

# Eco-efficient, regioselective and rapid access to 4, 5-disubstituted 1,2,3-thiadiazoles via [3+2] cycloaddition of $\alpha$ -enolicdithioesters with tosyl azide under solvent-free conditions

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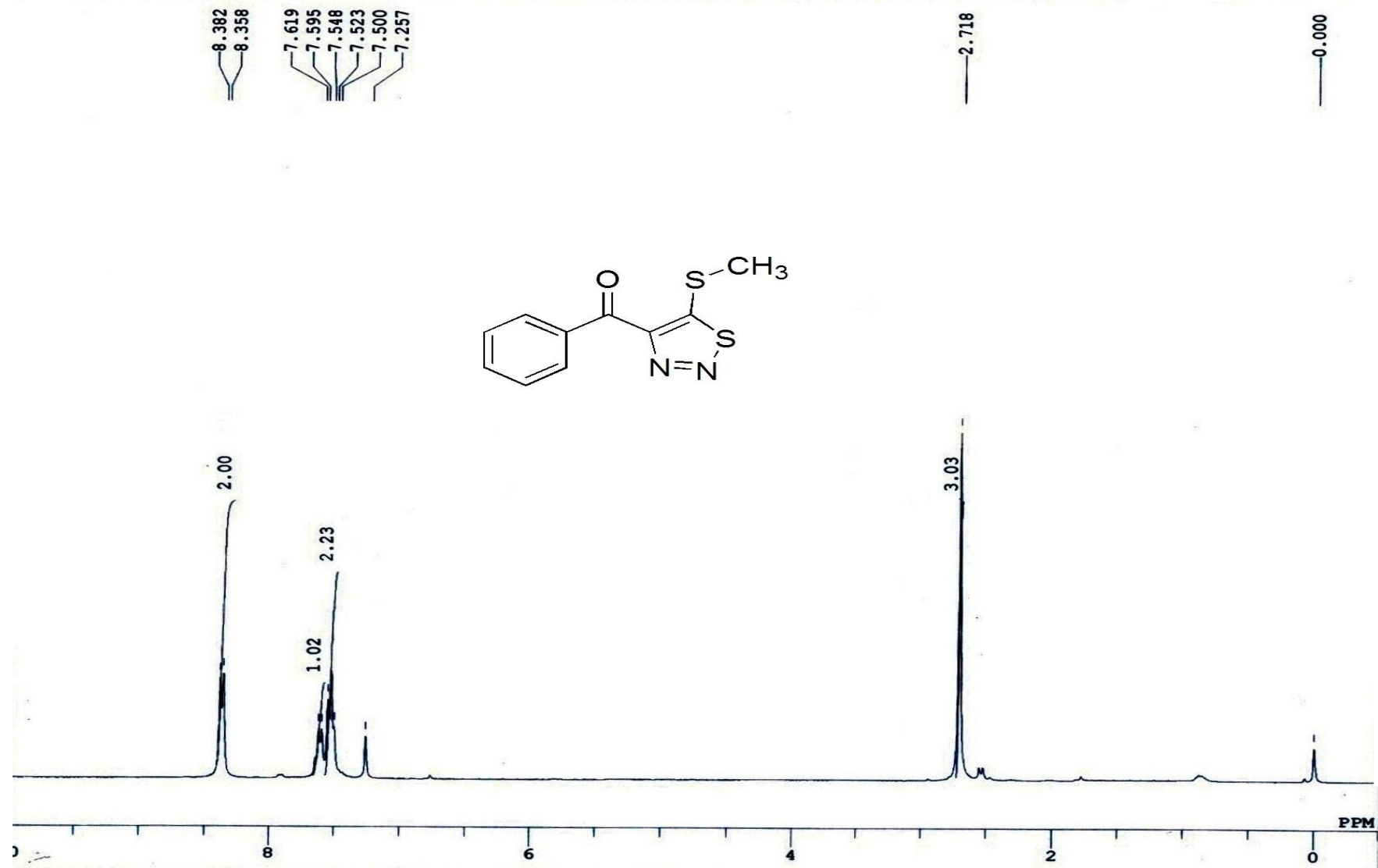
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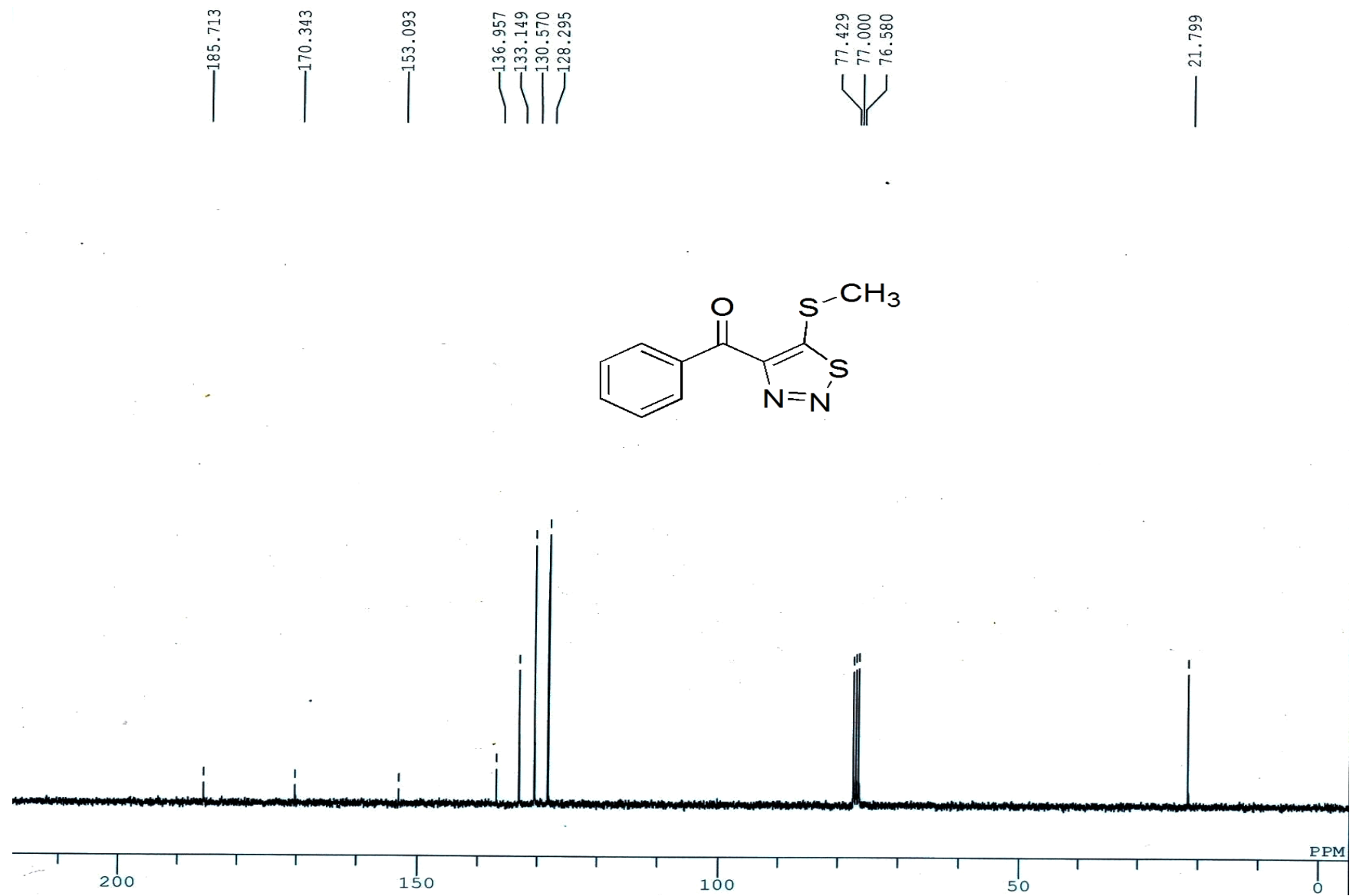
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<sup>b</sup> Institut für Organische und Biomolekulare Chemie, Georg-August-Universität, Tammannstrasse 2, 37077 Göttingen, Germany

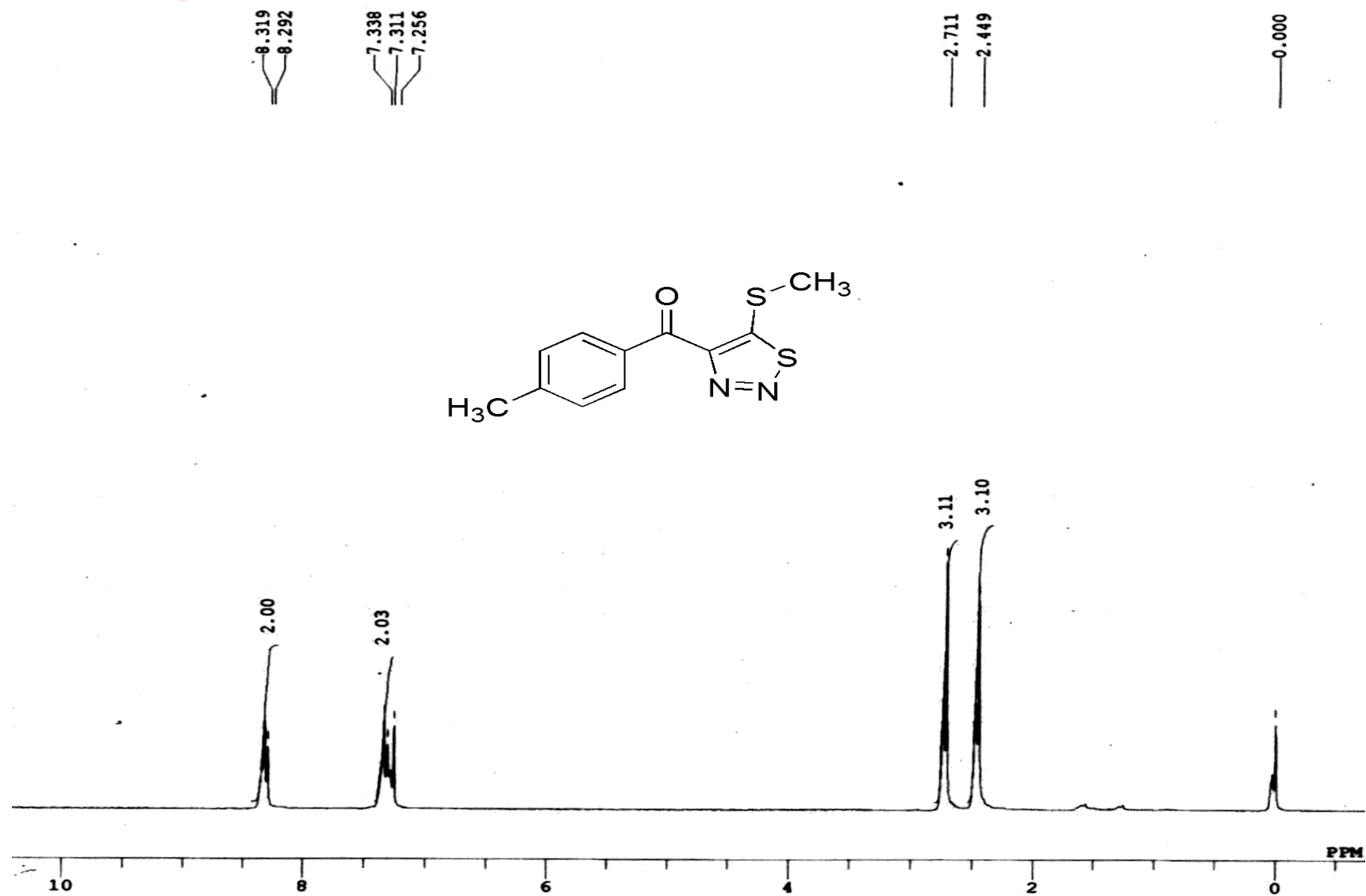
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<sup>1</sup> H & <sup>13</sup> C NMR Spectra	S2-S61

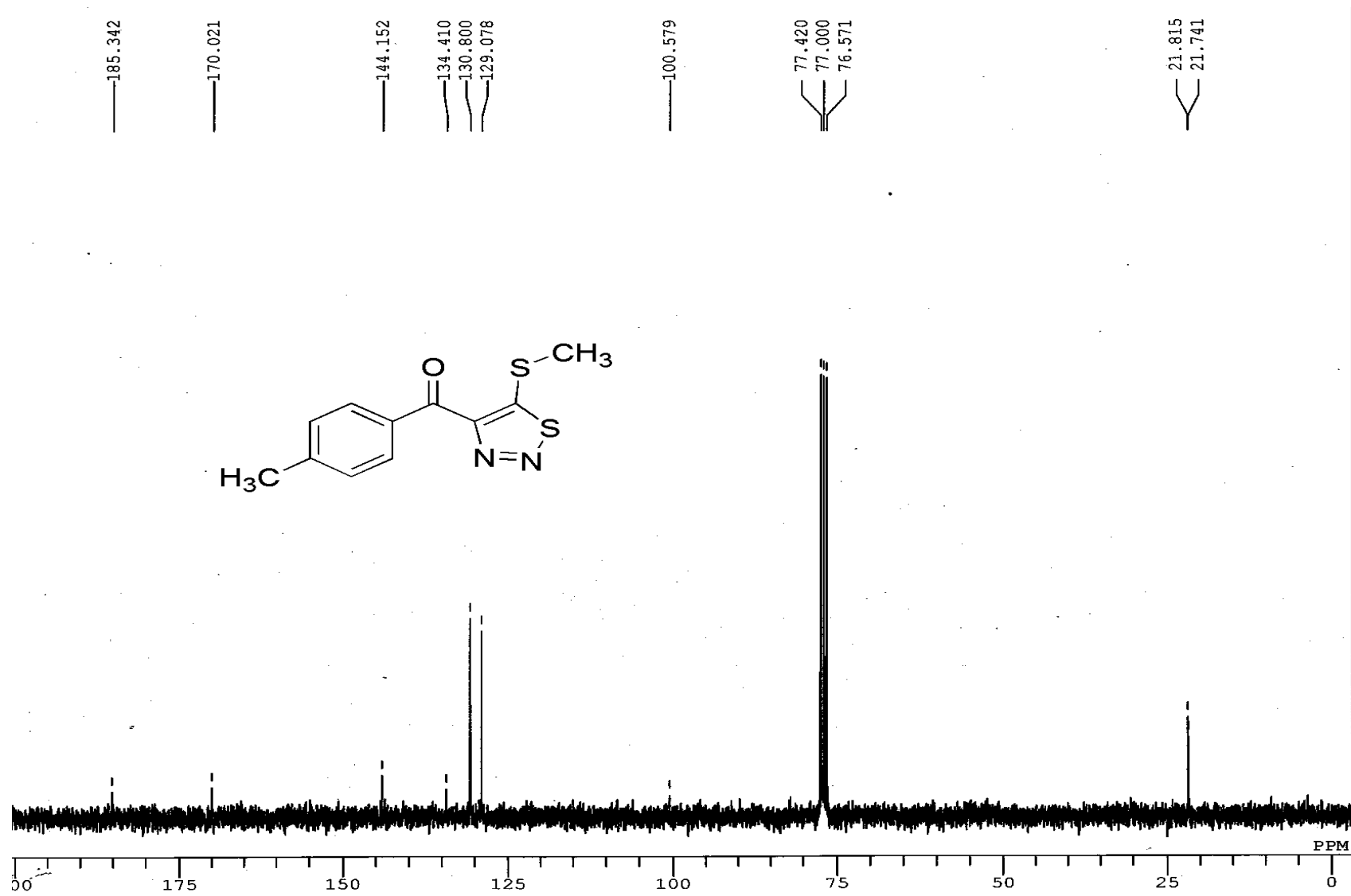
1)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 4-Benzoyl-5-methylsulfanyl-1,2,3-thiadiazole (3aa):



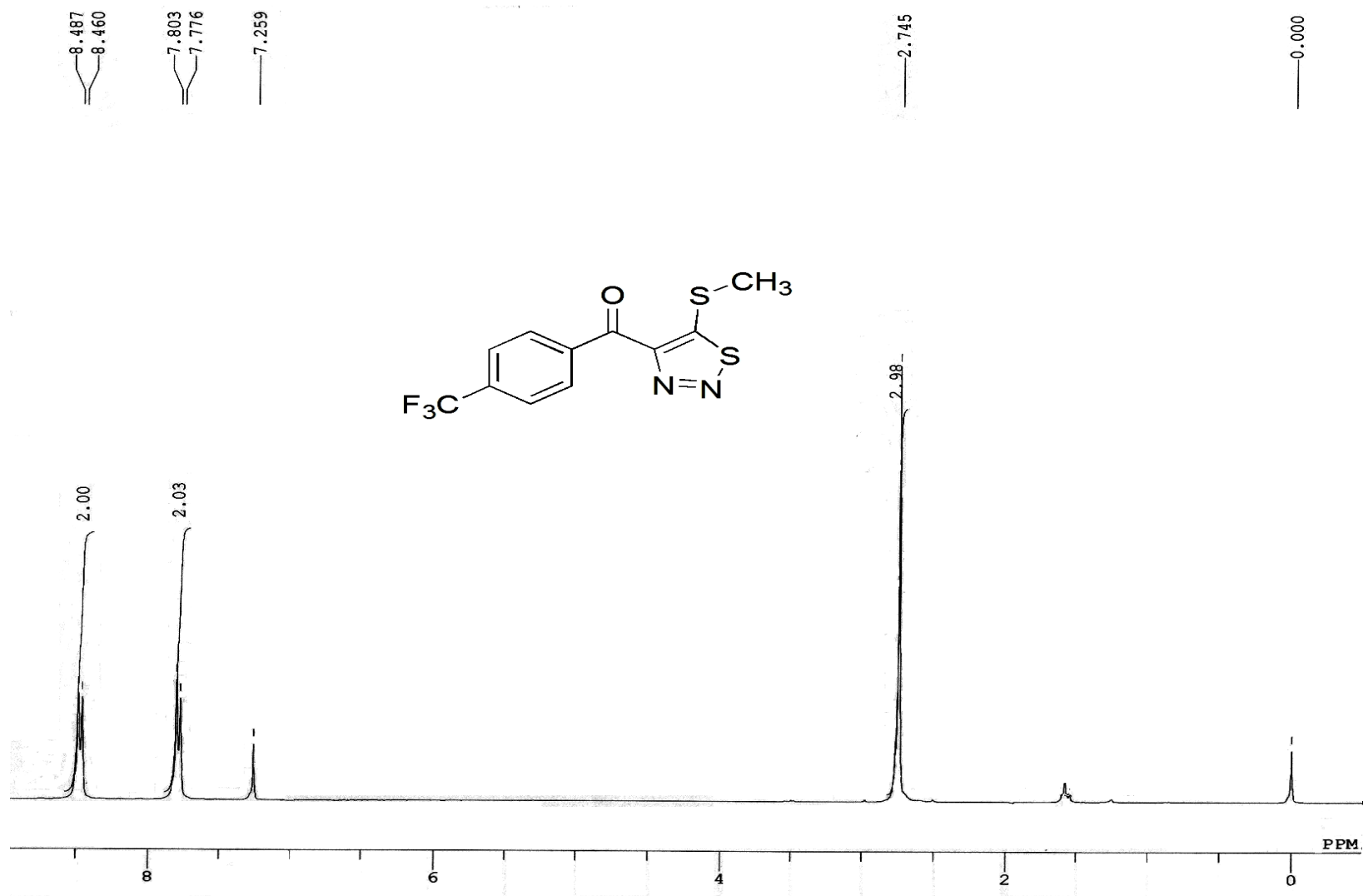


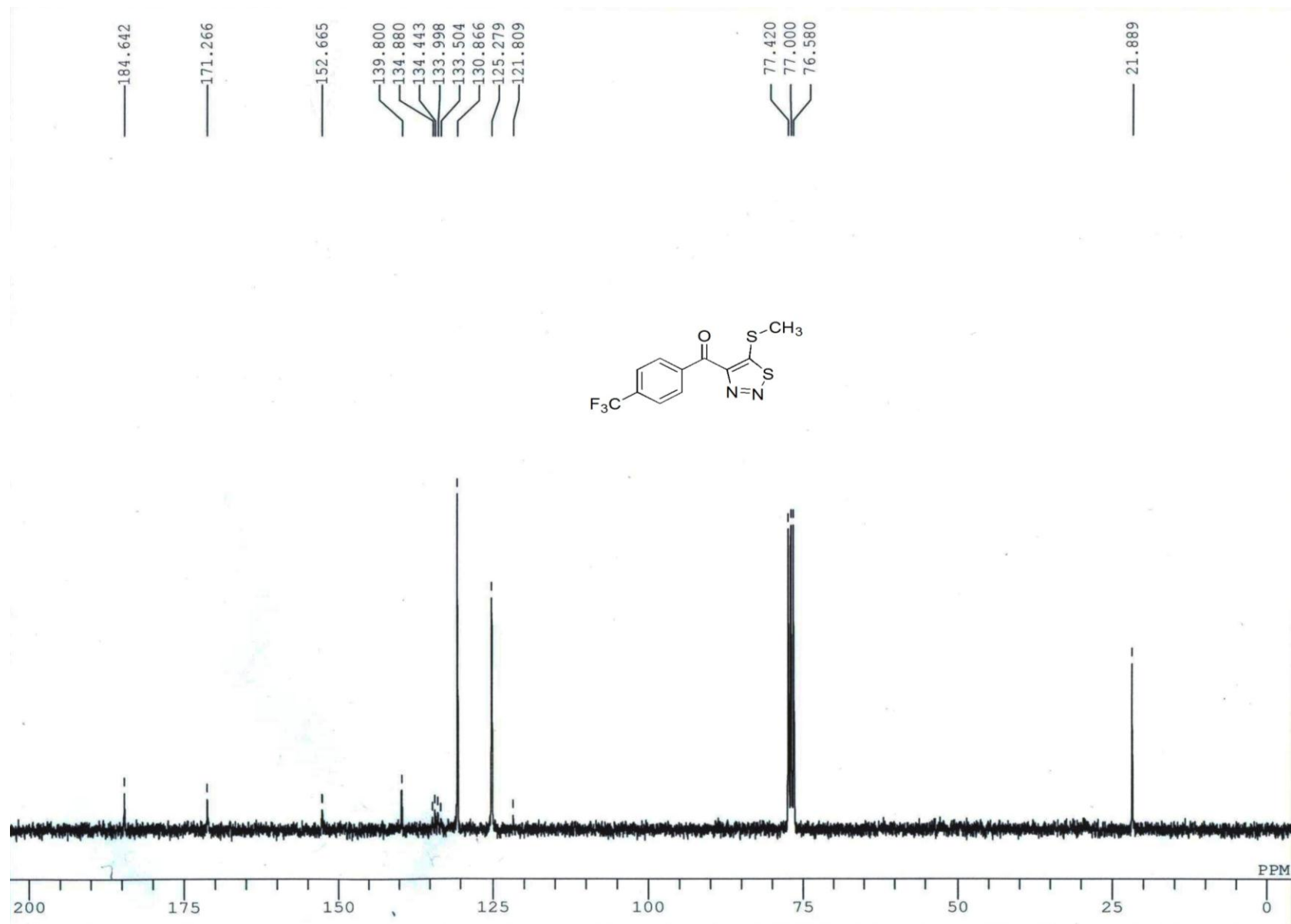
2)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 4-(4-Methylbenzoyl)-5-methylsulfanyl-1,2,3-thiadiazole (3ab):



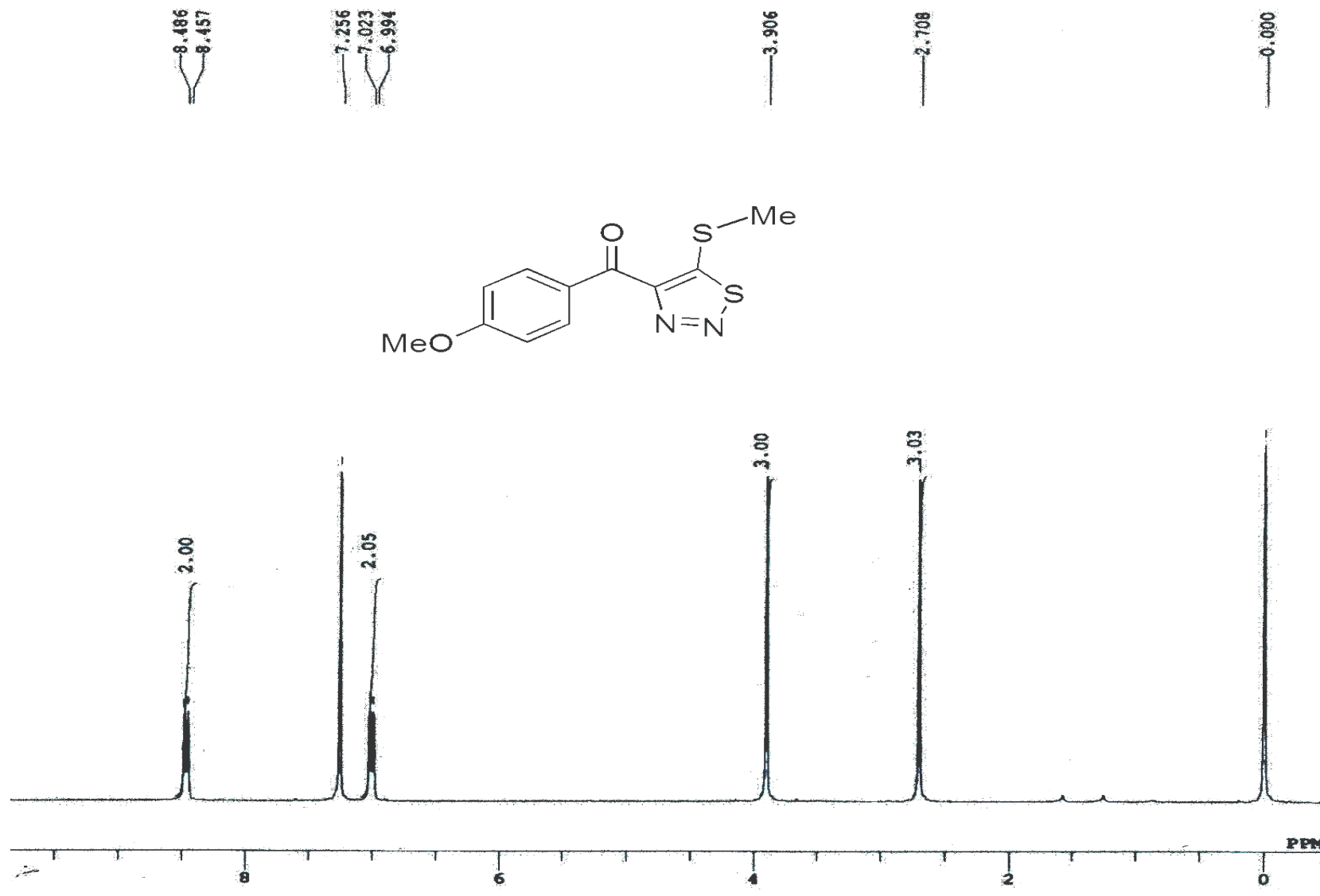


### 3) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 5-Methylsulfanyl-4(4-trifluoromethylbenzoyl)-1,2,3-thiadiazole (3ac):

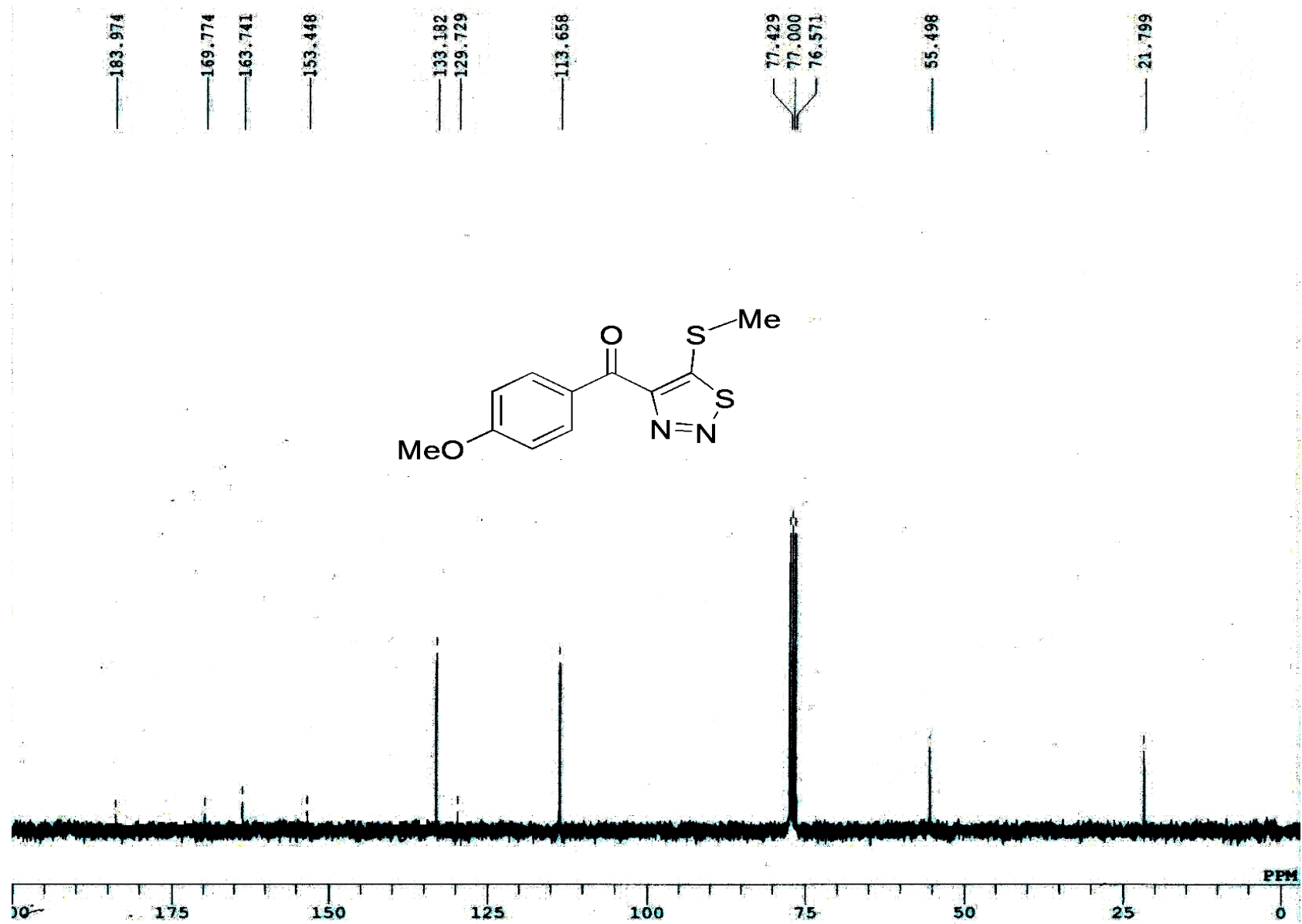




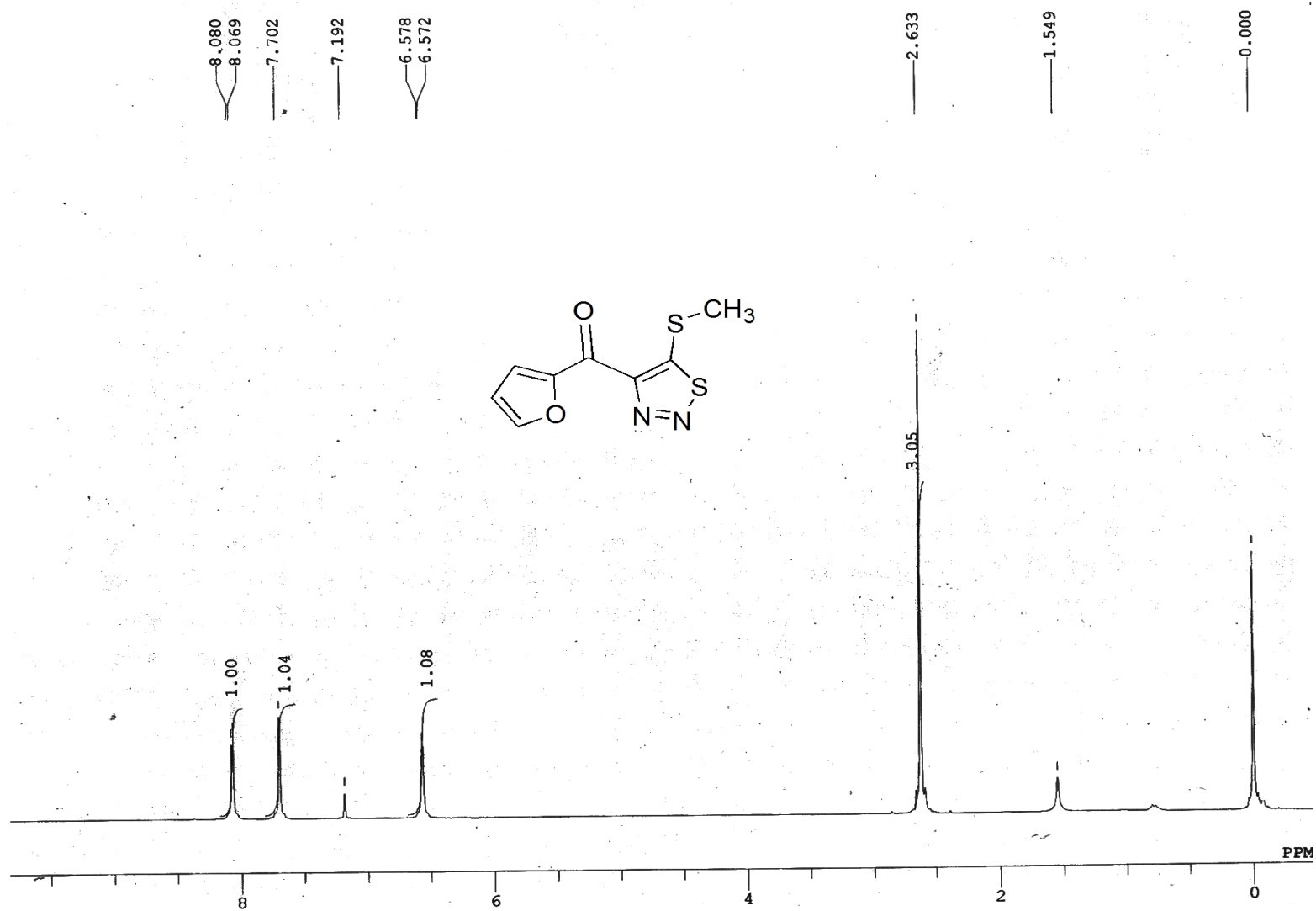
#### 4) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 4-(4-Methoxybenzoyl)-5-methylsulfanyl-[1,2,3]thiadiazole (3ad):

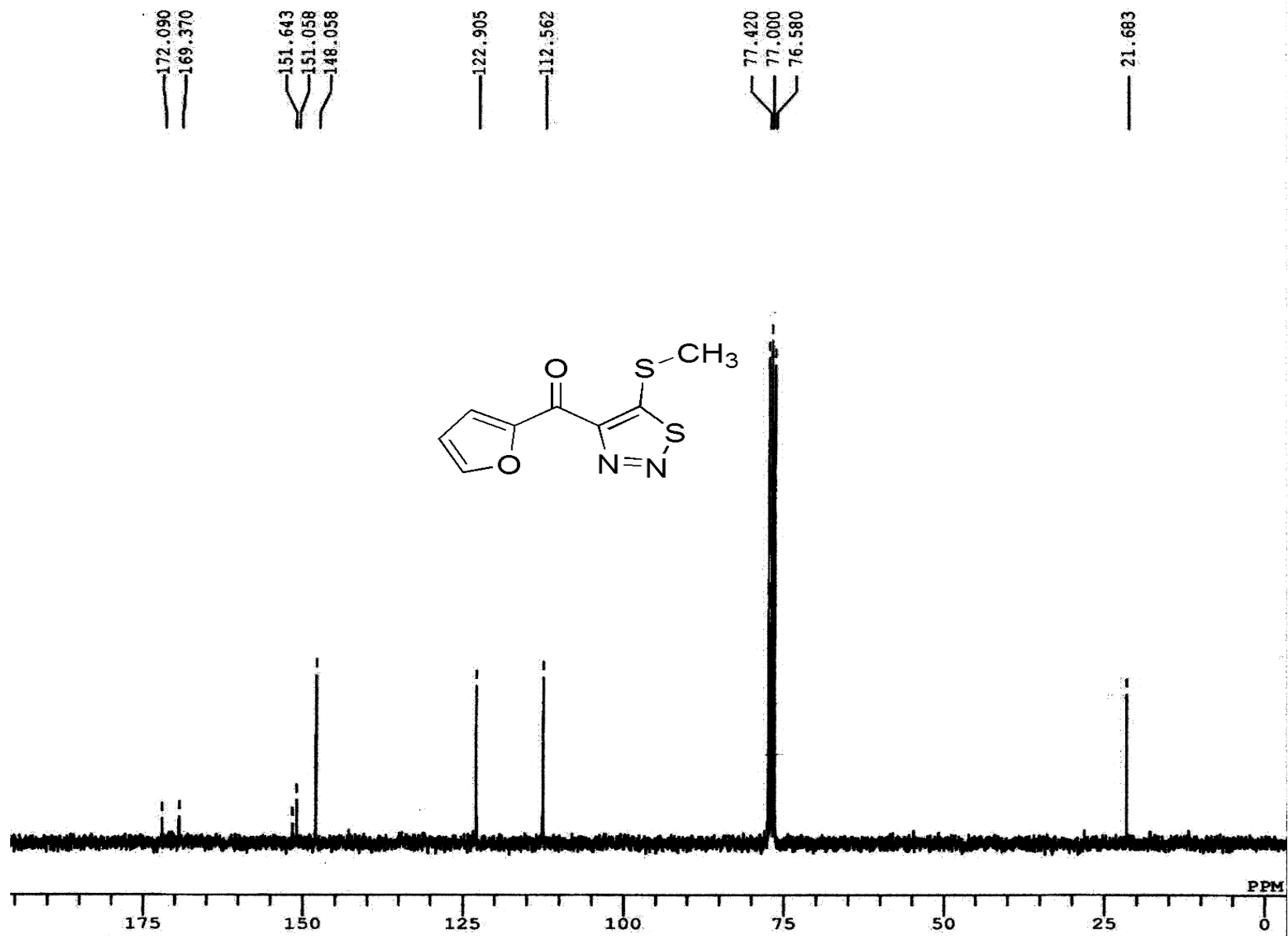




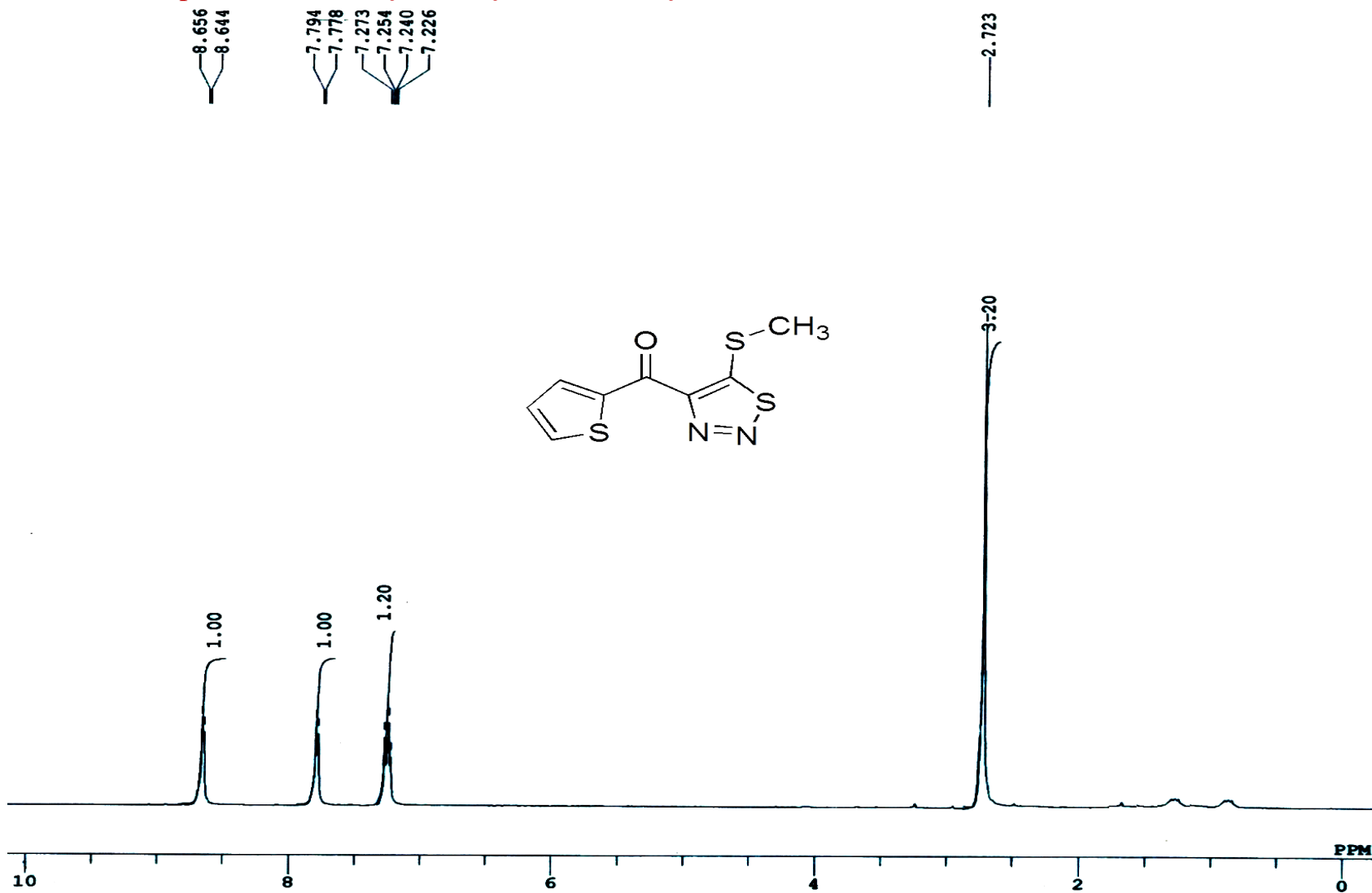


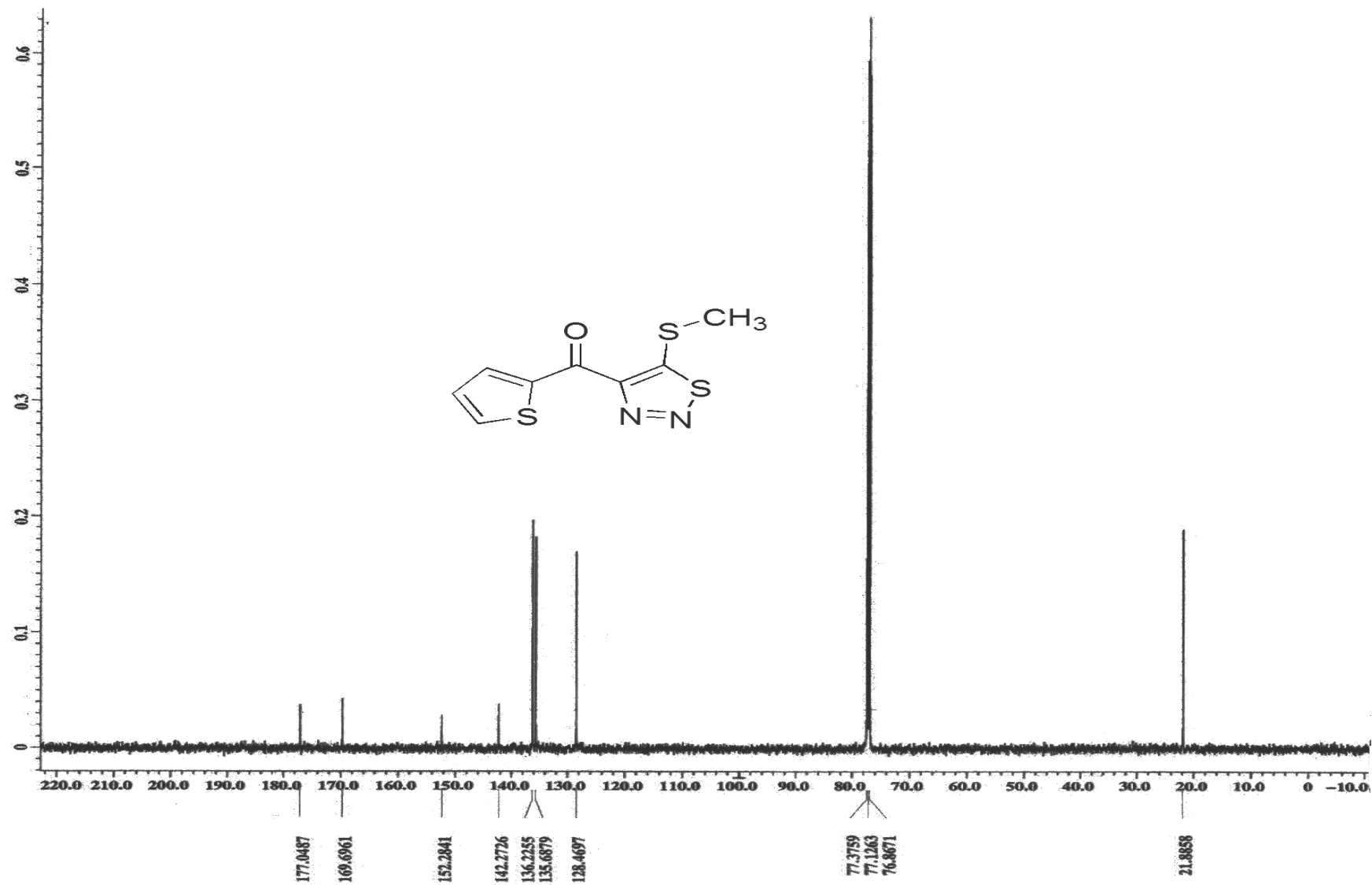
5)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 4-(2-furoyl)-5-methylsulfanyl-1,2,3-thiadiazole (3ae):



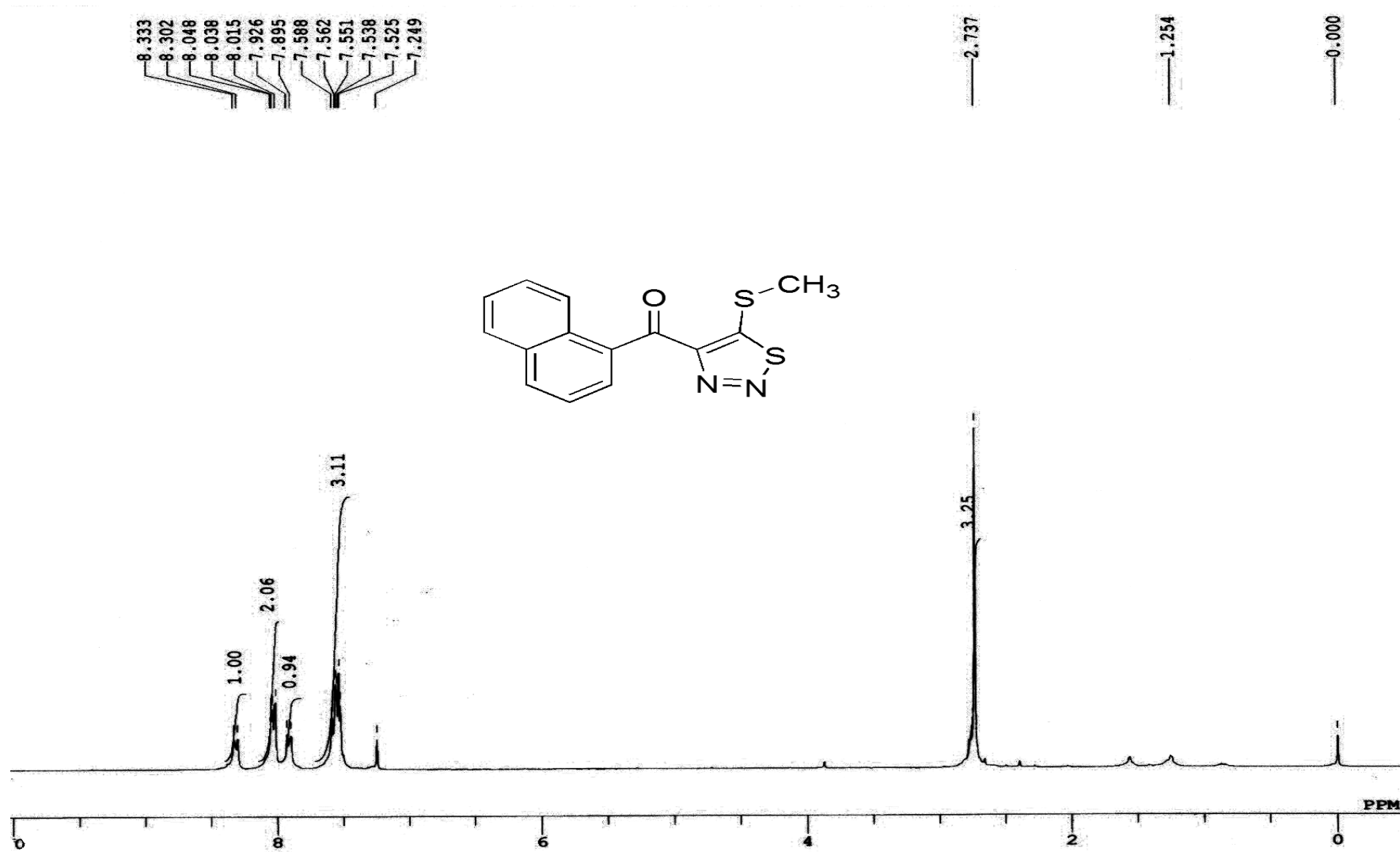


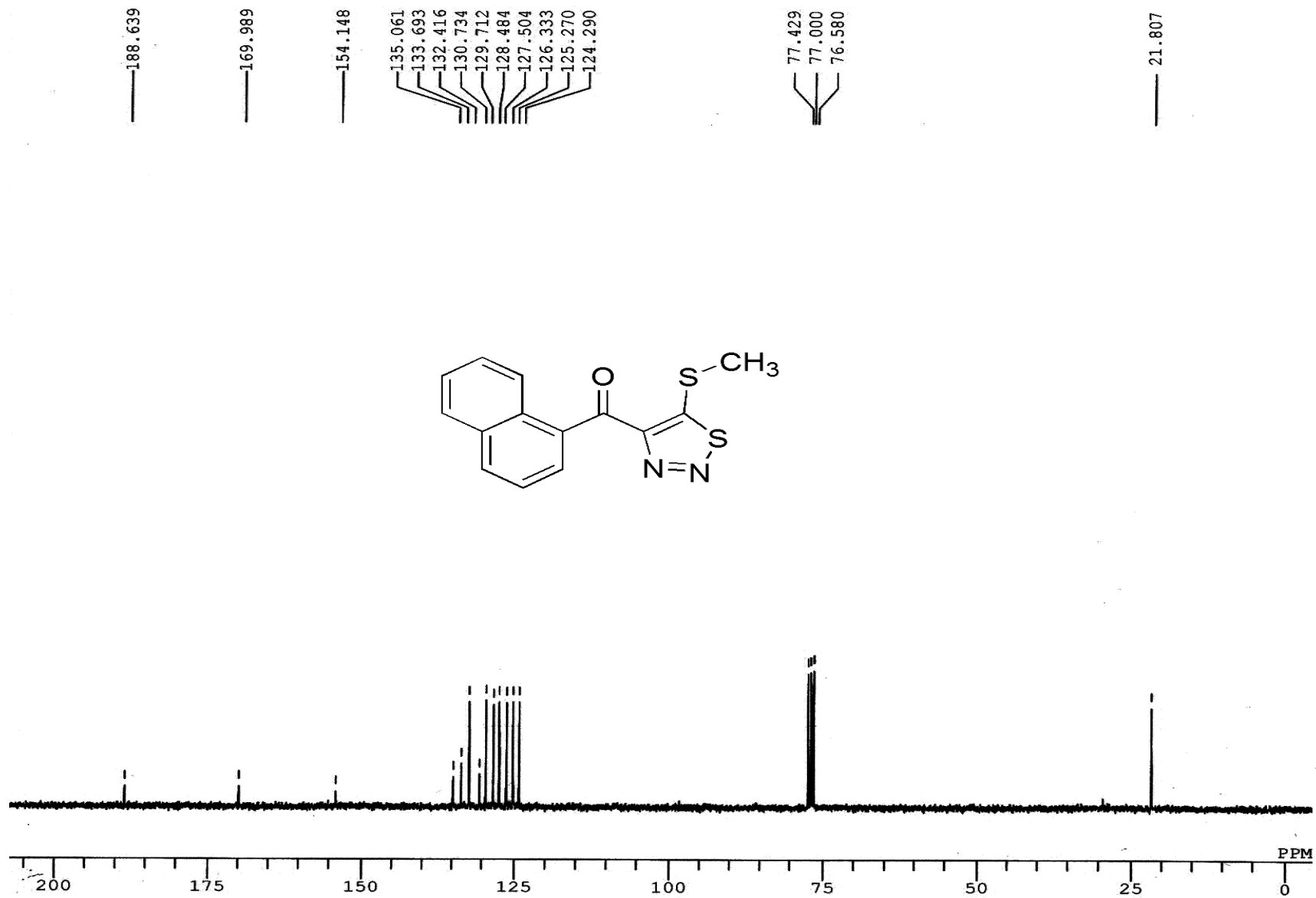
6)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Methylsulfanyl-4-(2-thienoyl)-1,2,3-thiadiazole (3af):



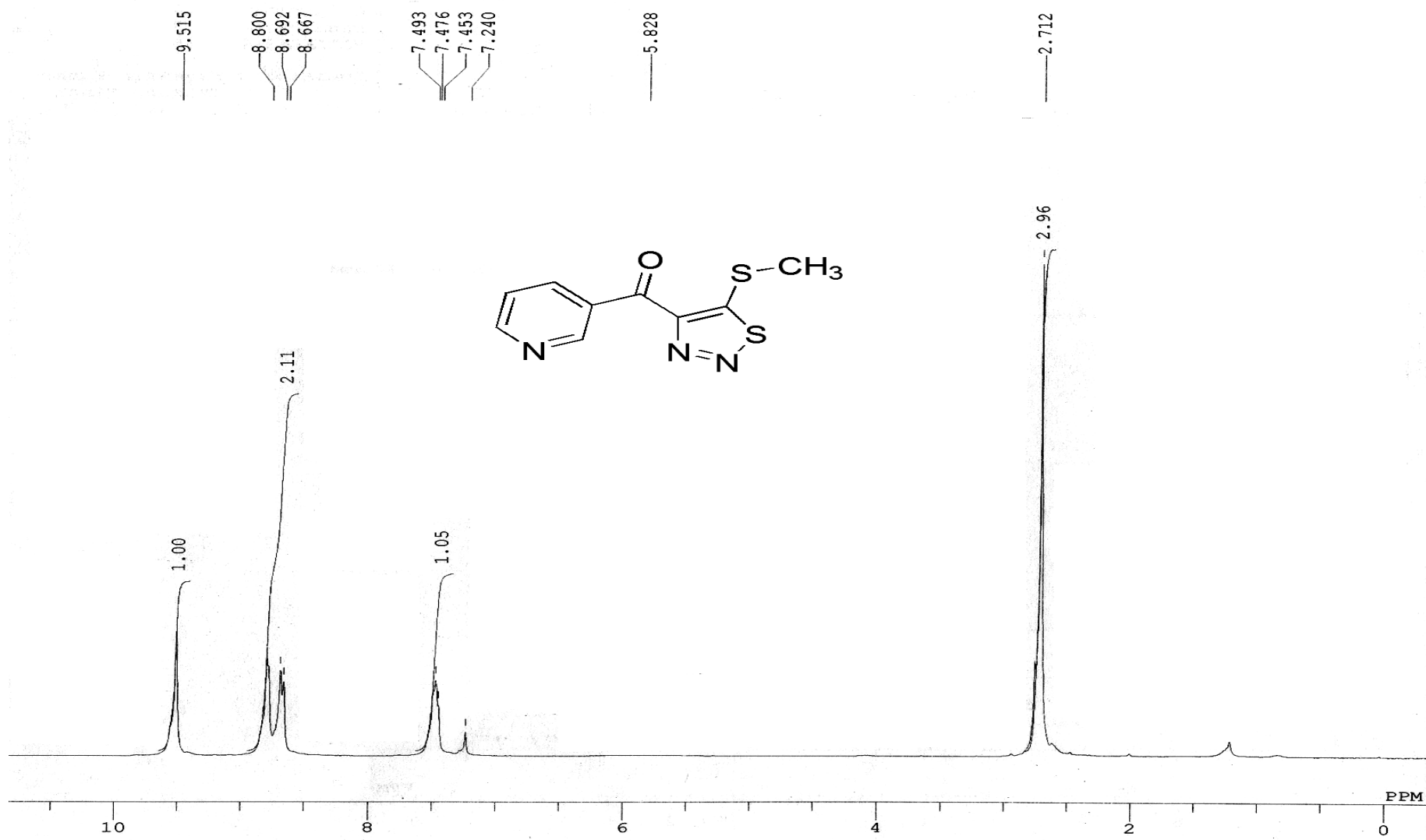


7)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Methylsulfanyl-4-(1-naphthoyl)-1,2,3-thiadiazole (3ag):

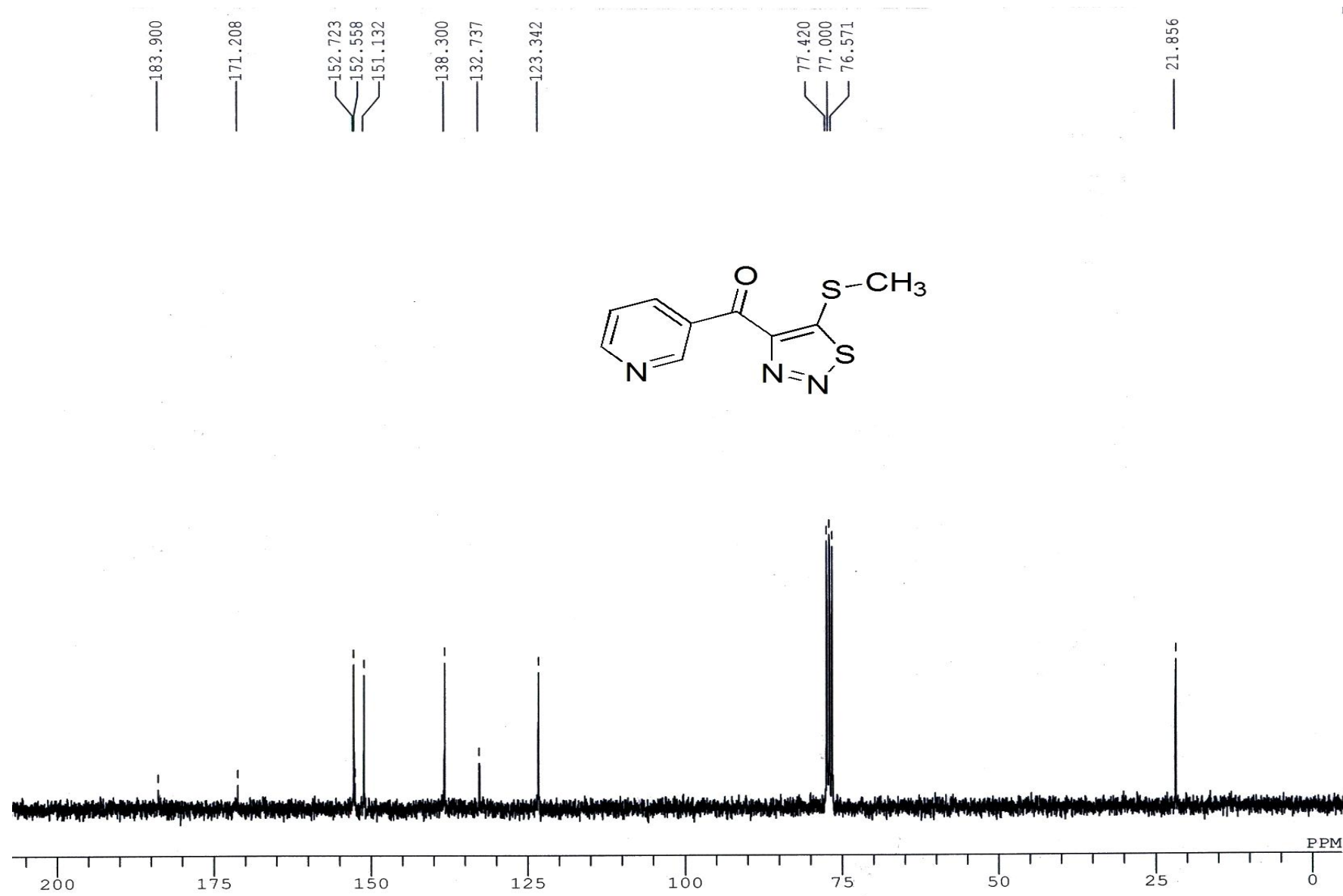




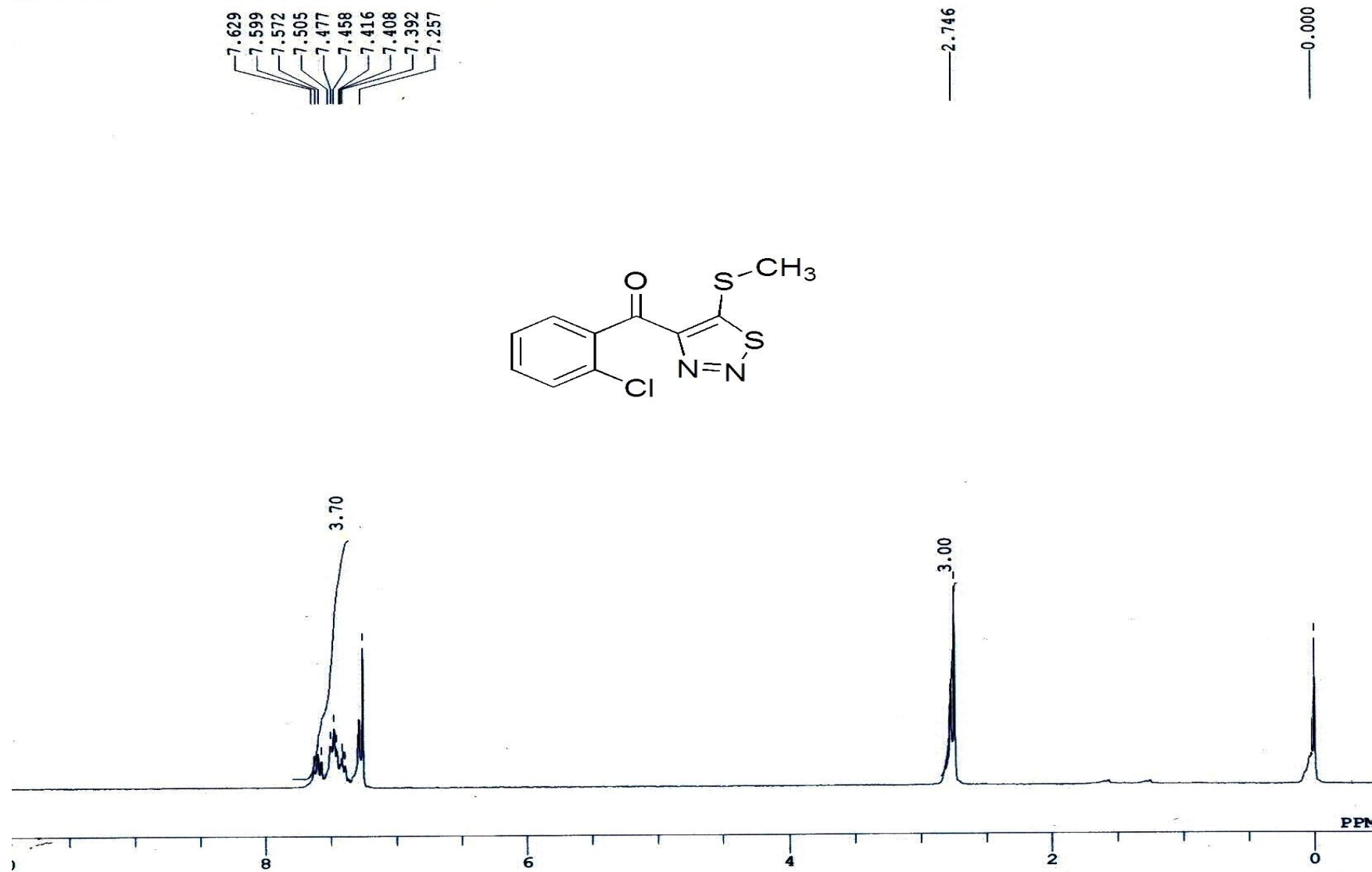
8)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Methylsulfanyl-4-(3-pyridoyl)-1,2,3-thiadiazole (3ah):

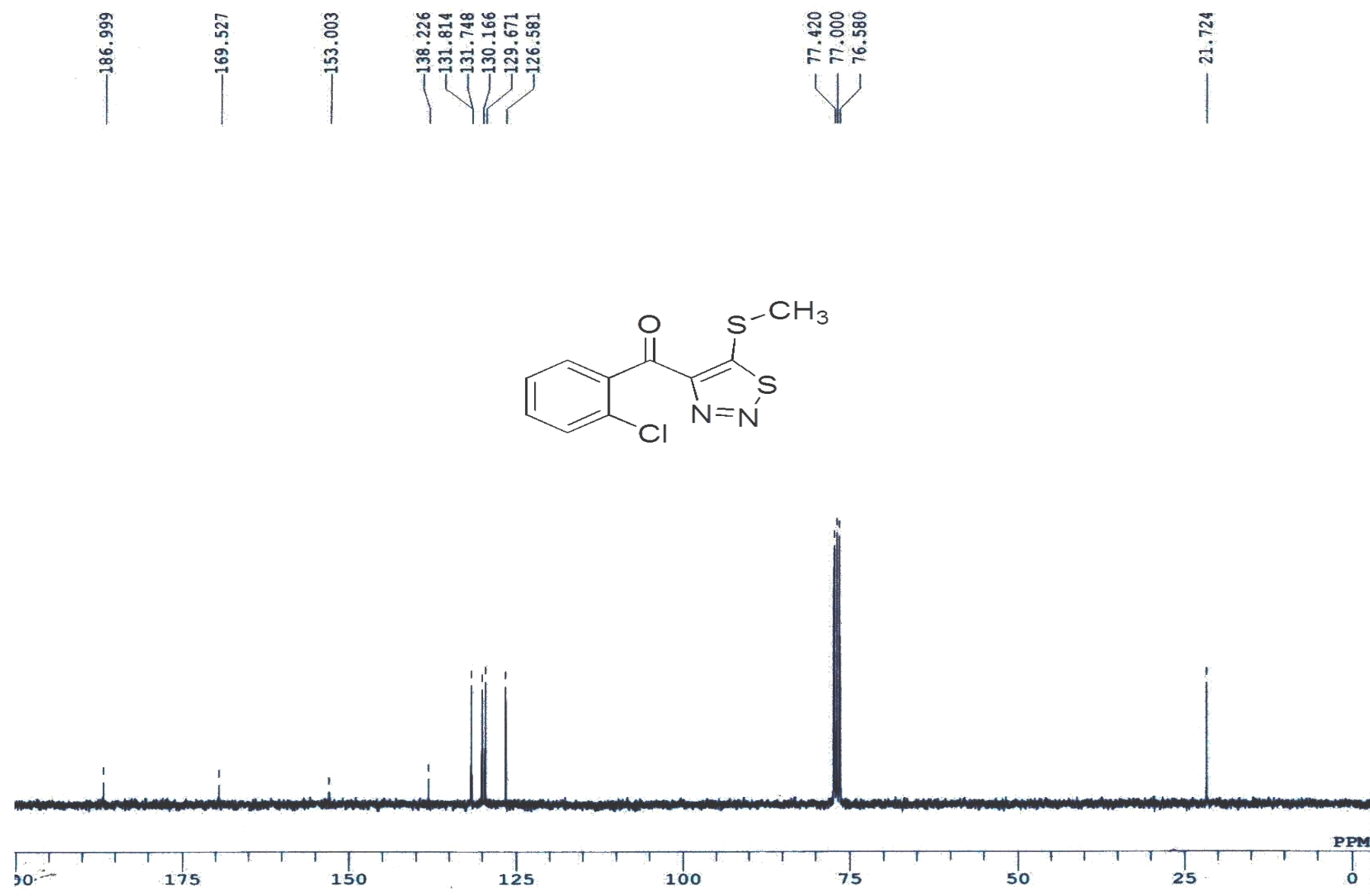




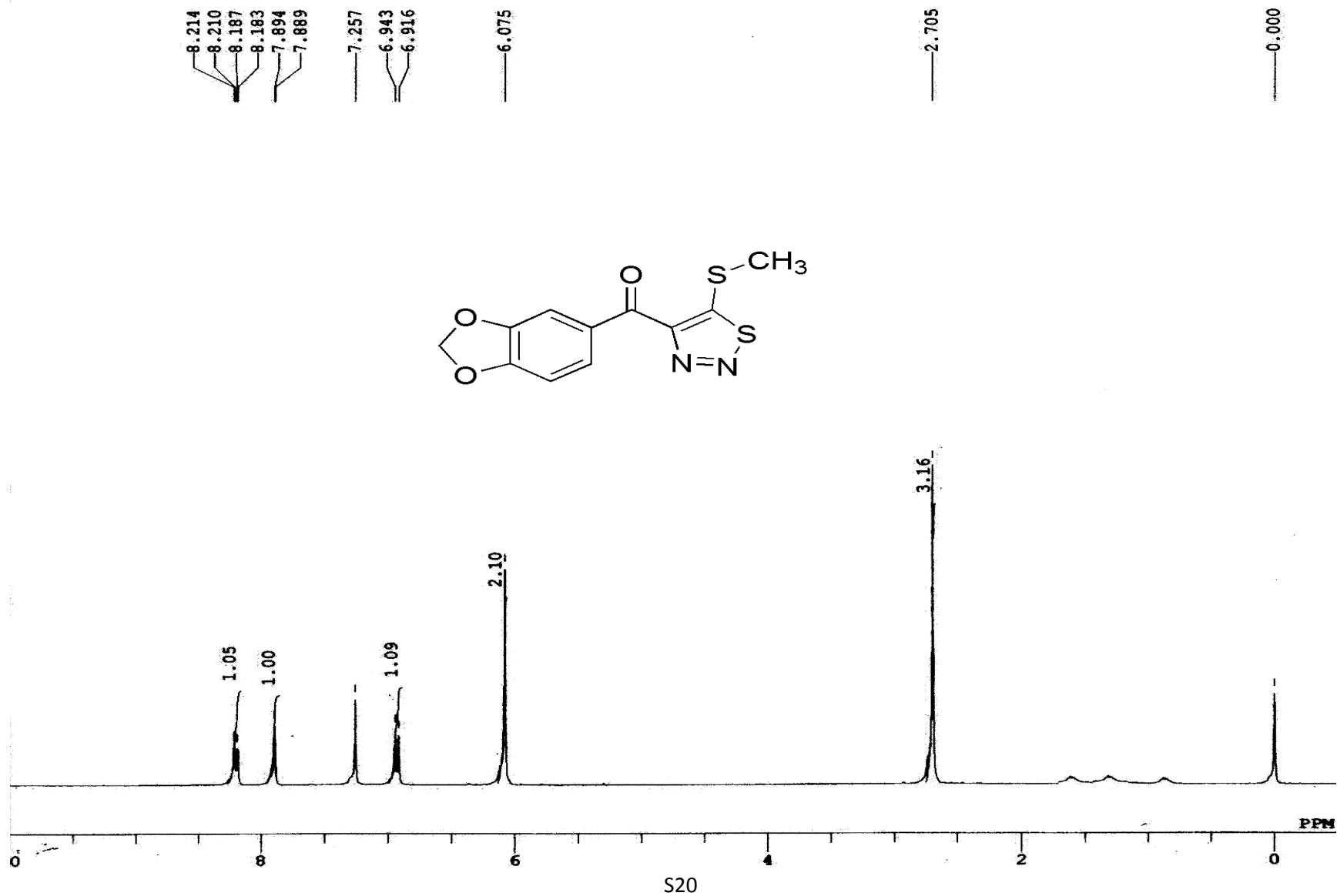


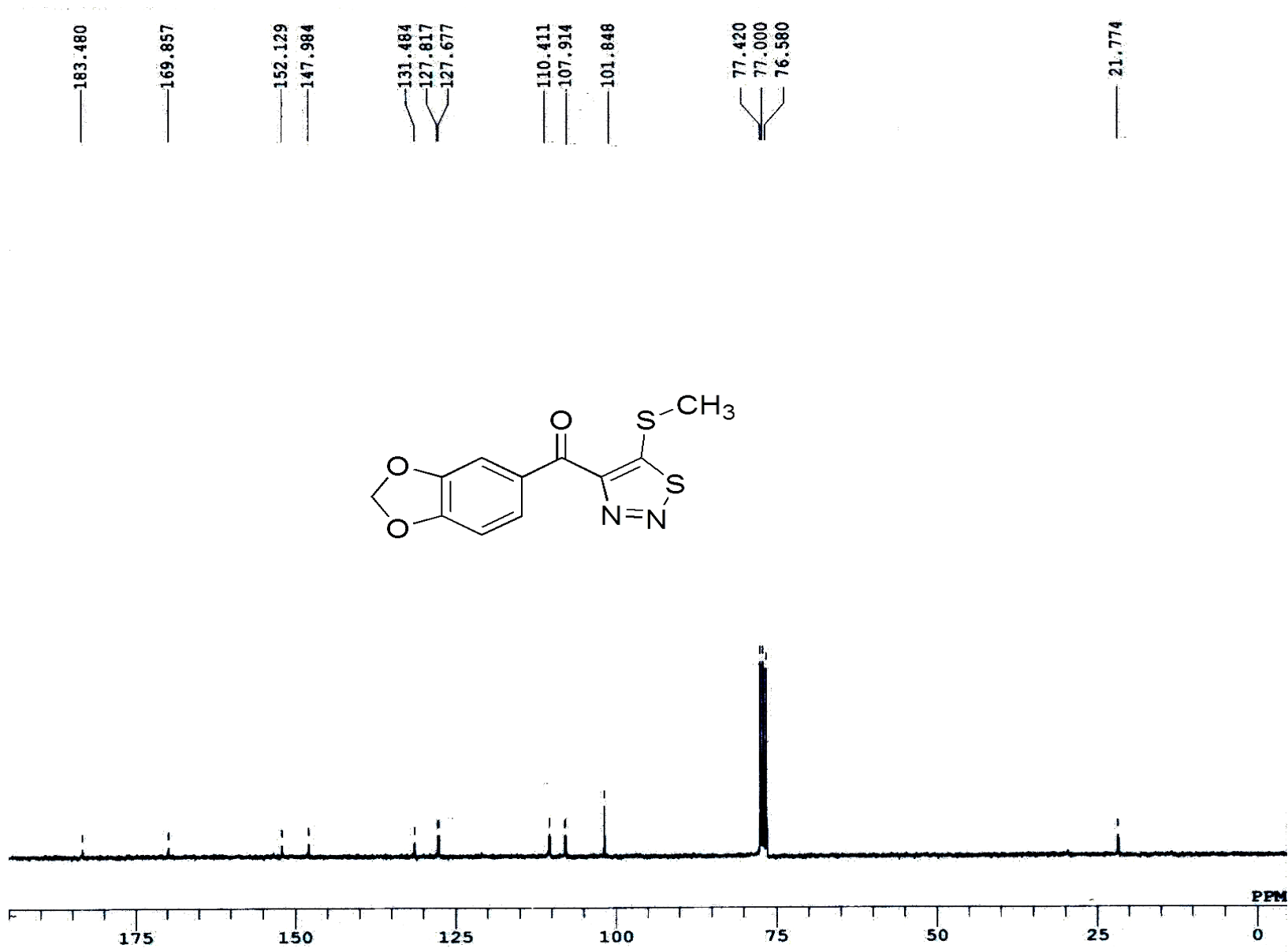
9)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 4-(2-Chlorobenzoyl)-5-methylsulfanyl-1,2,3-thiadiazole (3ai):



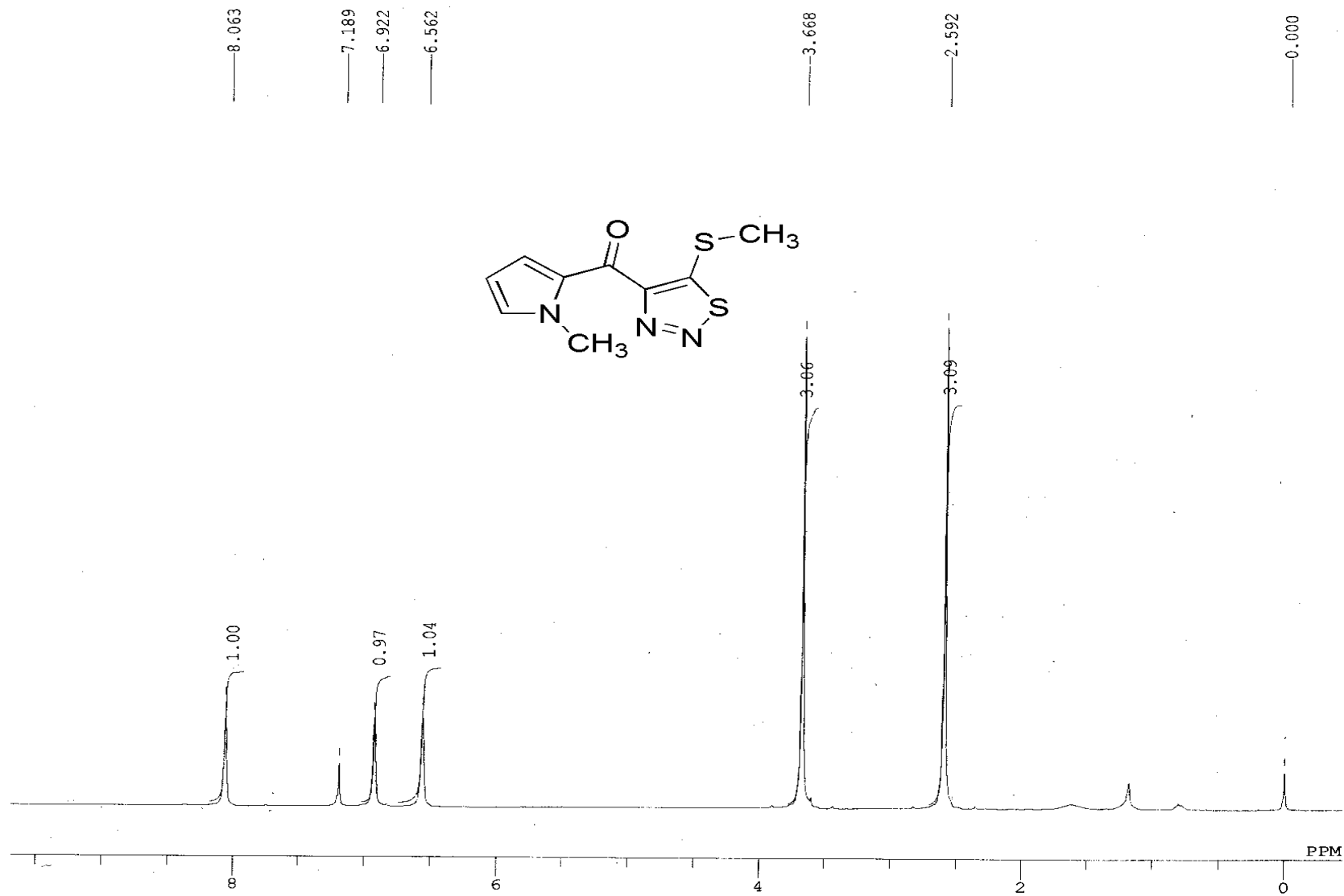


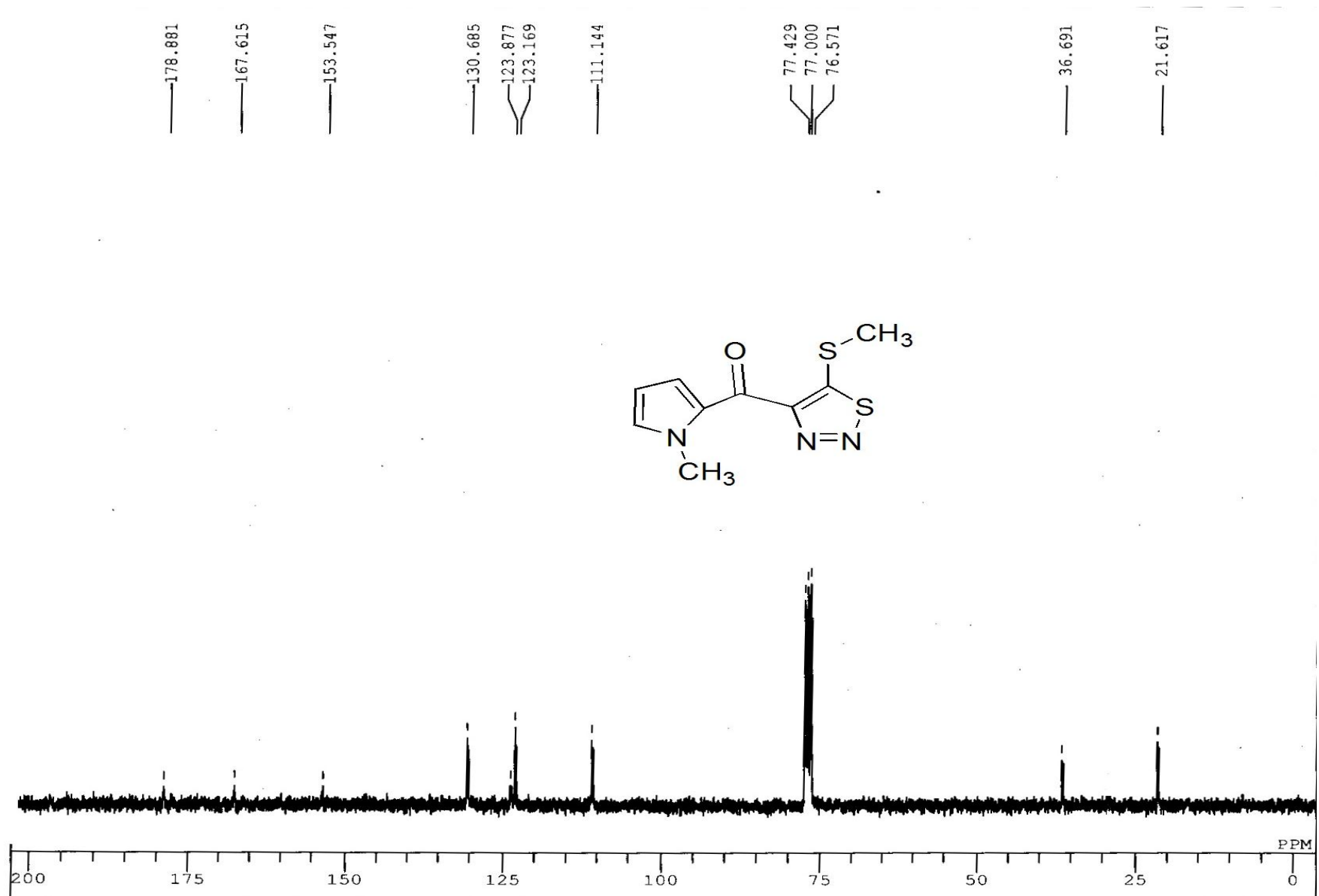
### 10) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 4-(3,4-Methylenedioxybenzoyl)-5-methylsulfanyl-1,2,3-thiadiazole (3aj):



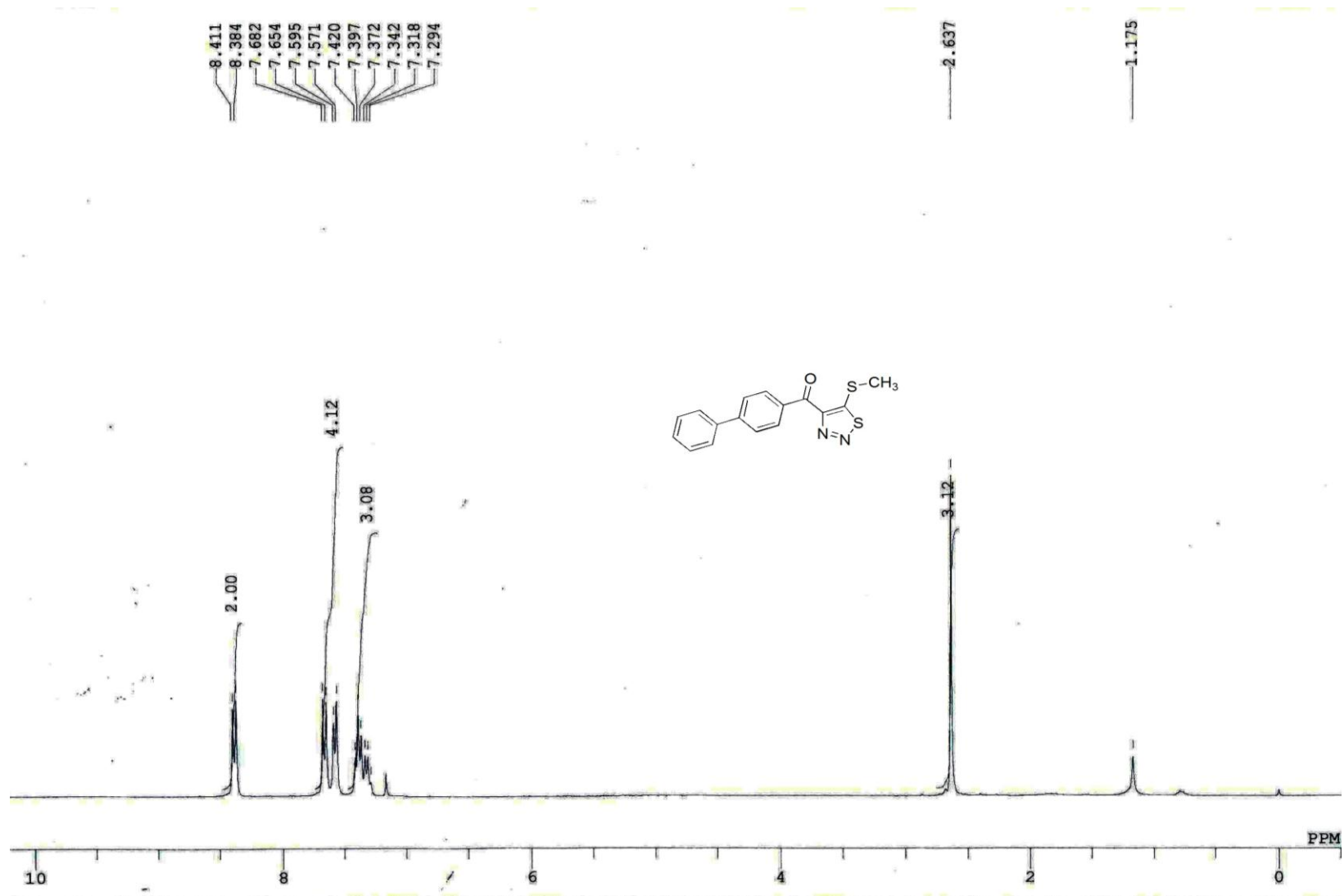


### 11) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 4-(N-Methylpyrrol-3-oyl)-5-methylsulfanyl-1,2,3-thiadiazole (3ak):

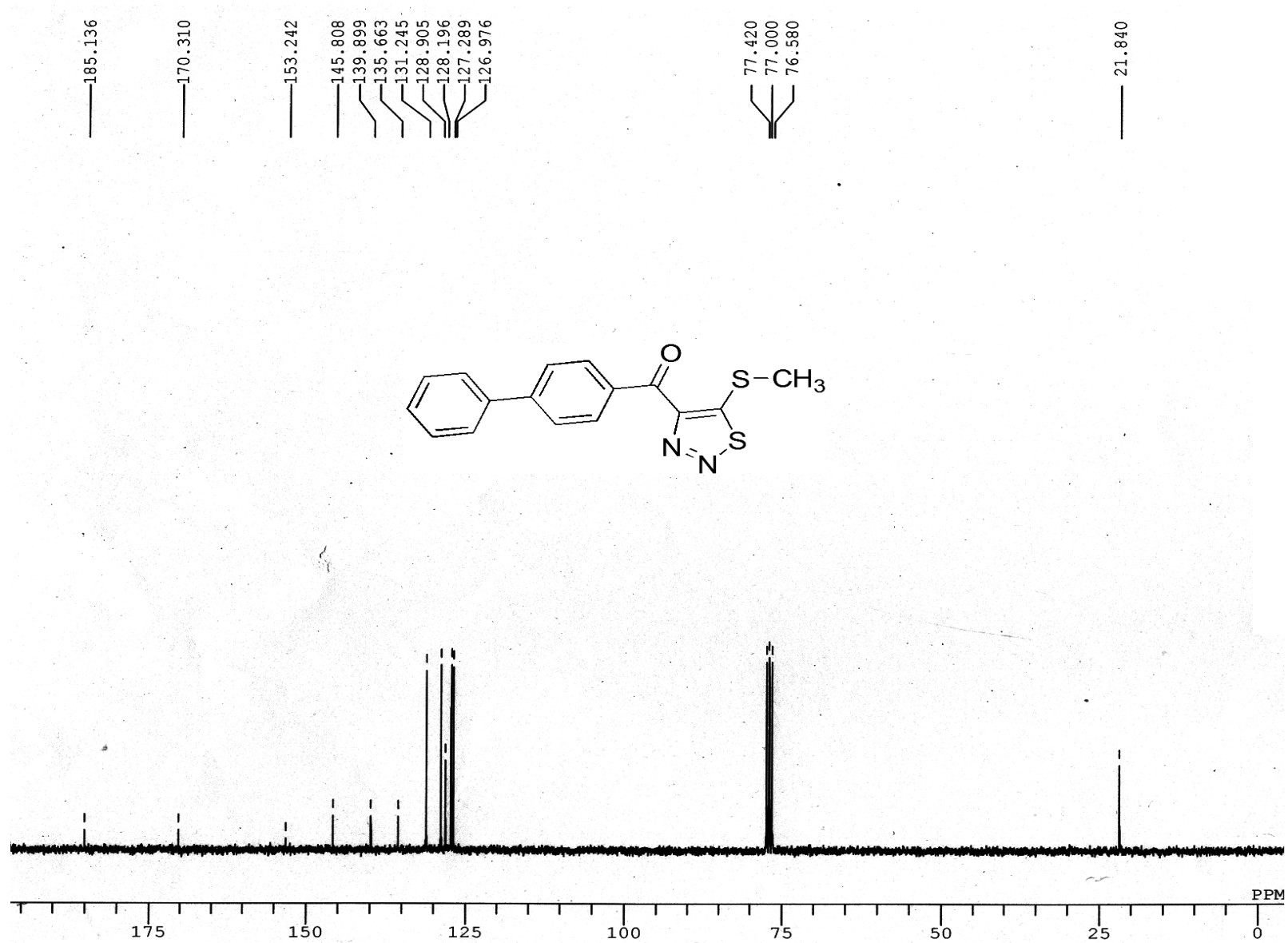




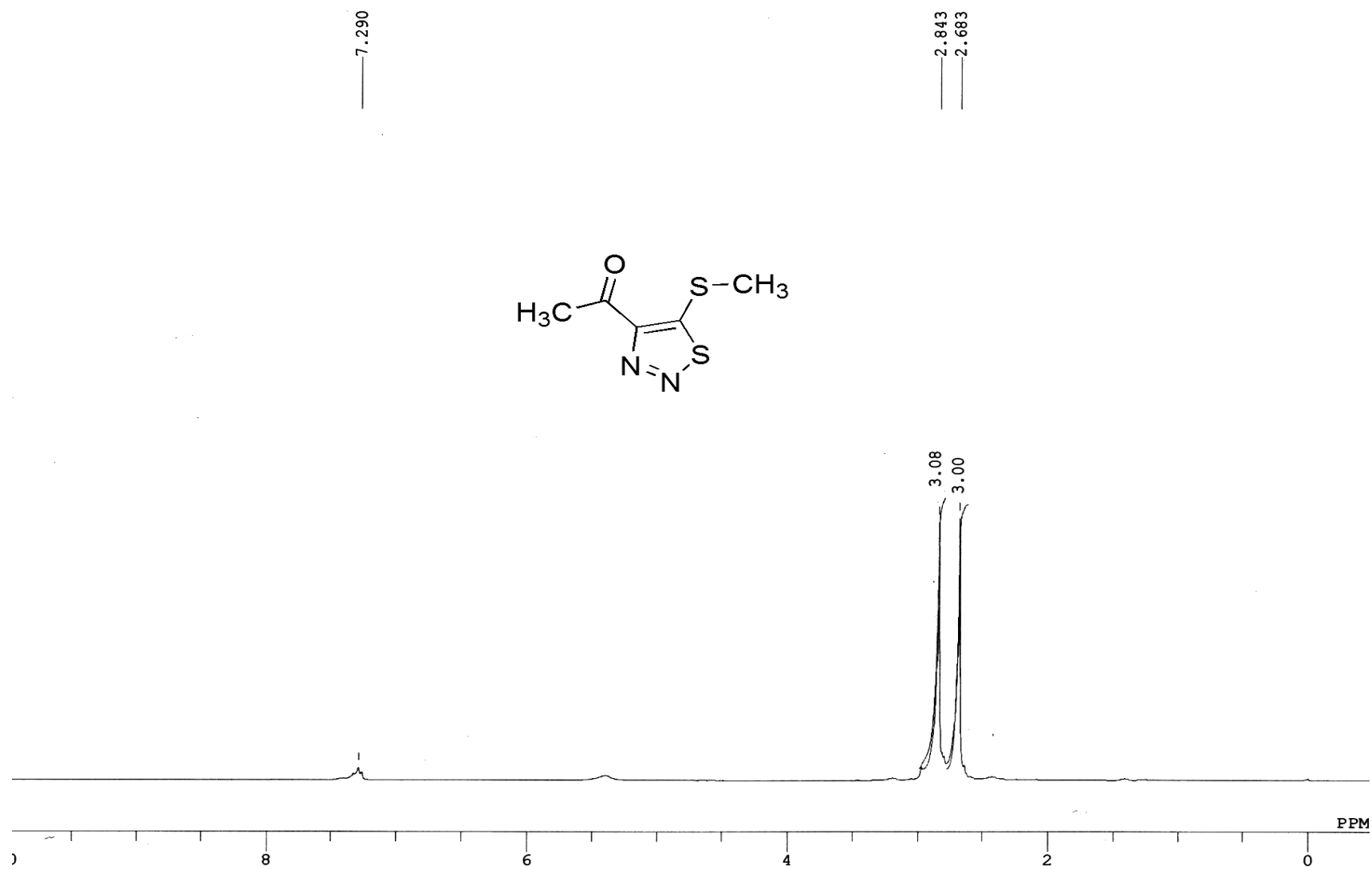
## 12) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 5-Methylsulfanyl-4-(4-phenylbenzoyl)-1,2,3-thiadiazole (3a):

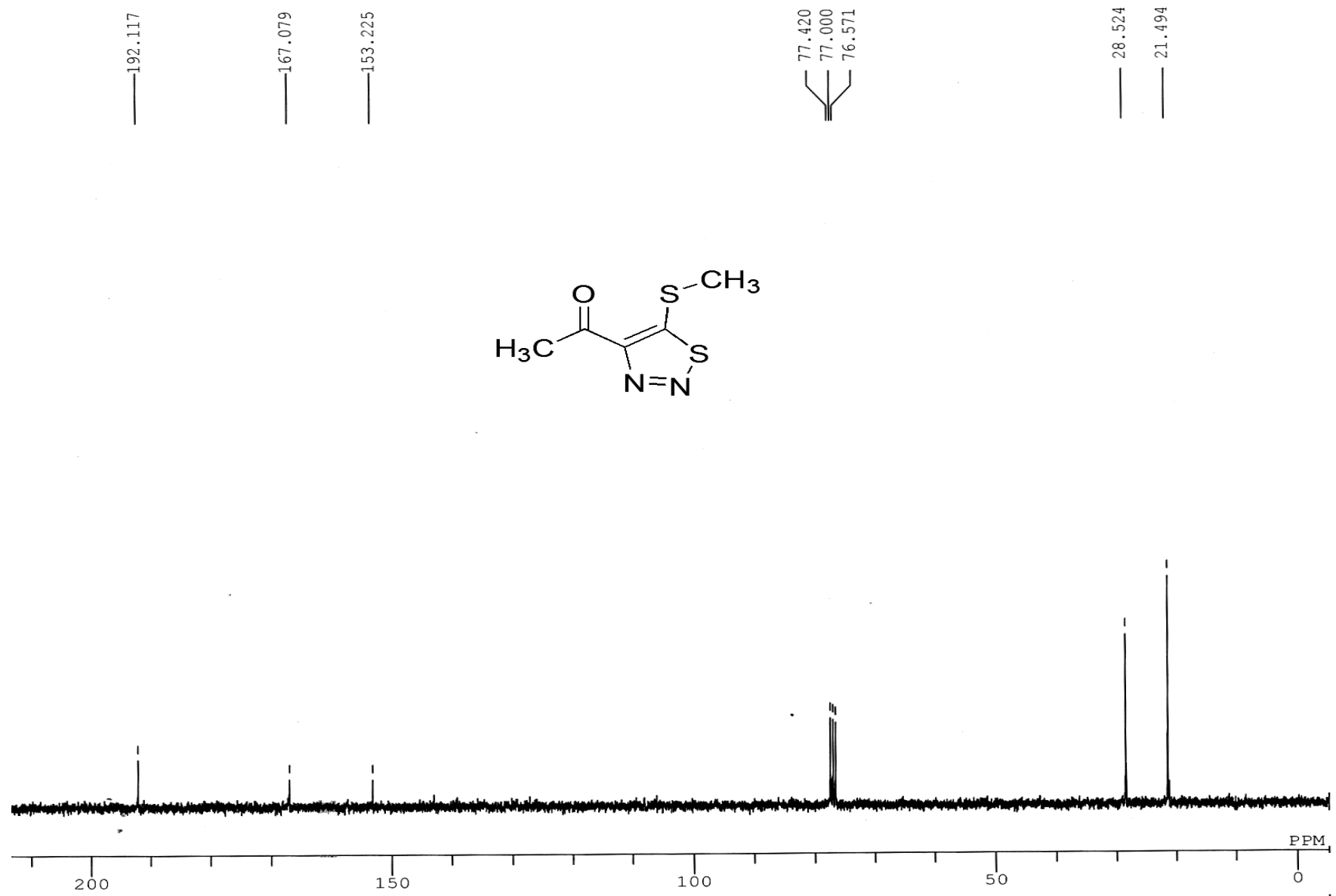




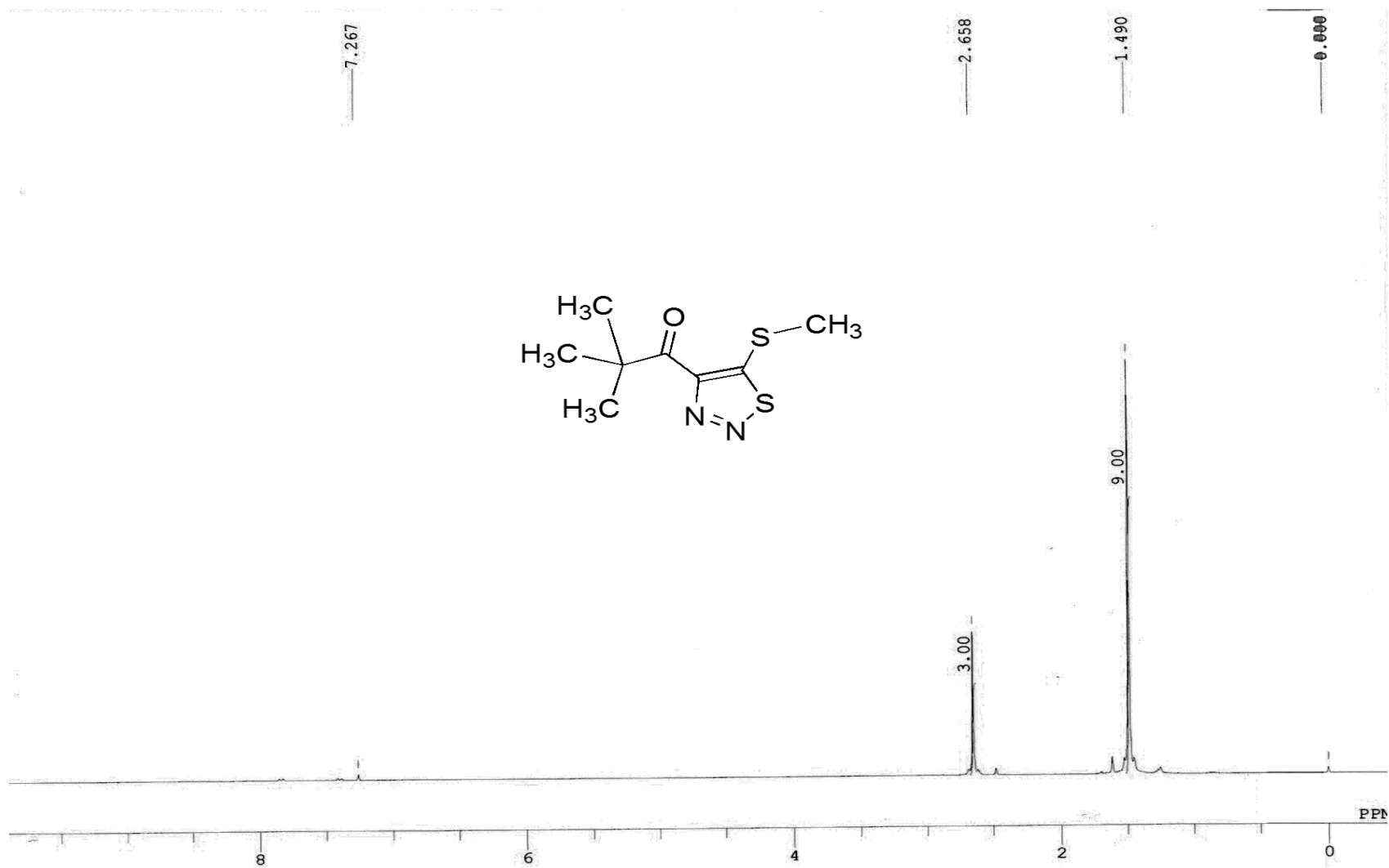


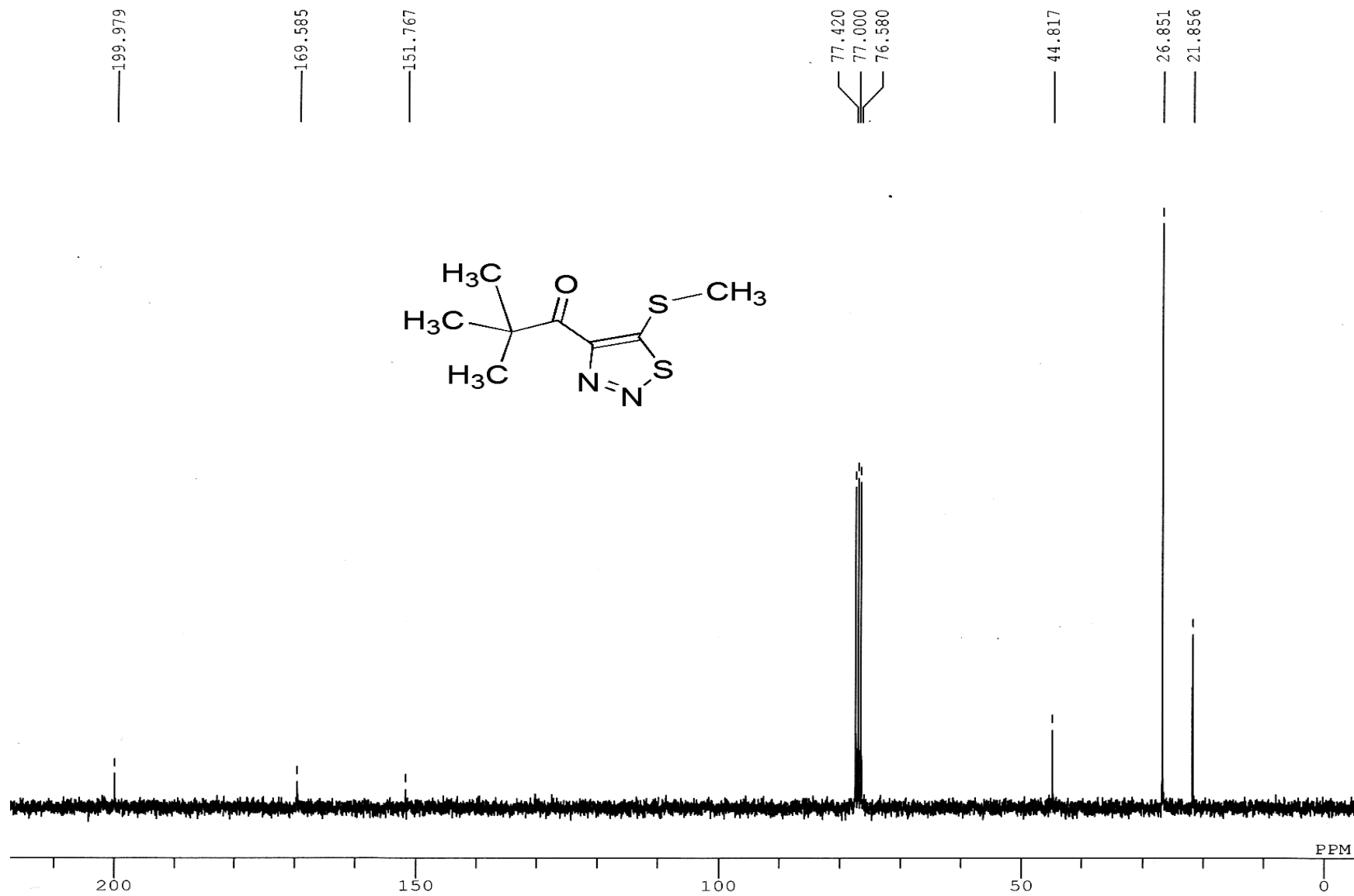
### 13) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 4-Acetyl-5-methylsulfanyl-1,2,3-thiadiazole (3am):



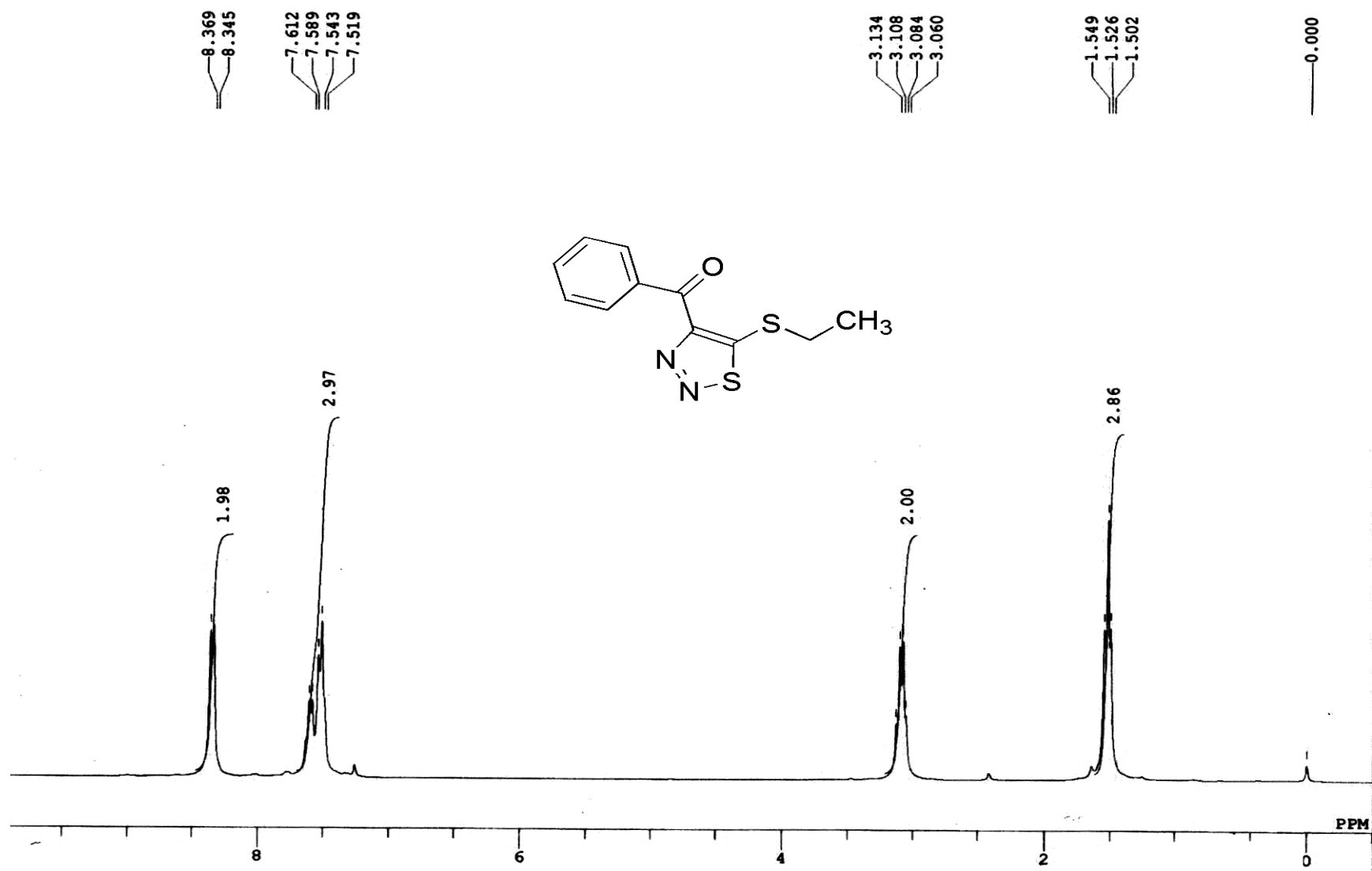


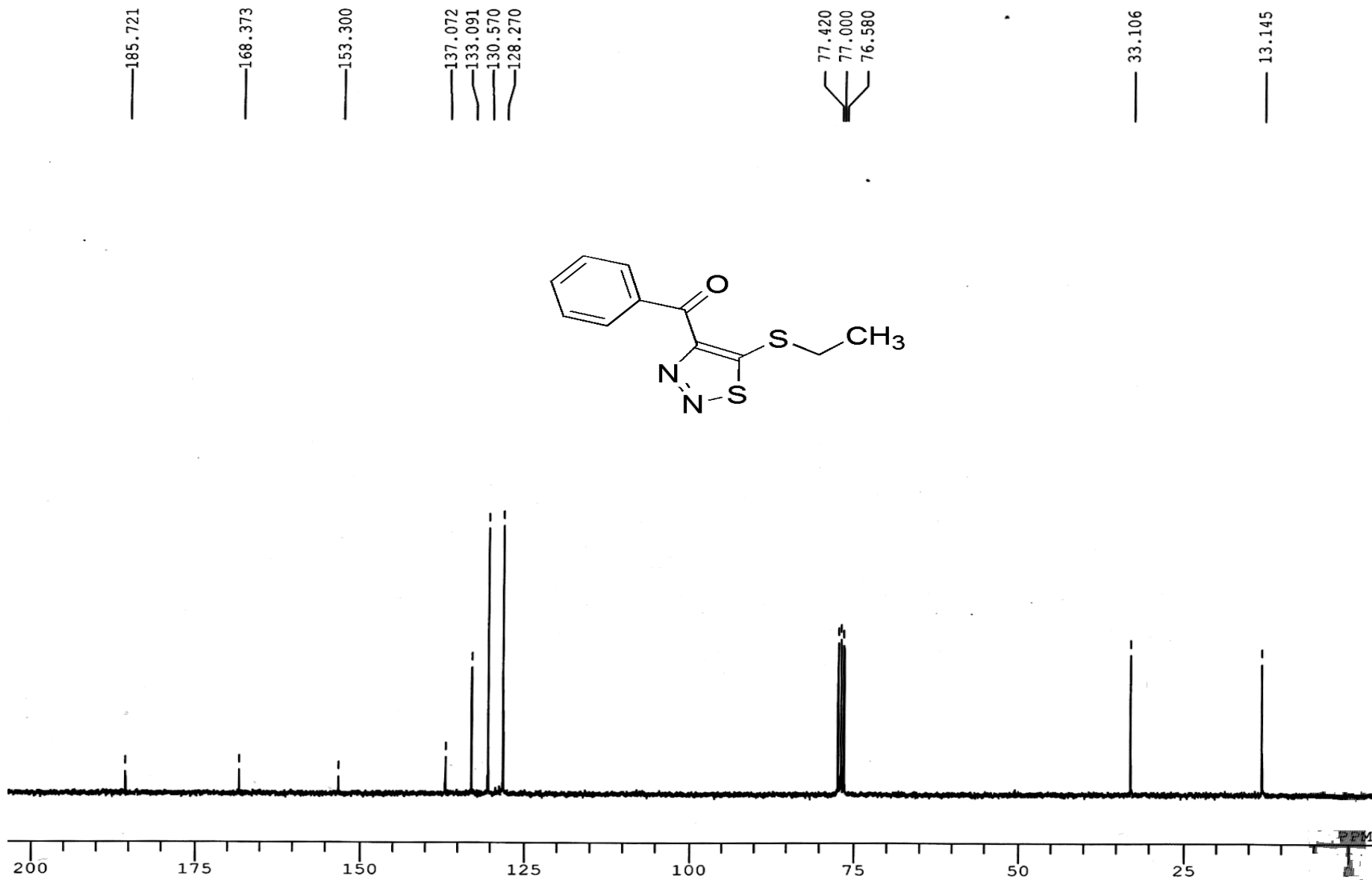
**14)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 4-(2,2-dimethylpropan-1-oyl)-5-methylsulfanyl-1,2,3-thiadiazole (3an):**



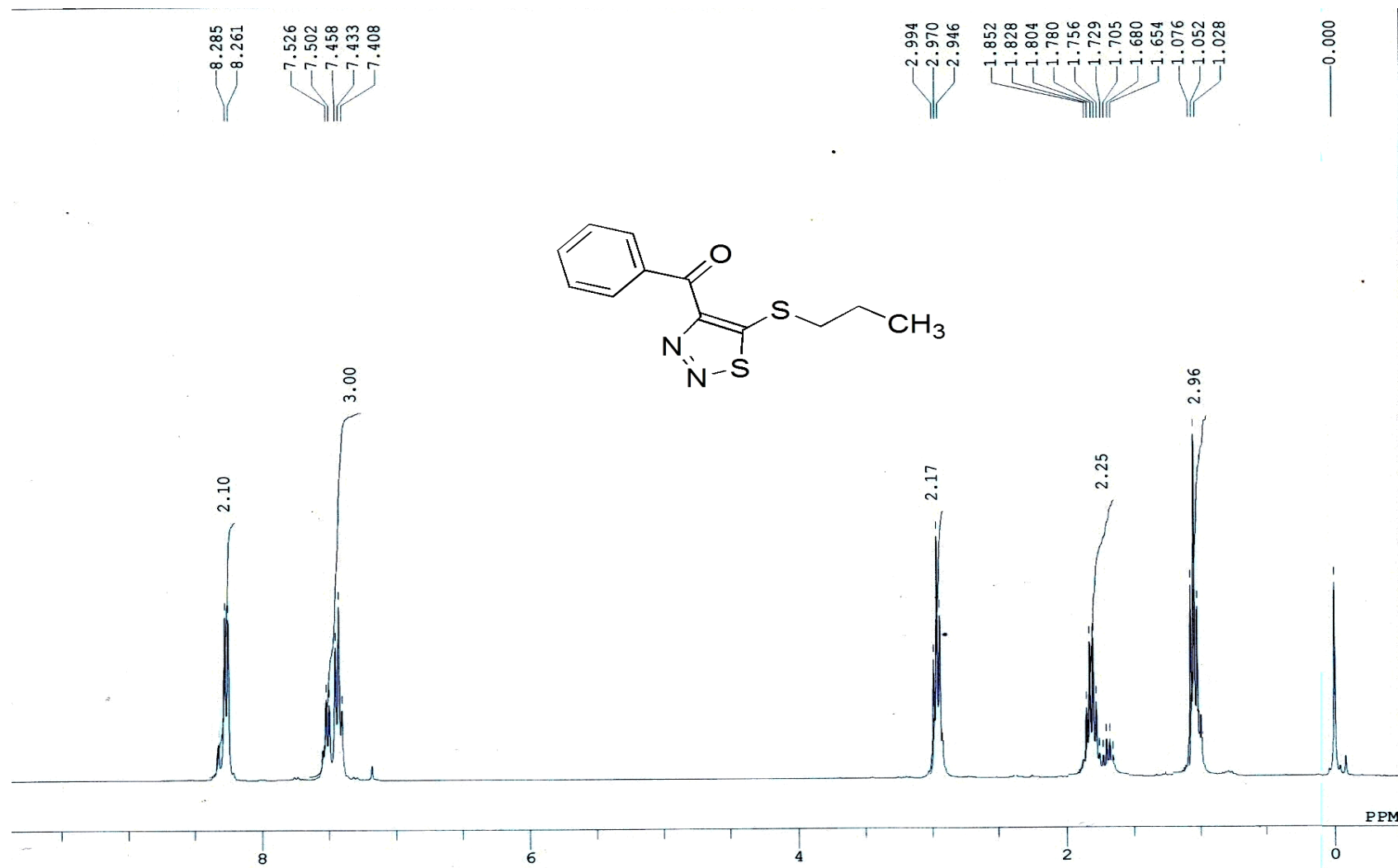


### 15) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 4-Benzoyl-5-ethylsulfanyl-1,2,3-thiadiazole (3ba):

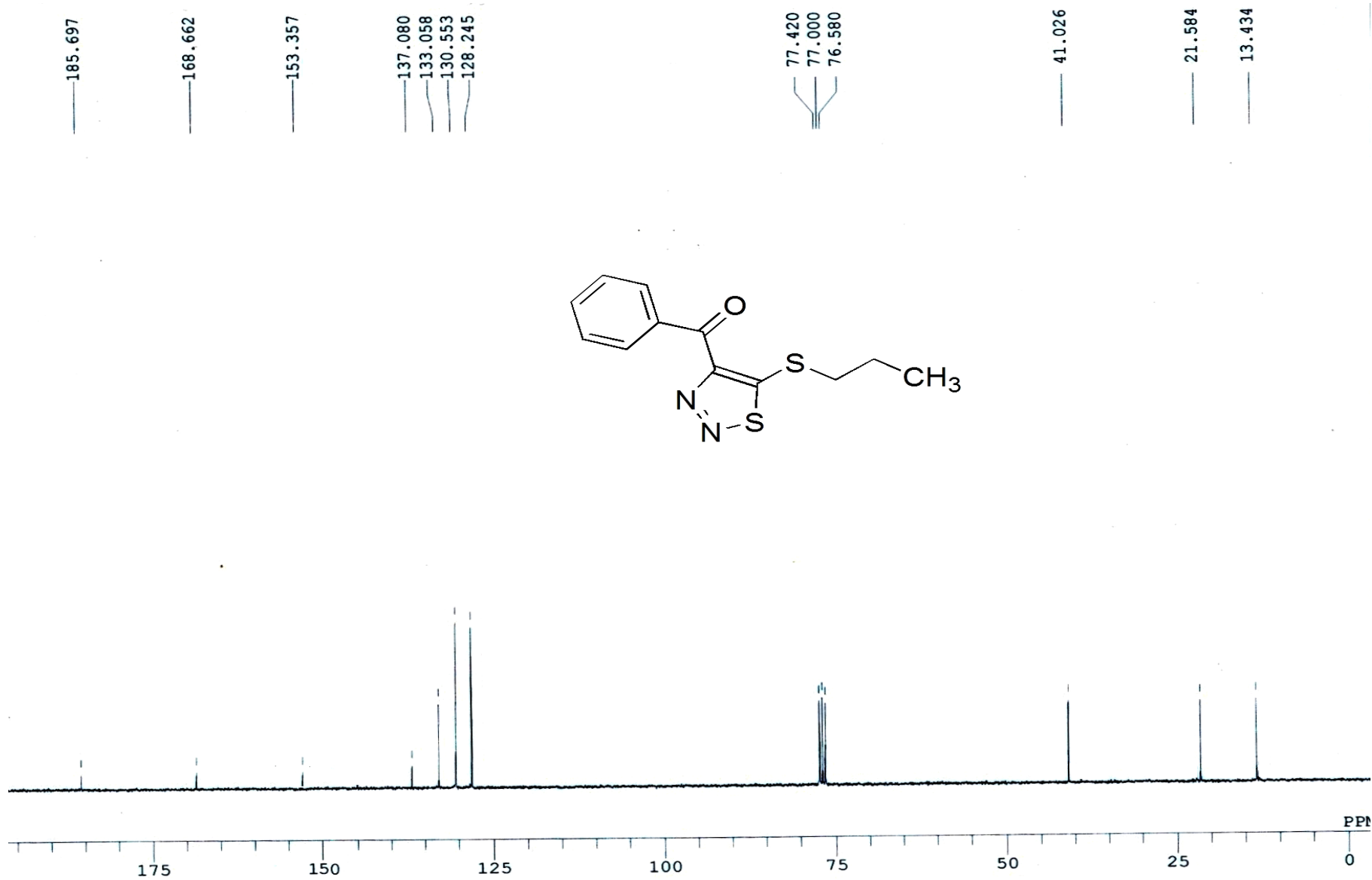




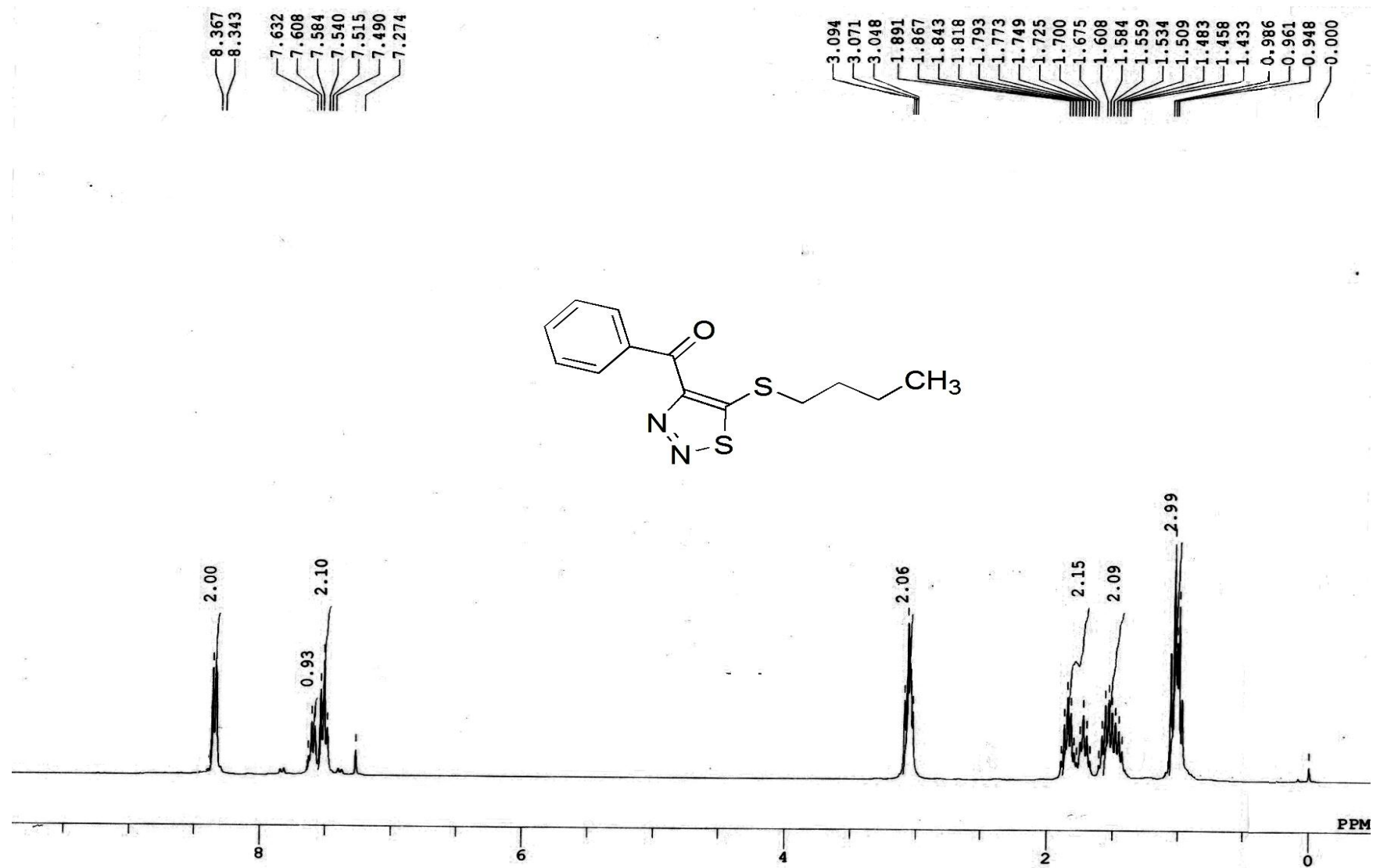
### 16) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 4-Benzoyl-5-(1-propylsulfanyl)-1,2,3-thiadiazole (3ca):

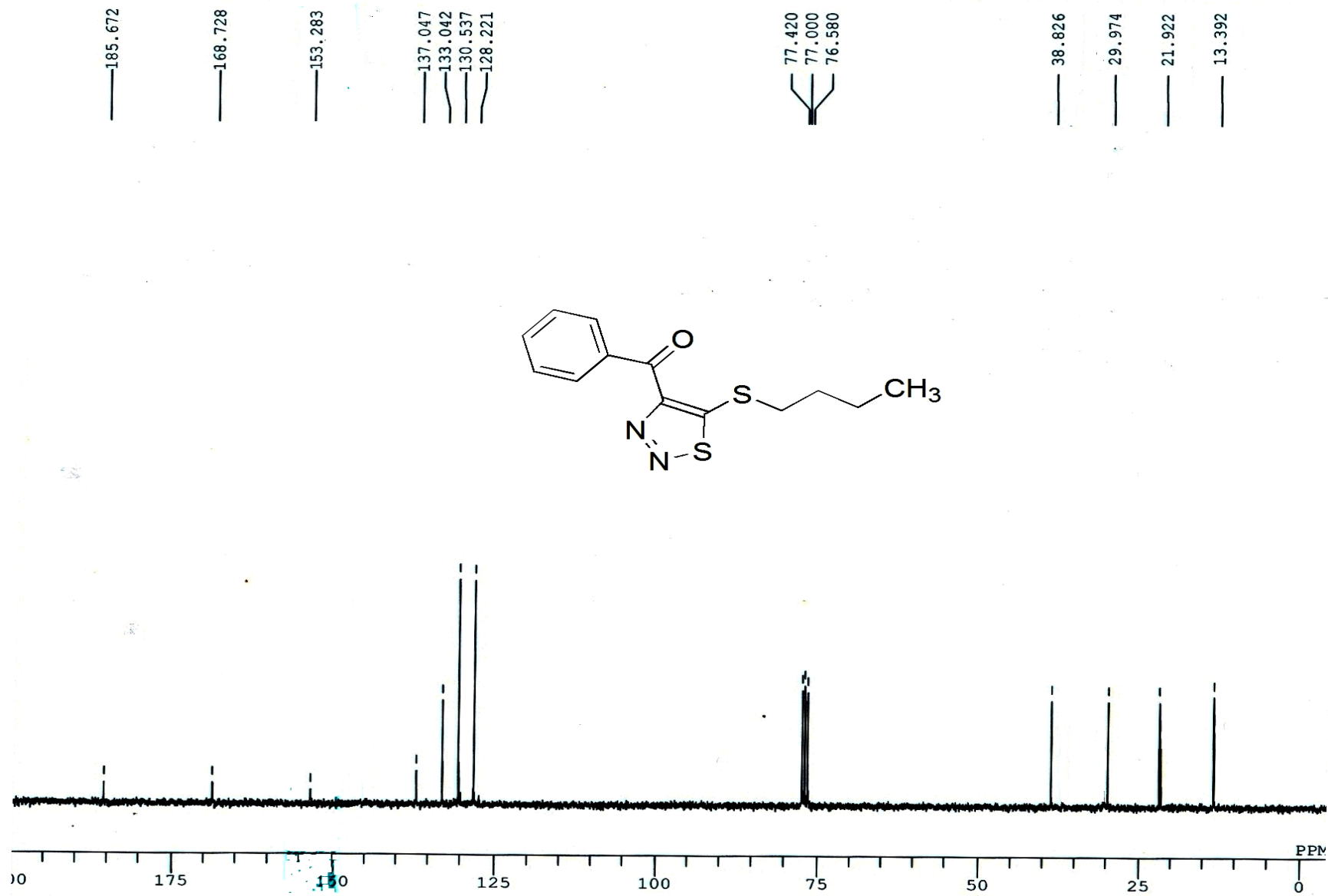




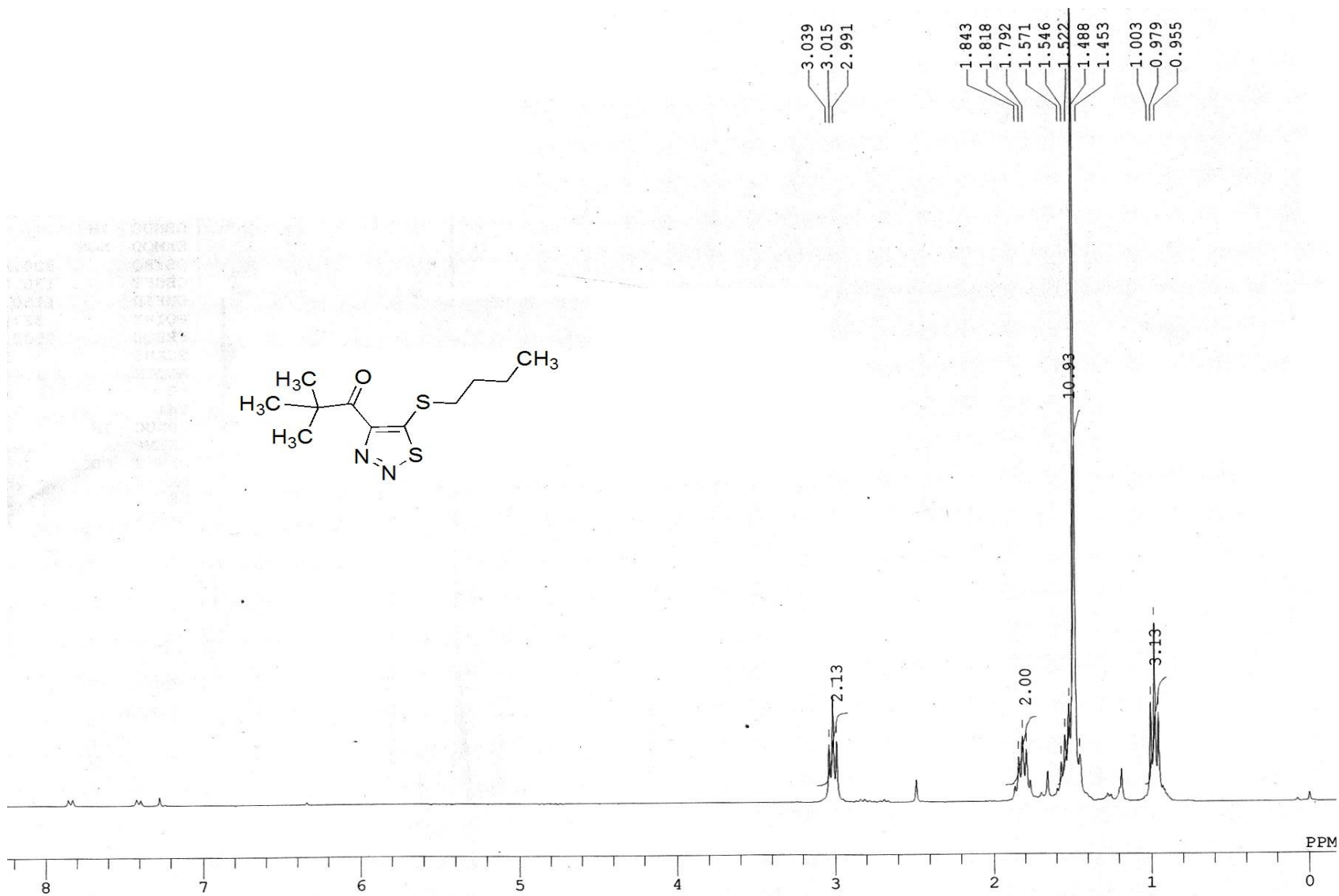


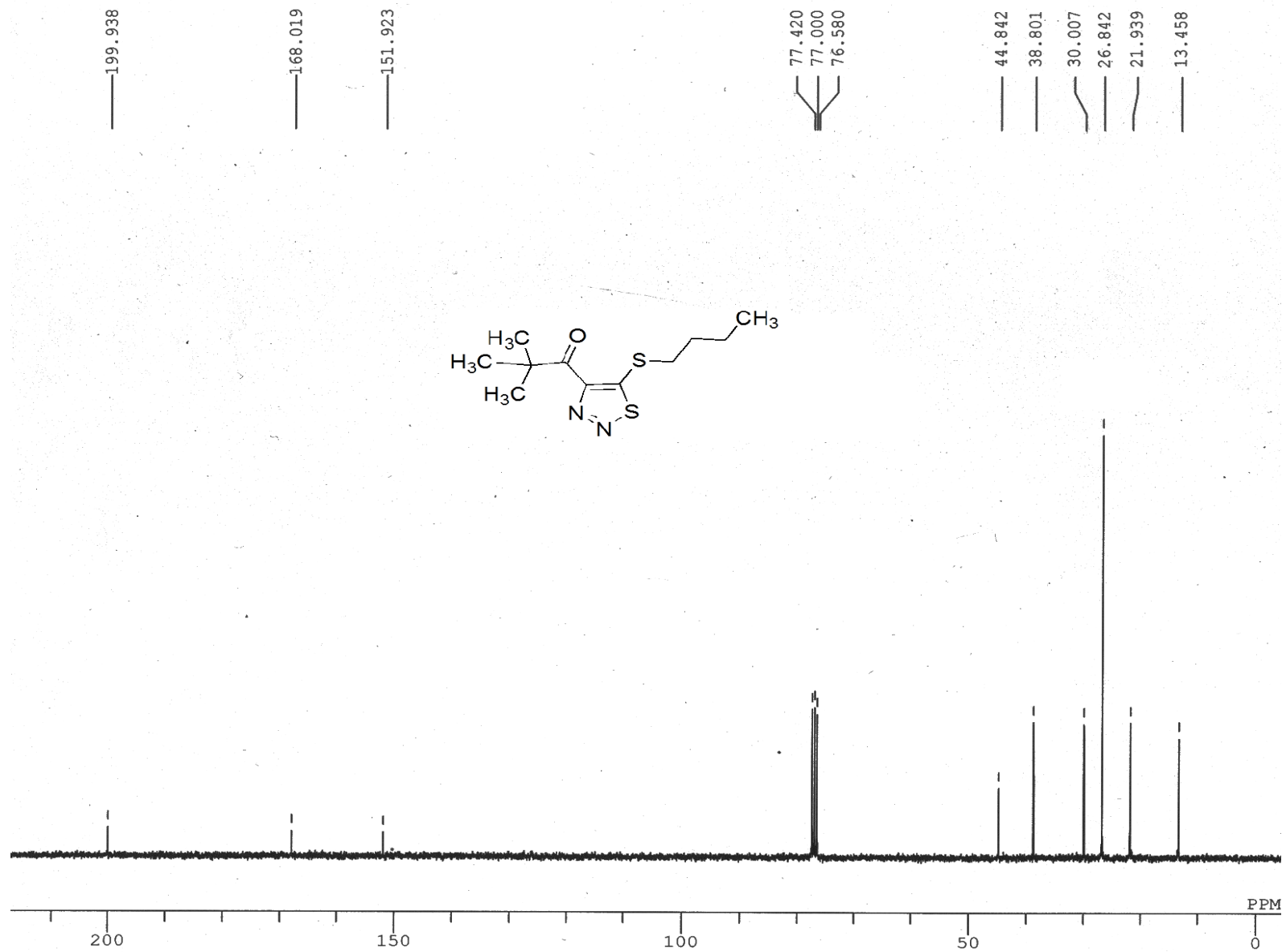
### 17) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 4-Benzoyl-5-(1-butylsulfanyl)-1,2,3-thiadiazole (3da):



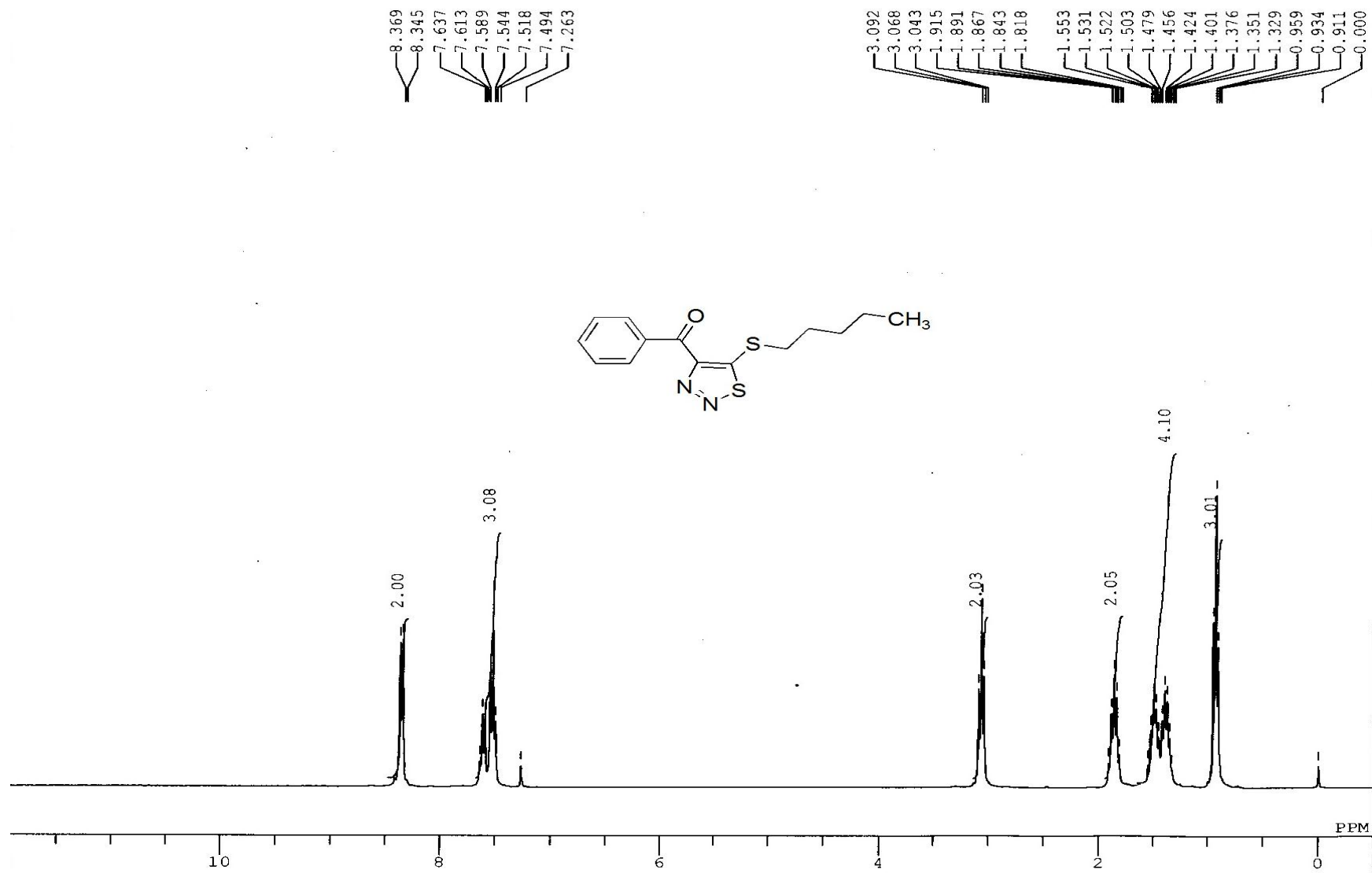


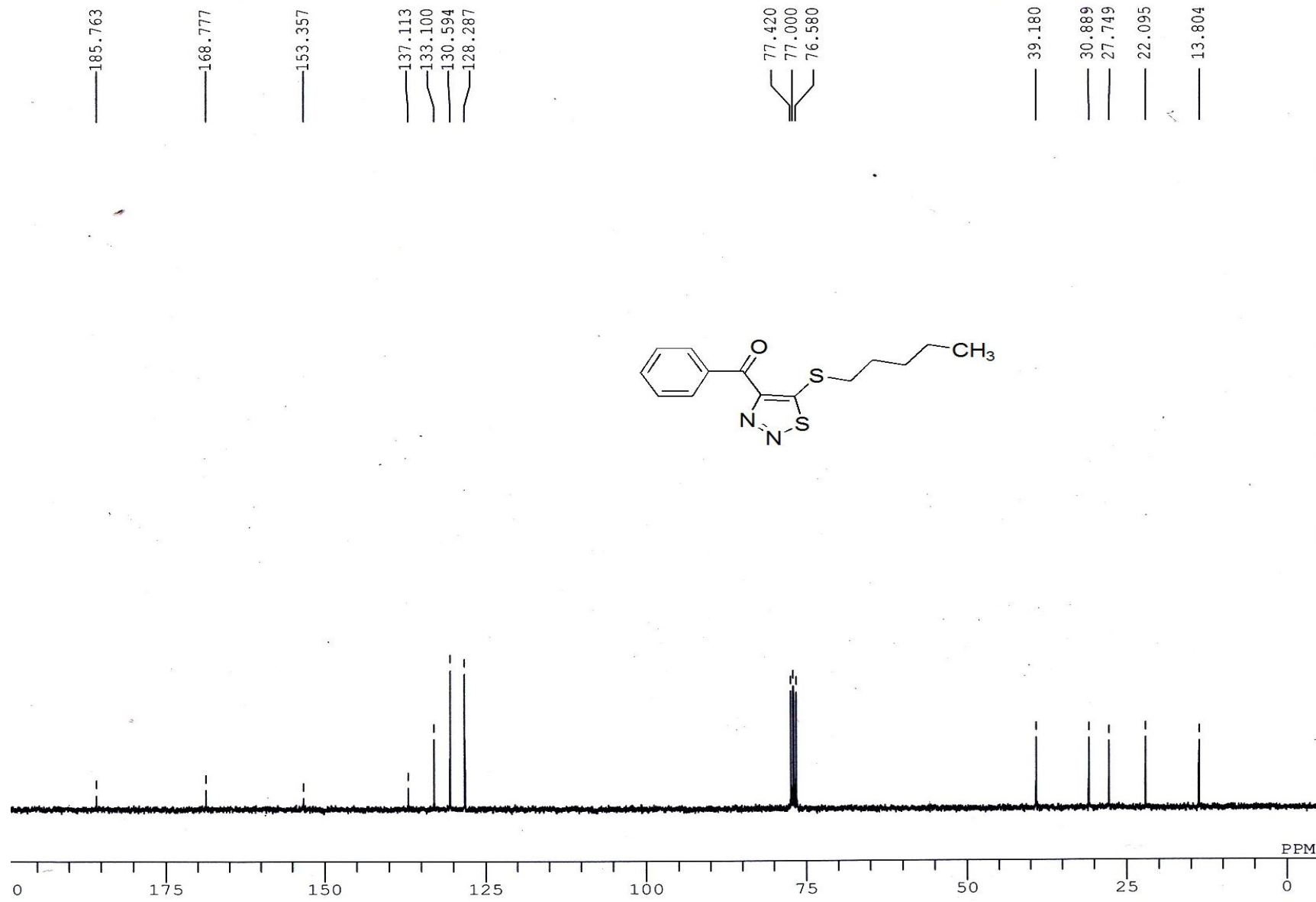
**18)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-(1-Butylsulfanyl)-4-(2,2-dimethylpropan-1-oyl)-1,2,3-thiadiazole (3dn):**



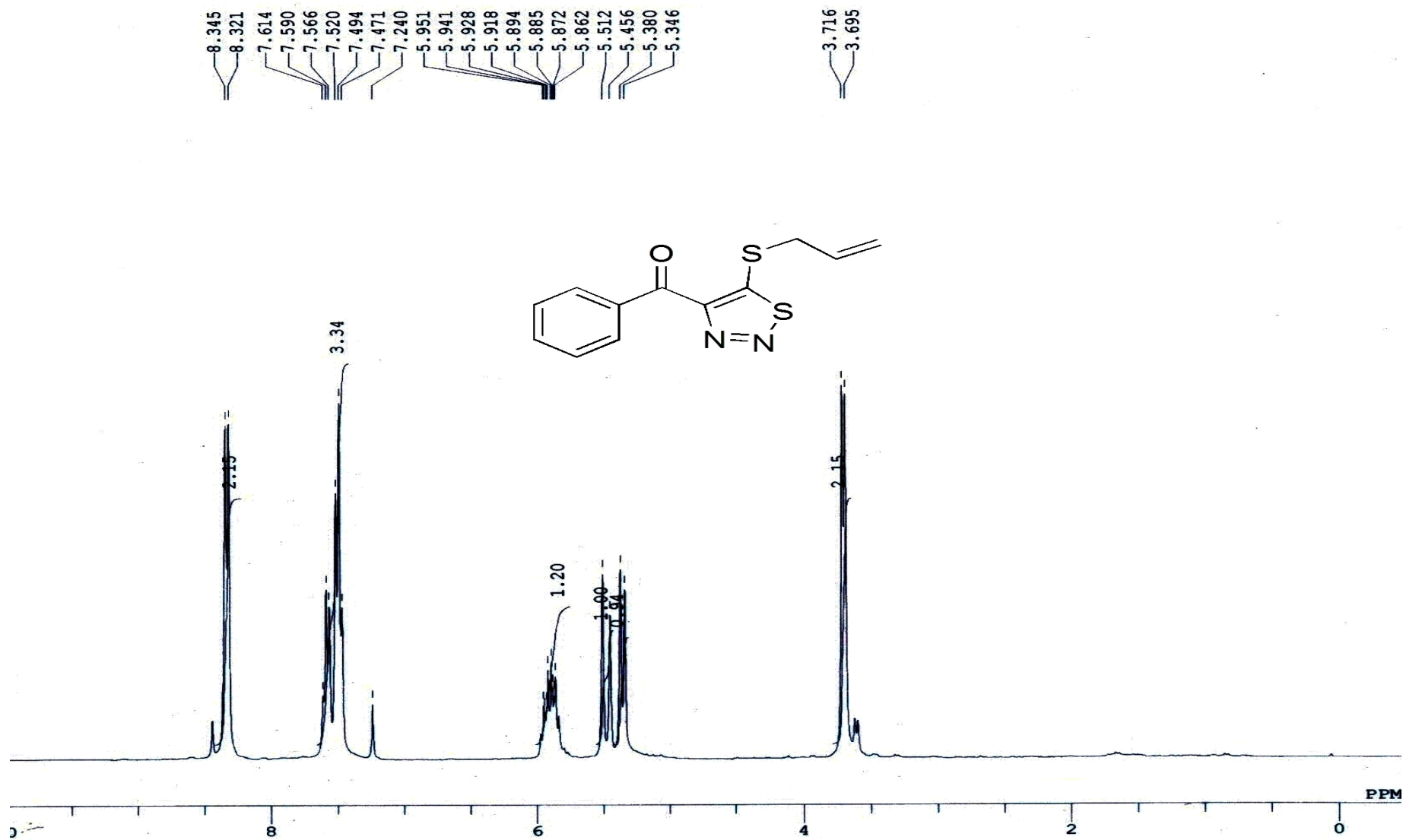


### 19) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 4-Benzoyl-5-(1-pentylsulfanyl)-1,2,3-thiadiazole (3ea):

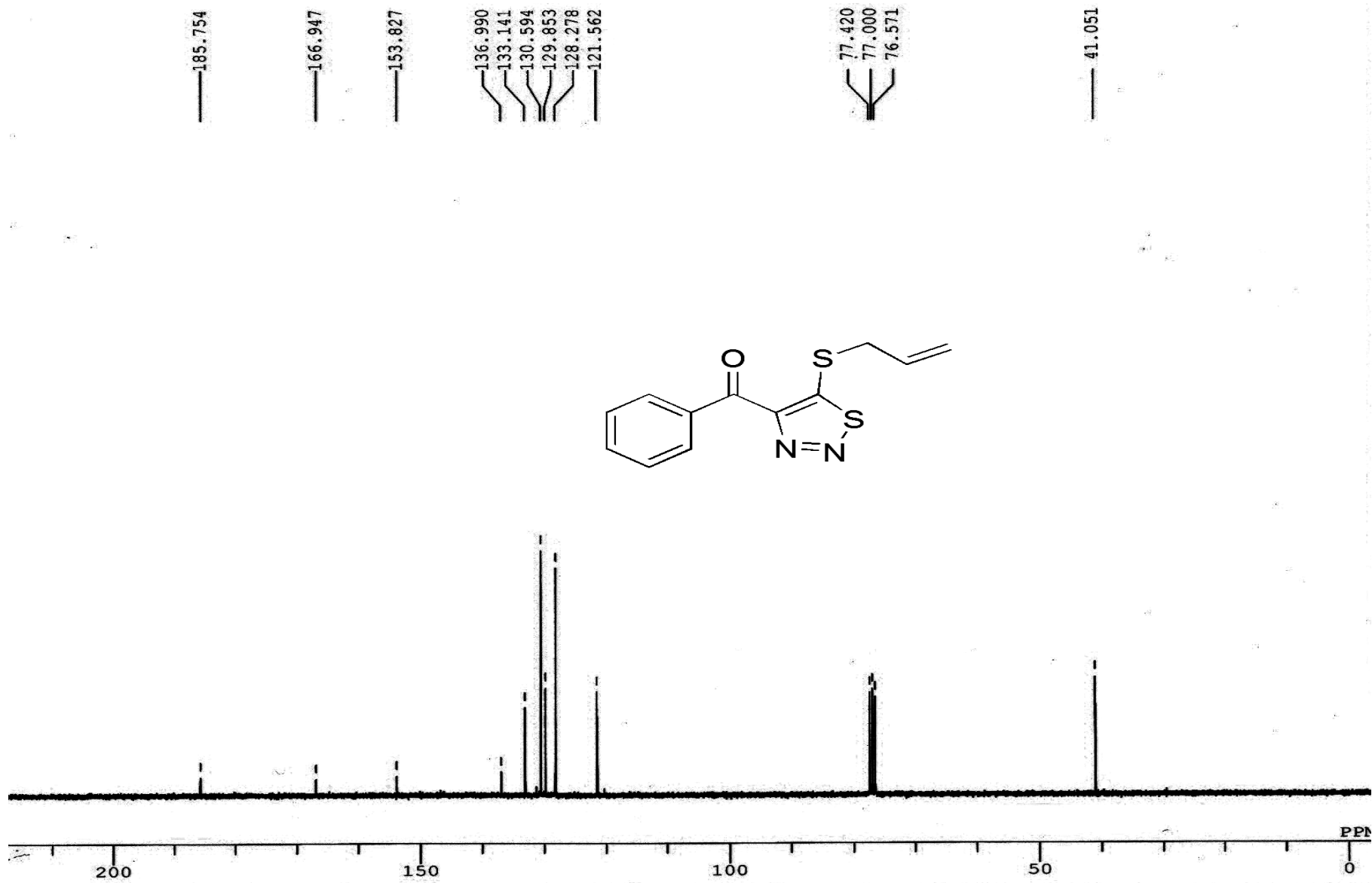




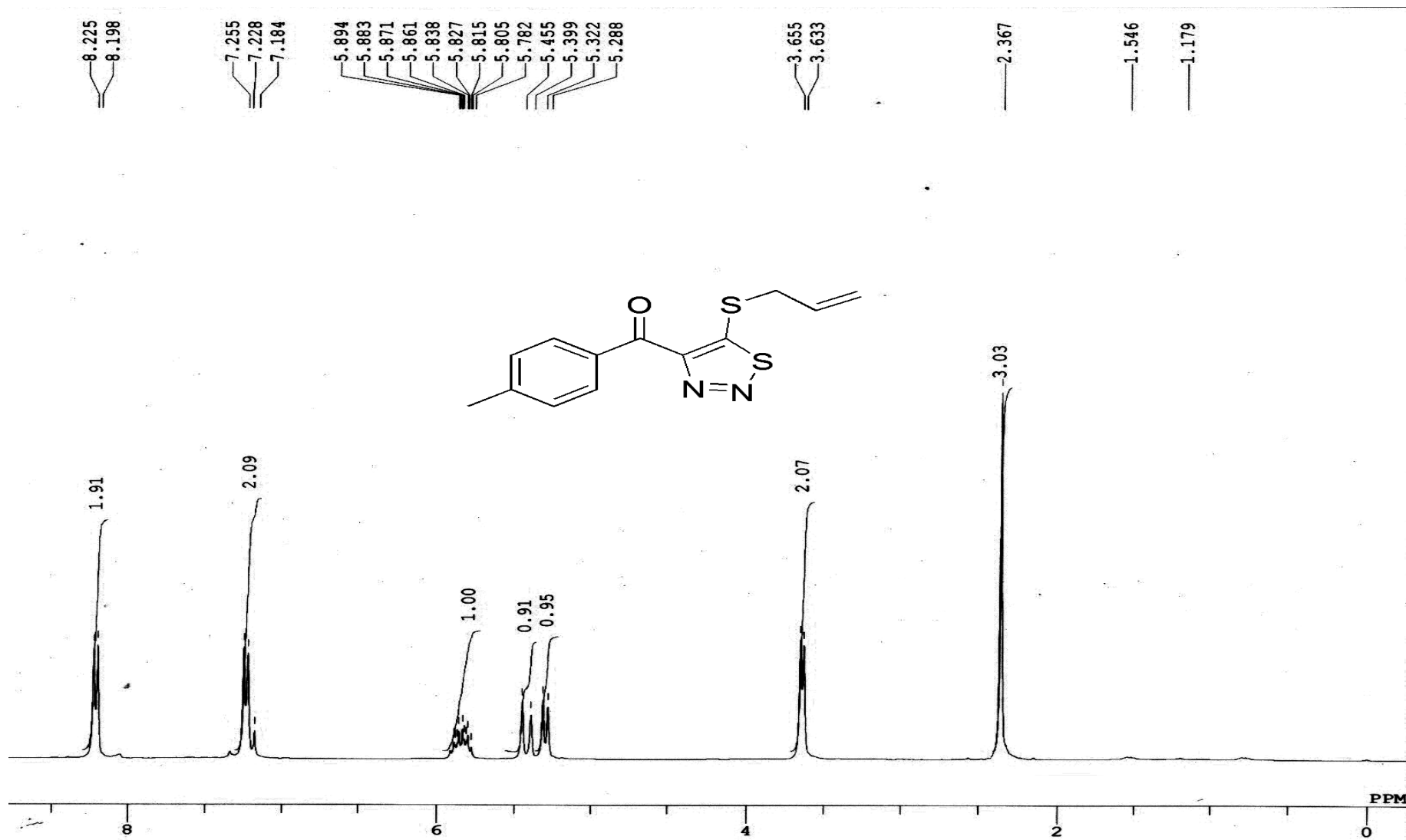
20)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Allylsulfanyl-4-benzoyl-1,2,3-thiadiazole (3fa):

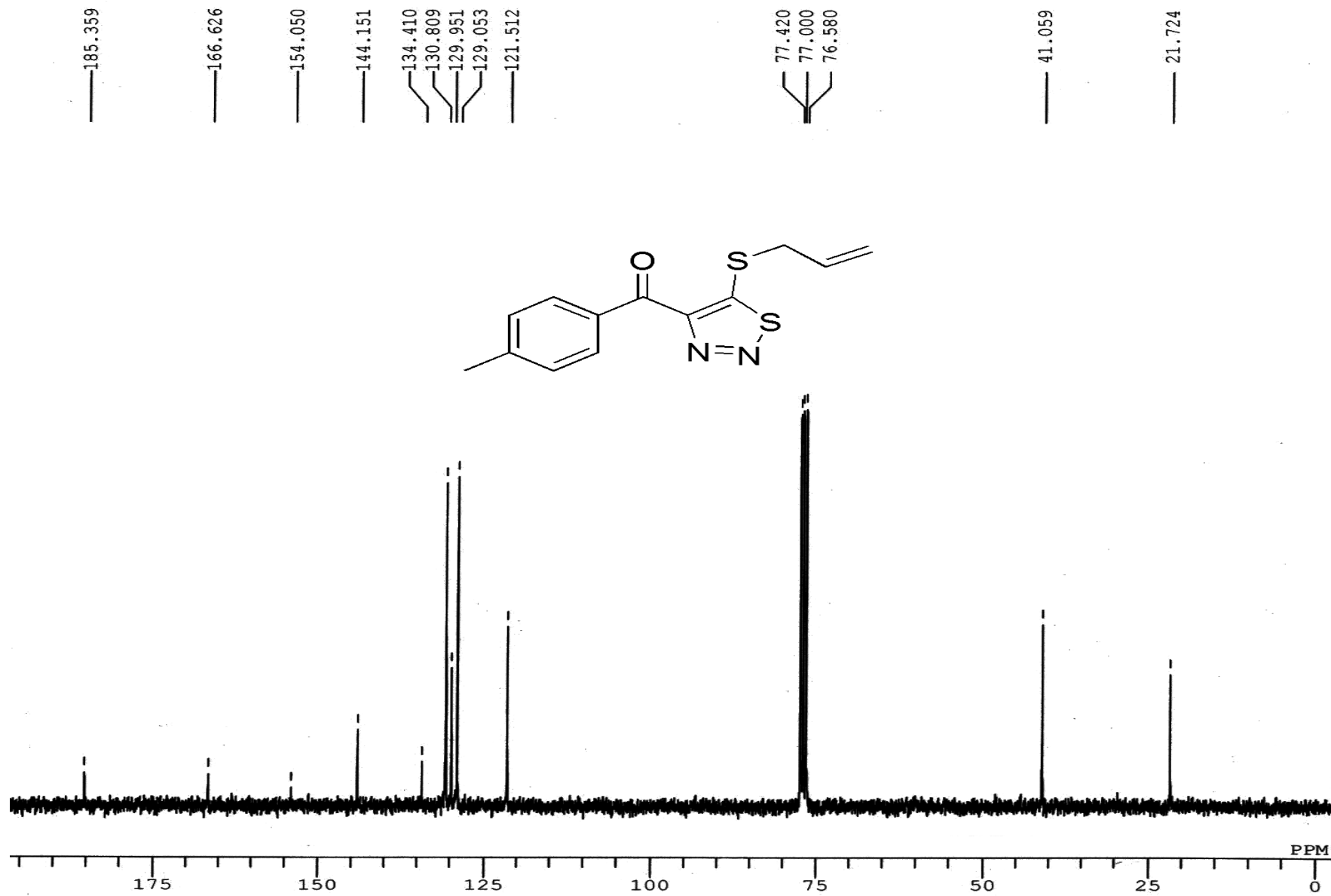




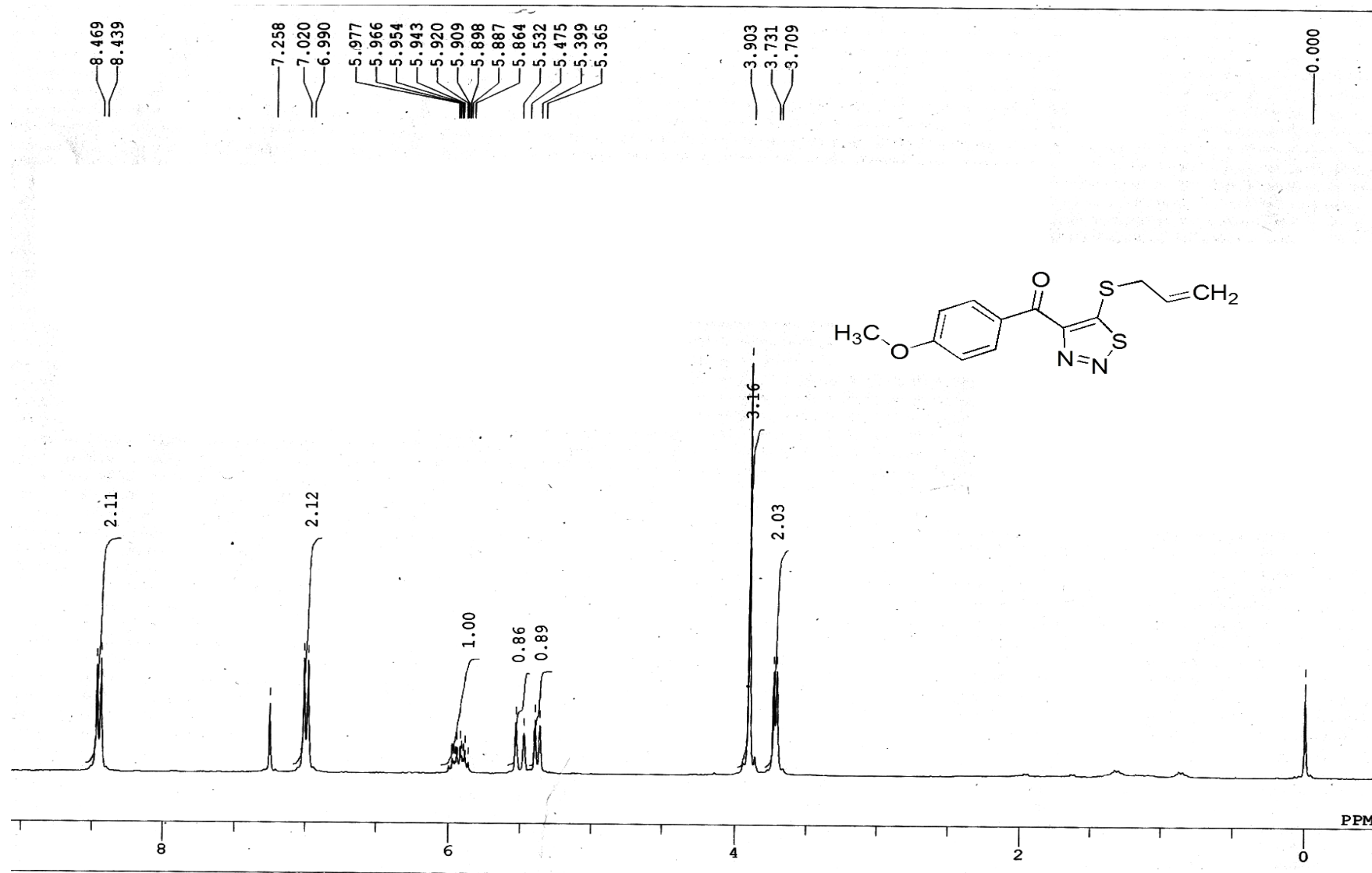


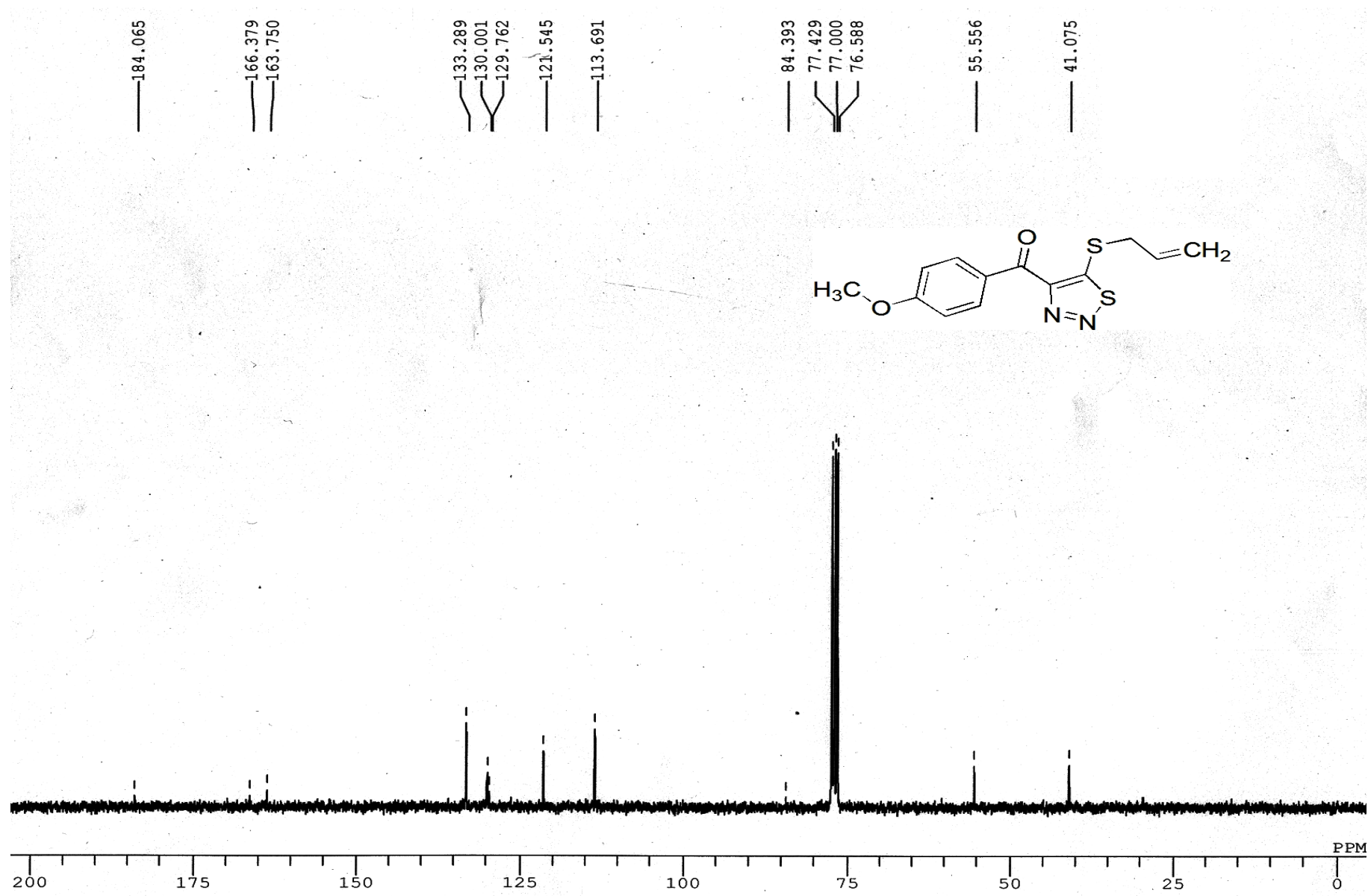
21)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Allylsulfanyl-4-(4-methylbenzoyl)-1,2,3-thiadiazole (3fb):



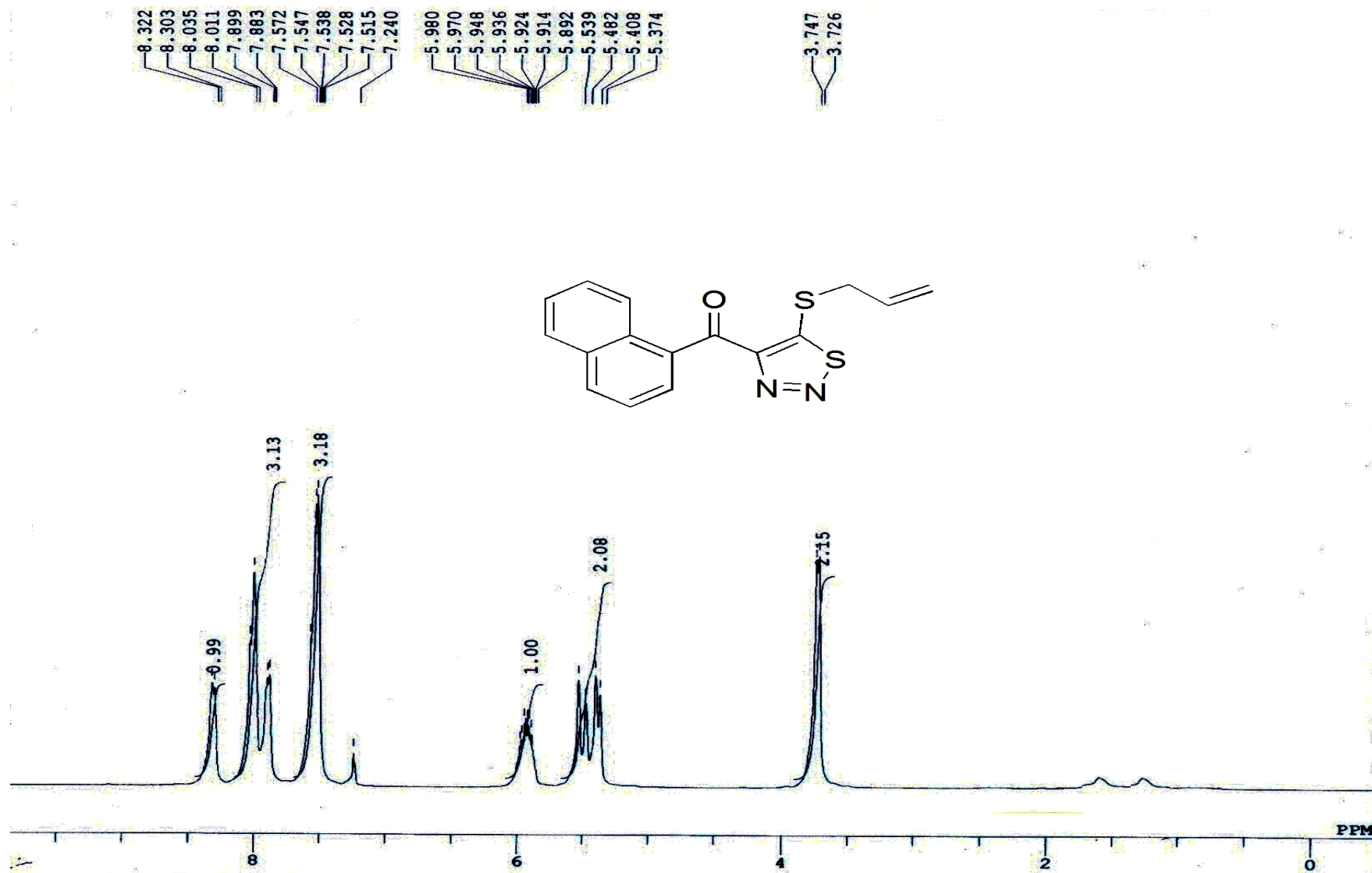


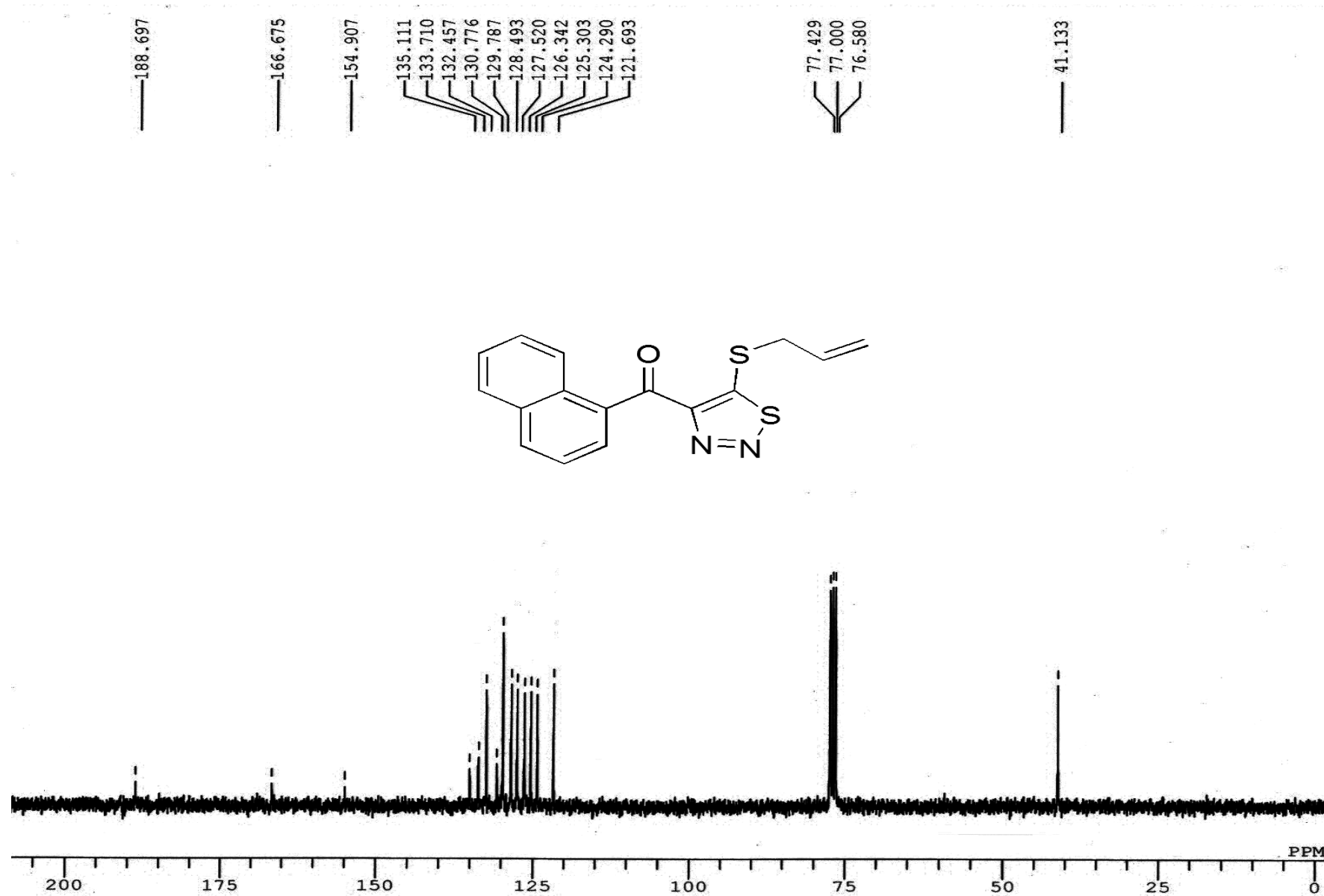
22)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Allylsulfanyl-4-(4-methoxybenzoyl)-1,2,3-thiadiazole (3fd):



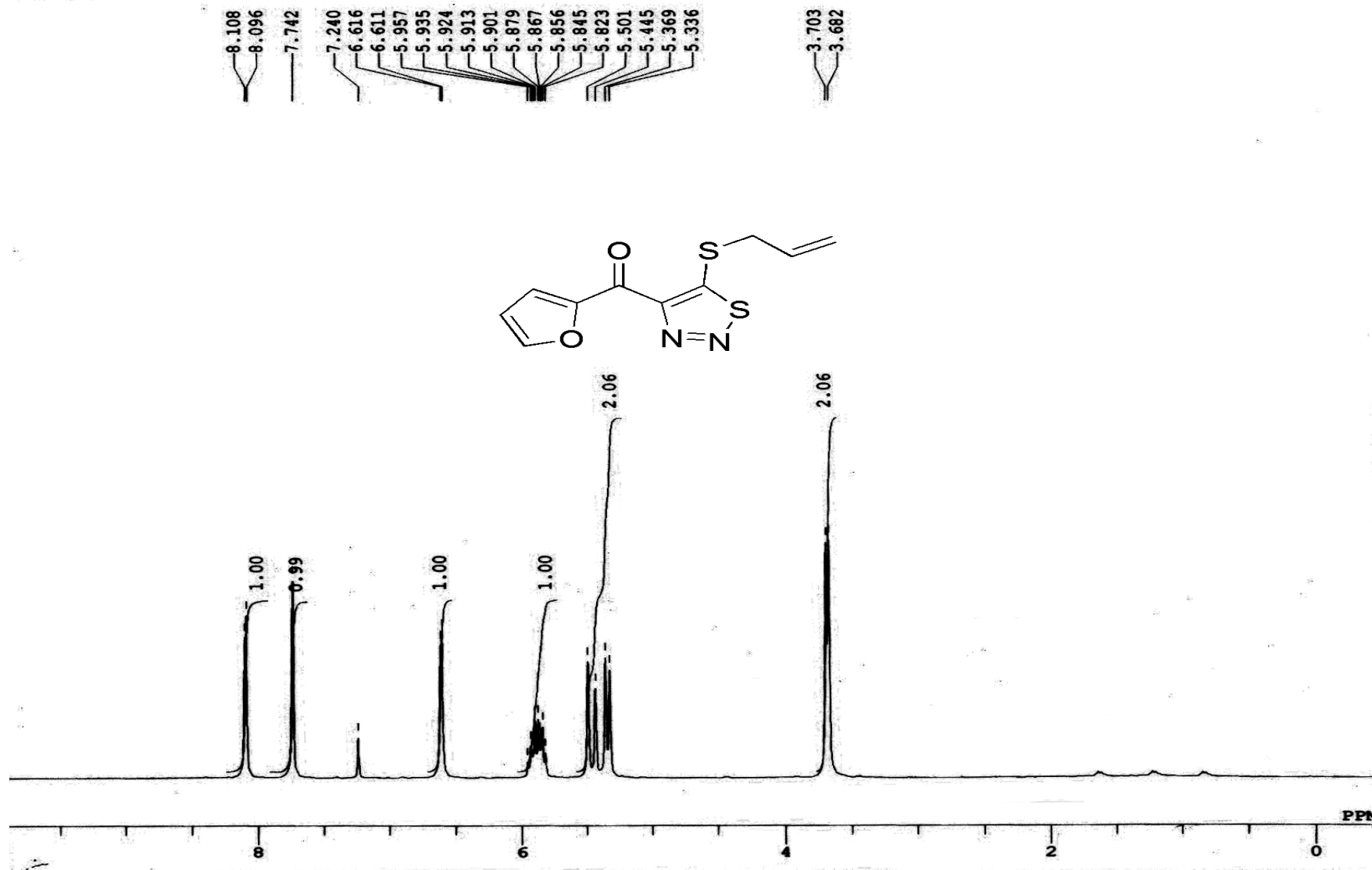


23)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Allylsulfanyl-4-(1-naphthoyl)-1,2,3-thiadiazole (3fg):

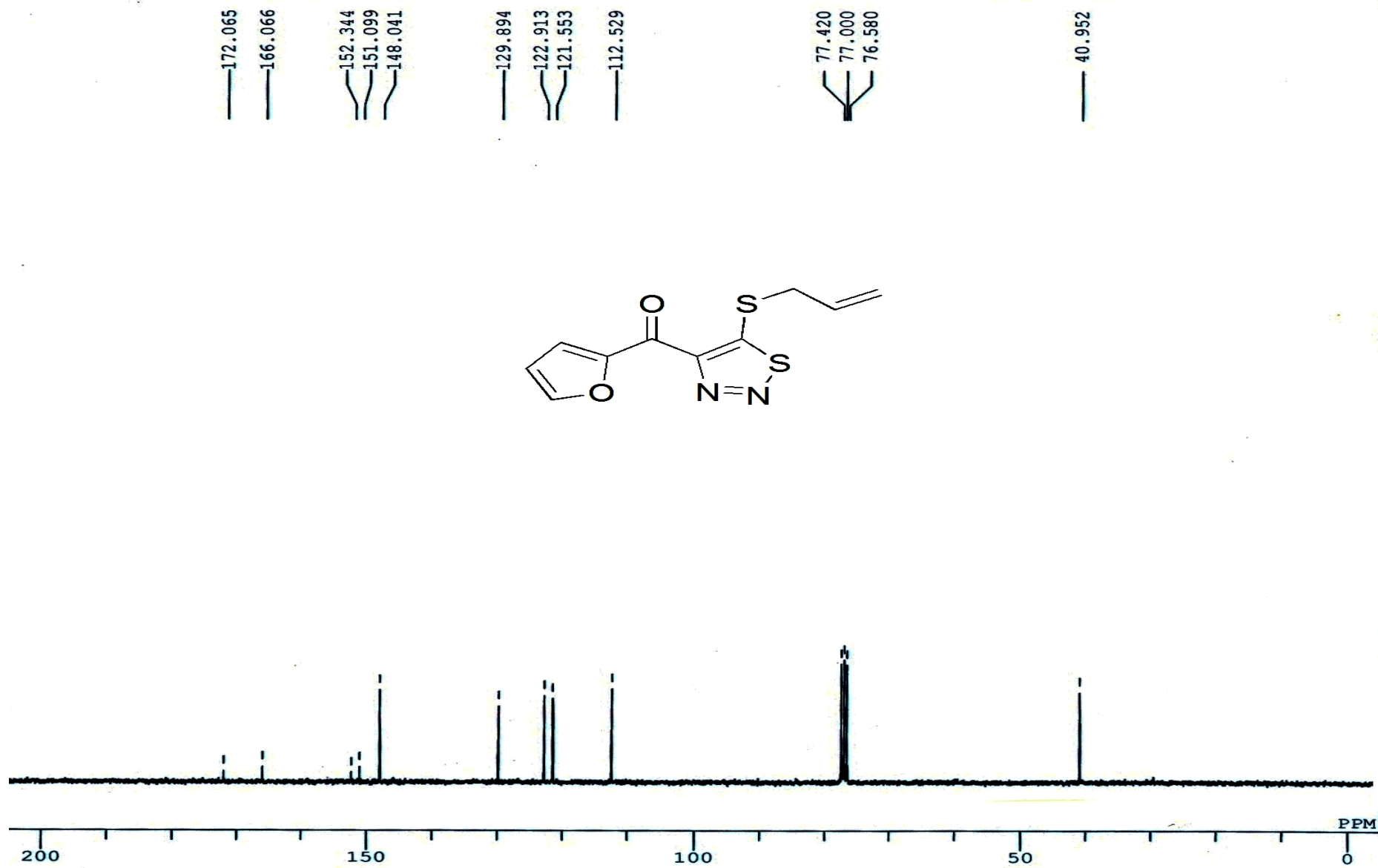




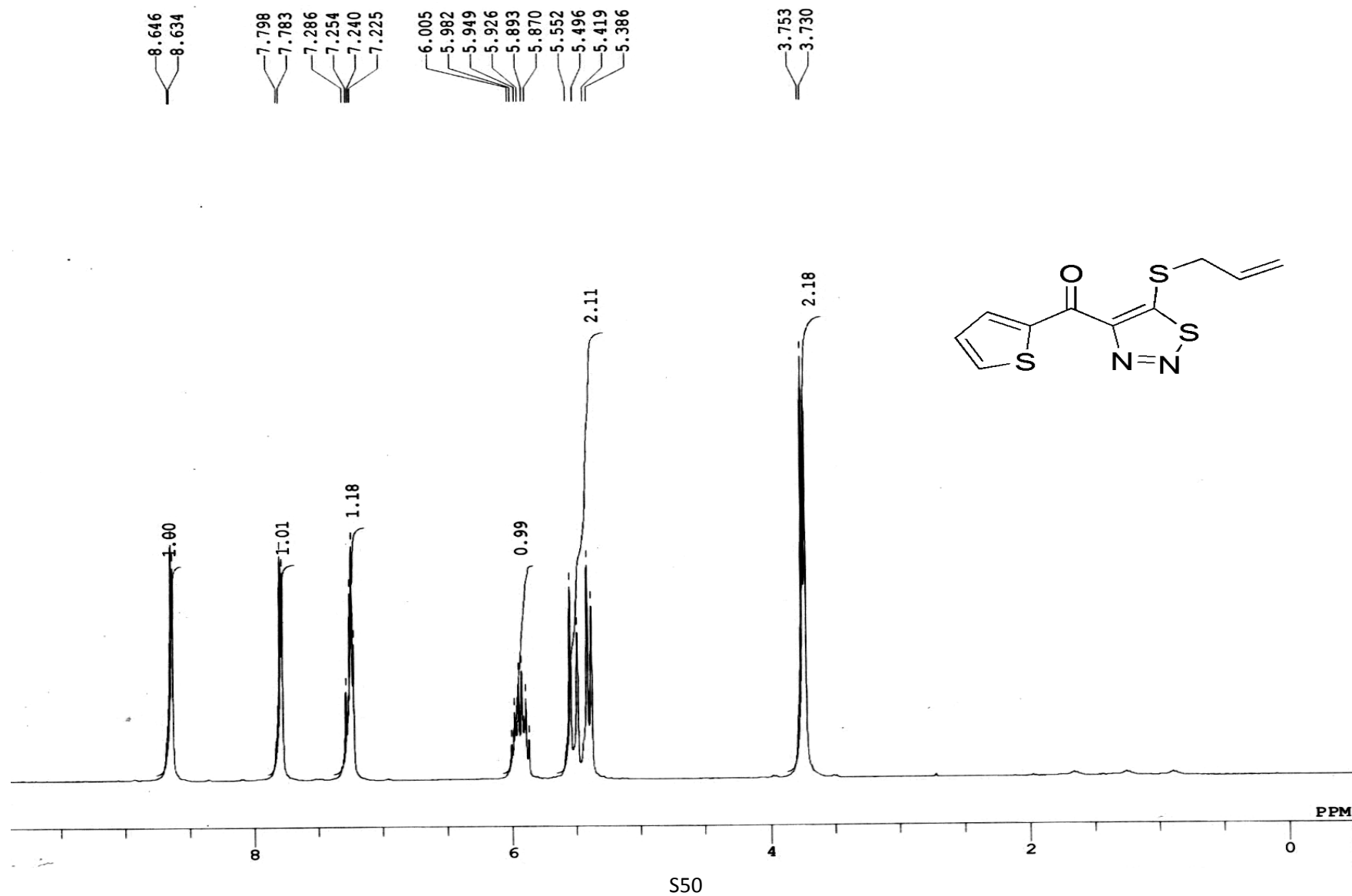
24)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Allylsulfanyl-4-(2-furoyl)-[1,2,3]thiadiazole (3fe):

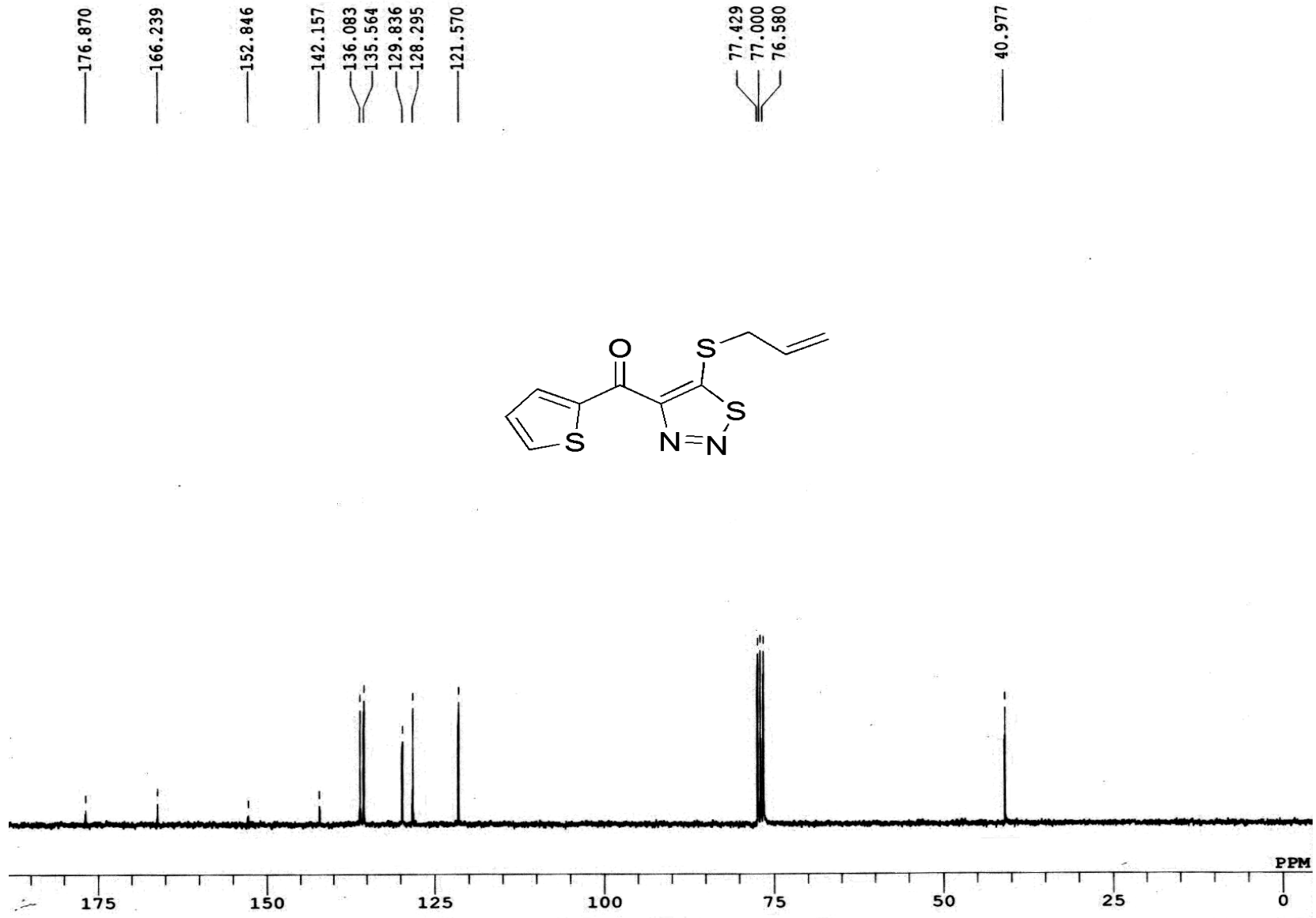




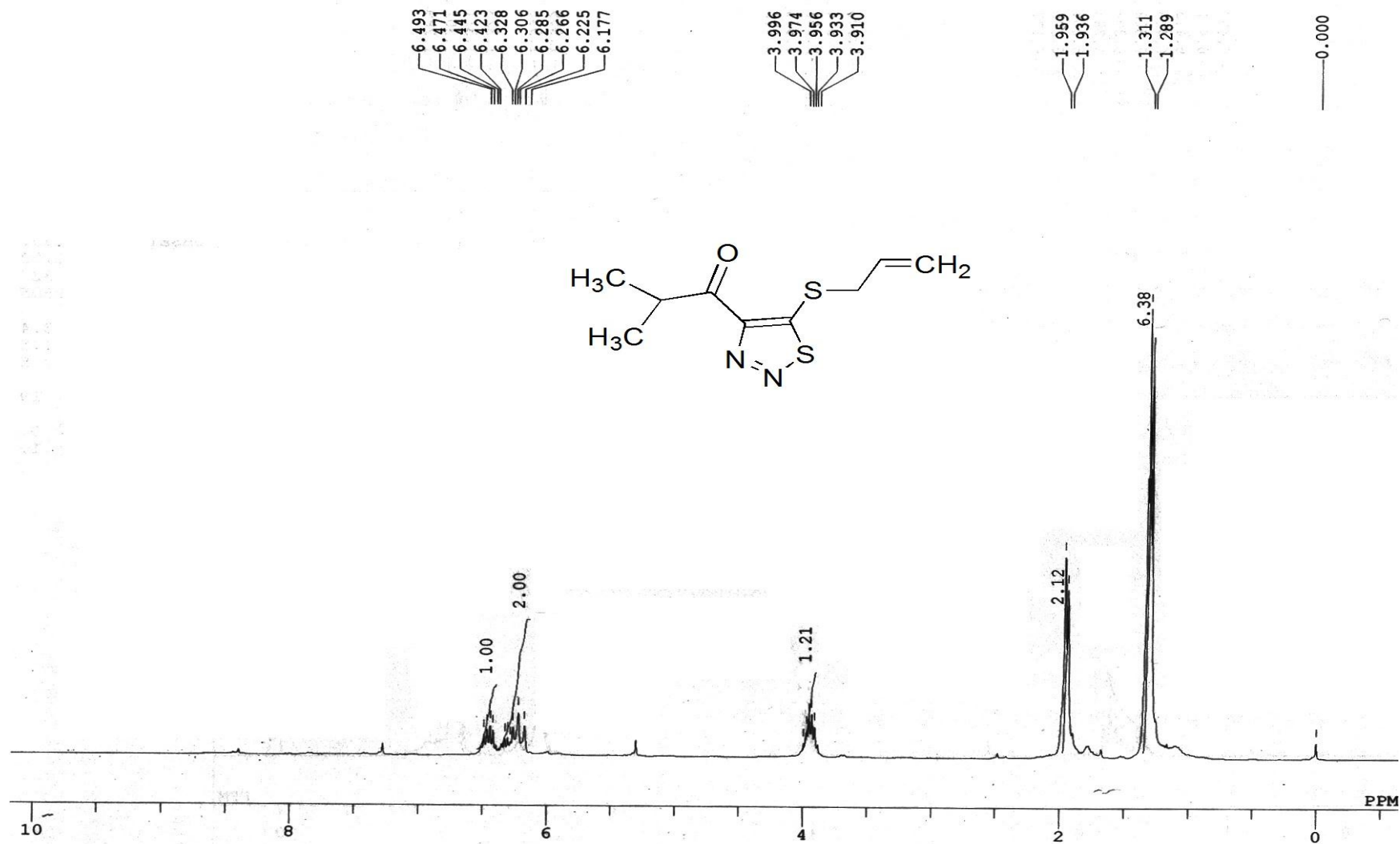


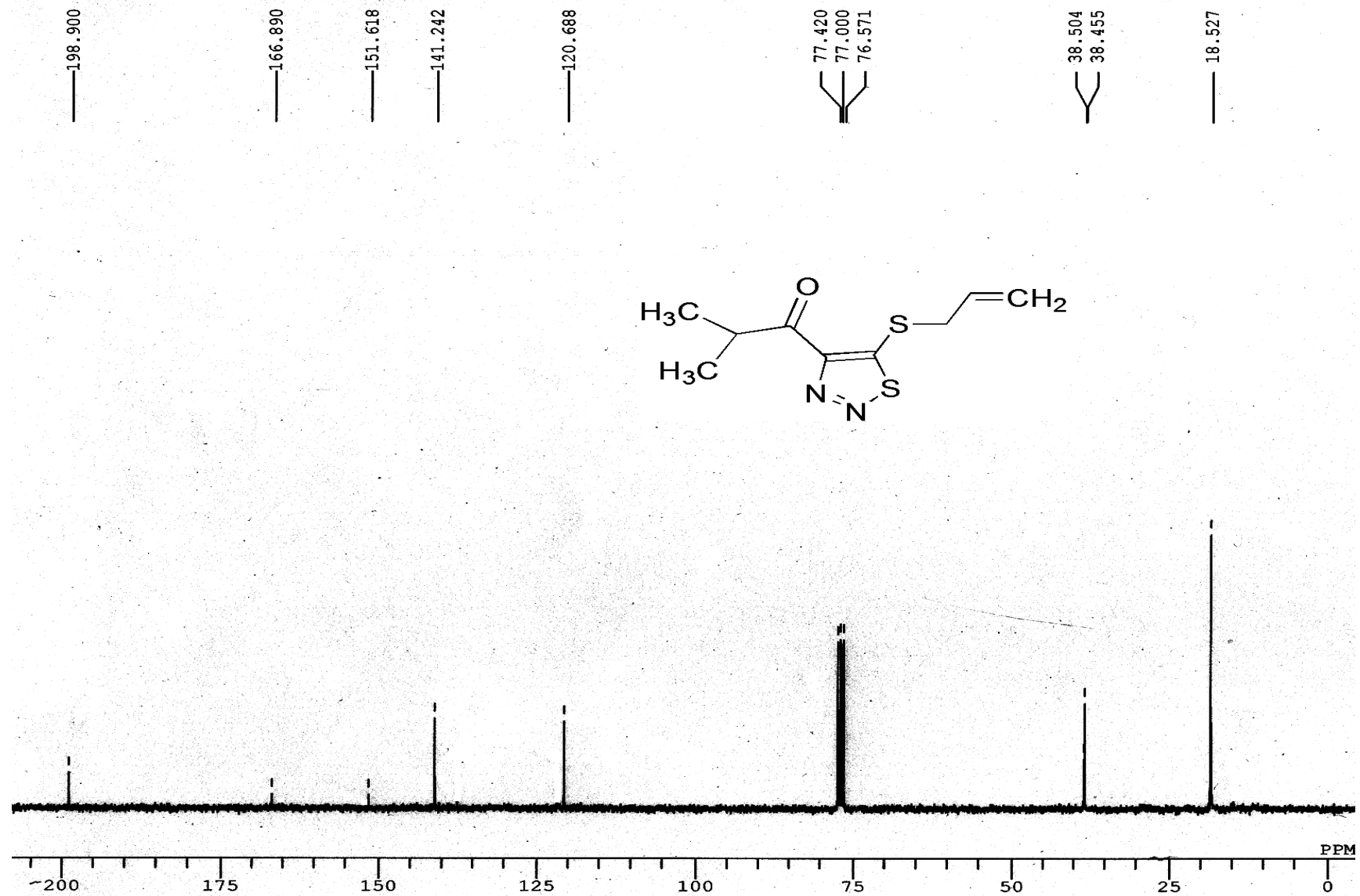
### 25) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 5-Allylsulfanyl-4-(2-thienoyl)-1,2,3-thiadiazole (3ff):





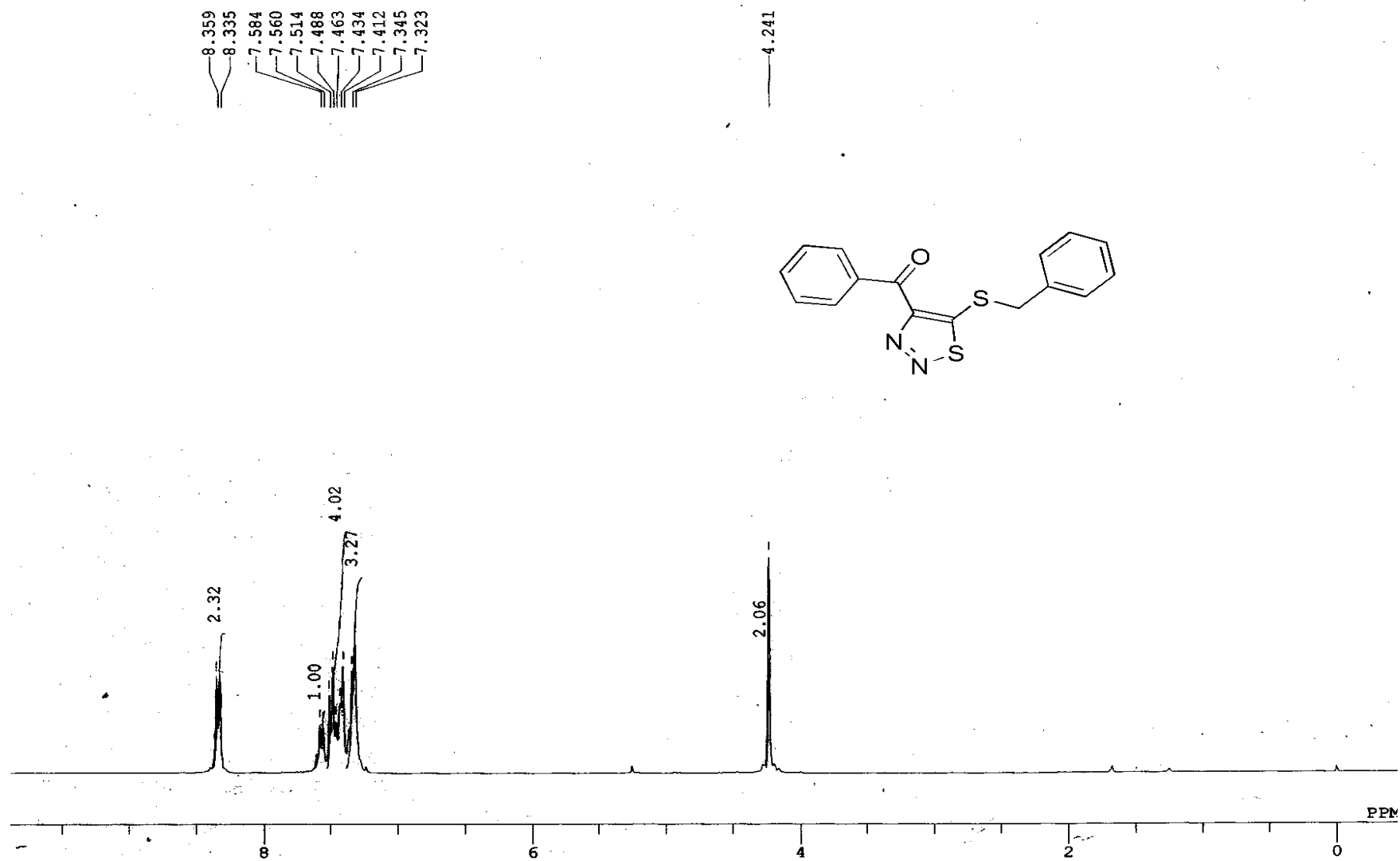
**26)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Allylsulfanyl-4-(2-methyl-propan-1-oyl)-1,2,3-thiadiazole (3fo):**

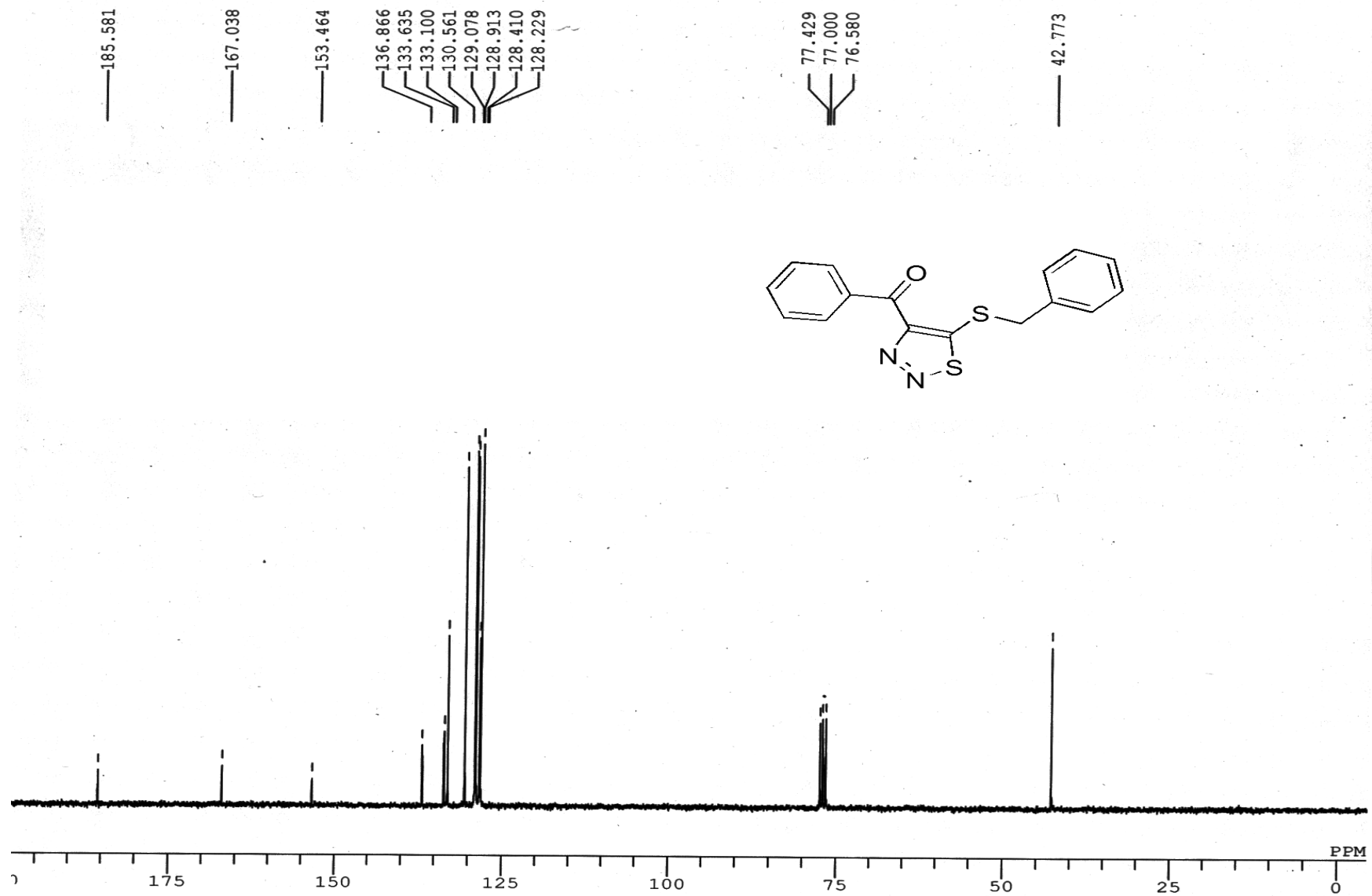




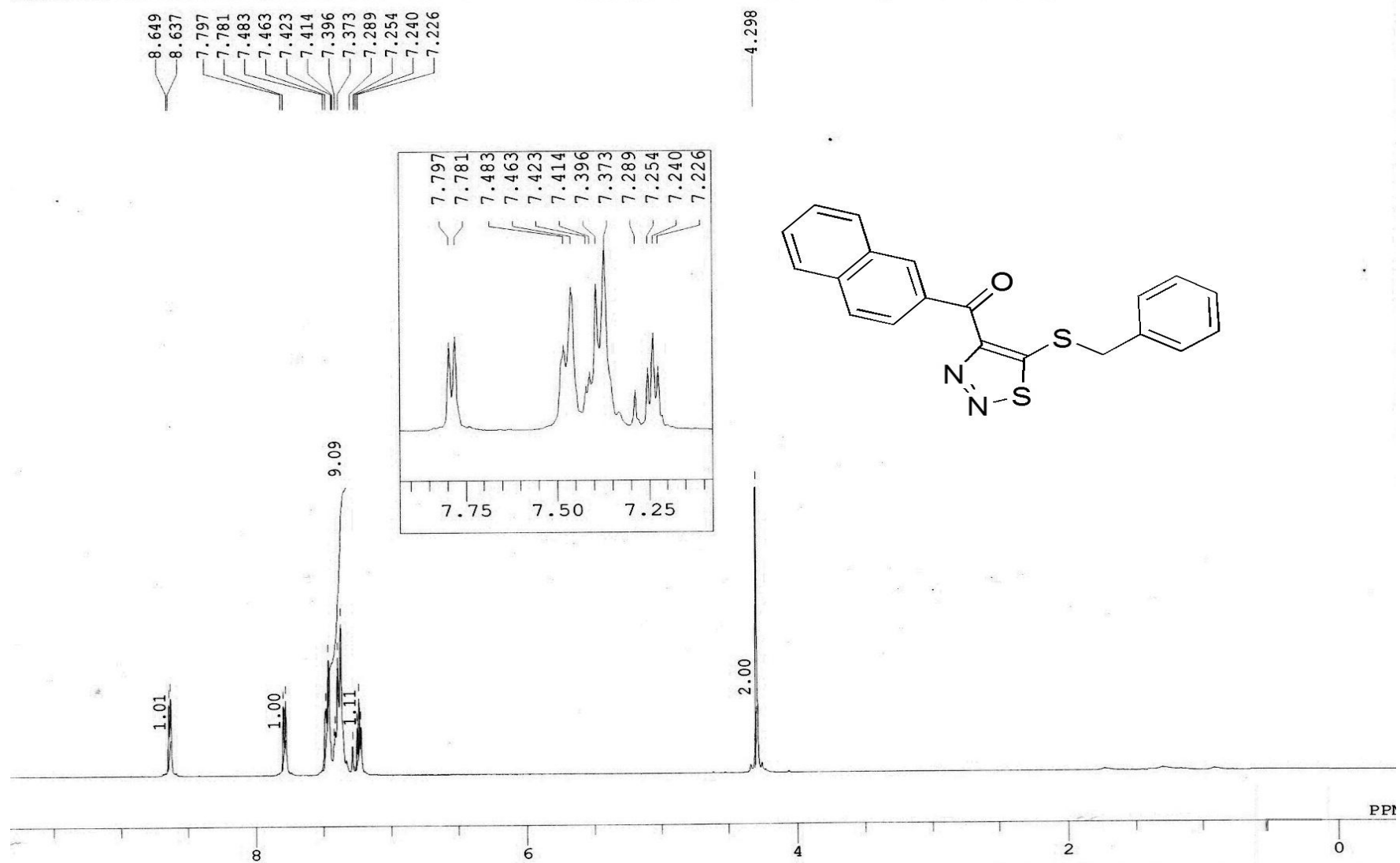
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**27)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 4-Benzoyl-5-benzylsulfanyl-1,2,3-thiadiazole (3ga):**

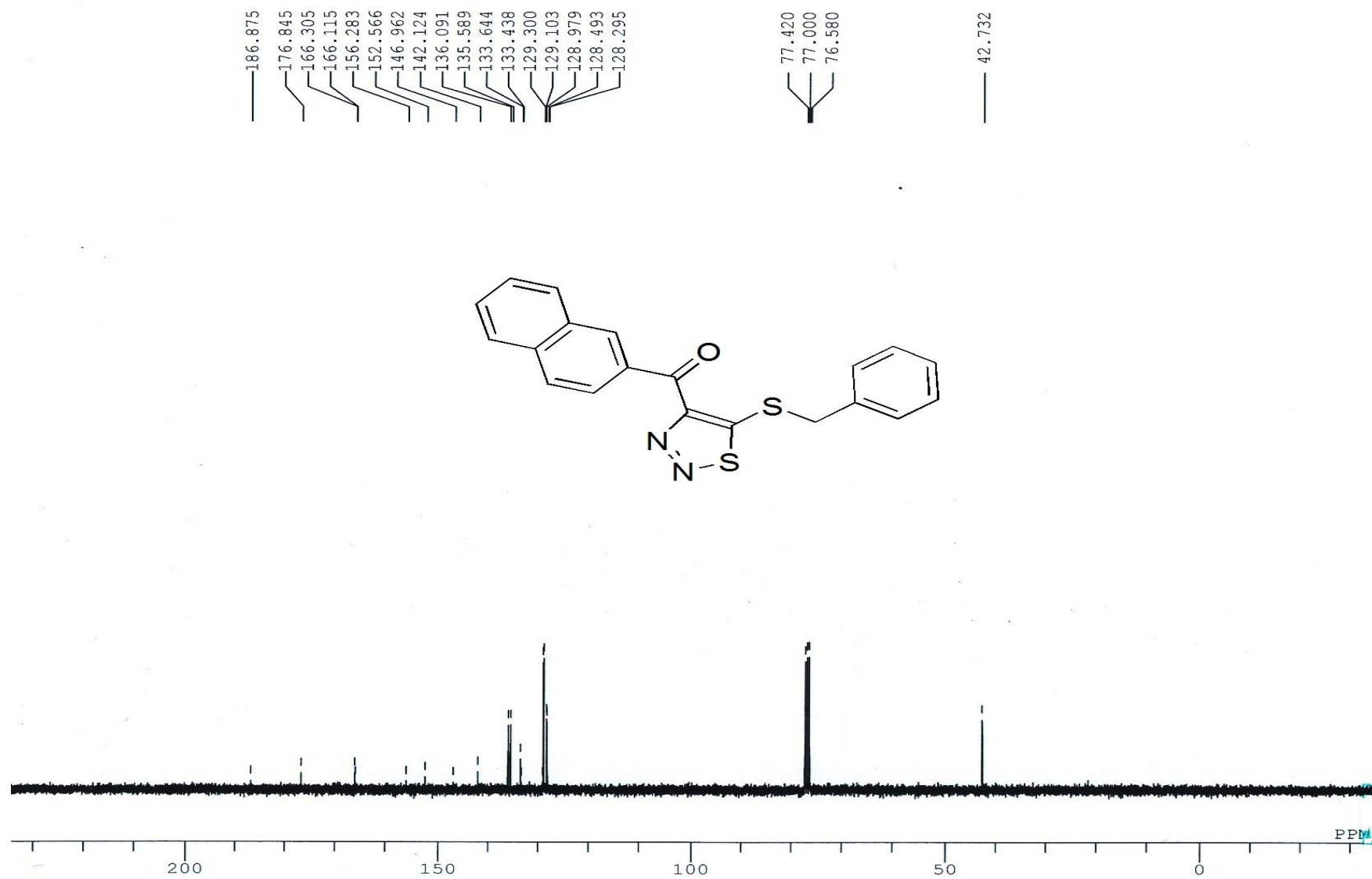




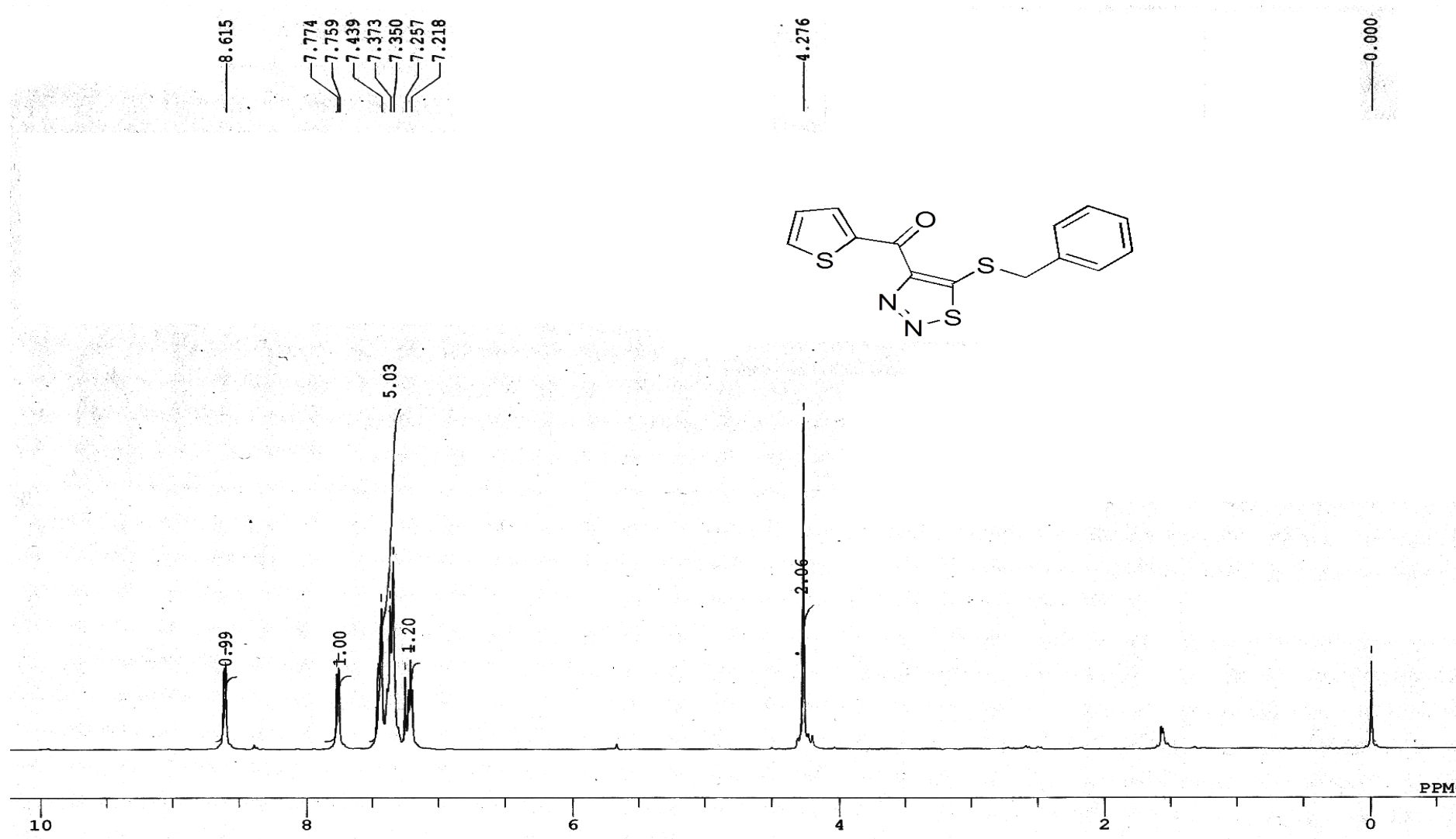
**28)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Benzylsulfanyl-4-(2-naphthoyl)-1,2,3-thiadiazole (3gp):**

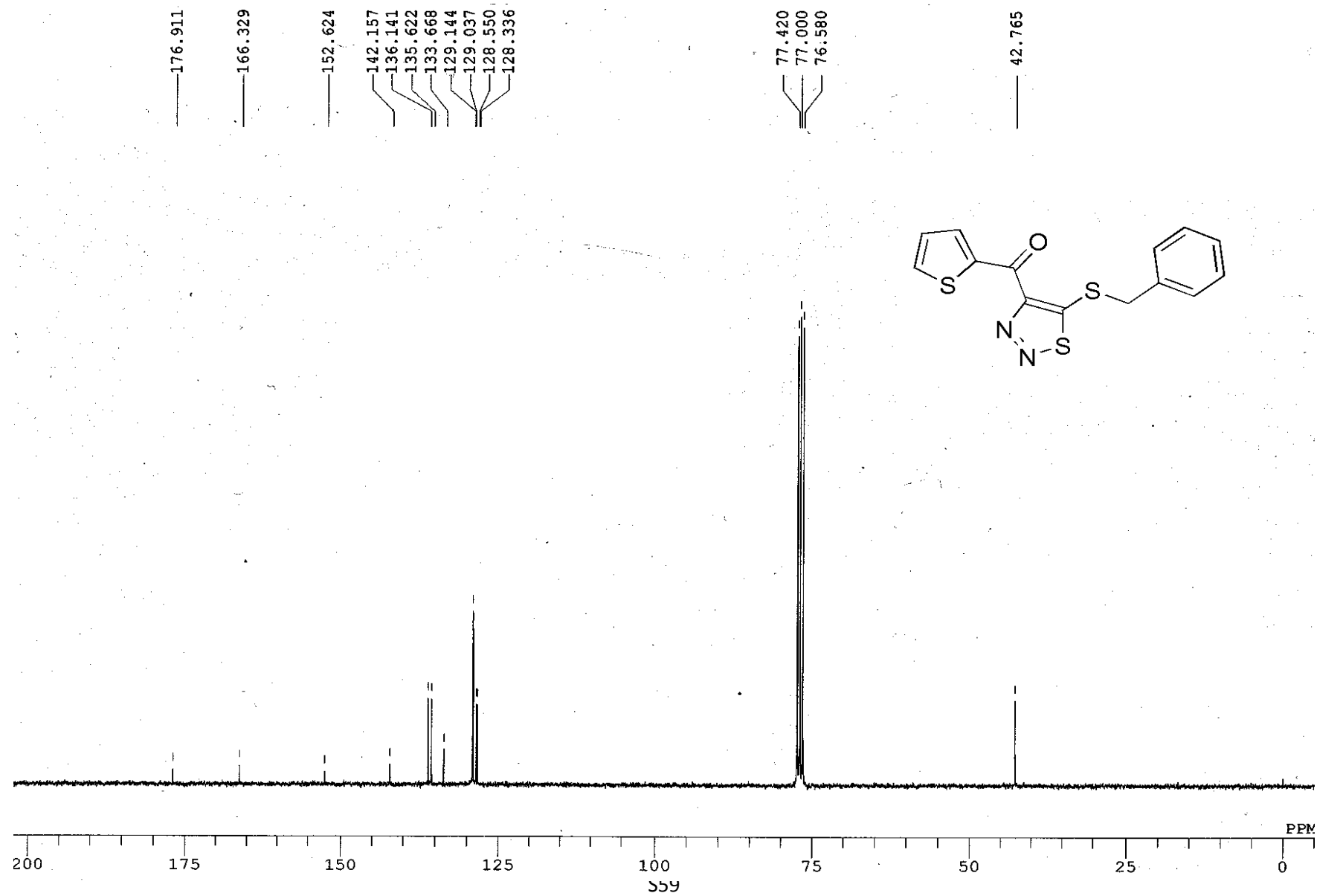






**29)  $^1\text{H}$  &  $^{13}\text{C}$  NMR Spectra of 5-Benzylsulfanyl-4-(2-thienoyl)-1,2,3-thiadiazole (3gf):**





### 30) $^1\text{H}$ & $^{13}\text{C}$ NMR Spectra of 5-Benzylsulfanyl-4-(2-methyl-propan-1-oyl)-1,2,3-thiadiazole (3go):

