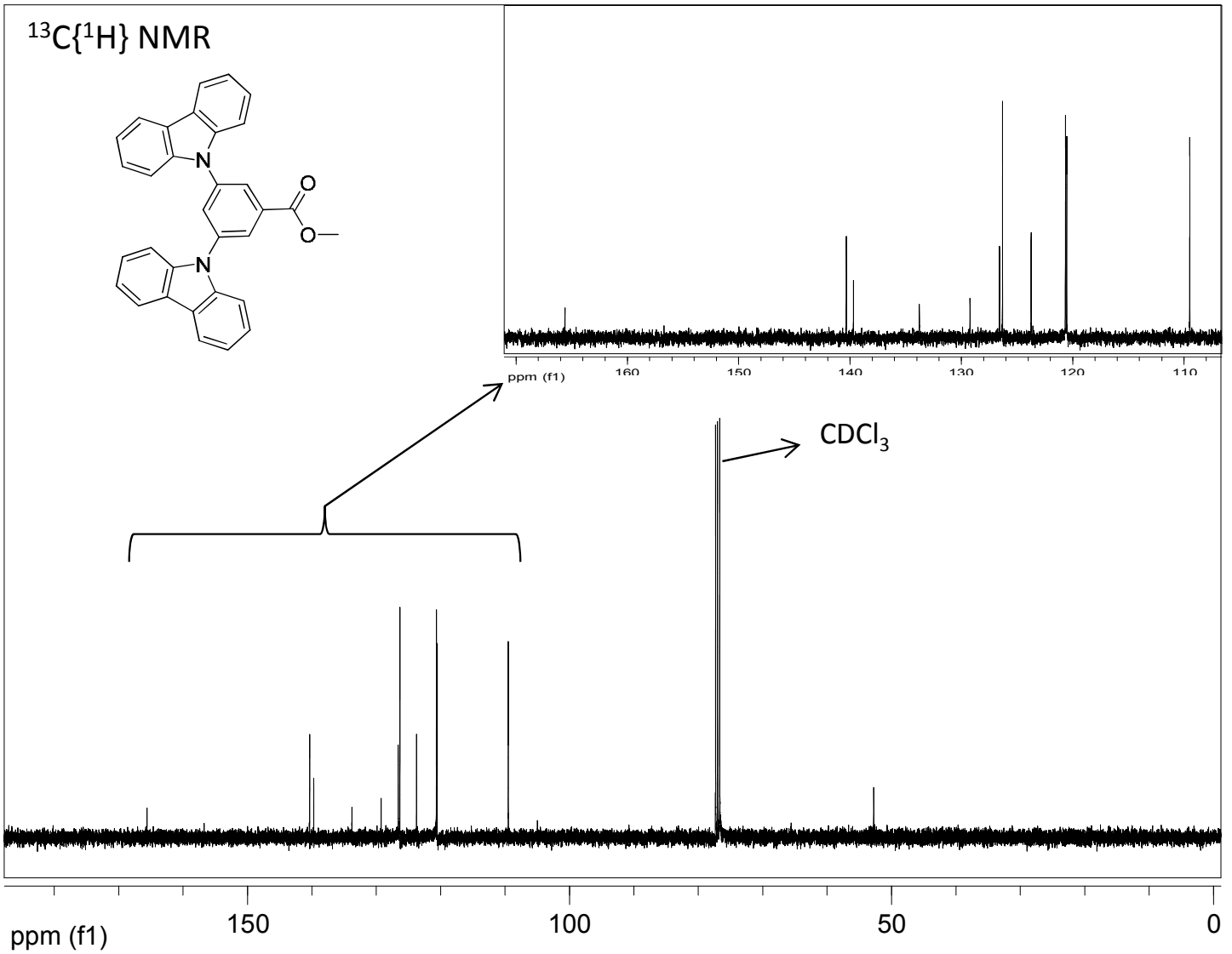

Fig S6 $^{13}C\{^{1}H\}$ NMR spectrum of methyl 3,5-di(carbazol-9-yl)benzoate in $CDCl_3$.

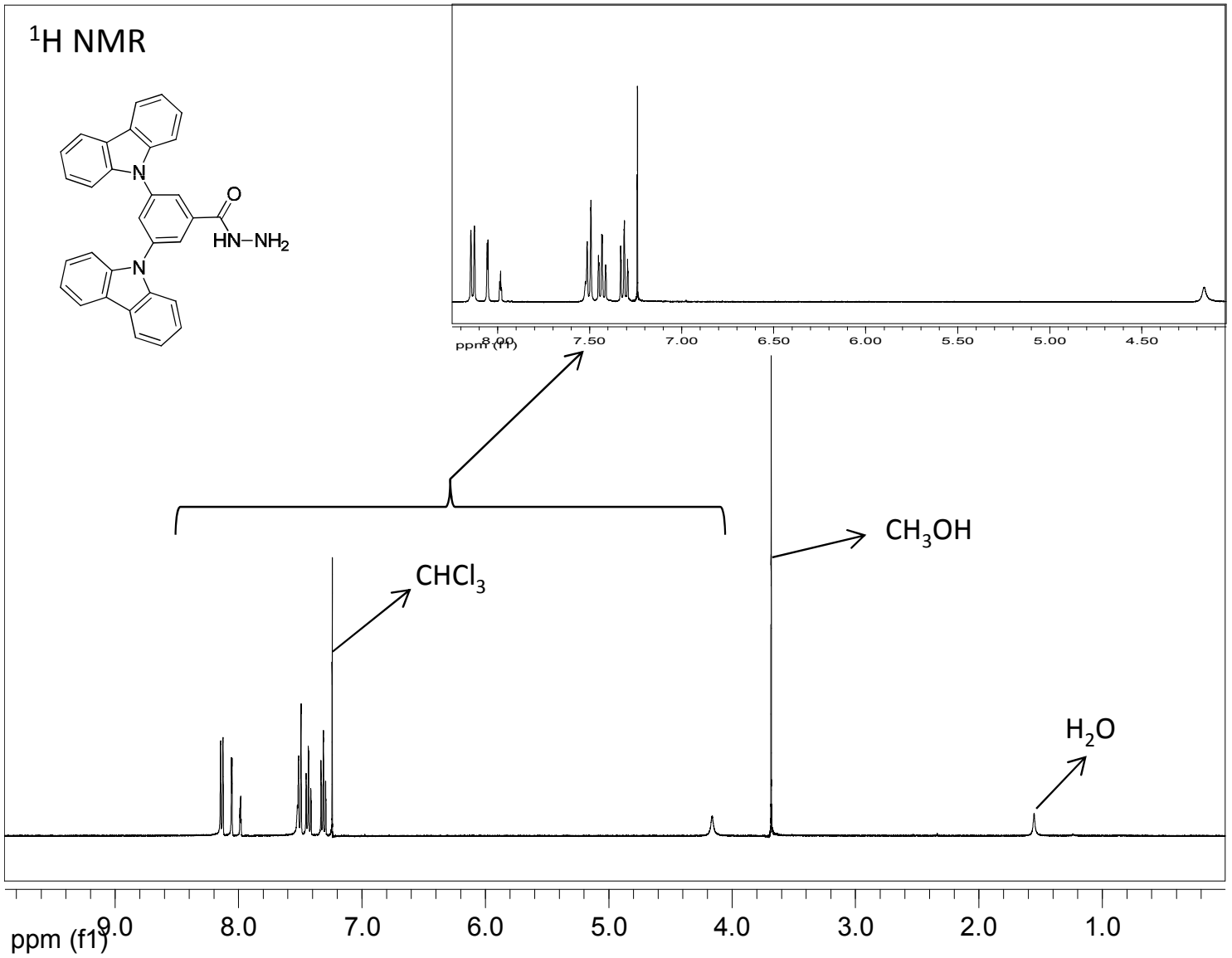

Fig S7 ^{1}H NMR spectrum of 3,5-di(carbazol-9-yl)benzohydrazide in $CDCl_3$.

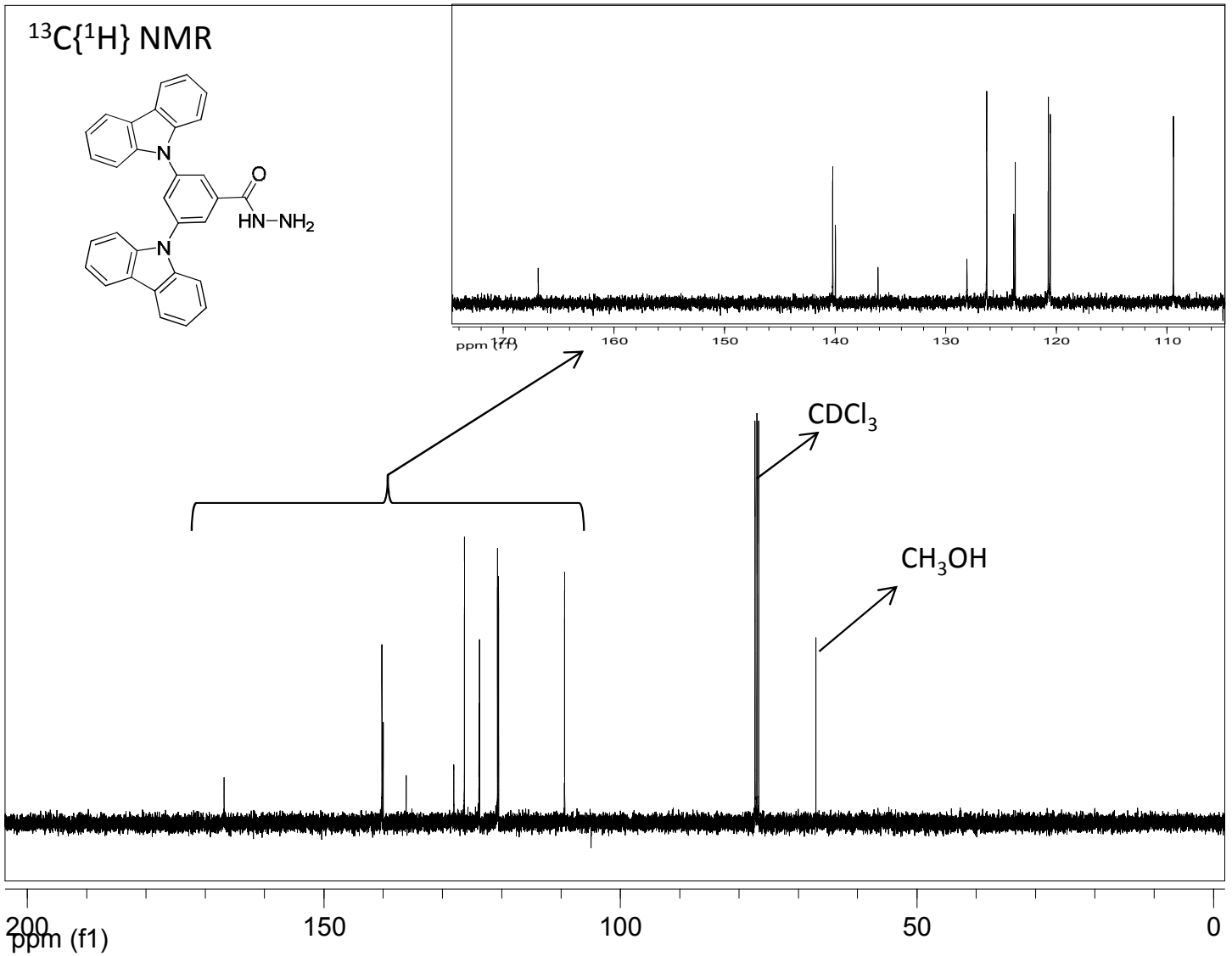

Fig S8 $^{13}C\{^{1}H\}$ NMR spectrum of 3,5-di(carbazol-9-yl)benzohydrazide in $CDCl_3$.

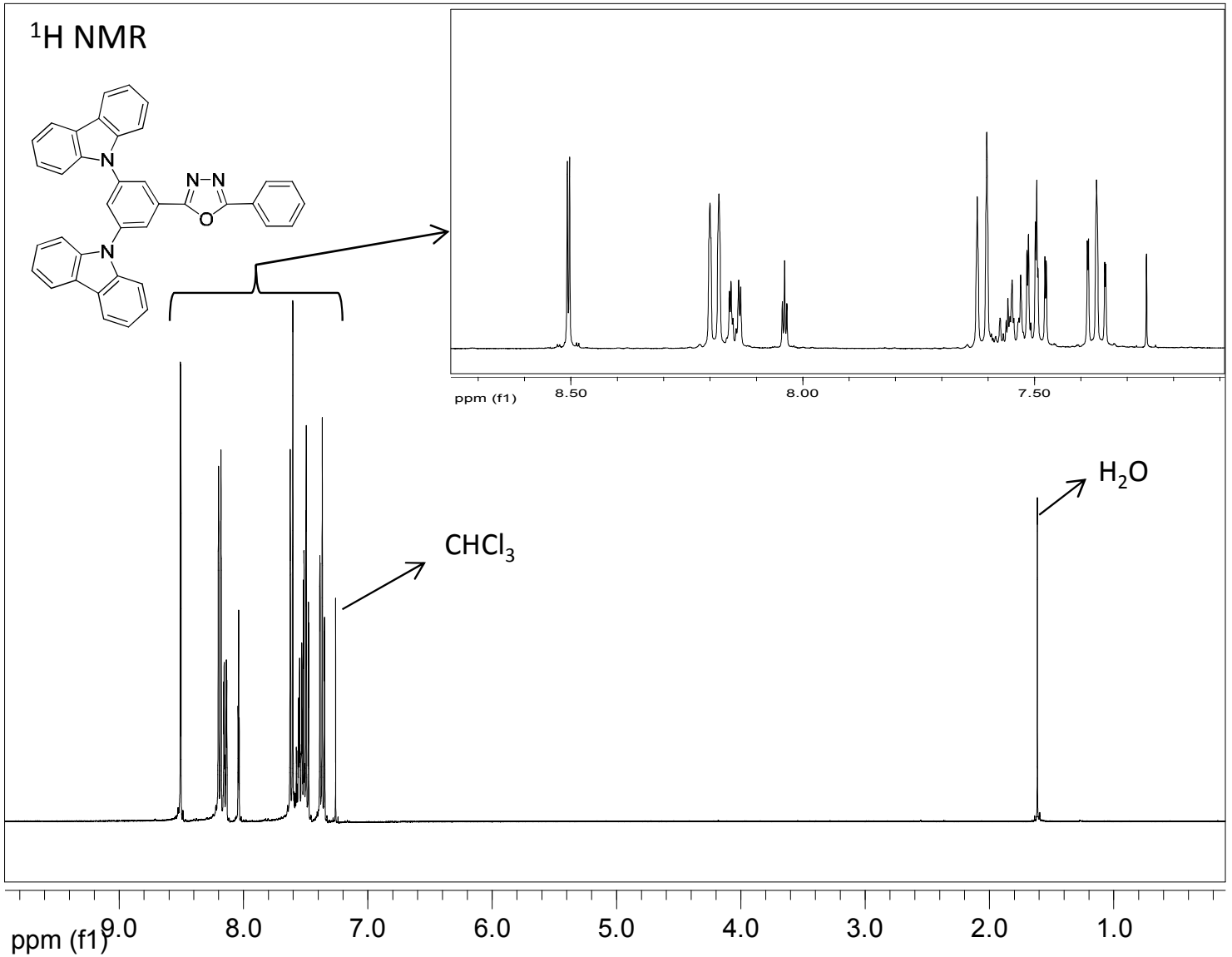

Fig S9 ^{1}H NMR spectrum of 2-(3,5-di(carbazol-9-yl)phenyl)-5-phenyl-1,3,4-oxadiazole (**1**) in $CDCl_3$.

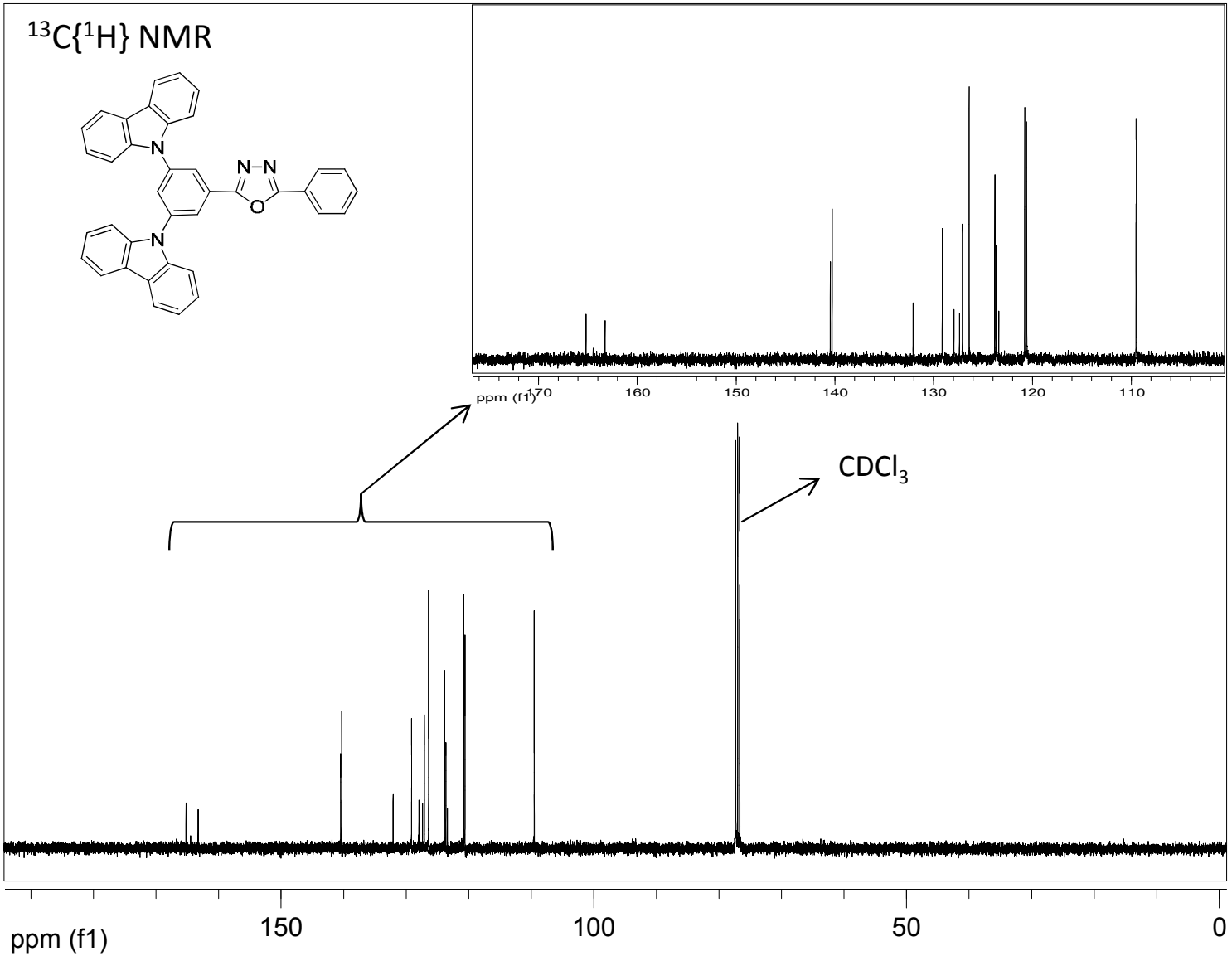

Fig S10 $^{13}C\{^{1}H\}$ NMR spectrum of 2-(3,5-di(carbazol-9-yl)phenyl)-5-phenyl-1,3,4-oxadiazole (**1**) in $CDCl_3$.