Table S1. ^{1}H and ^{13}C chemical shift values of compound **13b** (see Figure 4 for corrole numbering)

Position	δ ^{1}H (ppm)	δ ^{13}C (ppm)
1, 4		122.73, 129.0*
2		131.55
3	8.76	120.44
5, 15		-
6, 14; 9, 11		140.13, 136.82, 139.95, 136.45*
7, 13	8.67-8.64	125.23
8, 12	8.65	122.87
10		105.97
16, 19		132.13, 126.86*
17	8.58	122.39
18	9.65	116.63
20		133.88
21		138.76
22	7.33	127.80
23		138.18
24	2.61	20.12
25	1.91	19.82
26		142.10
27	8.27	133.62
28	8.23	124.94
29		144.25

* Chemical shift values may be interchanged.

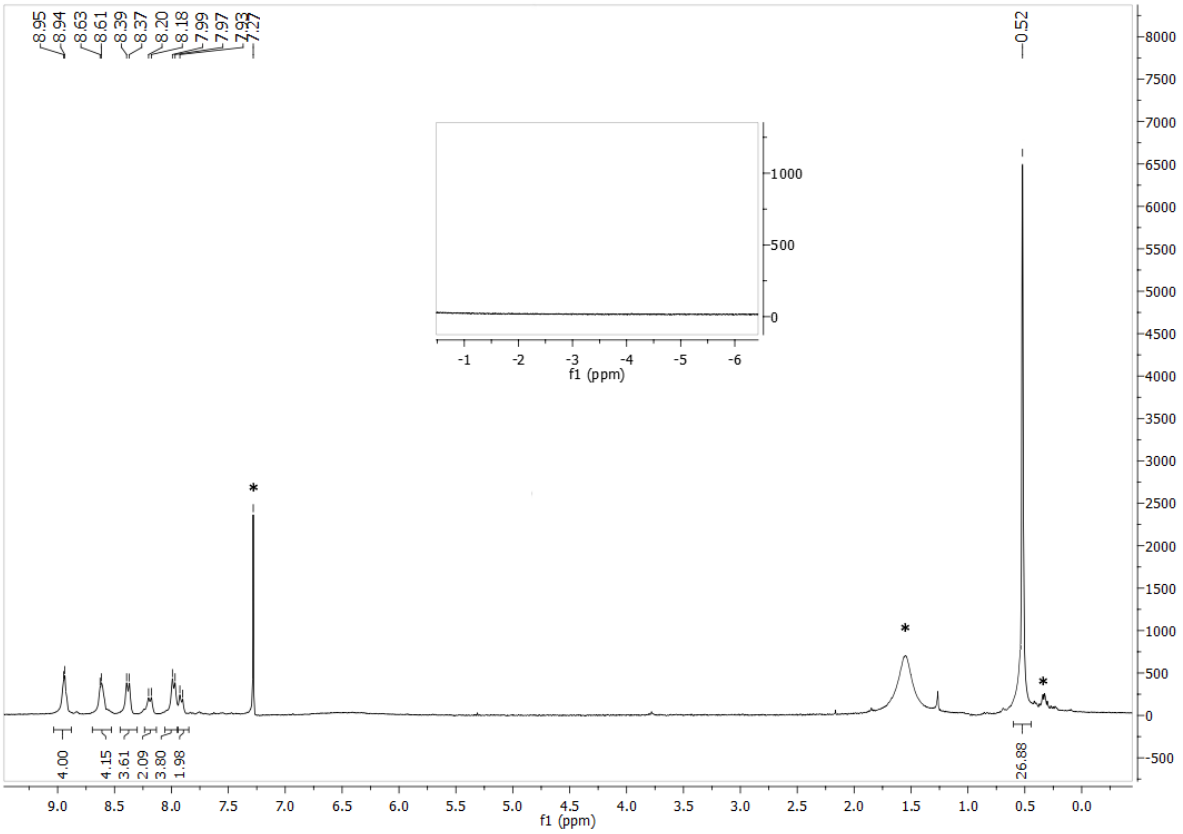

Figure S1: ^{1}H NMR of **6** in $CDCl_3$

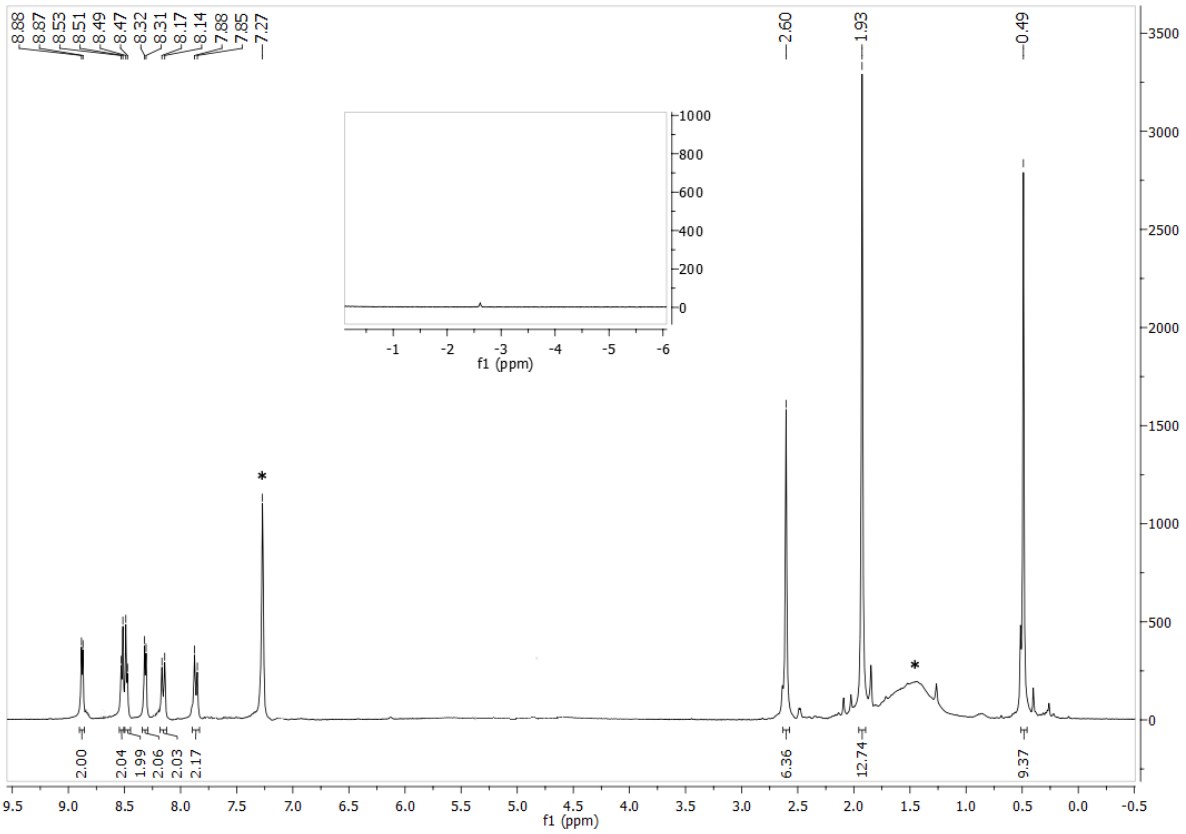

Figure S2: ^{1}H NMR of **7** in $CDCl_3$

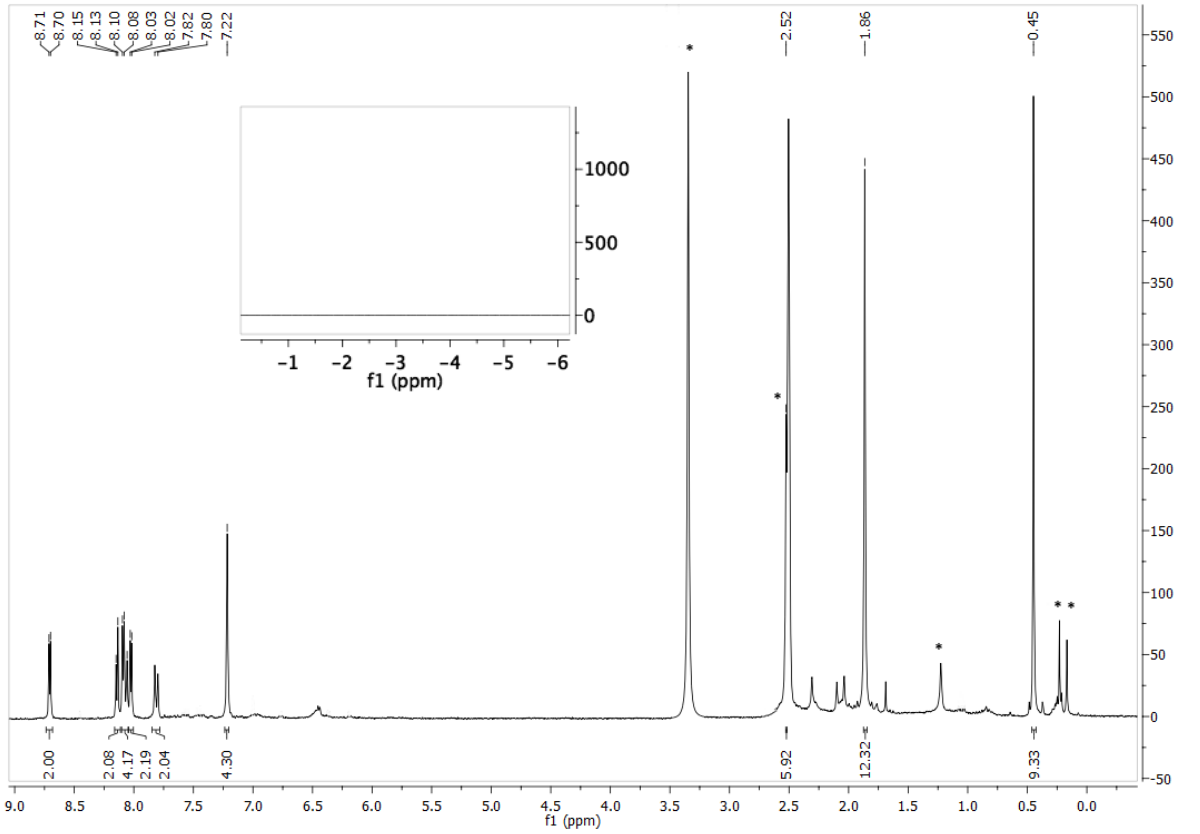

Figure S3: ^{1}H NMR of **7** in DMSO-d_6

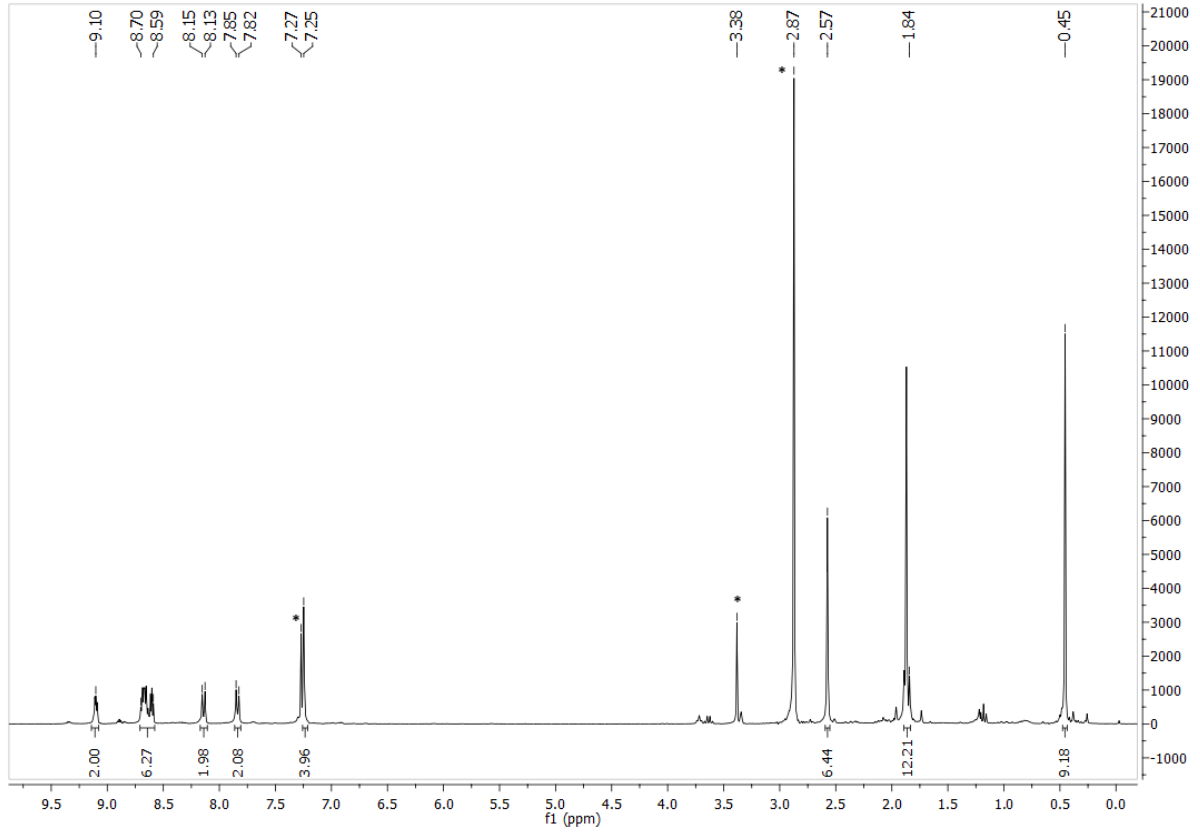

Figure S4: ^{1}H NMR of **10b** in $CDCl_3$ + 50μL CD_3OD ("**b**" indicates phosphorus complex with two -OCD_3 as axial ligands)

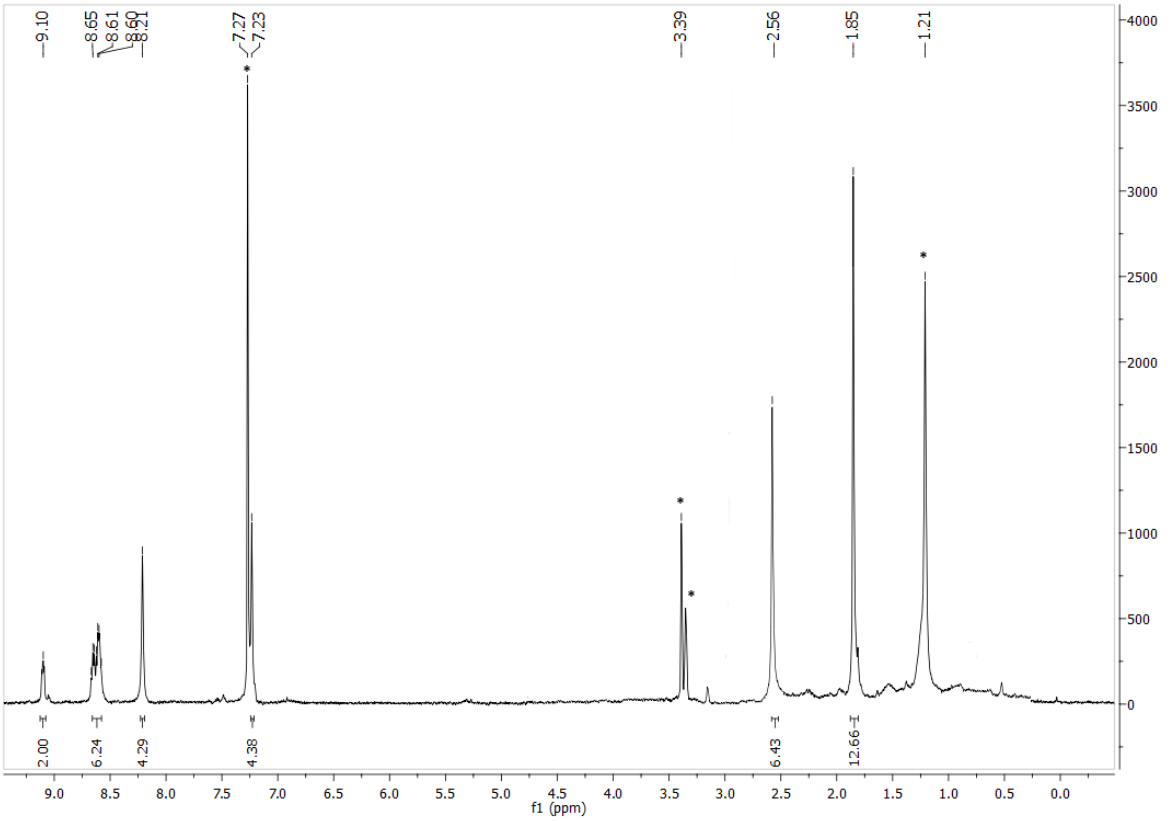

Figure S5: ^{1}H NMR of **11** in $CDCl_3$ + 50μL CD_3OD ("**b**" indicates phosphorus complex with two -OCD_3 as axial ligands)

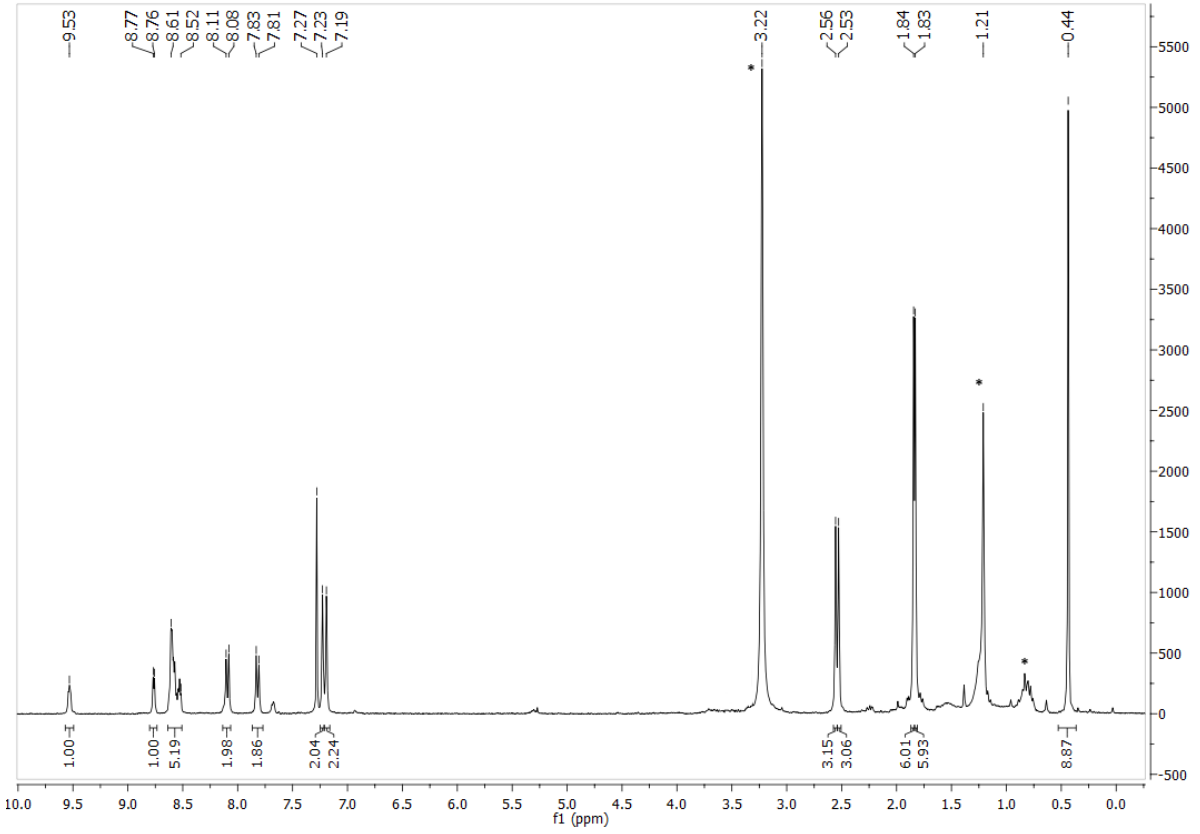

Figure S6: ^{1}H NMR of **12** in $CDCl_3$ + 50μL CD_3OD ("**b**" indicates phosphorus complex with two -OCD_3 as axial ligands)

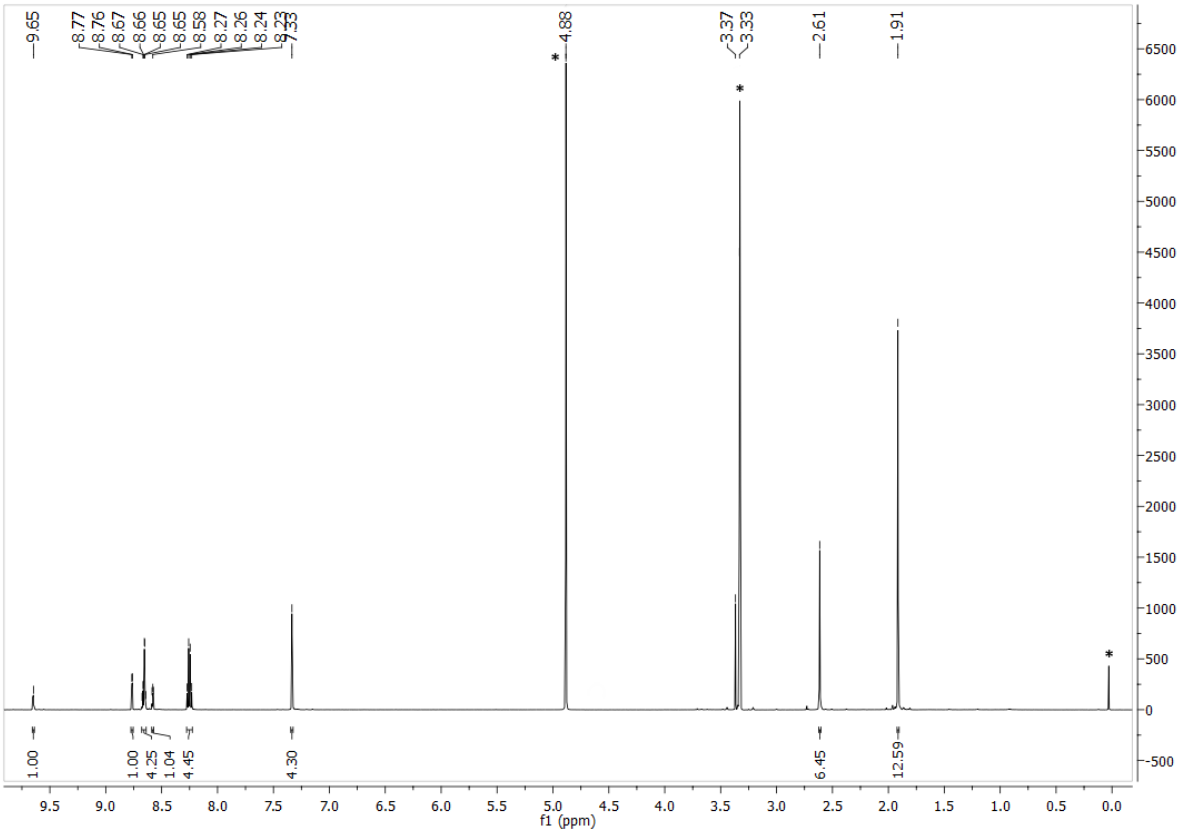

Figure S7: ^{1}H NMR of **13b** in CD_3OD

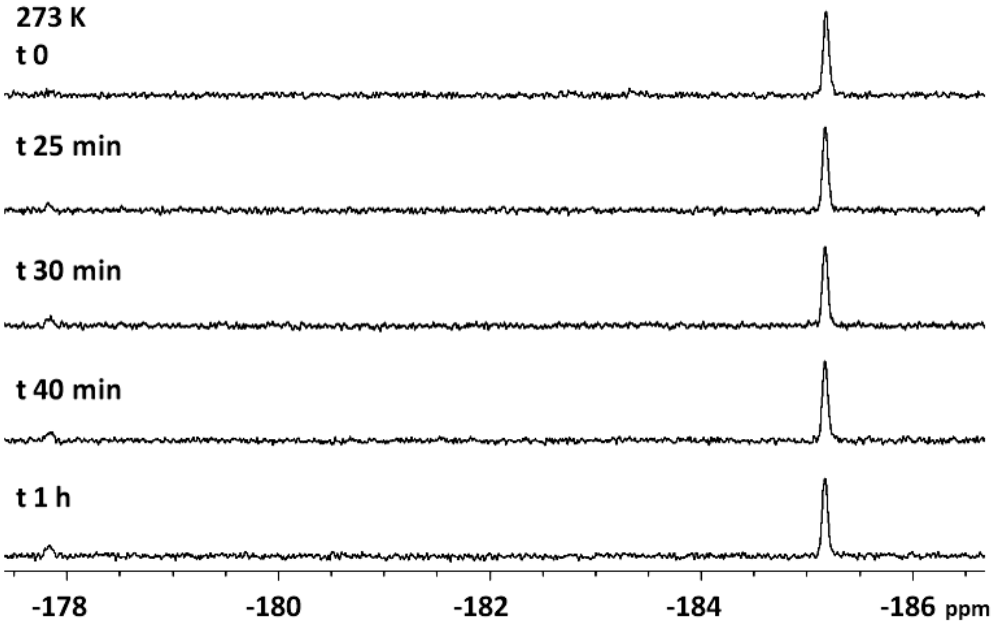

Fig. S8 Comparison between ^{31}P NMR spectra of compound **13** recorded at different time in CD_3OD at 273 K.

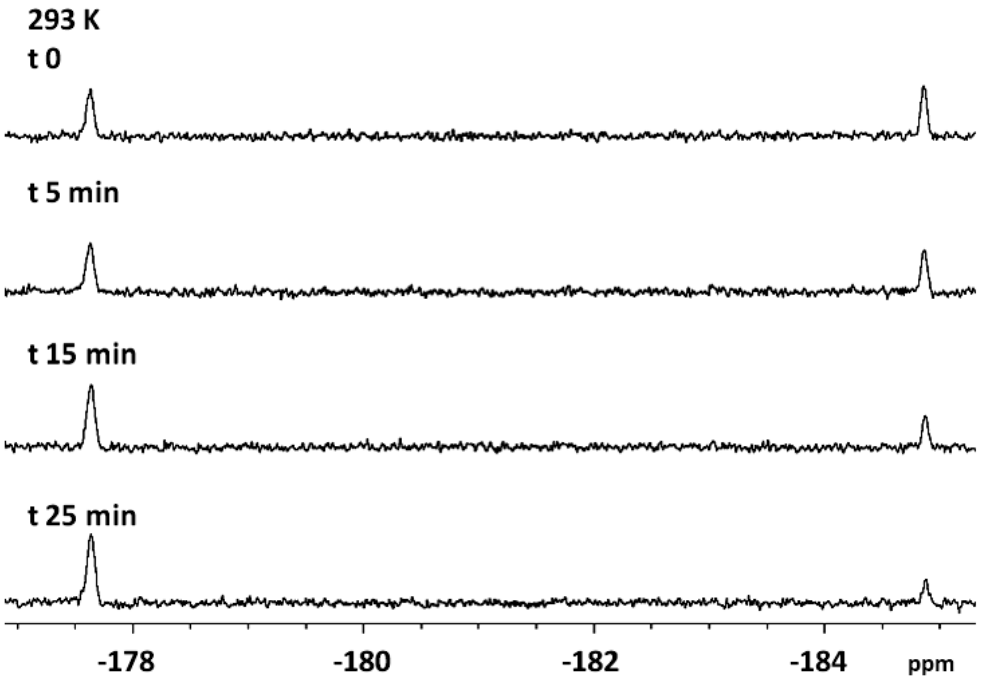

Fig. S9 Comparison between ^{31}P NMR spectra of compound **13** recorded at different time in CD_3OD at 293 K.

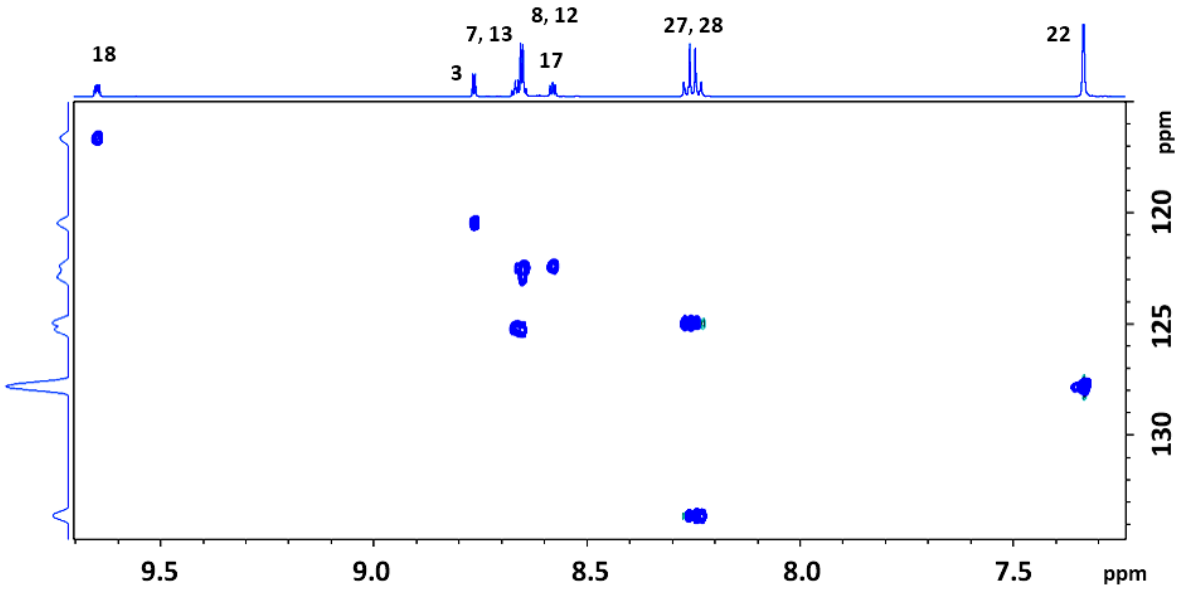

Fig. S10 ^{1}H-^{13}C HSQC spectrum of compound **13b** in CD_3OD at 298 K.

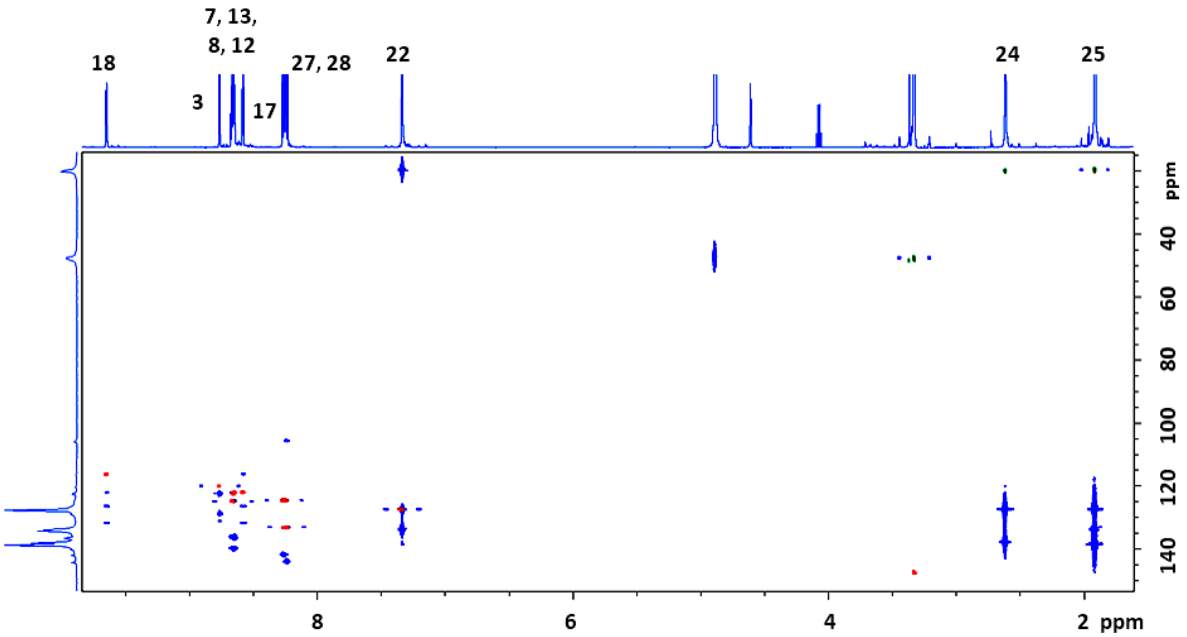

Fig. S11 Overlap between ^{1}H-^{13}C HSQC (green aliphatic region; red aromatic region) and HMBC (blue) spectra of compound **13b** in CD_3OD at 298 K.

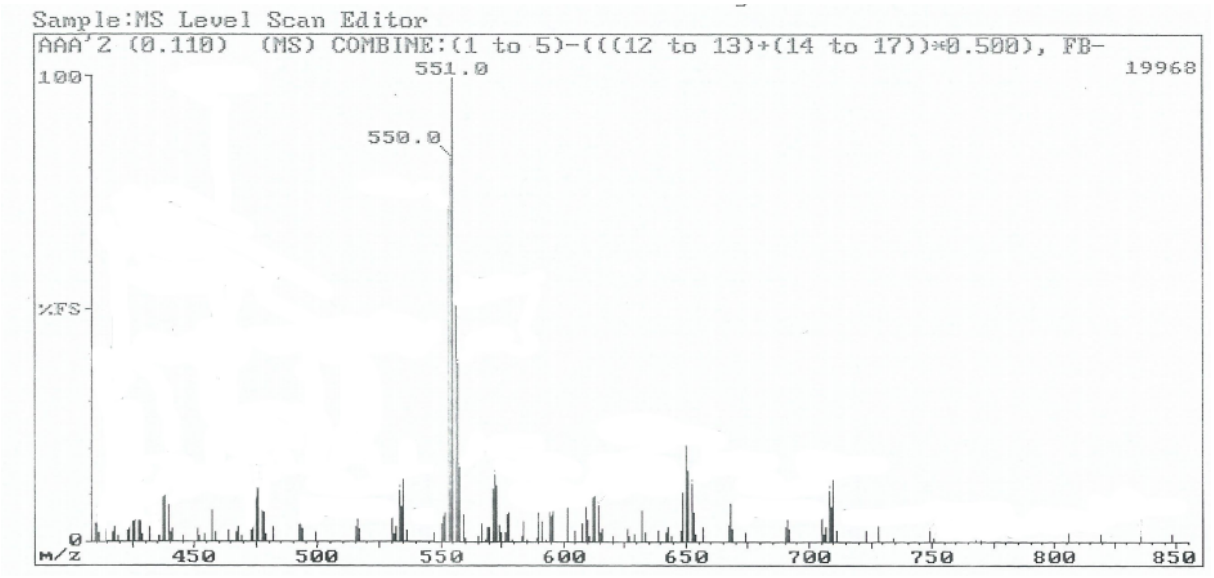

Figure S12: FAB MS^- of **13** in CH_3OH with *m*-nitrobenzyl alcohol(matrix)

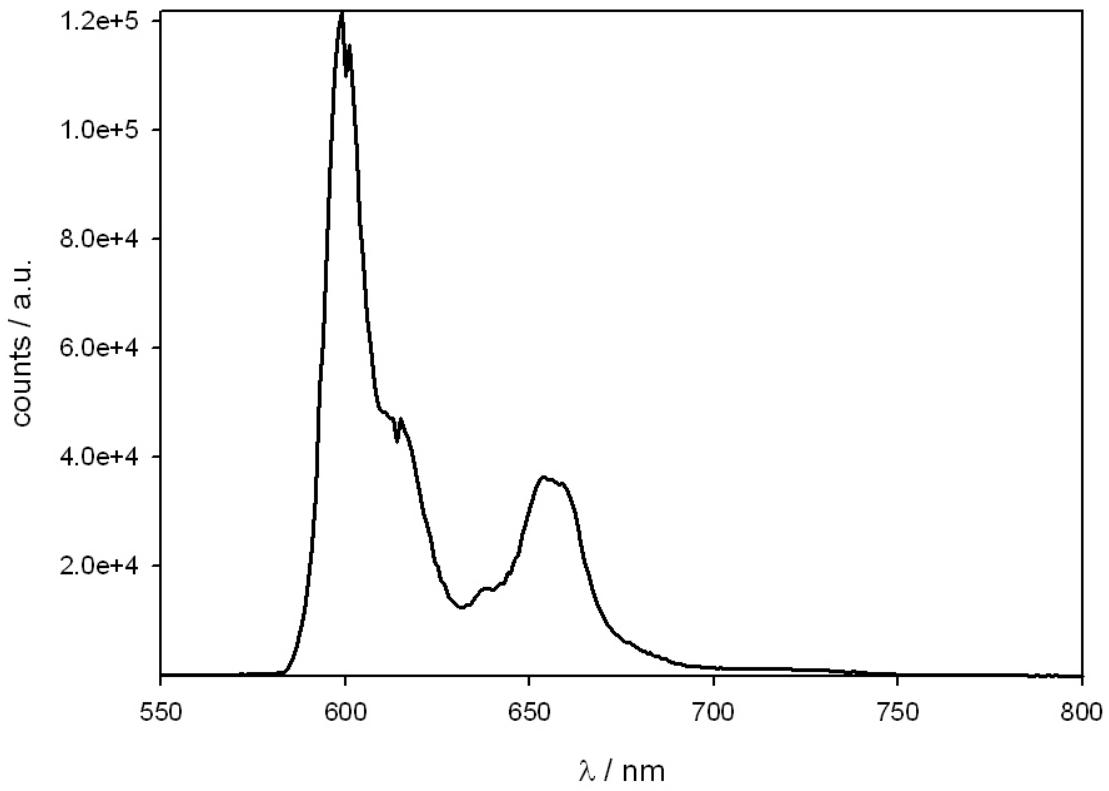

Figure S13 – Emission spectrum at T = 77K of **13b** in methanol (λ_{exc} = 410 nm).

STM characterization of Au(111) surface after RGO deposition

The first evidence observed after the deposition was nano-fingers growth on the atomically flat Au (111) triangular steps (Figure S14).

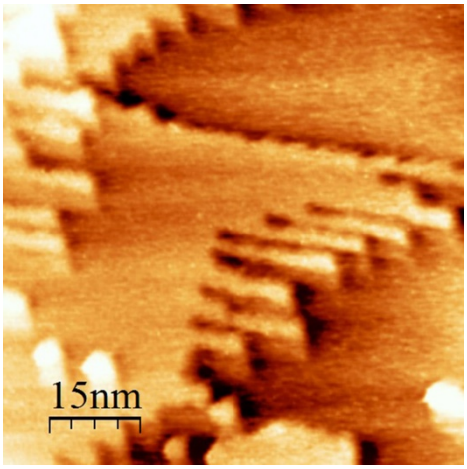

Figure S14. STM images (I=1 nA and V=0.2V) (150x150nm^2) of Au(111) surface after RGO deposition. In the (a) and (b) panel two different regions that show the Nano-fingers formation.

Moreover the surface morphology undergoes strong modification during the STM scan as shown by successive recorded STM images reported in Figure S15. Previous results[1] have reported nanofinger formation on a clean gold surface. However Yin et.al. concluded that high-field conditions, i.e. Bias voltage of ~1.5V and tunneling currents of ~30nA-50nA were required for the formation of Nano fingers via gold atom extraction from step edges, while under the low-field conditions, i.e. Bias voltage of

~0.1V and tunneling current of 5nA, the gold surface was not modified by repeated scanning at room temperature.[2] In our case, the formation of Nano fingers after the RGO deposition was readily observed, although we used a very low tunneling conditions (tunneling current of 1nA and bias potential of 0.2V).
Our experimental evidences are in agreement with similar nano-fingers formation at low tunneling conditions reported by Wilson and co-workers, in the case of (S)-lysine onto the Au (111) surface.[3] Moreover the RGO-gold atom clusters appear very mobile on the surface also at room temperature without any further annealing at step edges and inside defect-free terraces and they are dynamic over time as shown by the successive recorded STM images in Figure S15. Similar behavior was reported in the case of insulin growth factor tripeptide adsorption.[4]

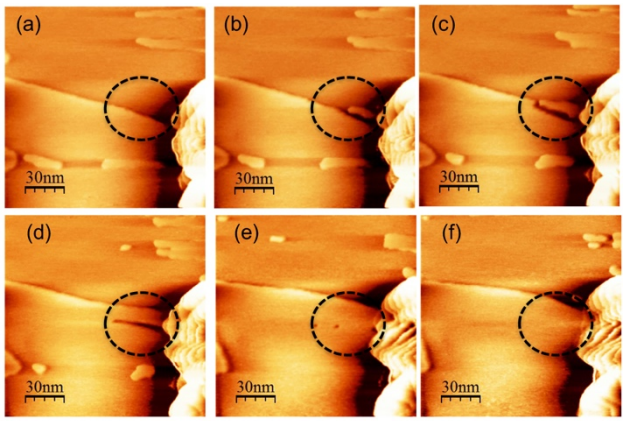

Figure S15. From (a) to (f) successive recorded STM images (I=1 nA and V=0.2V) (150x150nm^2) of Au(111) surface after RGO deposition showing the progressive change in the finger growth caused by repeated scans of STM tip. The dotted circle denotes changes in the surface

[1] F. Yin, *Phys. Rev. B.* **2006**, *73,* 073405.
[2] C. Schonenberger, J. A. M. Sondag-Huethorst, J. Jorritsma, L. G. J. Fokkink, *Langmuir* **1994***, 10,* 611–614.
[3] K. E. Wilson, H. A. Früchtl, F. Grillo, C. J. Baddeley, *Chem. Commun.* **2011***, 47,* 10365-10367.
[4] V. Humblot, A. Vallée, A. Naitabdi, F. Tielens, C.-M. Pradier, *J. Am. Chem. Soc.* **2012***, 134,* 6579-6583.