

*Supplementary Information*

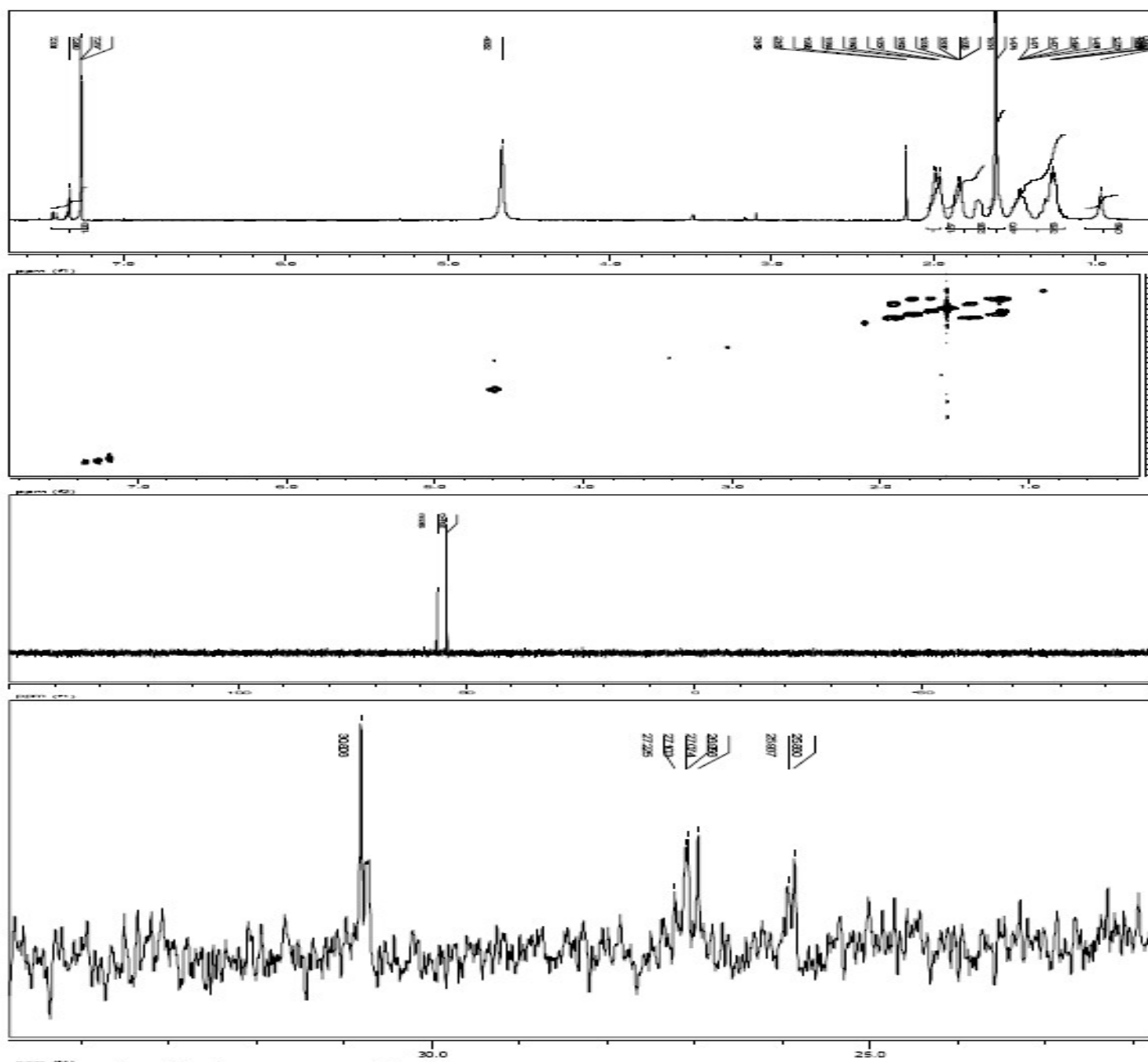
Phosphine-aryldiethynyls ( $-\text{C}\equiv\text{C}(\text{AR})\text{C}\equiv\text{C}-$ )-gold(I)-gold(III) complexes:  
Synthesis and spectral study

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ppm (P1)  
 Fig. 1.  $^1\text{H}$ ,  $^1\text{H}$   $^1\text{H}$  COSY,  $^{31}\text{P}$ ,  $^{13}\text{C}$  NMR of complex 1g

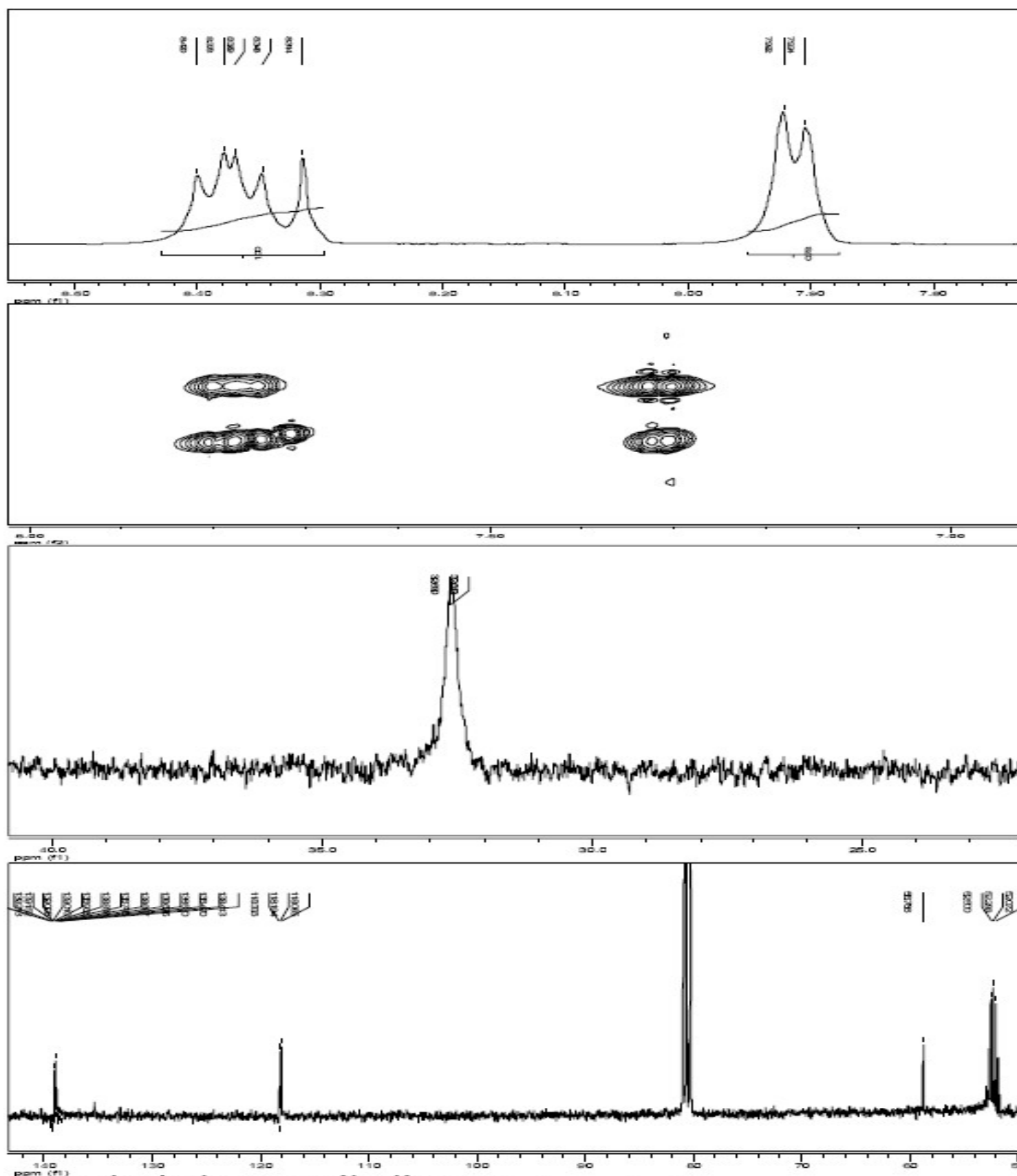


Fig. 2.  $^1\text{H}$ ,  $^1\text{H}$   $^1\text{H}$  COSY,  $^{31}\text{P}$ ,  $^{13}\text{C}$  NMR of complex 1b

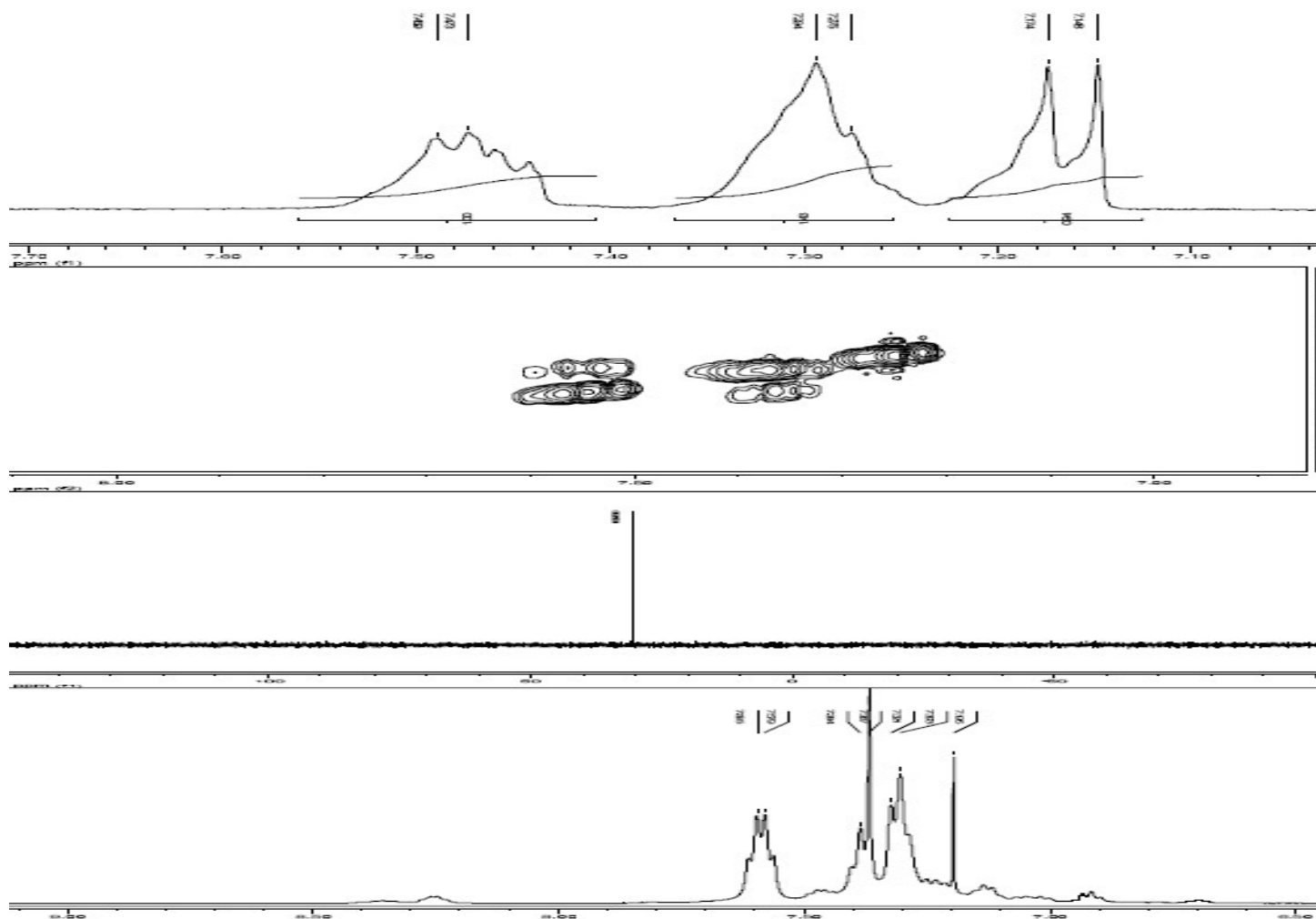


Fig. 3.  $^1\text{H}$ ,  $^1\text{H}$   $^1\text{H}$  COSY,  $^{31}\text{P}$ , NMR of complex **1e** and  $^1\text{H}$  NMR of **4a**

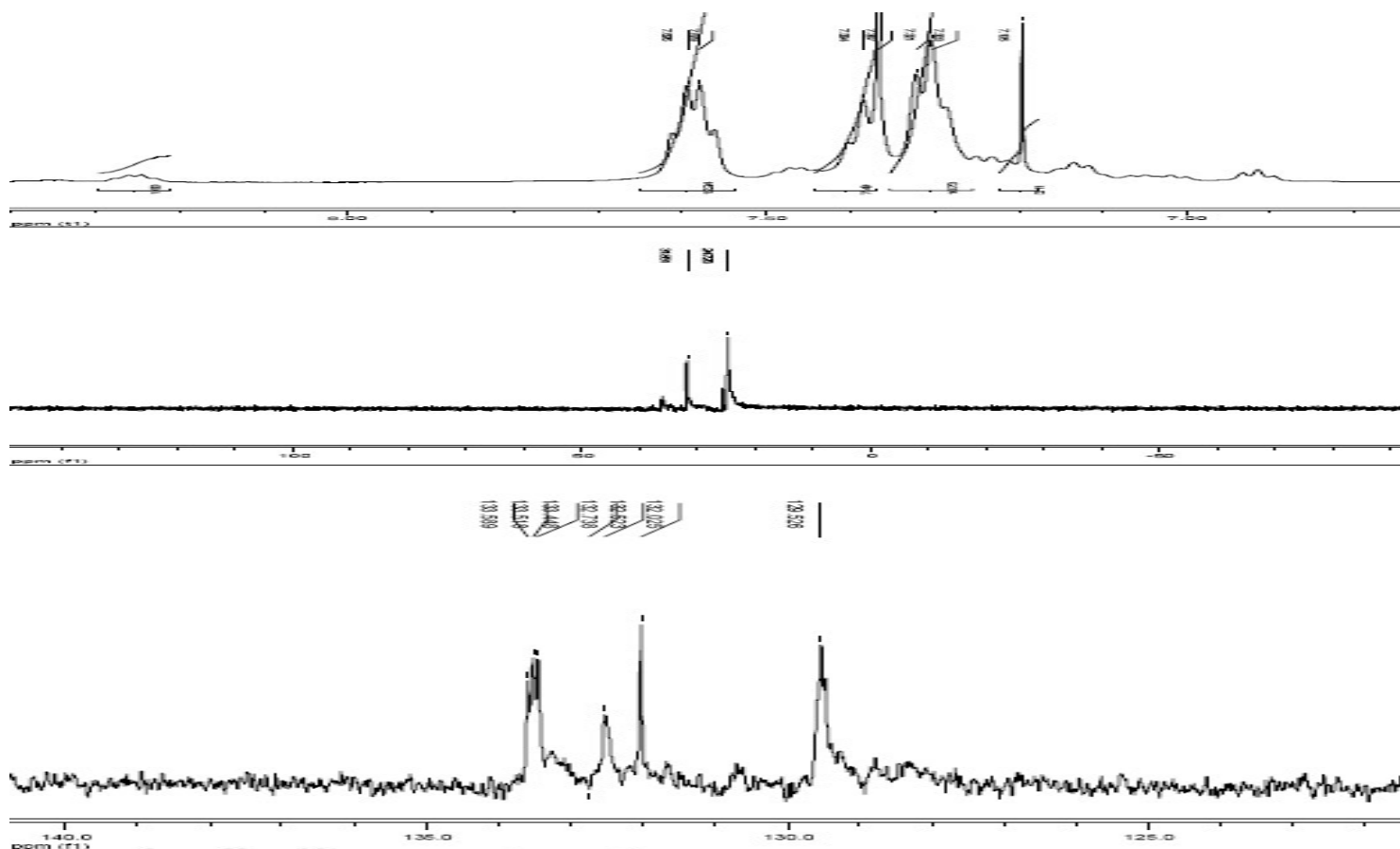


Fig. 4.  $^1\text{H}$ ,  $^{31}\text{P}$ ,  $^{13}\text{C}$  NMR of complex 4a

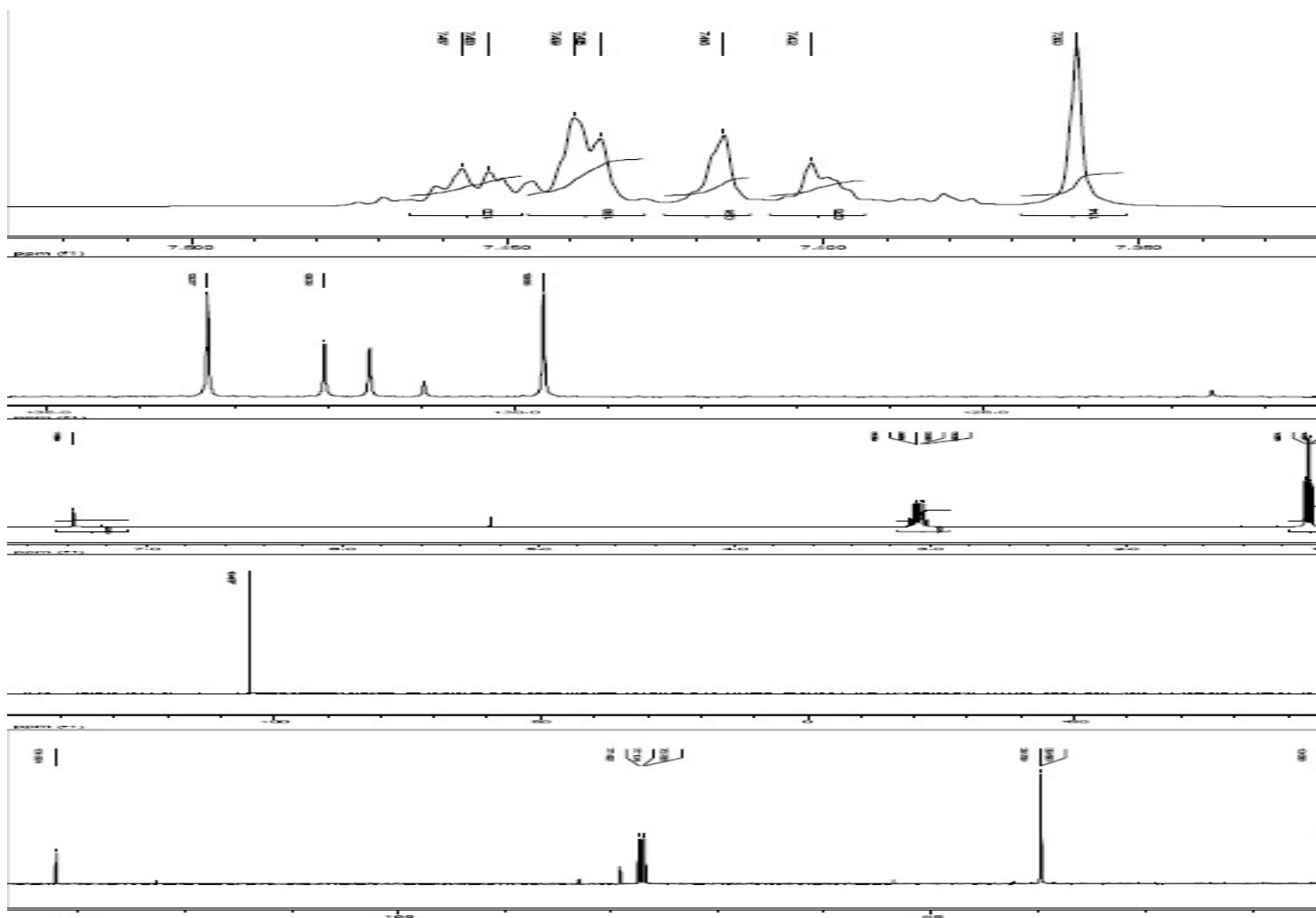


Fig.5.  $^1\text{H}$ ,  $^{13}\text{C}$  NMR of complex **1j** and  $^1\text{H}$ ,  $^{31}\text{P}$ ,  $^{13}\text{C}$  NMR of complex **1h**

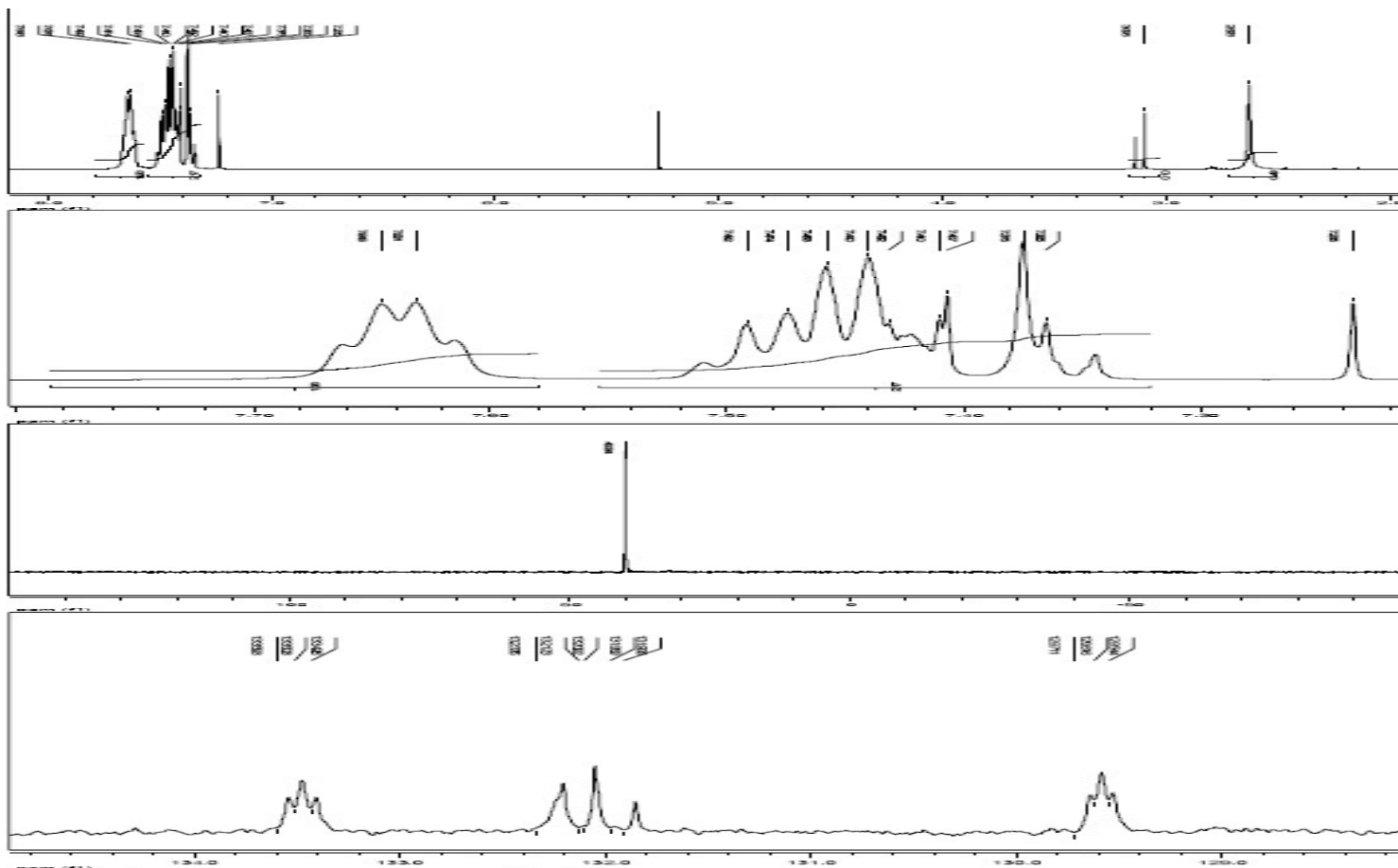


Fig. 6.  $^1\text{H}$ , aromatic portion,  $^{31}\text{P}$ ,  $^{13}\text{C}$  NMR of complex **4b**

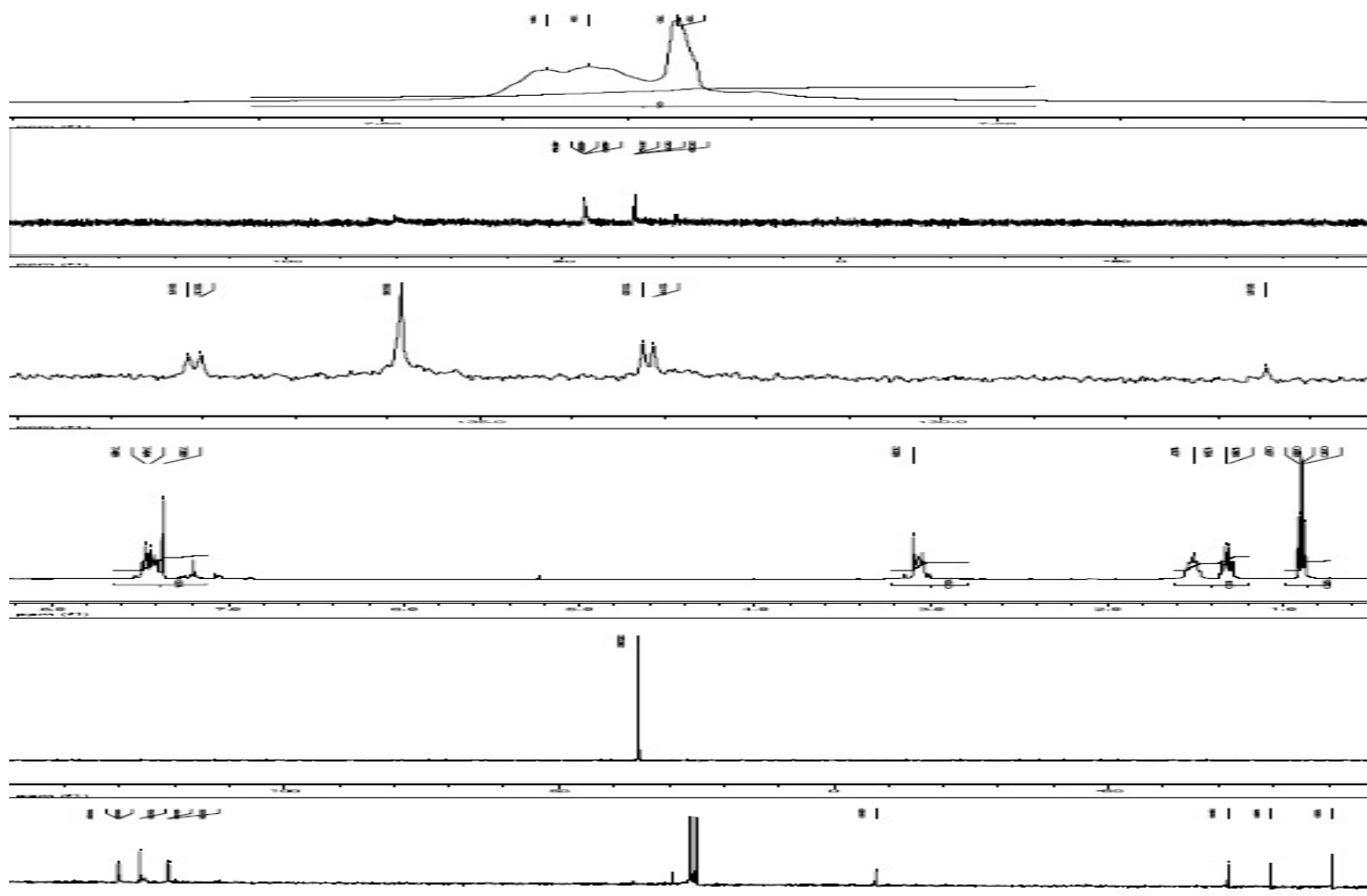


Fig. 7.  $^1\text{H}$ ,  $^{31}\text{P}$ ,  $^{13}\text{C}$  NMR of 3c and below,  $^1\text{H}$ ,  $^{31}\text{P}$ ,  $^{13}\text{C}$  NMR of 5a

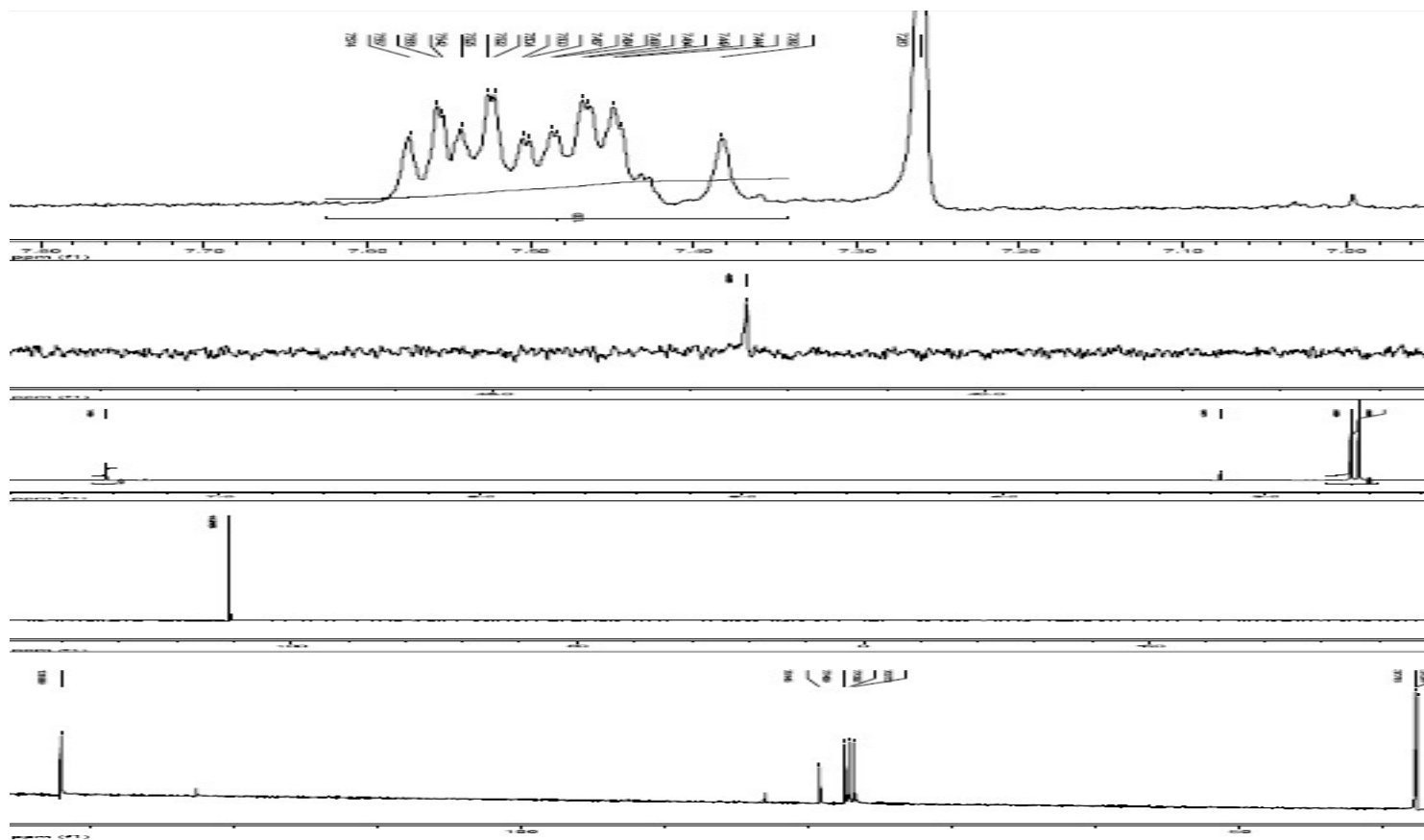


Fig. 8.  $^1\text{H}$   $^{31}\text{P}$  NMR of **2** and  $^1\text{H}$   $^{31}\text{P}$   $^{13}\text{C}$  NMR of **11**

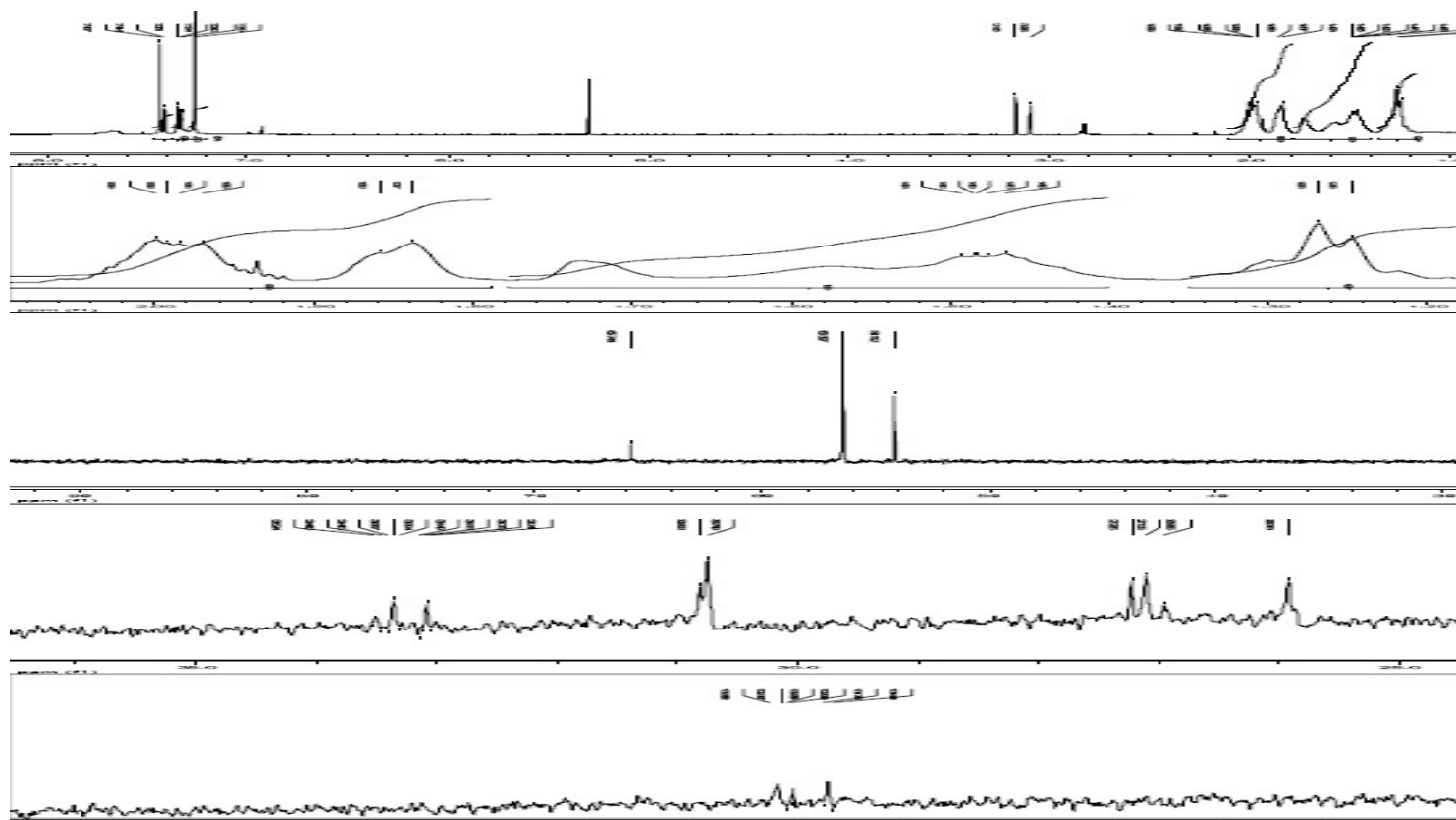


Fig. 9.  $^1\text{H}$ , Expanded  $^1\text{H}$ ,  $^{31}\text{P}$ ,  $^{13}\text{C}$ , aromatic region  $^{13}\text{C}$  NMR of complex 8c

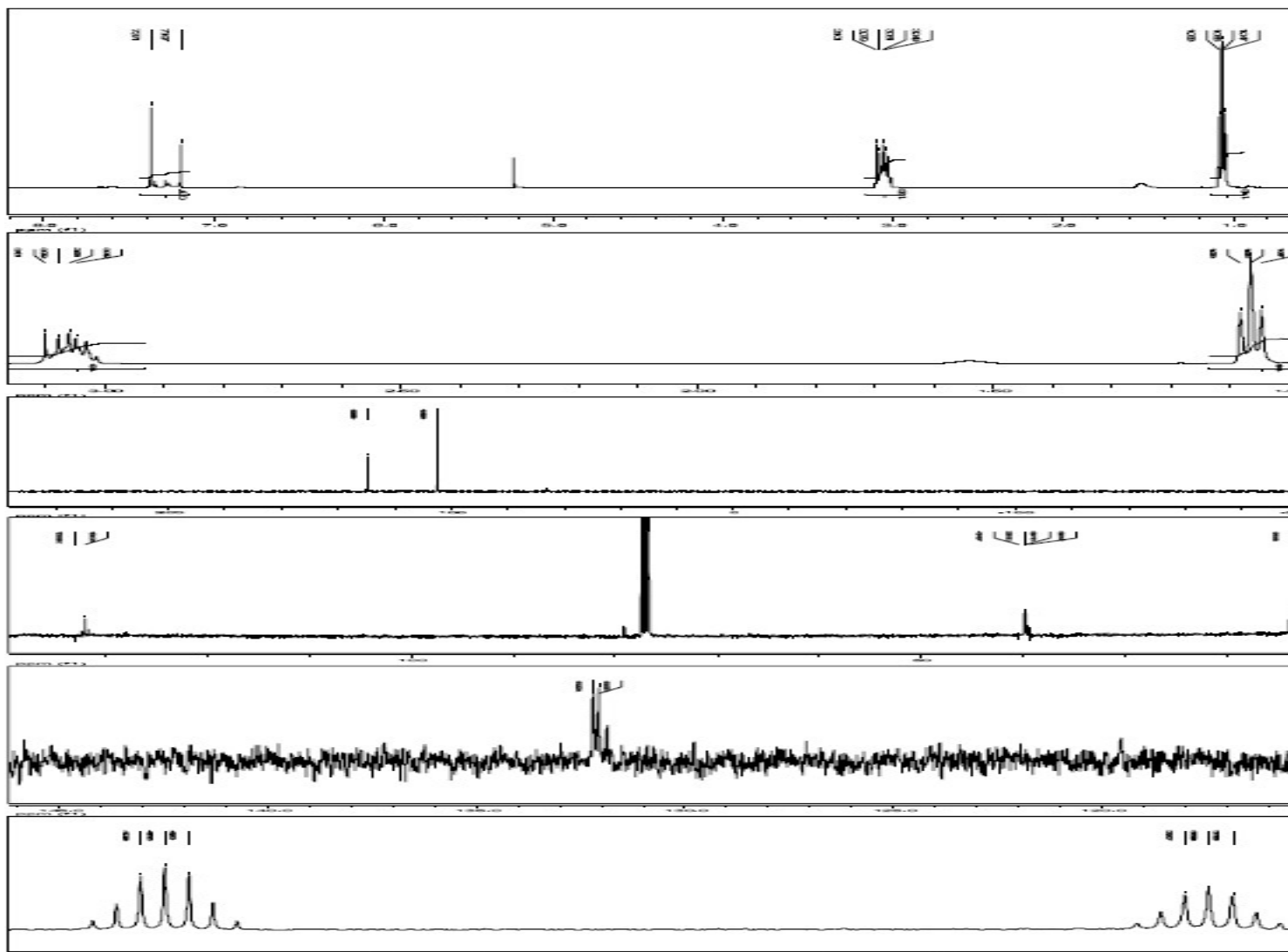


Fig. 10.  $^1\text{H}$ , expanded  $^1\text{H}$ ,  $^{31}\text{P}$ ,  $^{13}\text{C}$  NMR of 9c and below,  $^{31}\text{P}$ ,  $^1\text{H}$  NMR of 10c.