**Supporting Information**

**New iodo-dihydro-pyrrole-2-one derivatives as promising broad-spectrum antimicrobials breaking the polymicrobial synergisms**

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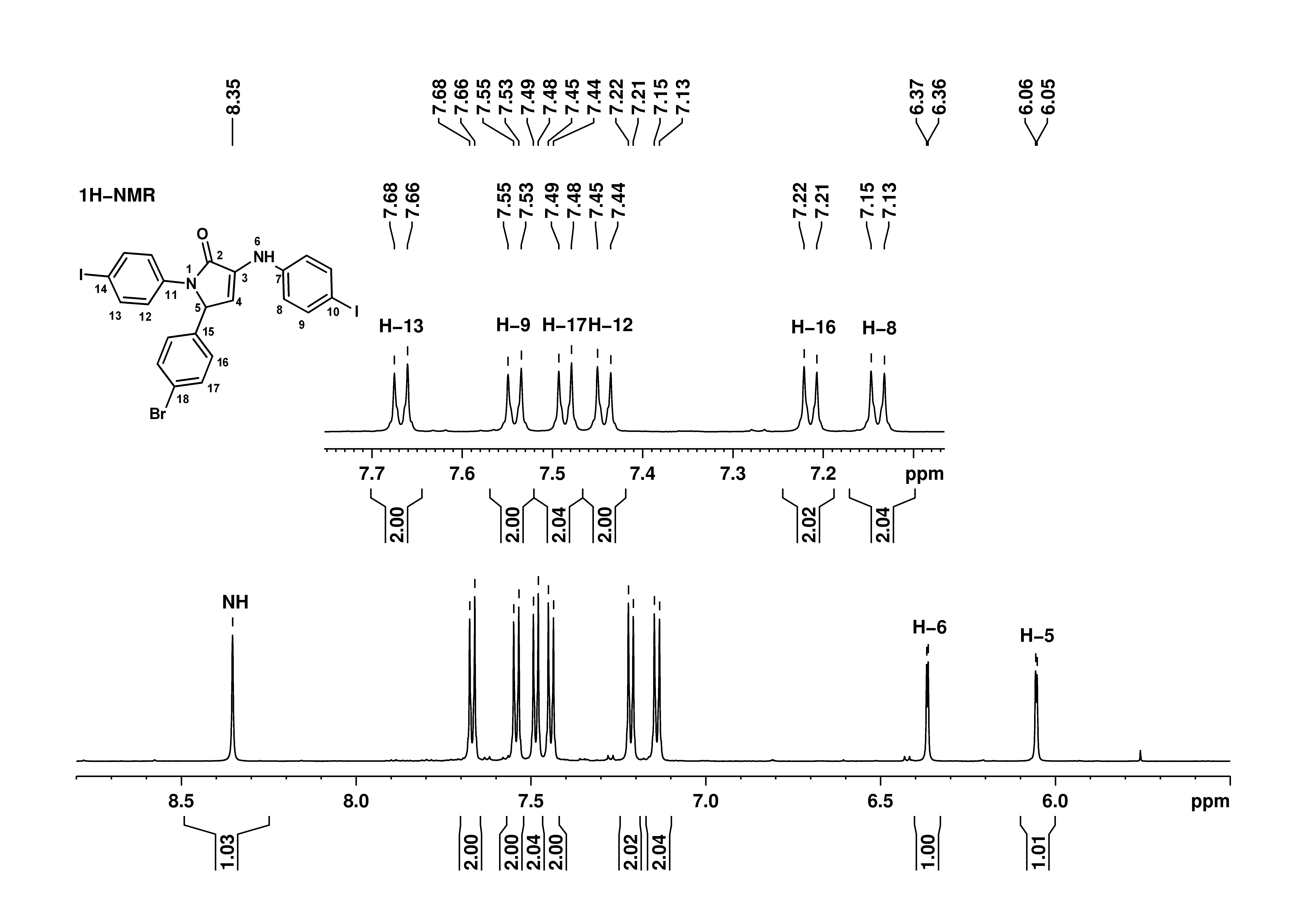


Figure S1.A. The 1H-NMR spectrum corresponding to compound **3d**, recorded in DMSO-d6, at 600.1 MHz. Signals assignments are annotated on the figure.

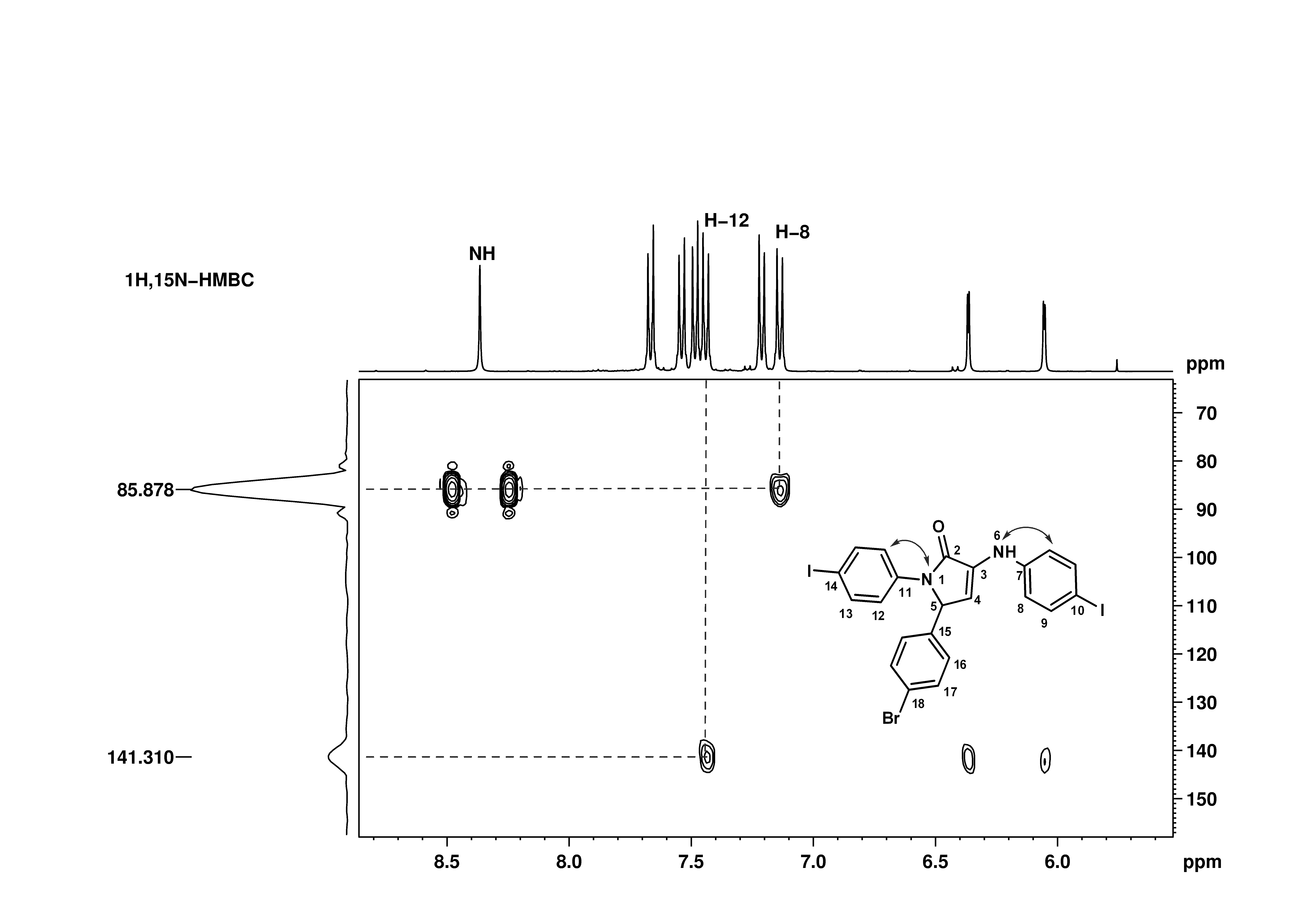


Figure S1.B. 1H,15N-HMBC spectrum corresponding to compound **3d** showing the correlation signals between nitrogen atoms and protons H-8 and H-12 from the two 4-iodophenyl rings.

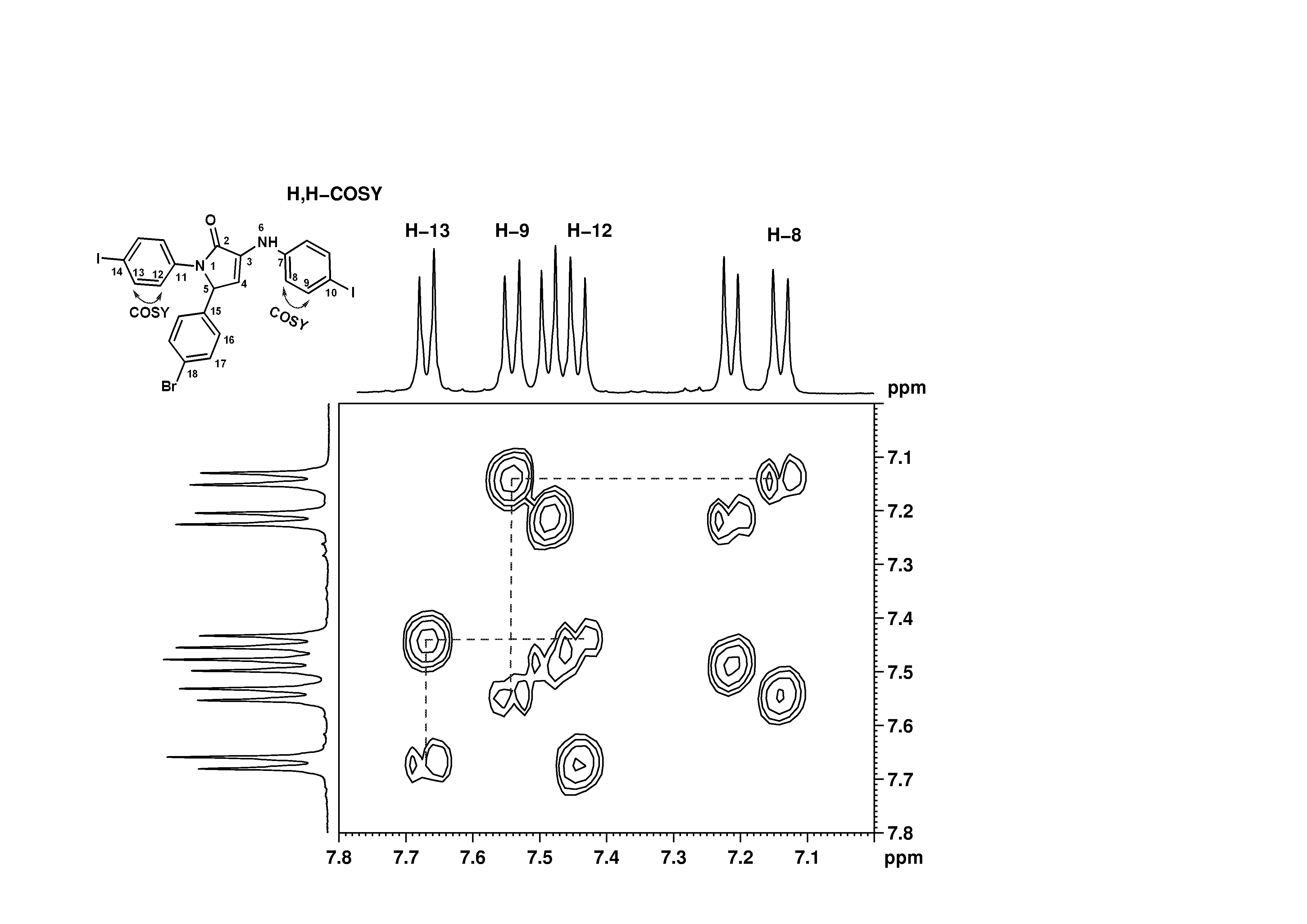


Figure S1.C. Detailed region of the 1H,1H-COSY spectrum corresponding to compound **3d**, showing the correlation signals between scalar coupling partners from the two 4-iodophenyl rings.

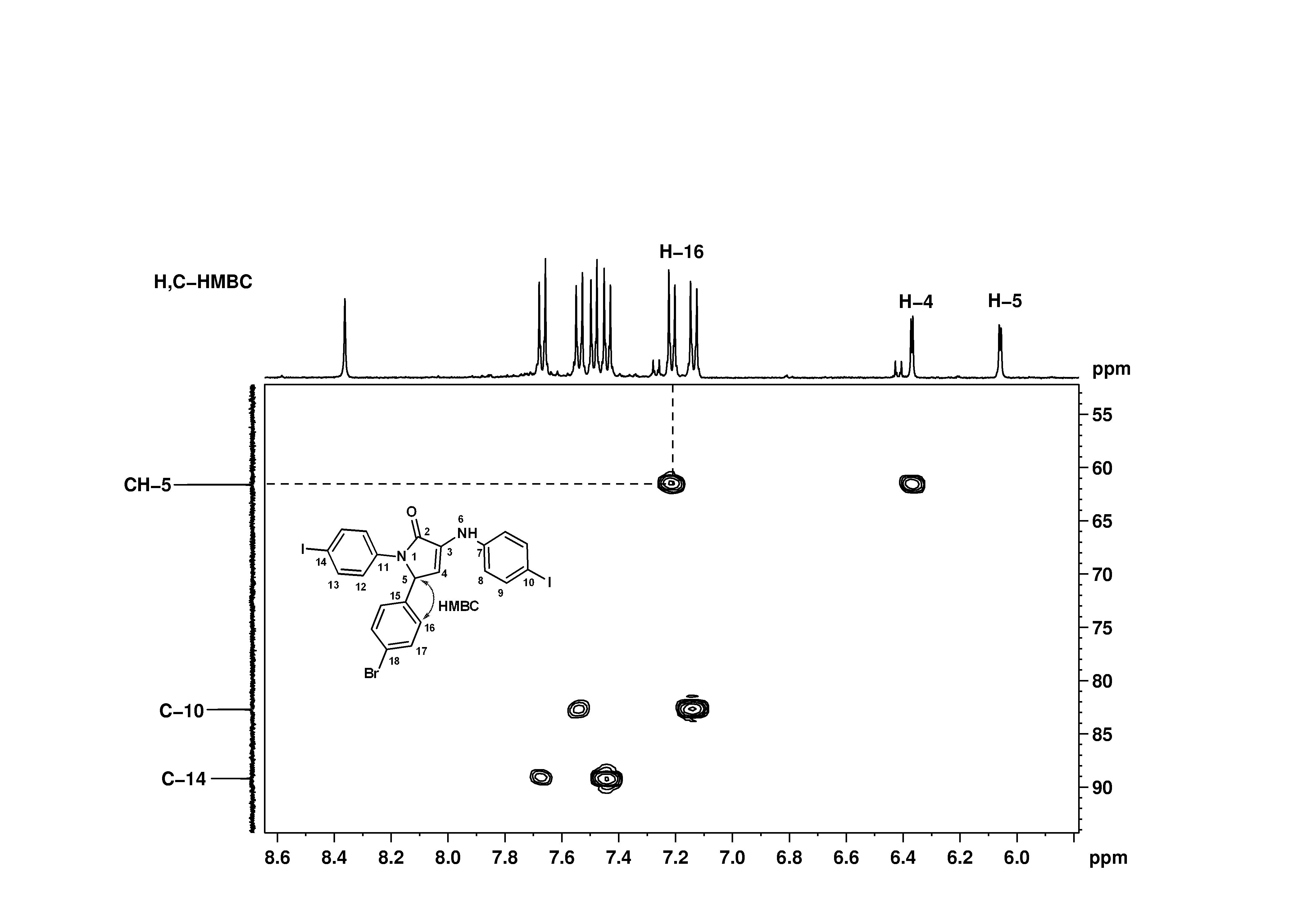


Figure S1.D. Detailed region of the 1H,13C-HMBC spectrum corresponding to compound **3d**, showing the correlation signals between proton H-16 and carbon C-5, used to properly assign the two doublets from 4-bromophenyl ring.

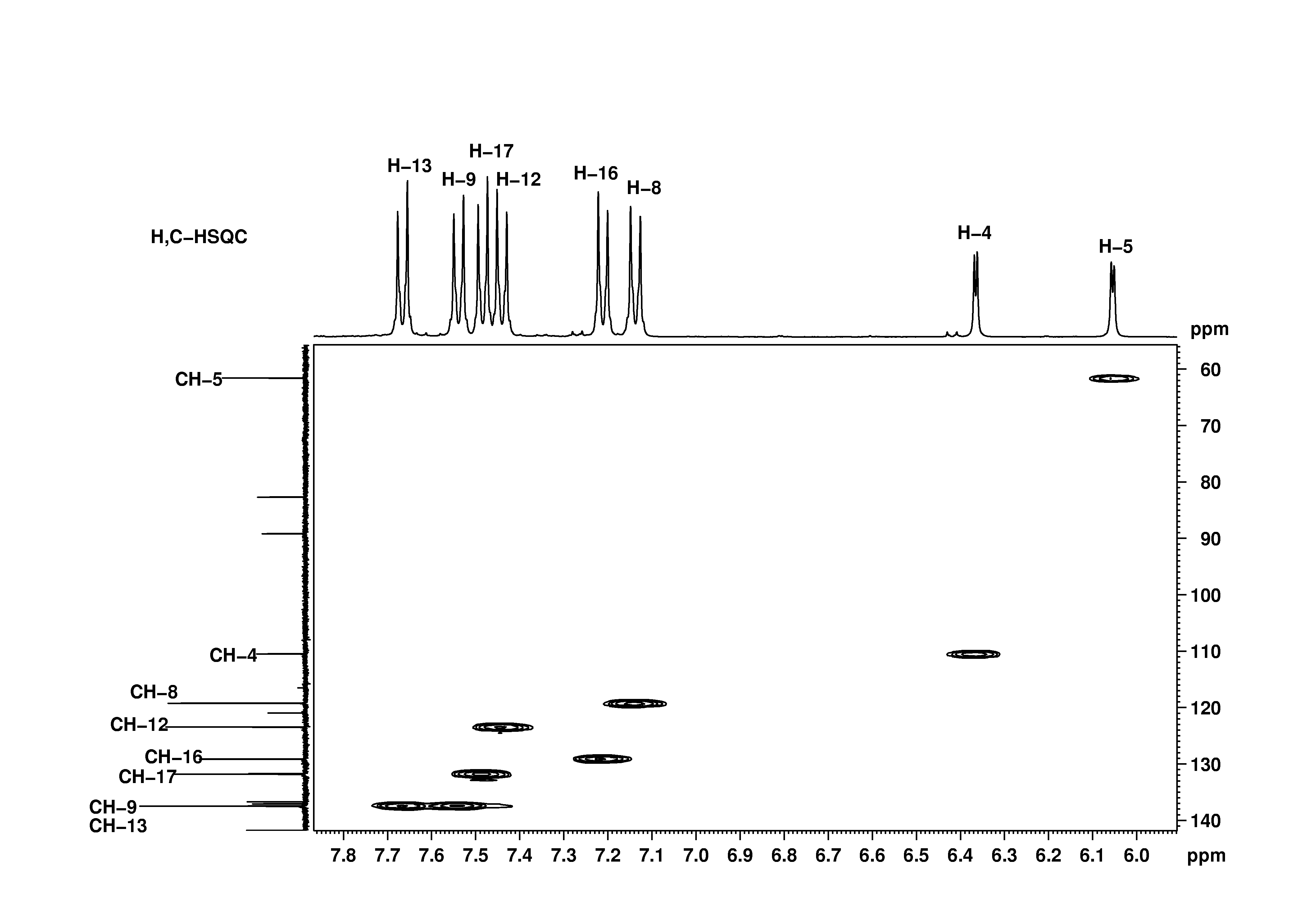


Figure S1.E. Detailed region of the 1H,13C-HSQC spectrum corresponding to compound **3d**, showing the correlation signals for protonated carbons.

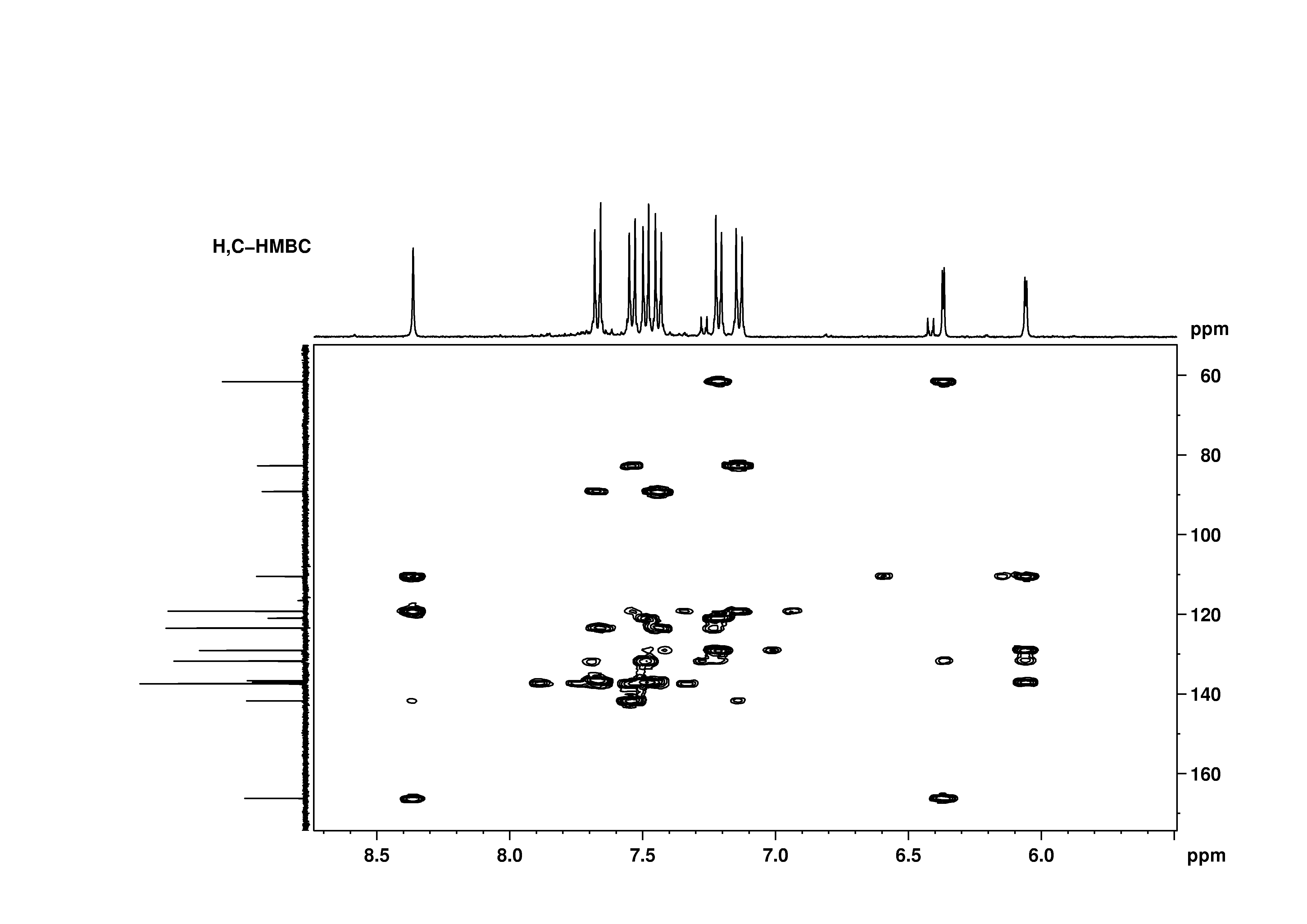


Figure S1.F. The 1H,13C-HMBC spectrum corresponding to compound **3d**, showing 2 or 3 bonds correlation signals between protons and carbons, used mainly to assign quaternary carbons.



Figure S1.G. MALDI-MS spectra of compound **3d**.

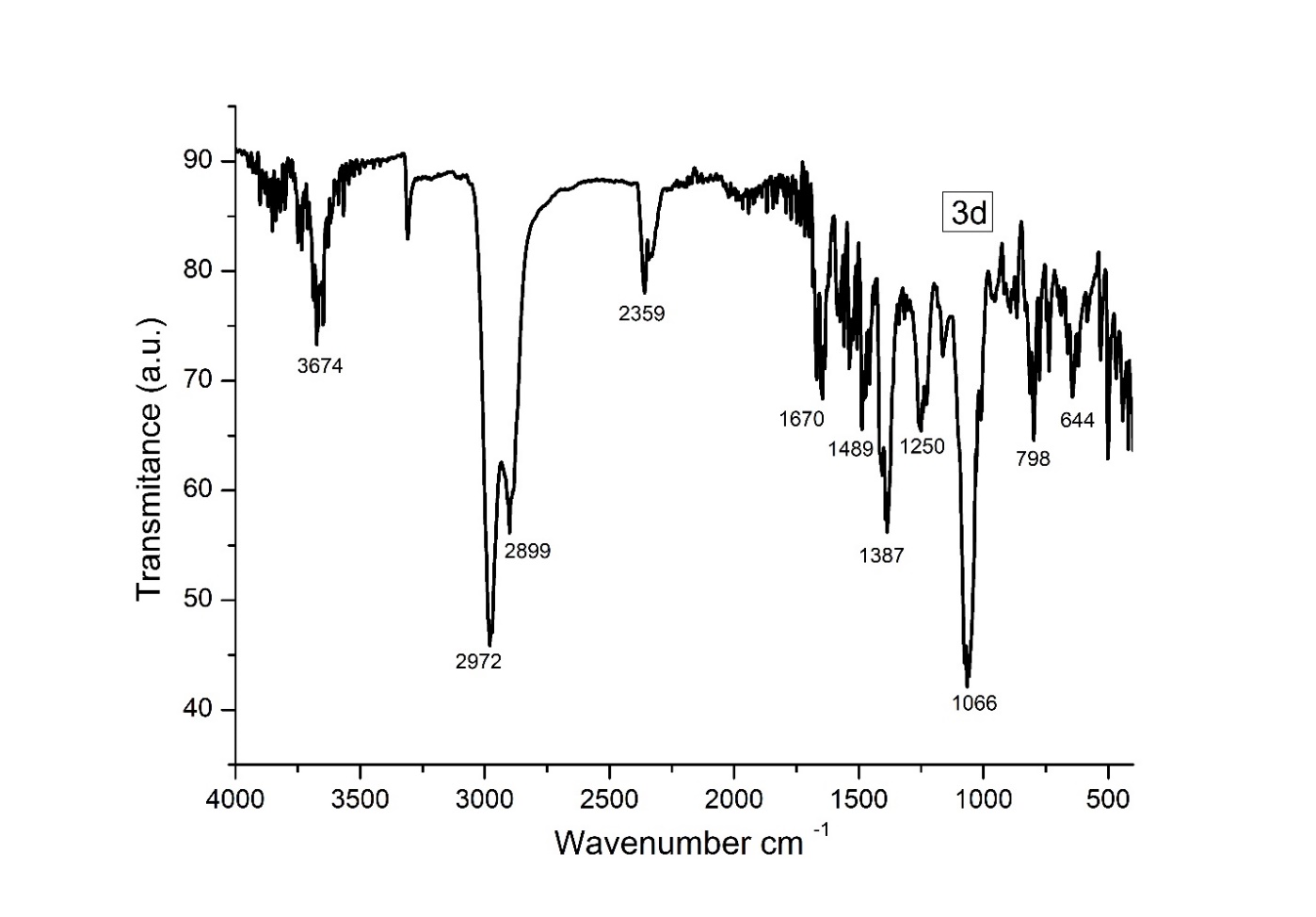


Figure S1.H. FT-IR spectrum of compound **3d.**

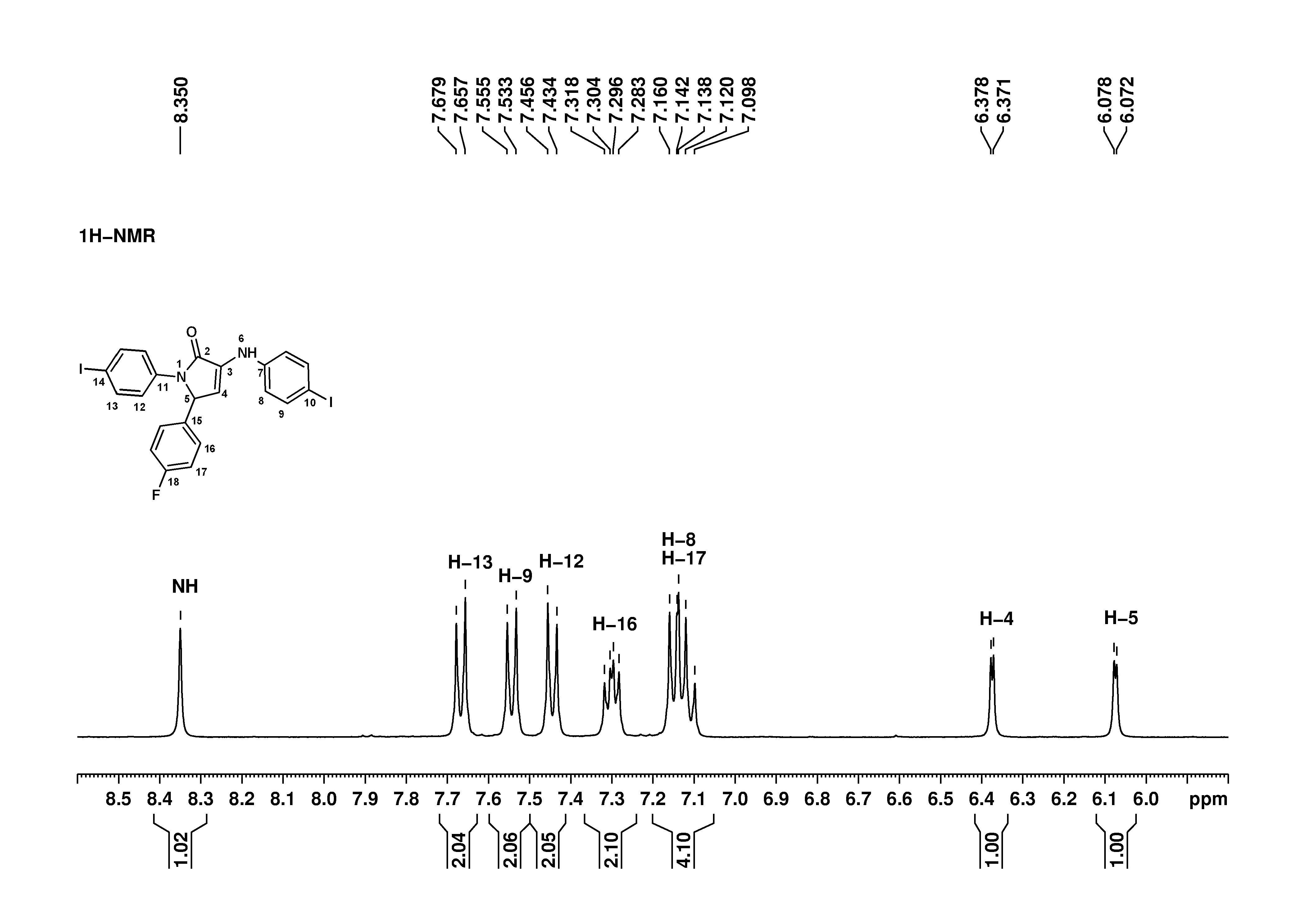


Figure S2.A. The 1H-NMR spectrum corresponding to compound **3b**, recorded in DMSO-d6, at 400.1 MHz. Signals assignments are annotated on the figure.

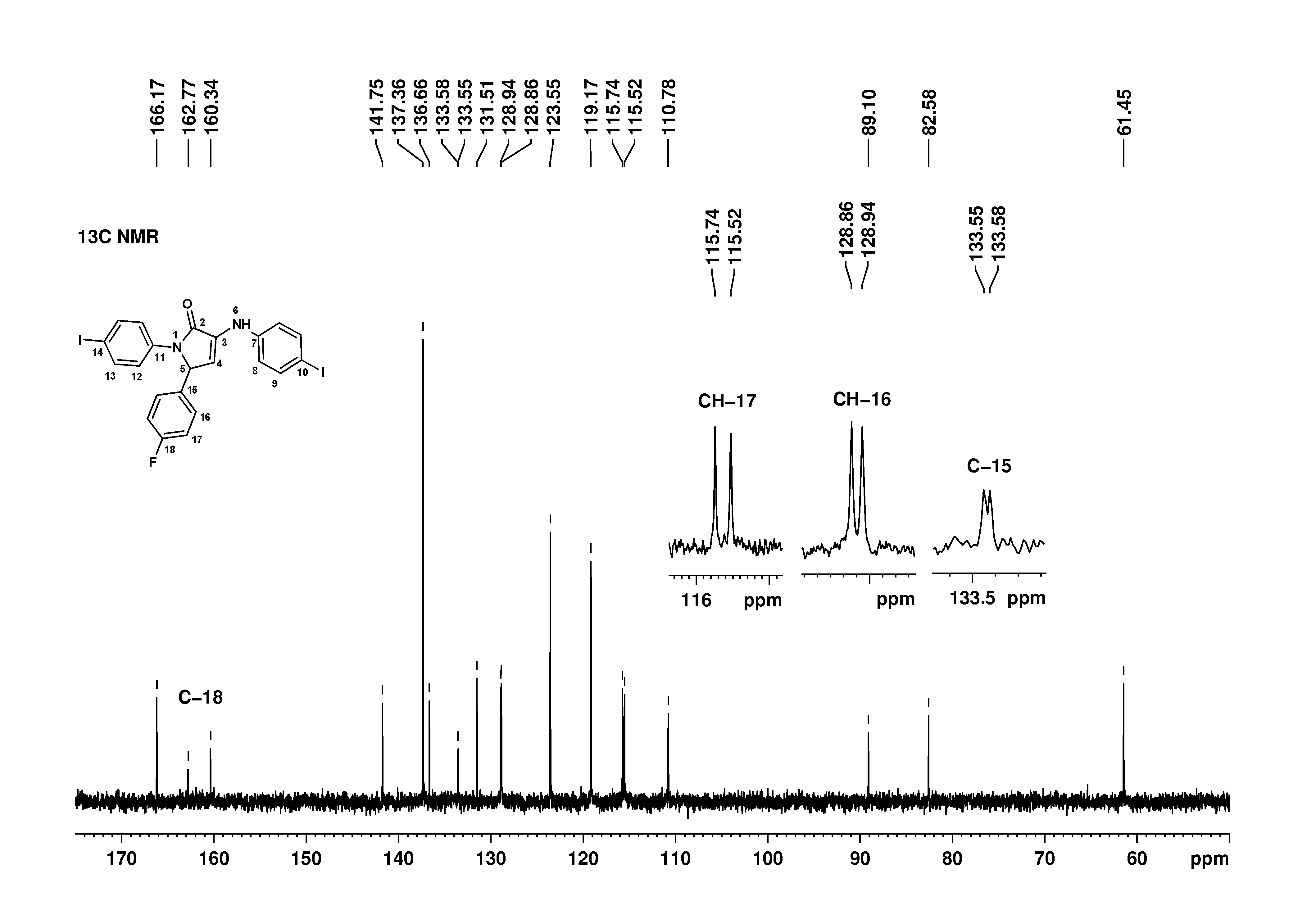


Figure S2.B. The 13C-NMR spectrum corresponding to compound **3b**, recorded in DMSO-d6, at 100.6 MHz. Signals assignments to 4-fluorophenyl ring, showing the characteristic doublet shape due to carbon-fluorine couplings, are annotated on the figure.

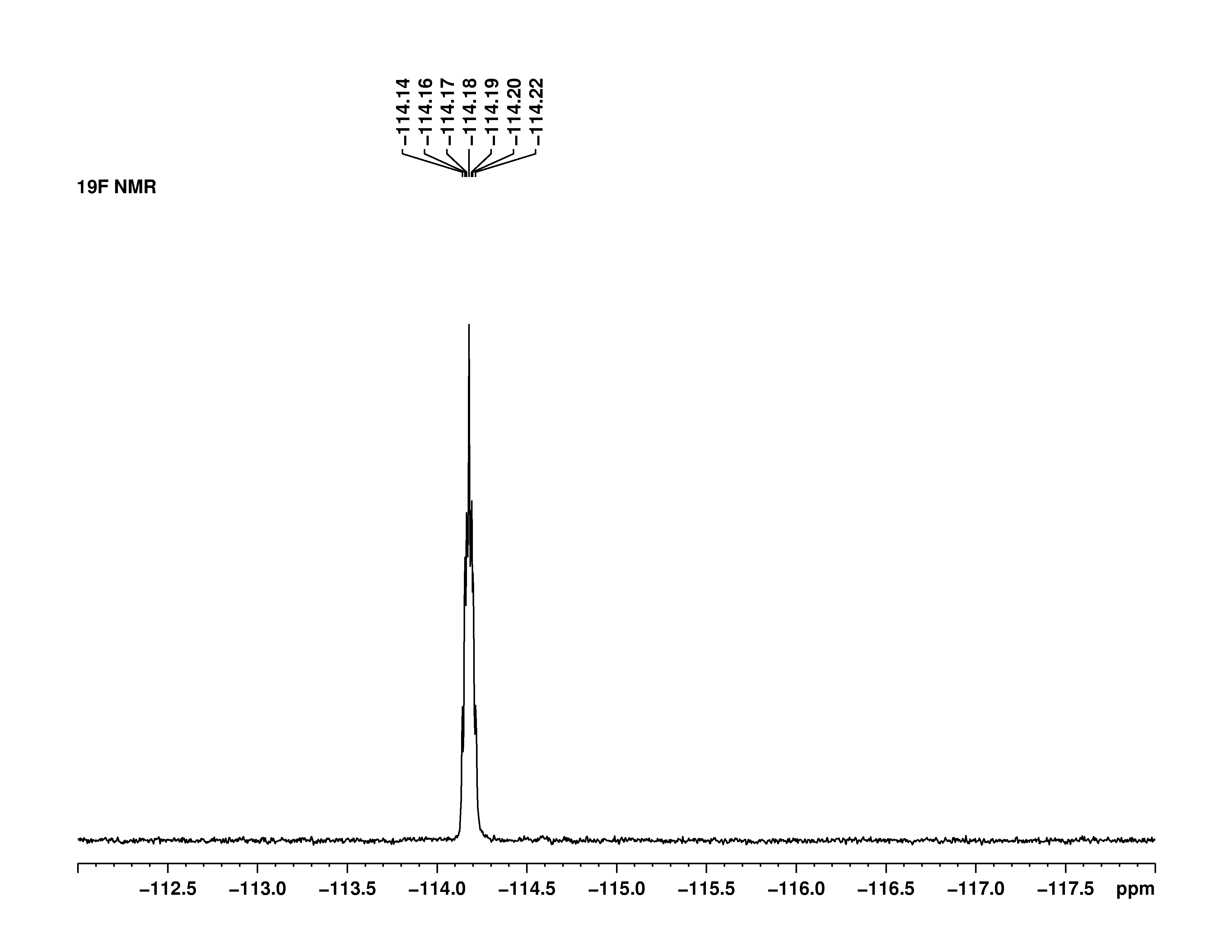


Figure S2.C. The 19F-NMR spectrum corresponding to compound **3b**, recorded at 376.5 MHz.



Figure S2.D. MALDI-MS spectrum of the compound **3b**.

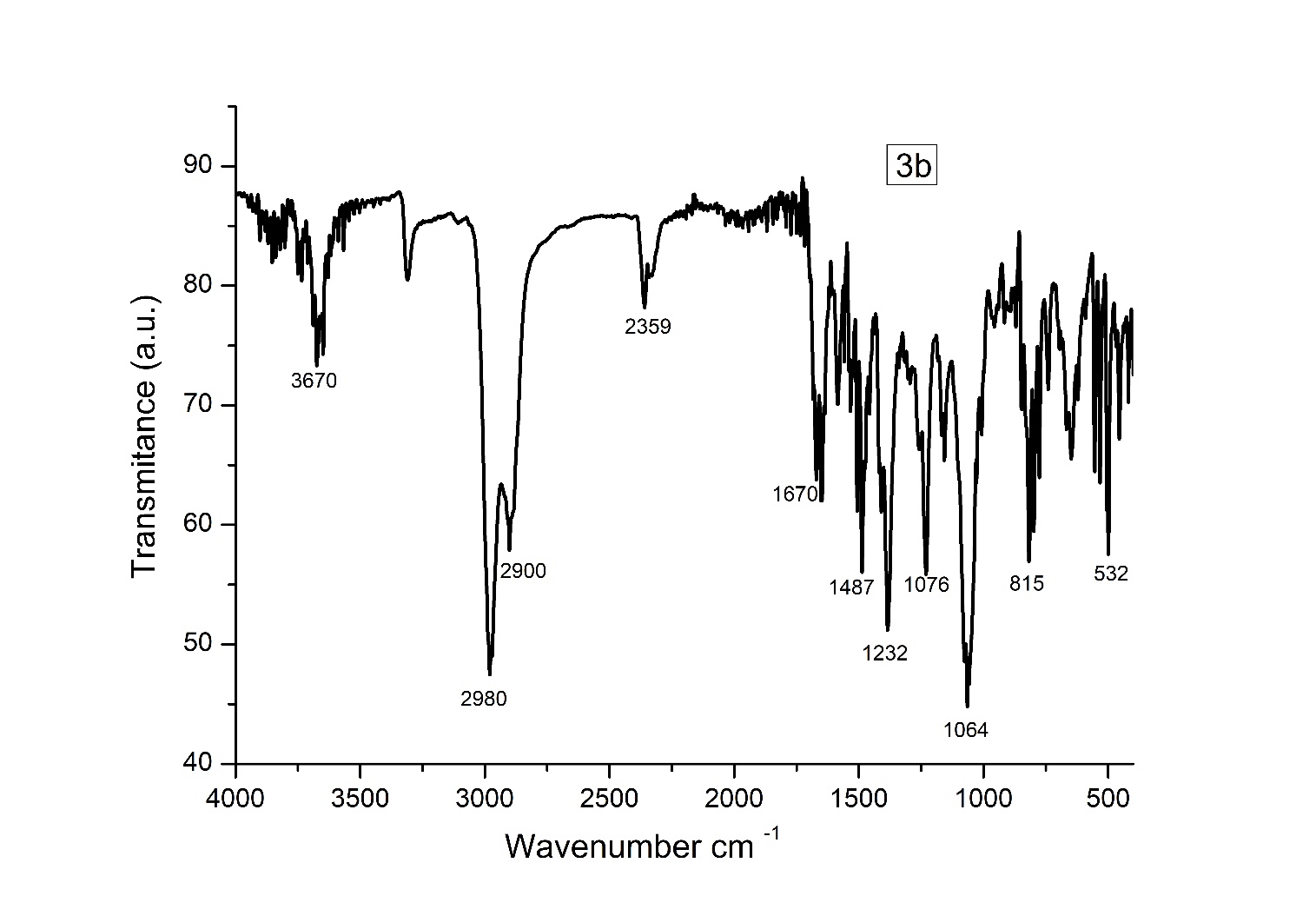


Figure S2.E. FT-IR spectrum of compound **3b.**

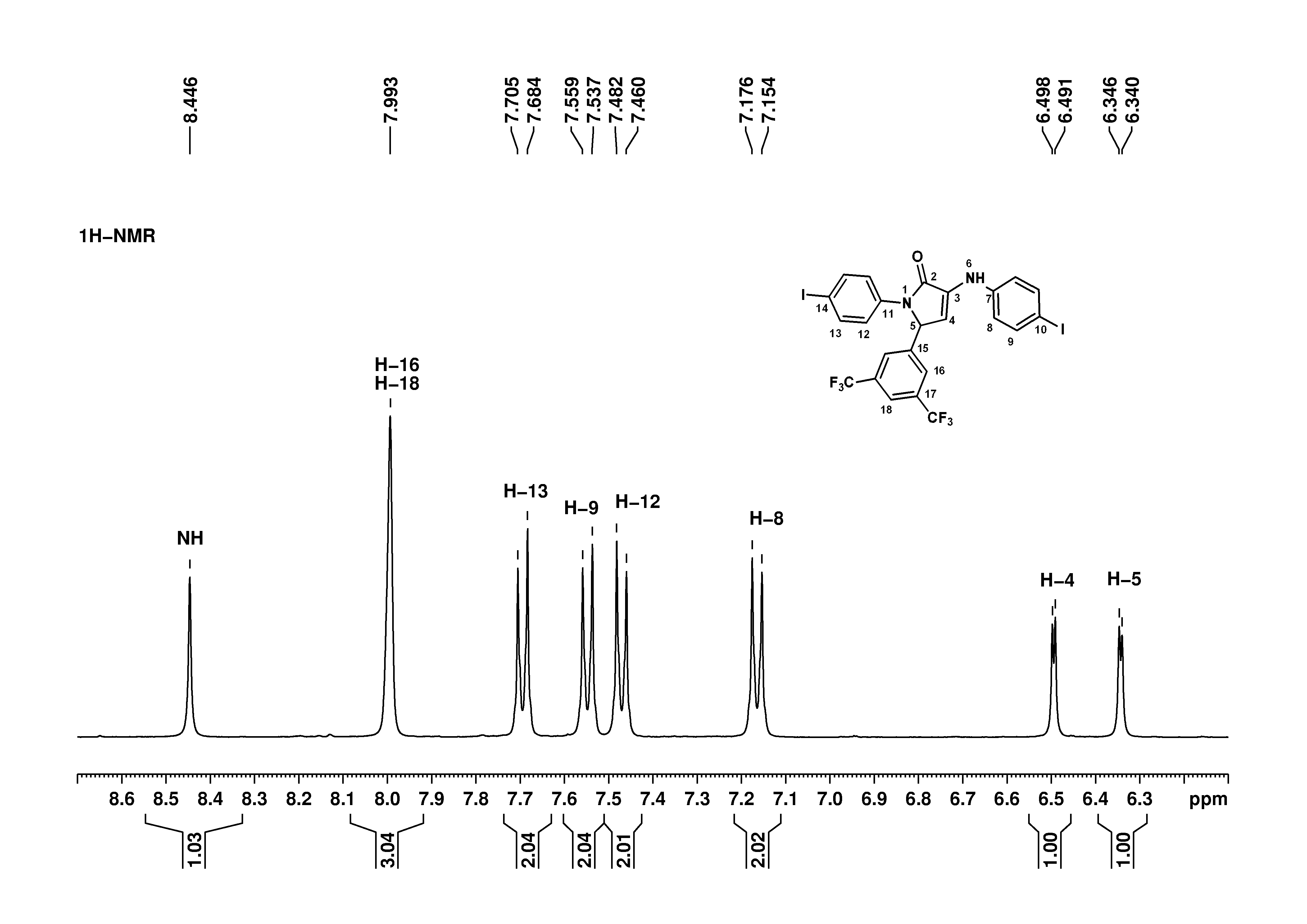


Figure S3.A. The 1H-NMR spectrum corresponding to compound **3f**, recorded in DMSO-d6, at 400.1 MHz. Signals assignments are annotated on the figure.

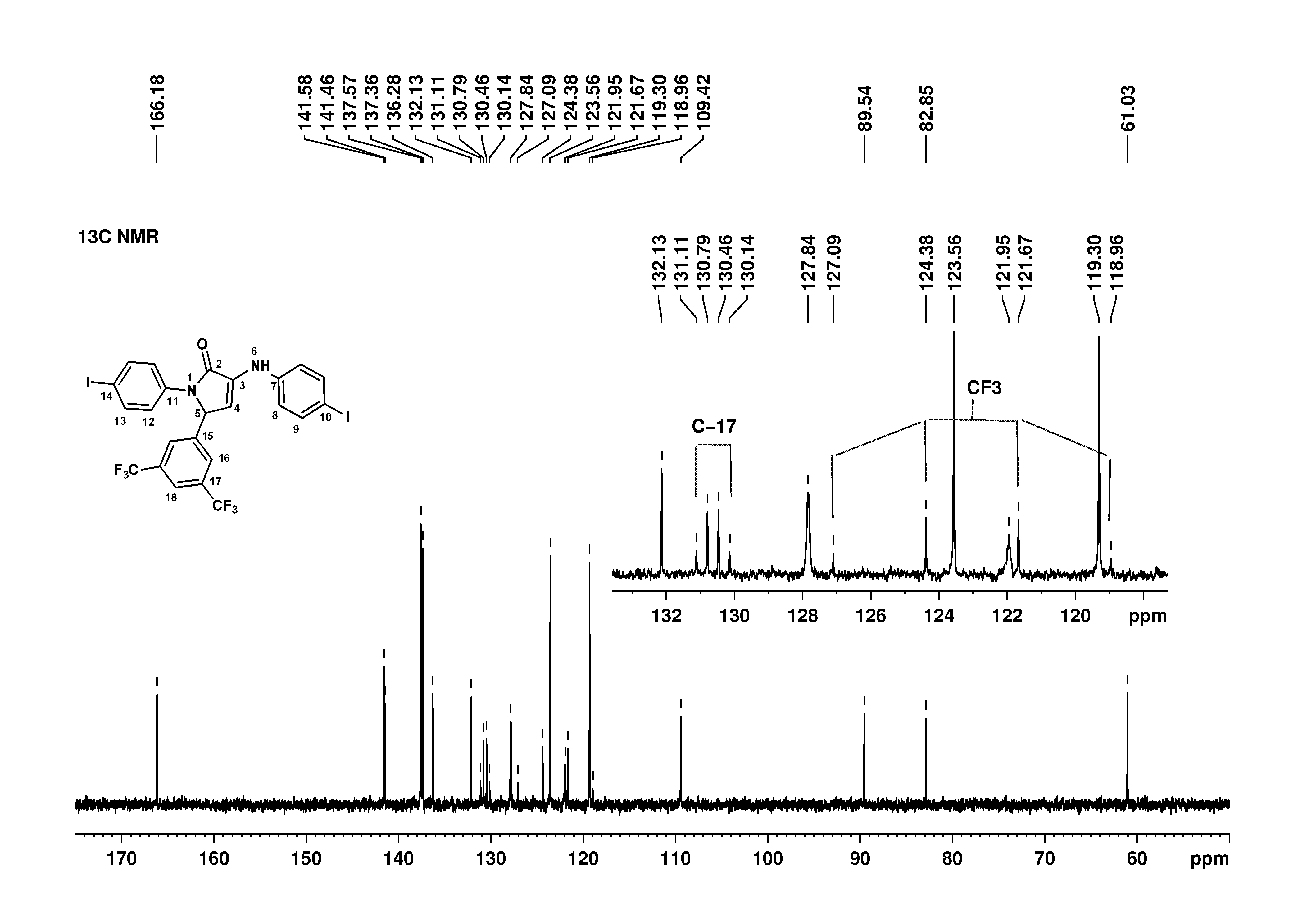


Figure S3.B. The 13C-NMR spectrum corresponding to compound **3f**, recorded in DMSO-d6, at 100.6 MHz. Signals assignments CF3 and *alpha* quaternary carbon (C-17), showing the characteristic quartet shape due to carbon-fluorine couplings, are annotated on the figure.

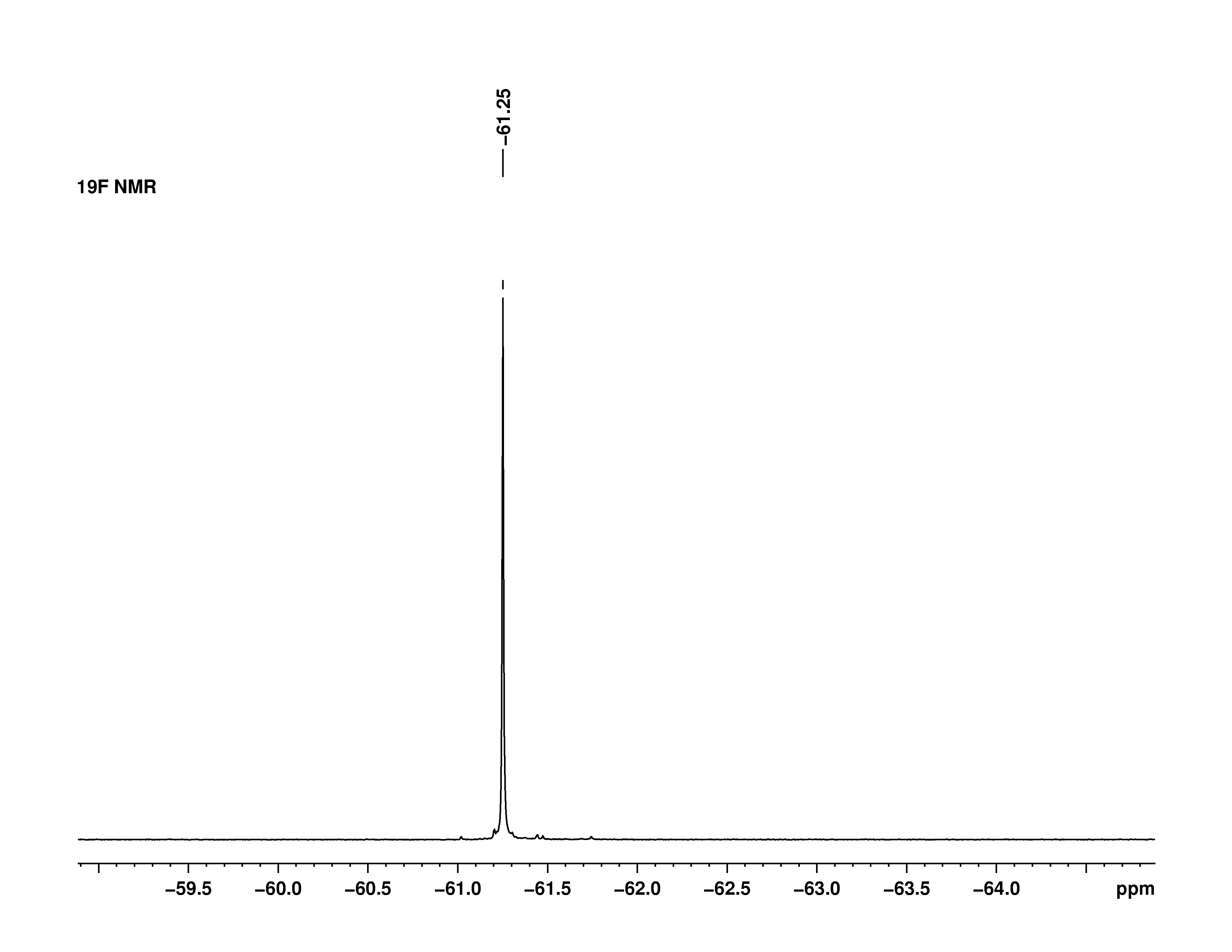


Figure S3.C. The 19F-NMR spectrum corresponding to compound **3f**, recorded at 376.5 MHz.



Figure S3.D. MALDI-MS spectra of compound **3f**.

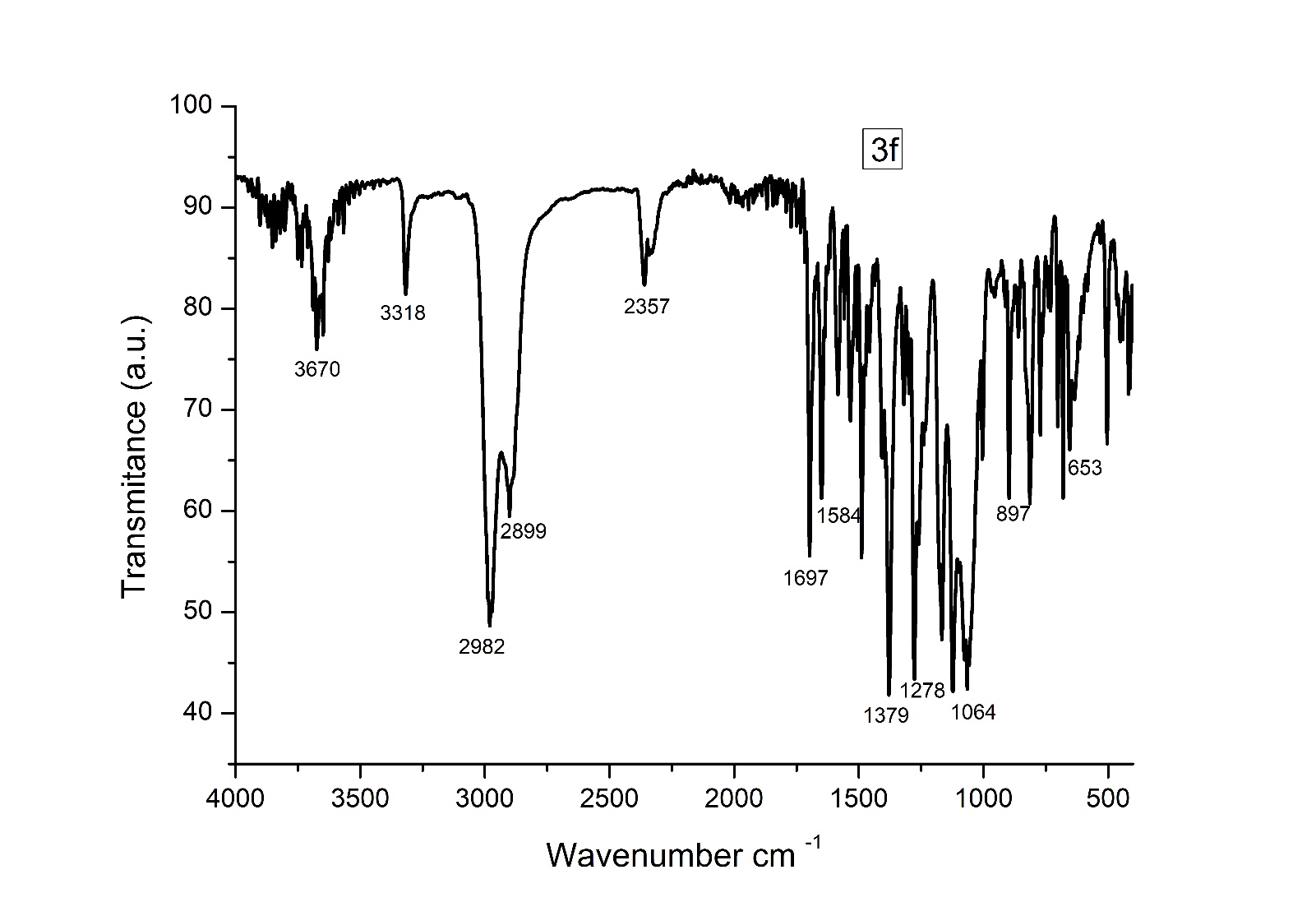


Figure S3.E. FT-IR spectrum of compound **3f.**

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Figure S4.A. The 1H-NMR spectrum corresponding to compound **3g**, recorded in DMSO-d6, at 400.1 MHz. Signals assignments are annotated on the figure.

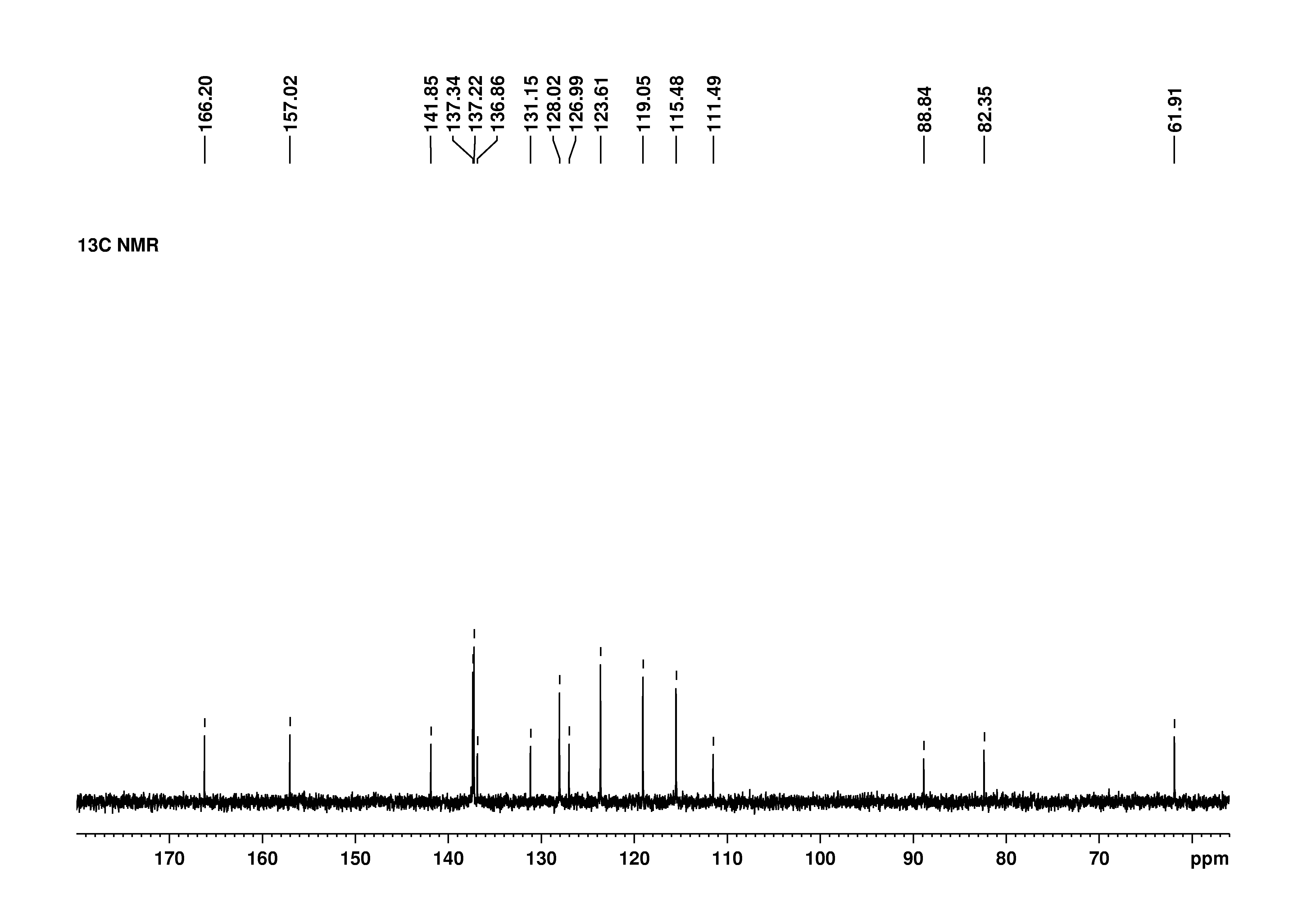


Figure S4.B. The 13C-NMR spectrum corresponding to compound **3g**, recorded in DMSO-d6, at 100.6 MHz.



Figure S4.C. Maldi-MS spectrum corresponding to compound **3g**.

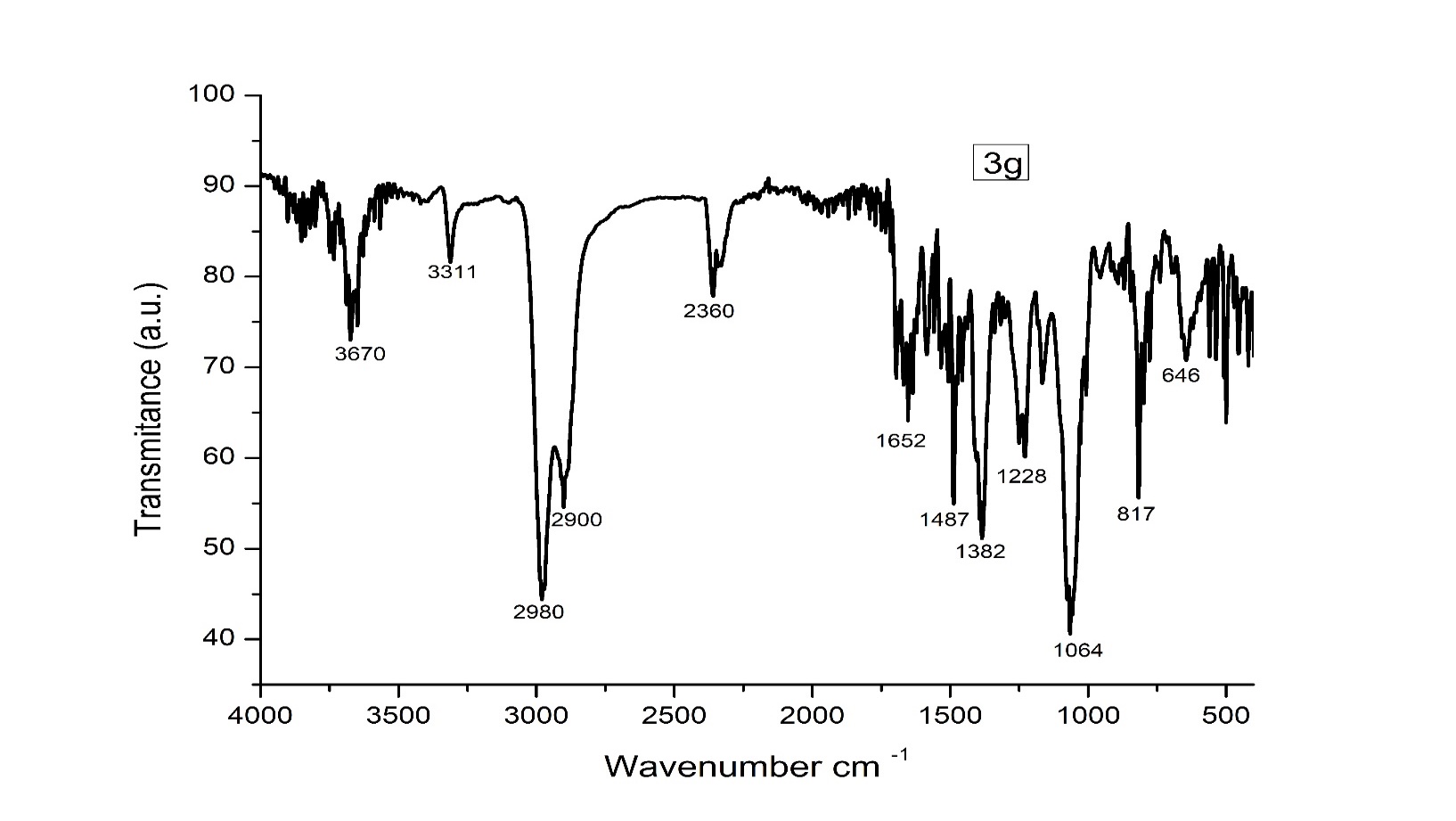


Figure S4.D. FT-IR spectrum of compound **3g.**

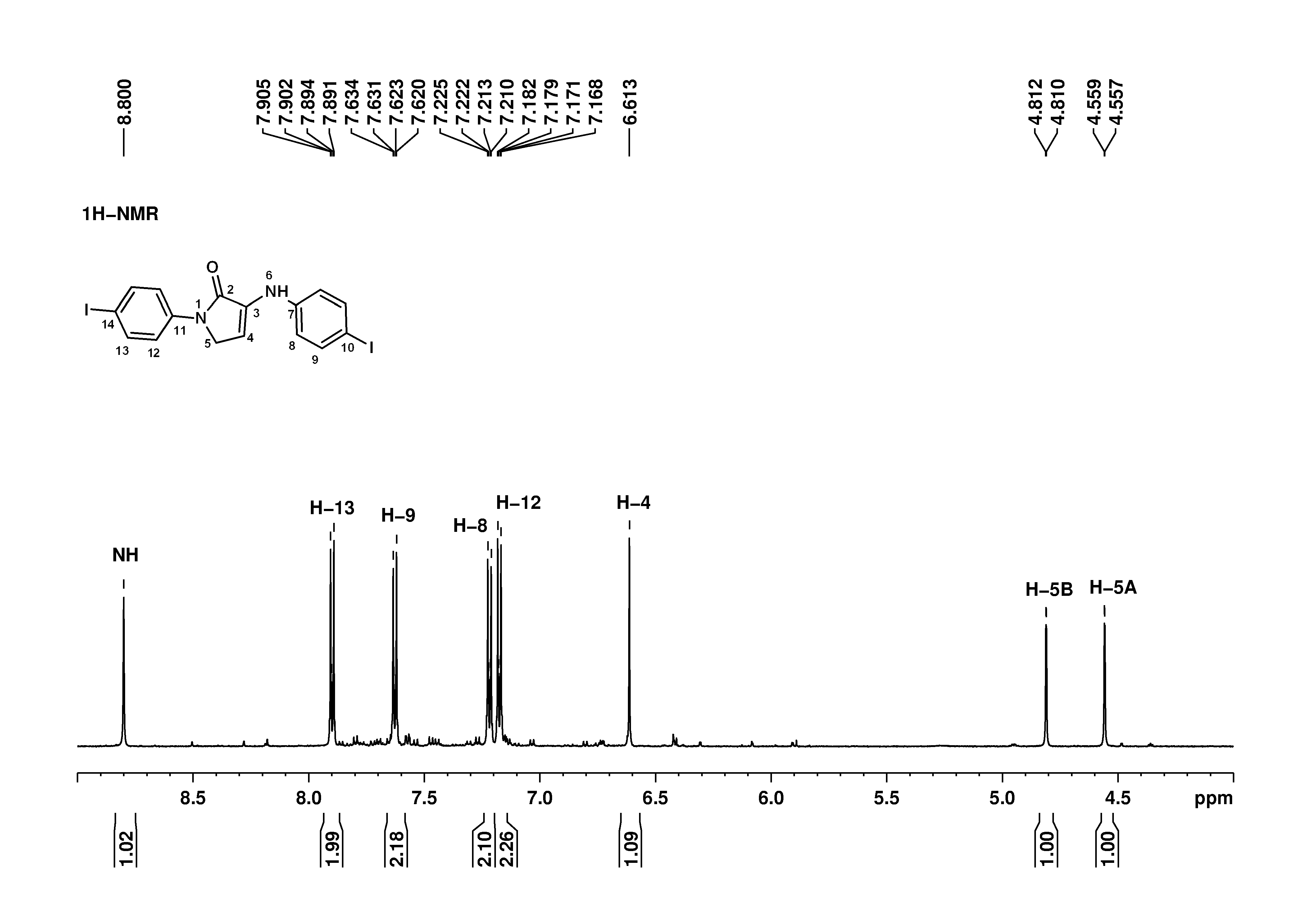


Figure S5.A. The 1H-NMR spectrum corresponding to compound **4m**, recorded in DMSO-d6, at 600.1 MHz. Signals assignments are annotated on the figure.

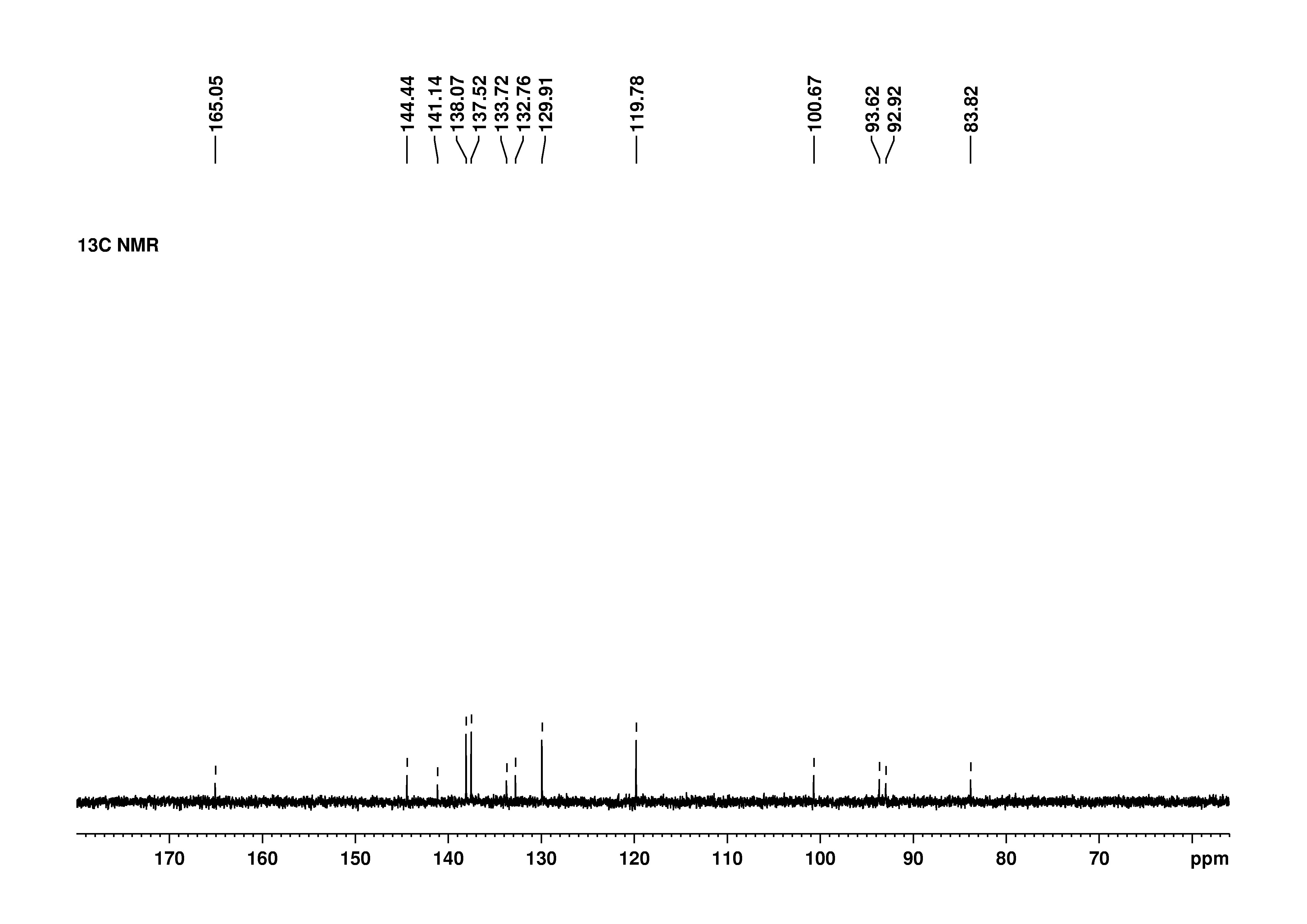


Figure S5.B. The 13C-NMR spectrum corresponding to compound **4m**, recorded in DMSO-d6, at 100.6 MHz.

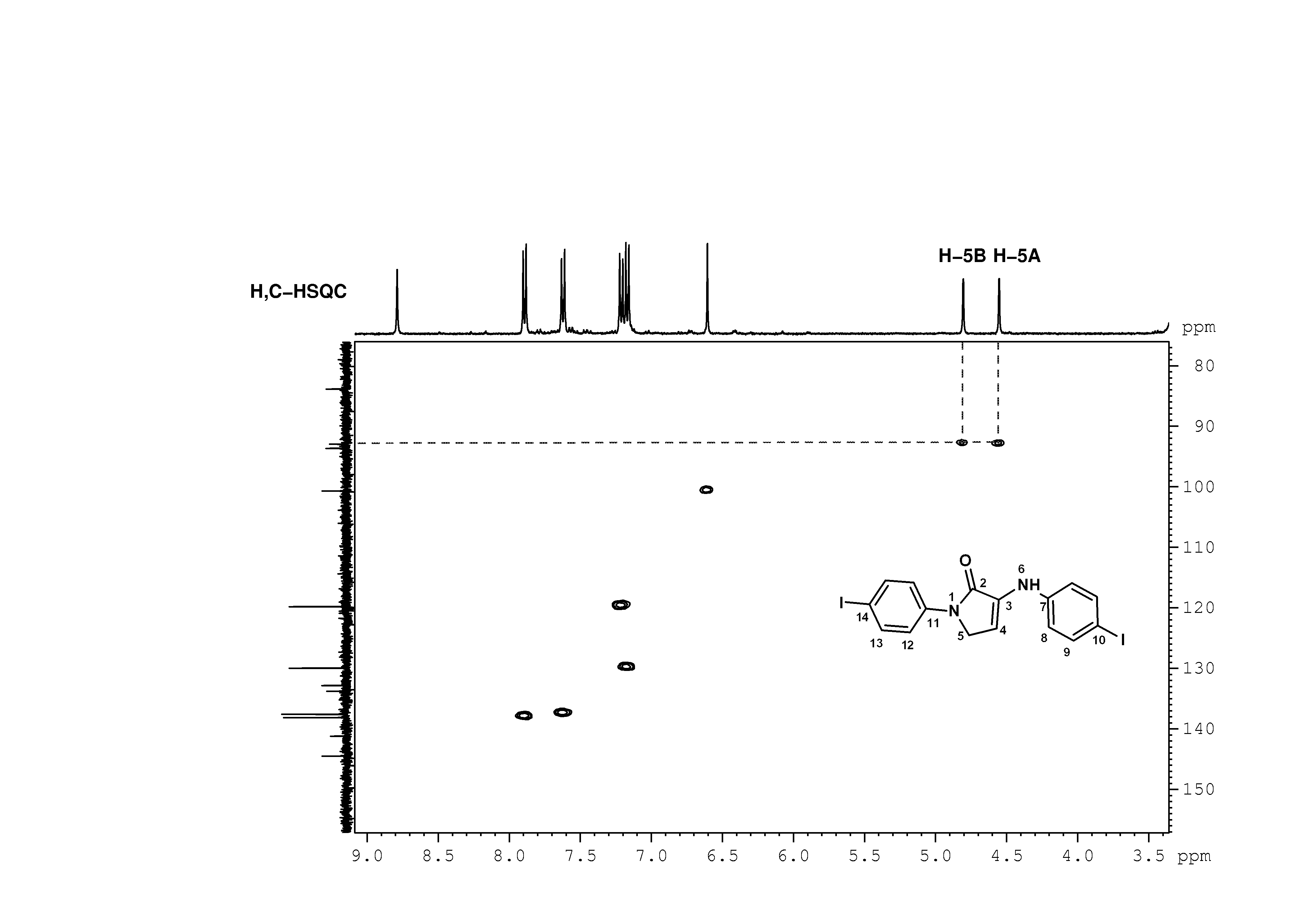


Figure S5.C. The H,C-HSQC spectrum corresponding to compound **4m**, showing the correlation signals for protonated carbons.



Figure S5.D. Maldi-MS spectrum corresponding to compound **4m**.

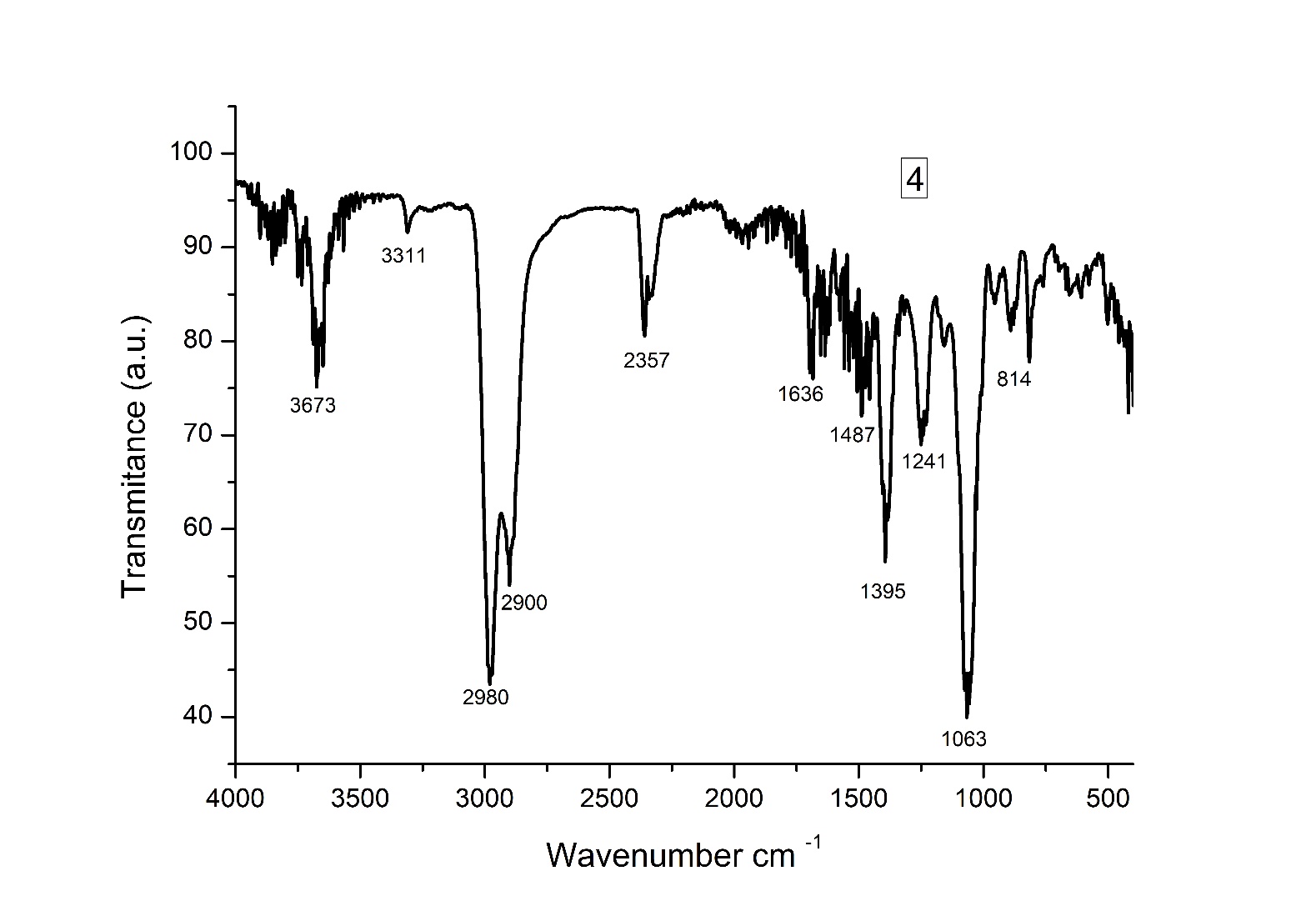


Figure S5.E. FT-IR spectrum of compound **4m.**

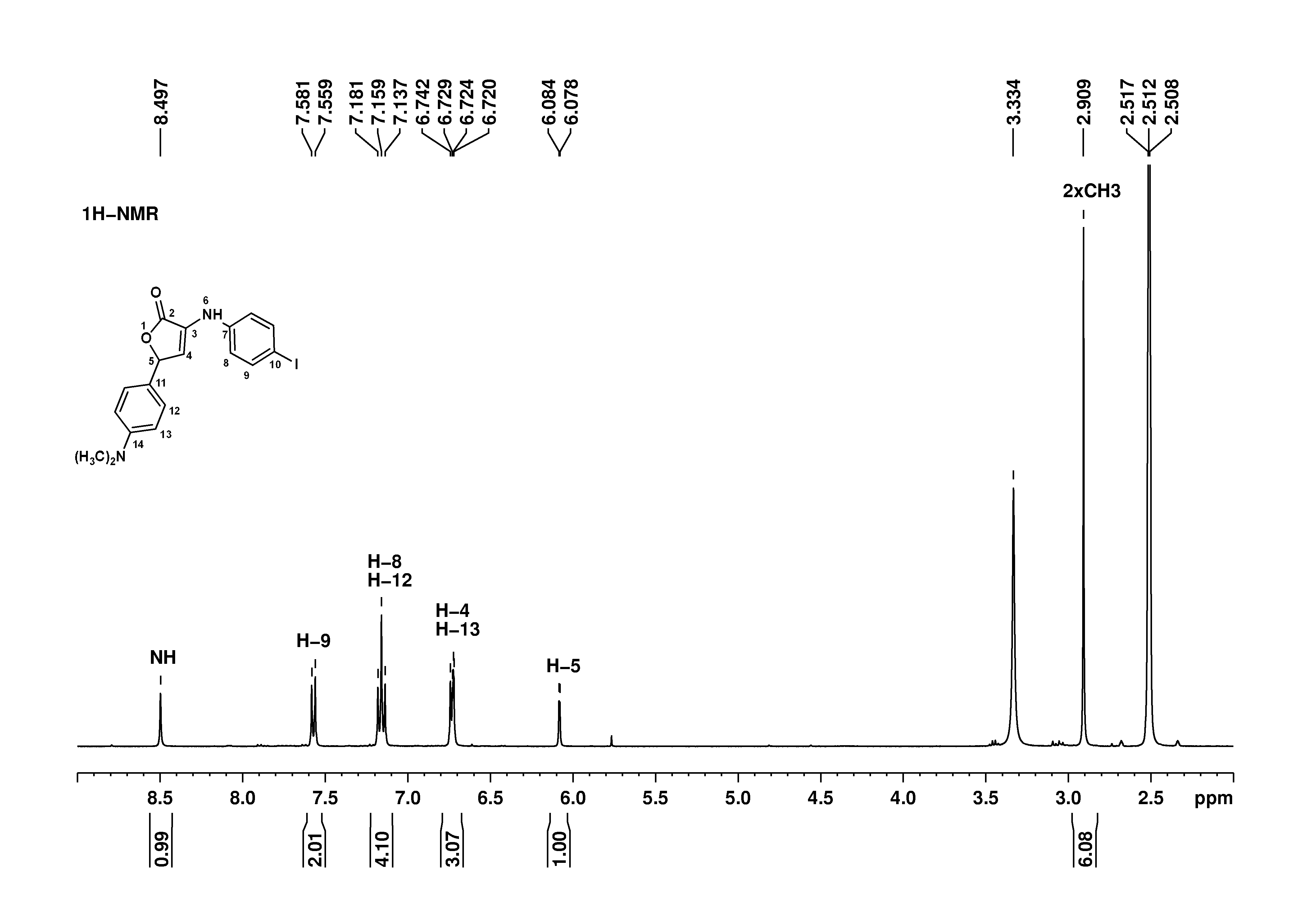


Figure S6.A. The 1H-NMR spectrum corresponding to compound **5m**, recorded in DMSO-d6, at 400.1 MHz. Signals assignments are annotated on the figure.

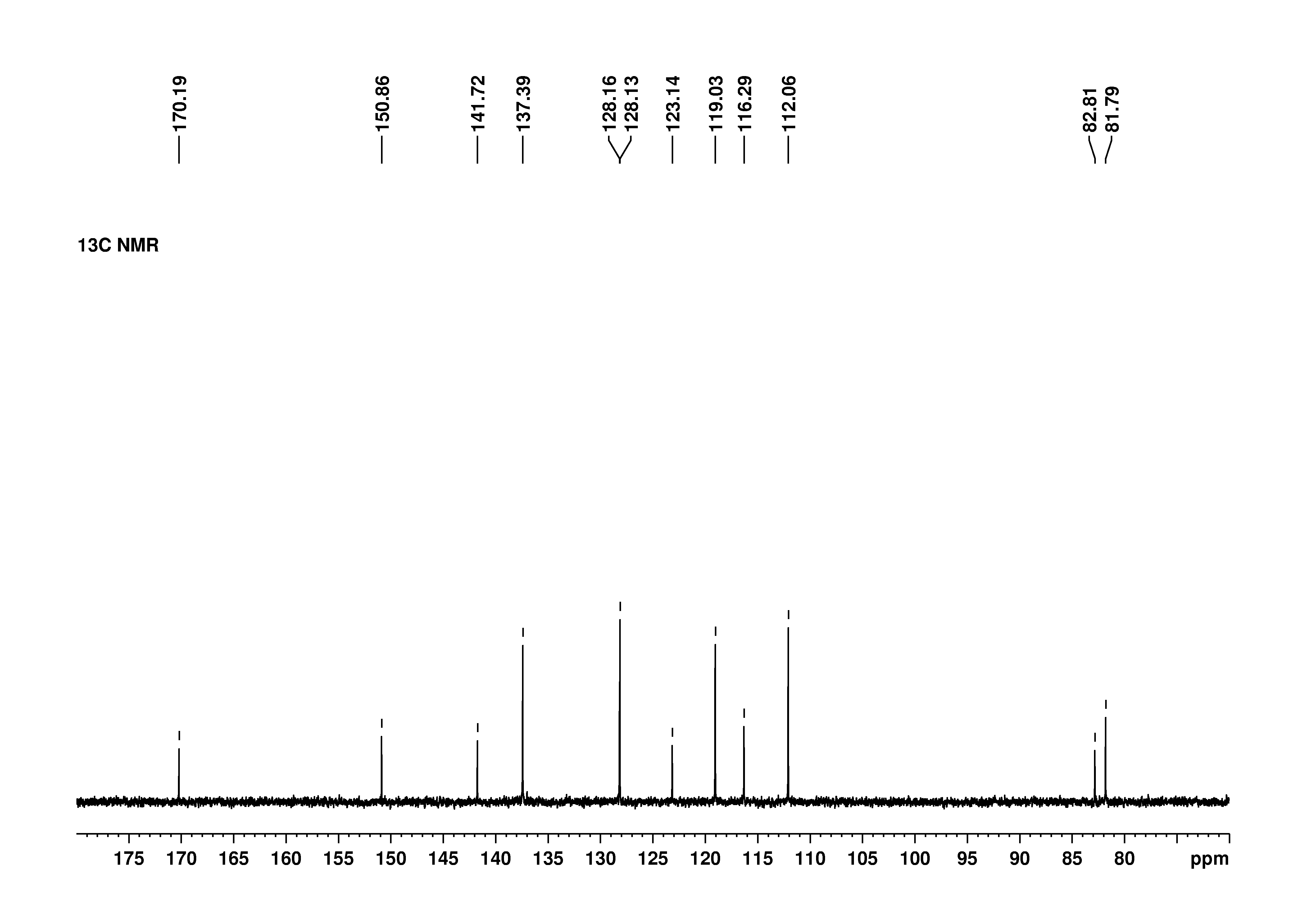


Figure S6.B. The 13C-NMR spectrum corresponding to compound **5m**, recorded in DMSO-d6, at 100.6 MHz.

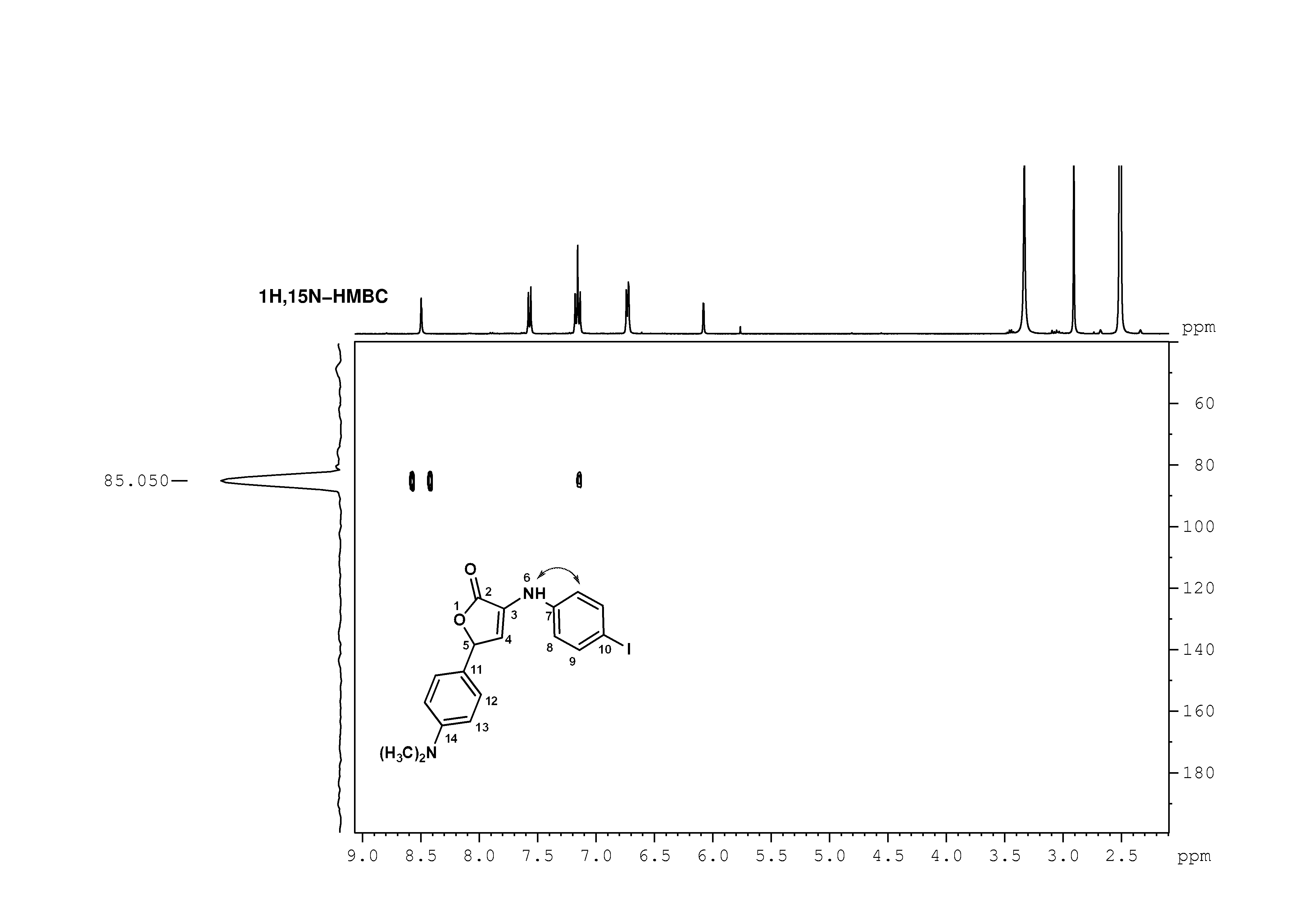


Figure S6.C. 1H,15N-HMBC spectrum corresponding to compound **5m** showing the correlation signal between nitrogen atom and protons H-8 from the two 4-iodophenyl ring.



Figure S6.D. Maldi-MS spectrum corresponding to compound **5m**.

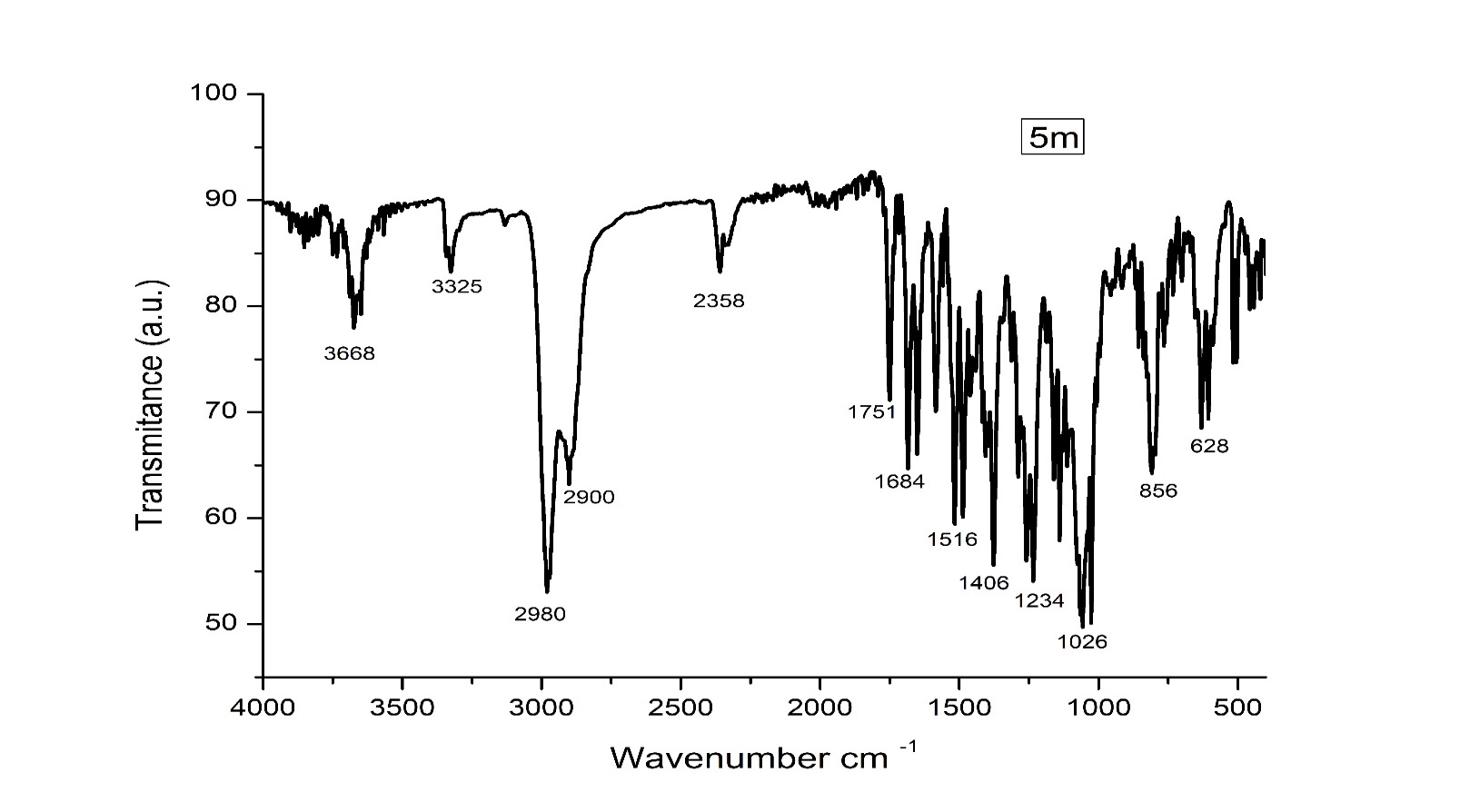


Figure S6.E. FT-IR spectrum of compound **5m.**

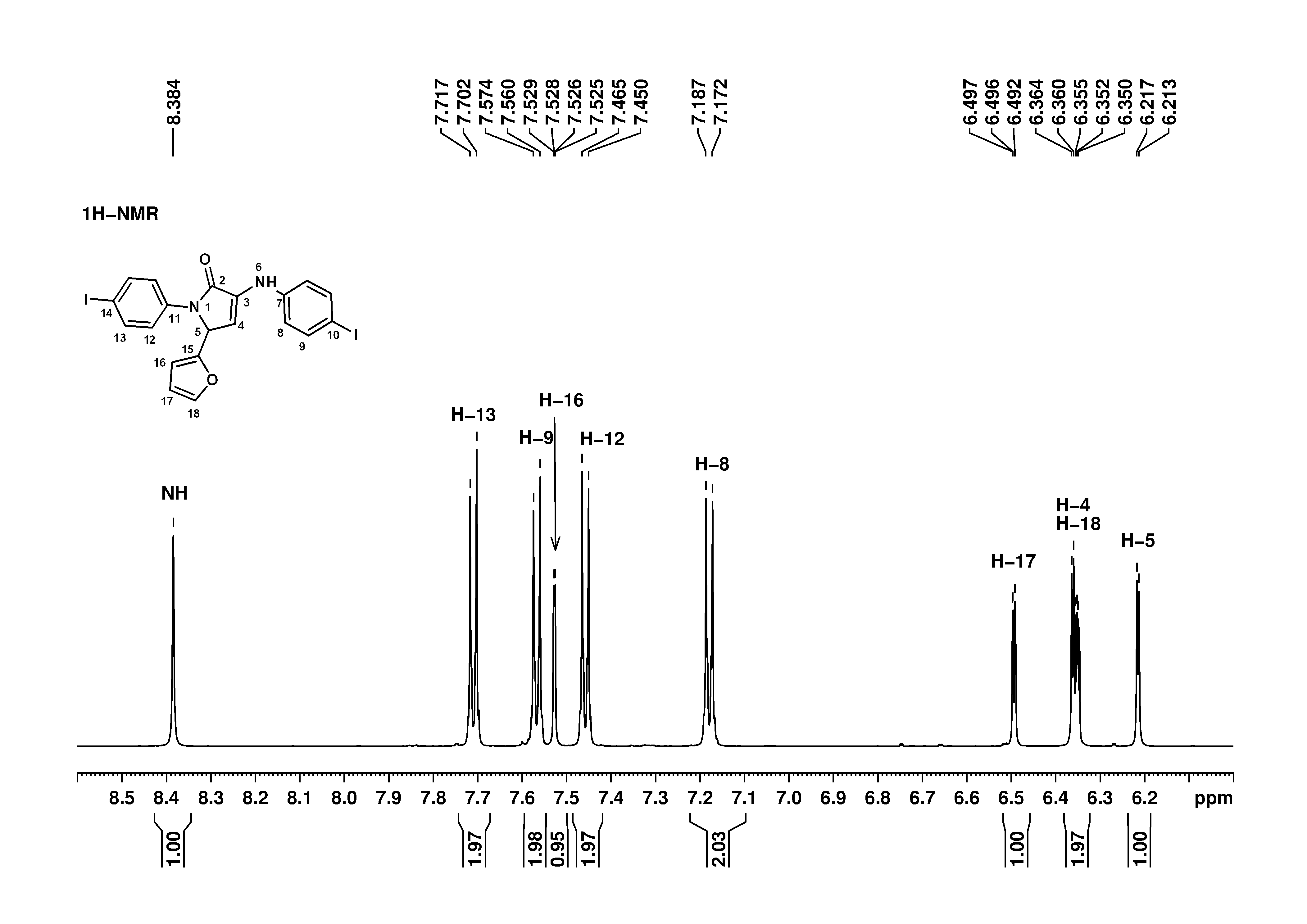


Figure S7.A. The 1H-NMR spectrum corresponding to compound **7**, recorded in DMSO-d6, at 600.1 MHz. Signals assignments are annotated on the figure.

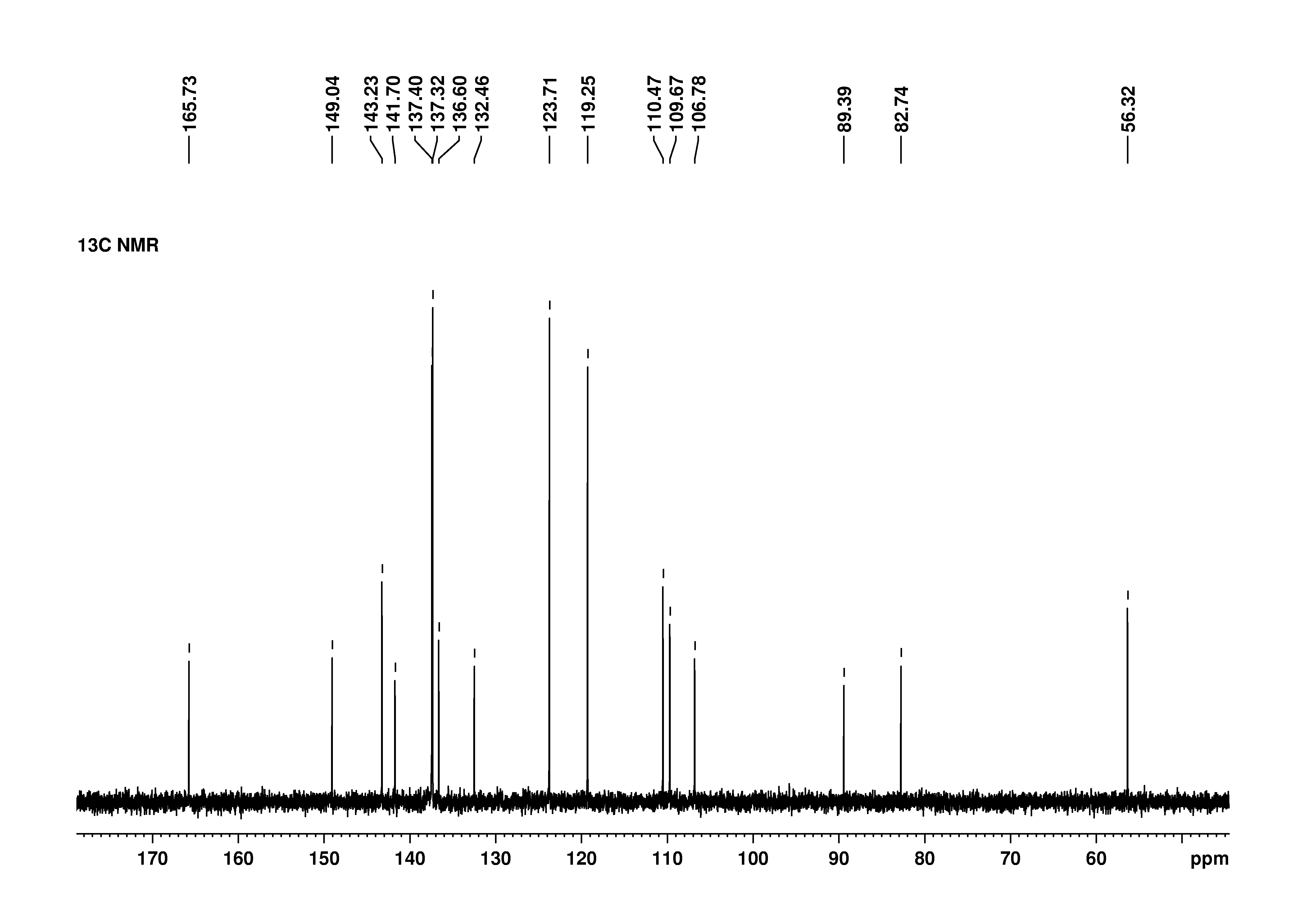


Figure S7.B. The 13C-NMR spectrum corresponding to compound **7**, recorded in DMSO-d6, at 150.9 MHz.



Figure S7.C. Maldi-MS spectrum corresponding to compound **7**.

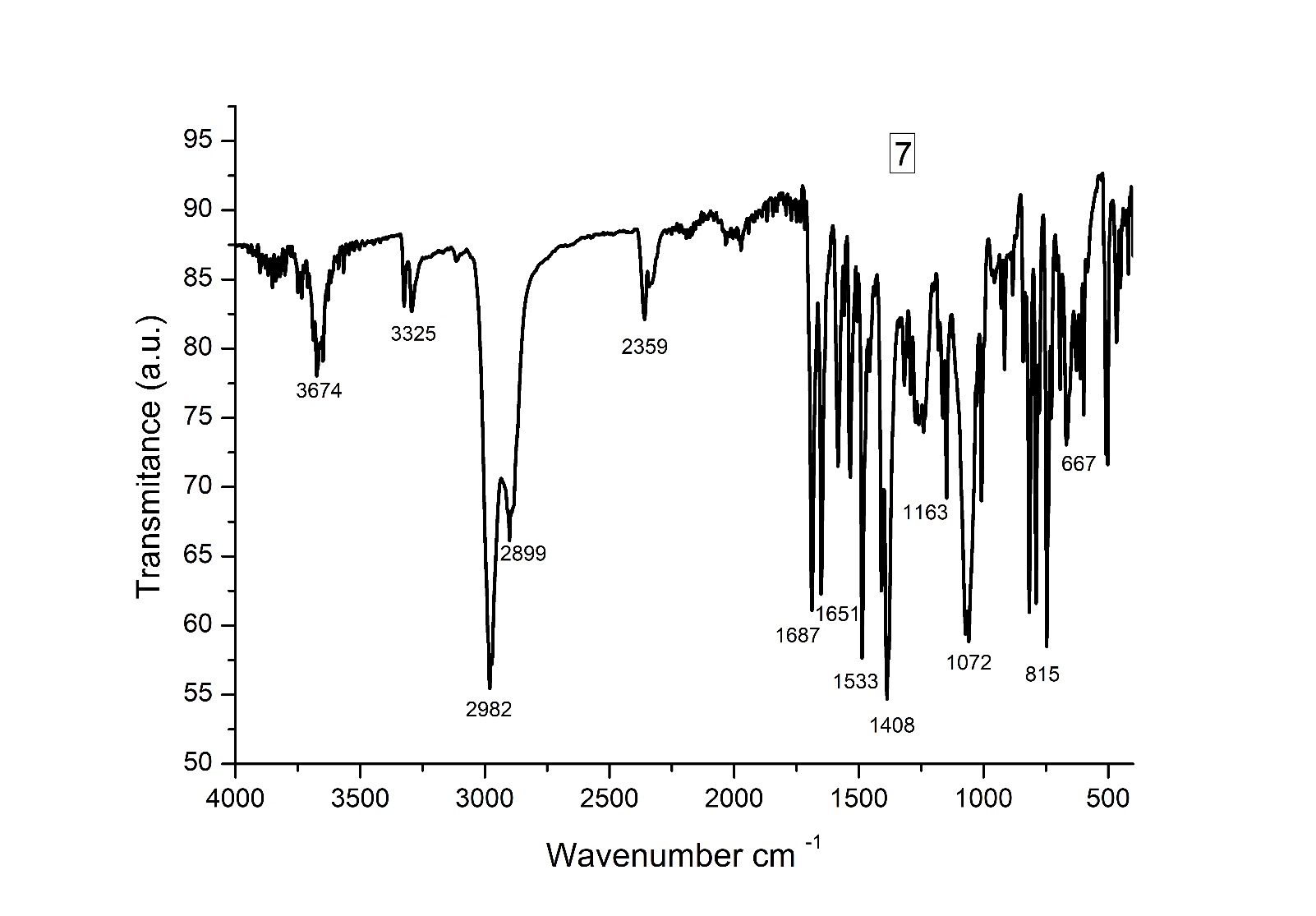


Figure S7.D. FT-IR spectrum of compound **7.**

Table S1. Bond distances and angles for **3d**.

|  |  |
| --- | --- |
| I1-C1 | 2.095(5) |
| I2-C20 | 2.084(5) |
| Br1-C14 | 1.851(18) |
| O1-C10 | 1.227(5) |
| N1-C4 | 1.390(6) |
| N1-C7 | 1.373(6) |
| N2-C9 | 1.487(6) |
| N2-C10 | 1.364(6) |
| N2-C17 | 1.424(6) |
| C1-C2 | 1.374(7) |
| C1-C6 | 1.380(7) |
| C2-C3 | 1.393(7) |
| C3-C4 | 1.389(7) |
| C4-C5 | 1.391(7) |
| C5-C6 | 1.381(7) |
| C7-C8 | 1.333(6) |
| C7-C10 | 1.480(7) |
| C8-C9 | 1.488(7) |
| C9-C11 | 1.526(7) |
| C13-C12 | 1.39 |
| C13-C14 | 1.39 |
| C12-C11 | 1.39 |
| C11-C16 | 1.39 |
| C16-C15 | 1.39 |
| C15-C14 | 1.39 |
| C17-C18 | 1.380(7) |
| C17-C22 | 1.387(7) |
| C18-C19 | 1.391(7) |
| C19-C20 | 1.370(7) |
| C20-C21 | 1.395(7) |
| C21-C22 | 1.376(7) |

|  |  |
| --- | --- |
| C4-C3-C2 | 120.7(5) |
| N1-C4-C5 | 117.4(4) |
| C3-C4-N1 | 124.5(5) |
| C3-C4-C5 | 118.0(5) |
| C6-C5-C4 | 121.5(5) |
| C1-C6-C5 | 119.7(5) |
| N1-C7-C10 | 113.5(4) |
| C8-C7-N1 | 138.1(5) |
| C8-C7-C10 | 108.4(5) |
| C7-C8-C9 | 111.5(5) |
| N2-C9-C8 | 101.9(4) |
| N2-C9-C11 | 113.0(5) |
| C8-C9-C11 | 113.2(5) |
| O1-C10-N2 | 126.2(5) |
| O1-C10-C7 | 126.4(5) |
| N2-C10-C7 | 107.5(4) |
| C12-C13-C14 | 120 |
| C13-C12-C11 | 120 |
| C12-C11-C9 | 120.7(6) |
| C16-C11-C9 | 119.3(6) |
| C16-C11-C12 | 120 |
| C11-C16-C15 | 120 |
| C14-C15-C16 | 120 |
| C13-C14-Br1 | 117.3(7) |
| C15-C14-Br1 | 122.7(7) |
| C15-C14-C13 | 120 |
| C18-C17-N2 | 120.4(5) |
| C18-C17-C22 | 119.7(5) |
| C22-C17-N2 | 119.9(4) |
| C17-C18-C19 | 119.9(5) |
| C20-C19-C18 | 120.4(5) |
| C19-C20-I2 | 120.6(4) |
| C19-C20-C21 | 119.5(5) |
| C21-C20-I2 | 119.9(4) |
| C22-C21-C20 | 120.1(5) |
| C21-C22-C17 | 120.2(5) |

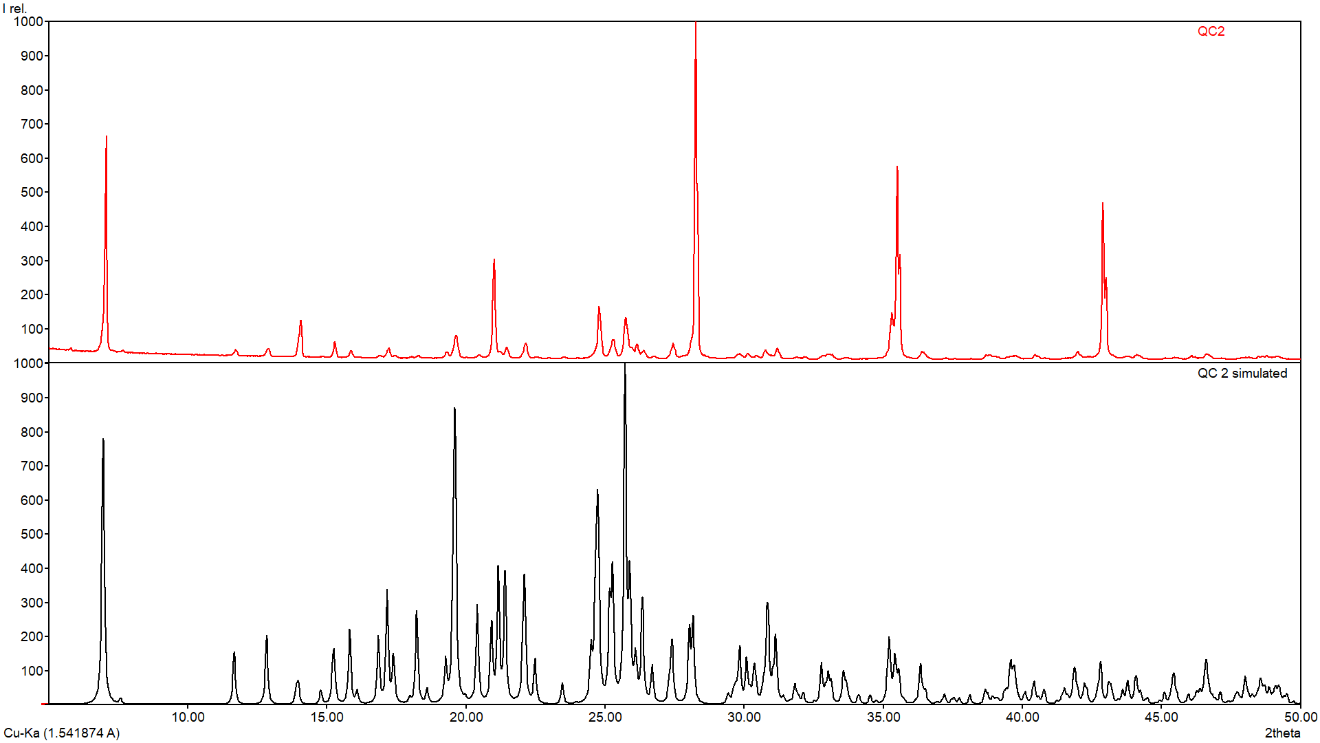


Figure S8. Powder XRD of compound **3d**.