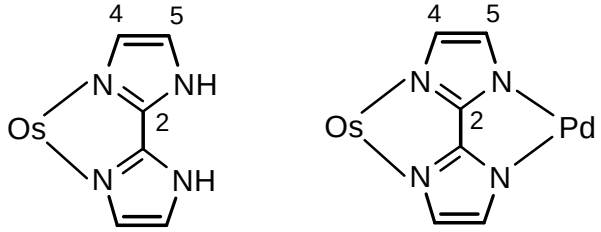
Eur. J. Inorg. Chem. **2003** · © WILEY-VCH Verlag GmbH & Co. KGaA, 69451 Weinheim, 2003 · ISSN 1434–1948

SUPPORTING INFORMATION

Title: Heterotrinuclear Complexes of the Platinum Group Metals with 2,2'-Biimidazol as a Bridging Ligand
Author(s): Andrey Mayboroda, Peter Comba,* Hans Pritzkow, Gerd Rheinwald, Heinrich Lang, Gerard van Koten
Ref. No.: I02559

NMR spectra of $[Os(H_2biim)_2(O{=}PPh_3)_2](NO_3)_3$, **1** ($H_2biim$ = 2,2'-biimidazole) and $[(PdL)_2(\mu\text{-}biim)_2Os(O{=}PPh_3)_2](NO_3)_3$ [**8**, L = cod, 1,5-cyclooctadiene; **9**, L = en, ethylen-1,2-diamine] were recorded at 300.135 MHz (^1H), 75.469 MHz ($^{13}C\{^1H\}$) or 121.495 MHz ($^{31}P\{^1H\}$) in CD_3OD. The relatively low solubility of these complexes in CD_3OD results in low intensities in the proton NMR spectra. Solubilities in DMSO or DMF are significantly higher. However, [D^6]DMSO or [D^7]DMF could not be used for the NMR spectra because triphenylphosphine oxide in **1**, **8** and **9** is easily substituted with these solvents. Spectra in CD_3OD allowed to determine chemical shifts of carbon or phosphorous in the coordinated 2,2'-biimidazole or triphenylphosphine oxide ligands. The NMR data are listed in Table 1 (atom numbering corresponds to Scheme 1). NMR spectra of **1**, **8** and **9**, are shown in Fig. 3 – 11 (signals of solvents are identified with *). NMR spectra of free 2,2'-biimidazole are given for comparison (Fig. 1, 2).



Scheme 1

Table 1. NMR data of metal-free 2,2'-biimidazole and triphenylphosphine oxide and in complexes **1**, **8** and **9**

Compound	$^{13}C\{^1H\}$ NMR		$^{31}P\{^1H\}$ NMR
	C-2, -2'	C-4, 4'	
H_2biim	139.4	128.3	-
$Ph_3P{=}O$	-	-	26.95
1	141.2	138.6	36.36
8	152.1	141.3	32.46
9	152.6	141.1	32.58

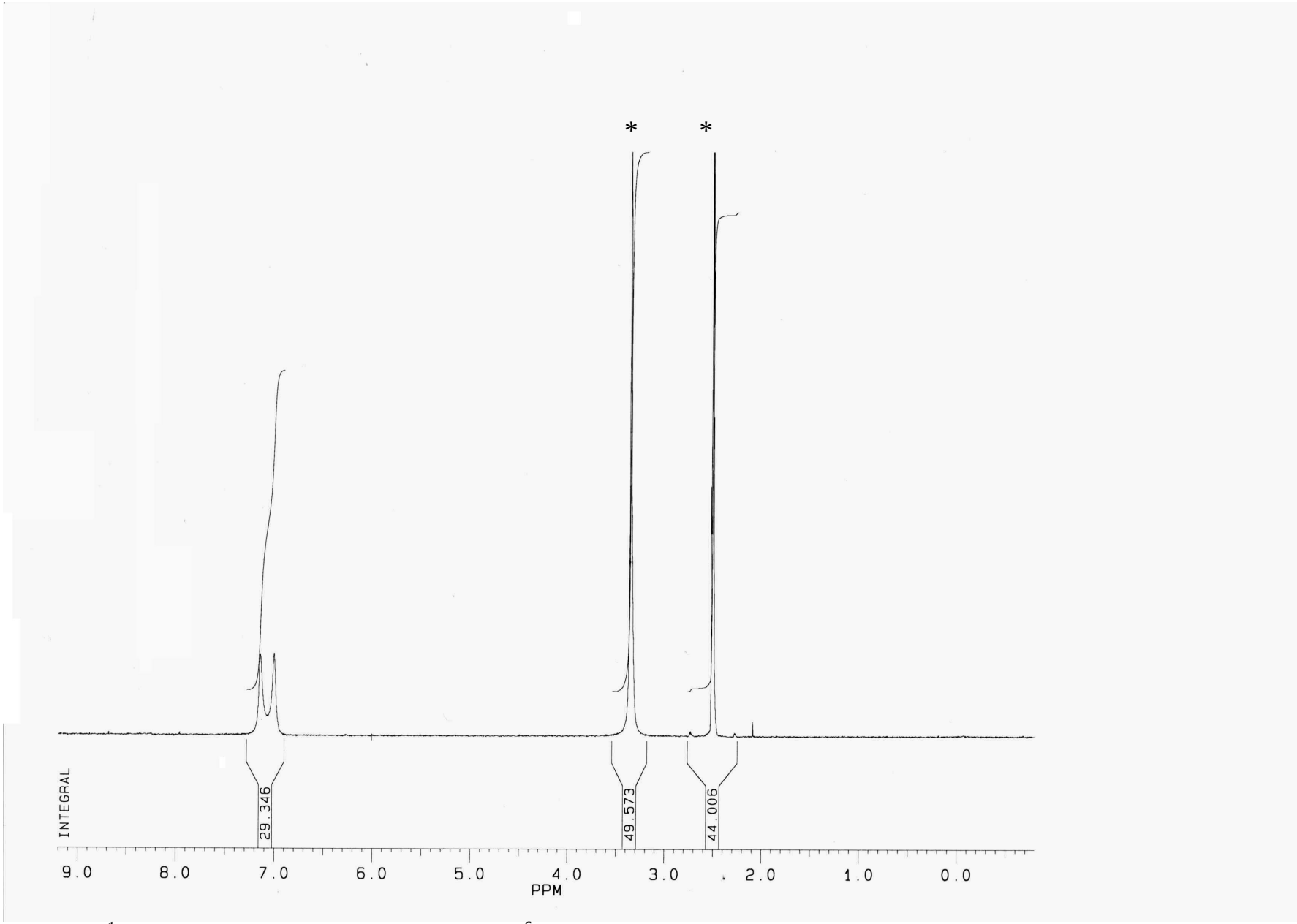


Figure 1. ^{1}H NMR spectrum of 2,2’-biimidazole in [D^{6}]DMSO.

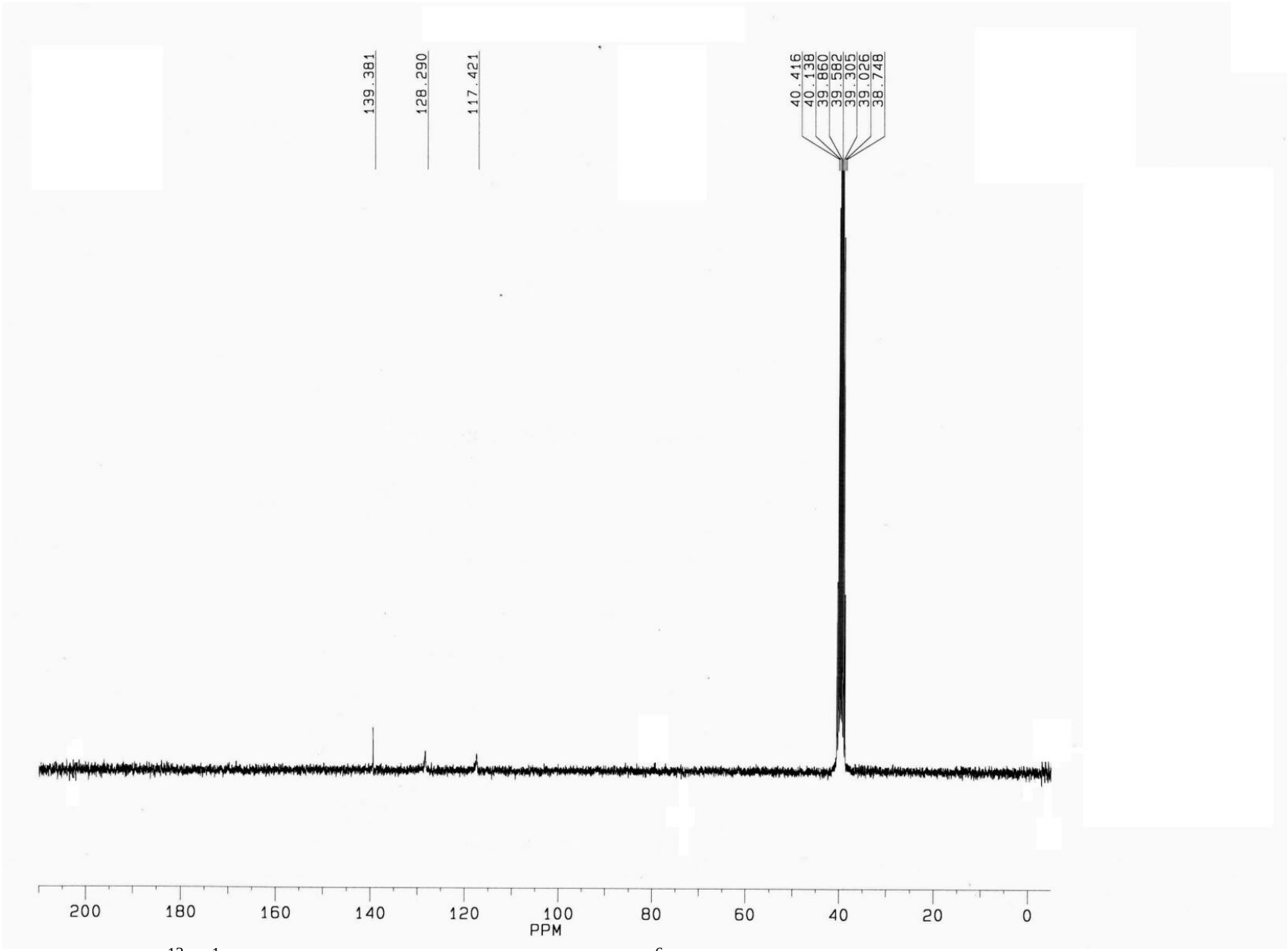


Figure 2. $^{13}C\{^{1}H\}$ NMR spectrum of 2,2'-biimidazole in [D^{6}]DMSO.

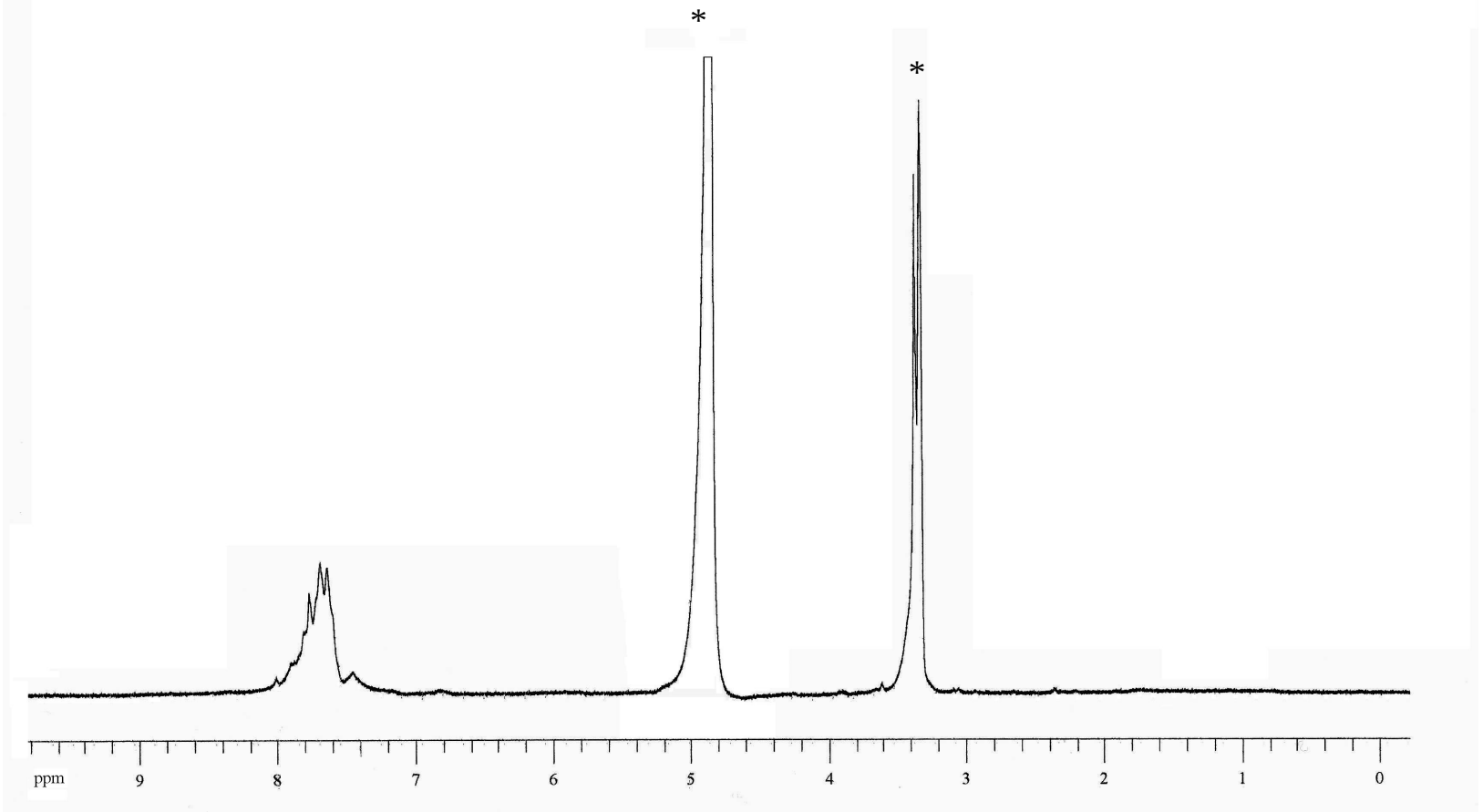


Figure 3. ^{1}H NMR spectrum of $[Os(H_2biim)_2(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.

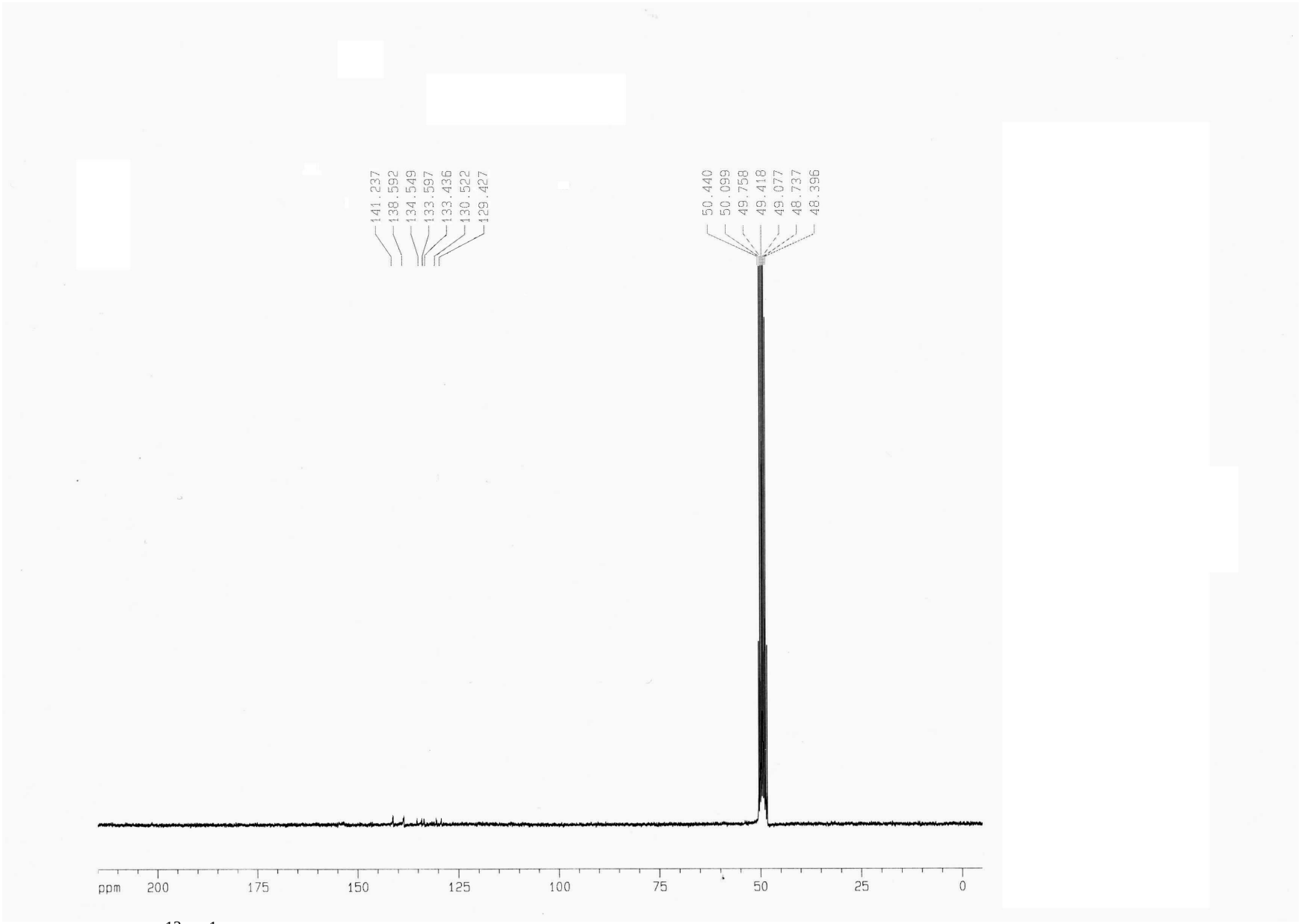


Figure 4. $^{13}C\{^{1}H\}$ NMR spectrum of $[Os(H_2biim)_2(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.

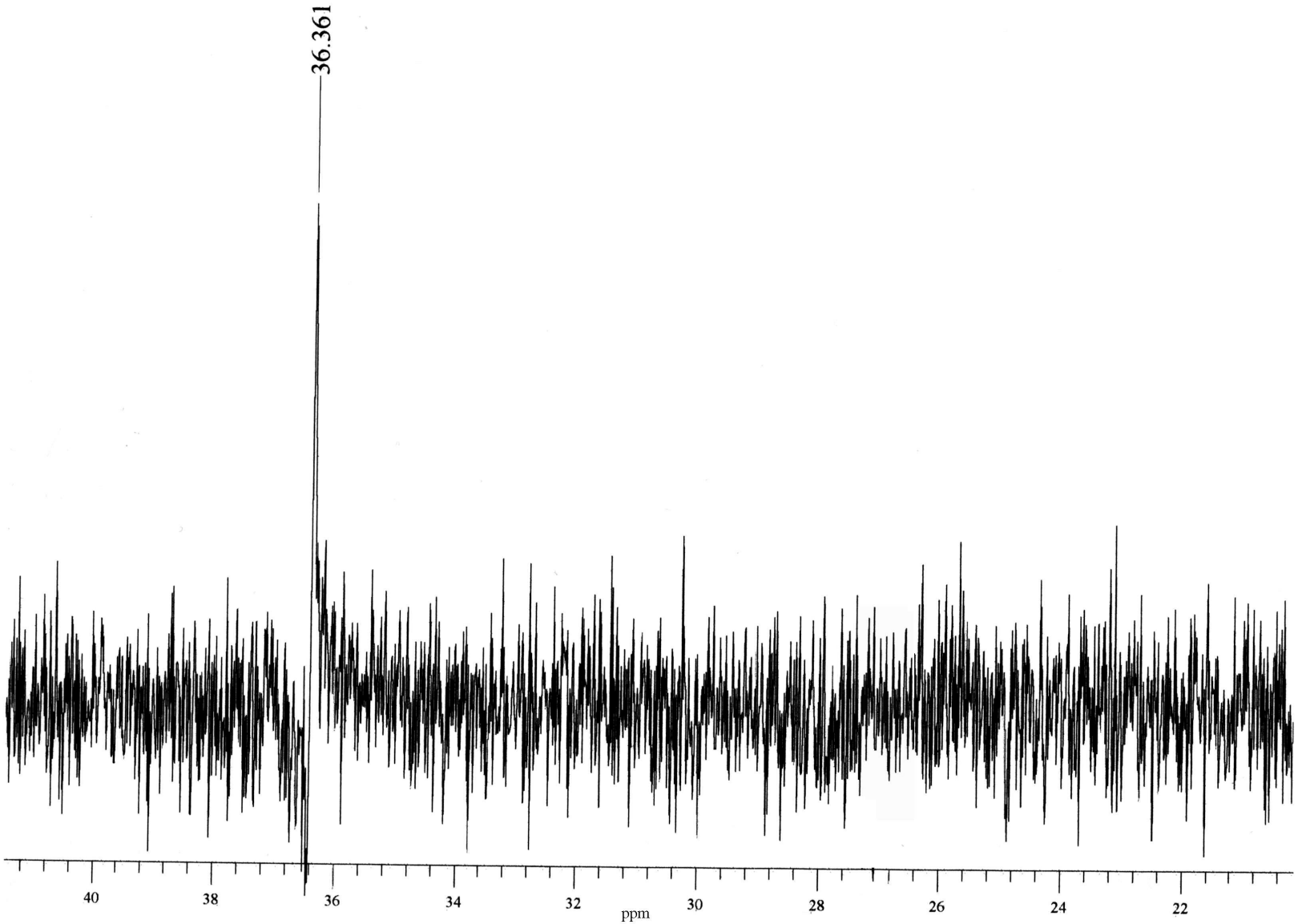


Figure 5. $^{31}P\{^{1}H\}$ NMR spectrum of $[Os(H_2biim)_2(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.

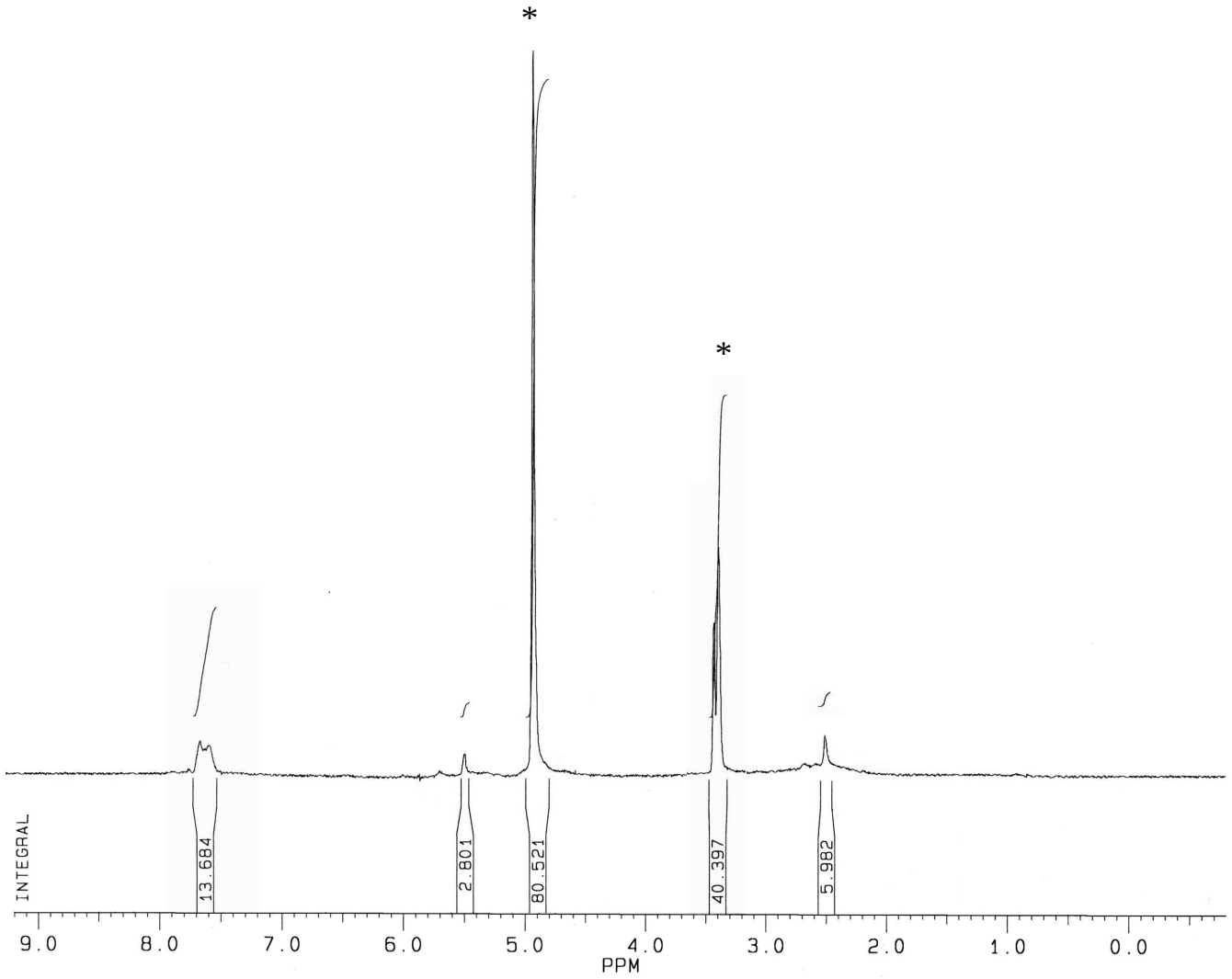


Figure 6. ^{1}H NMR spectrum of $[\{Pd(cod)\}_2(\mu\text{-biim})_2Os(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.

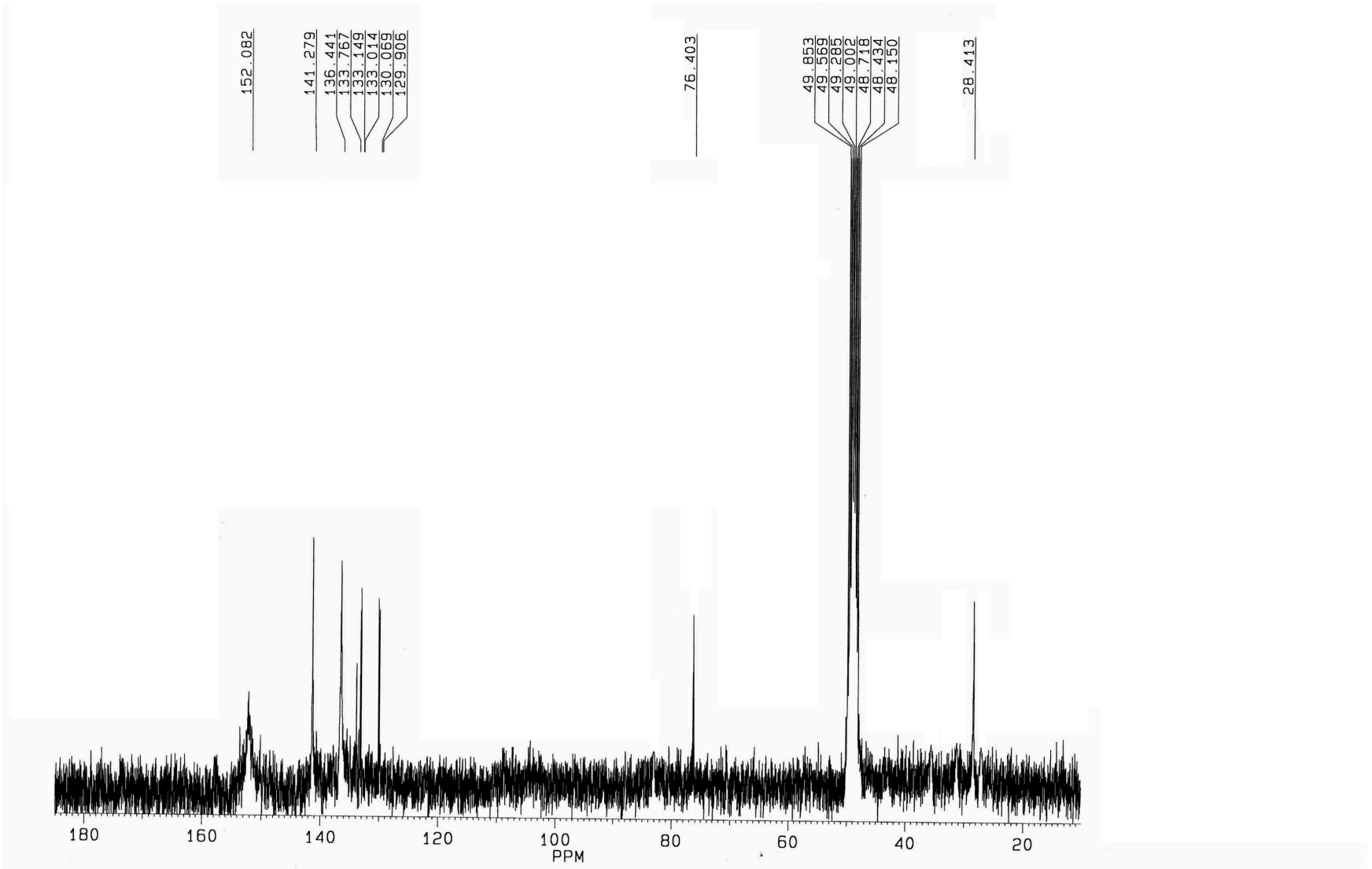


Figure 7. $^{13}C\{^{1}H\}$ NMR spectrum of $[\{Pd(cod)\}_2(\mu\text{-biim})_2Os(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.

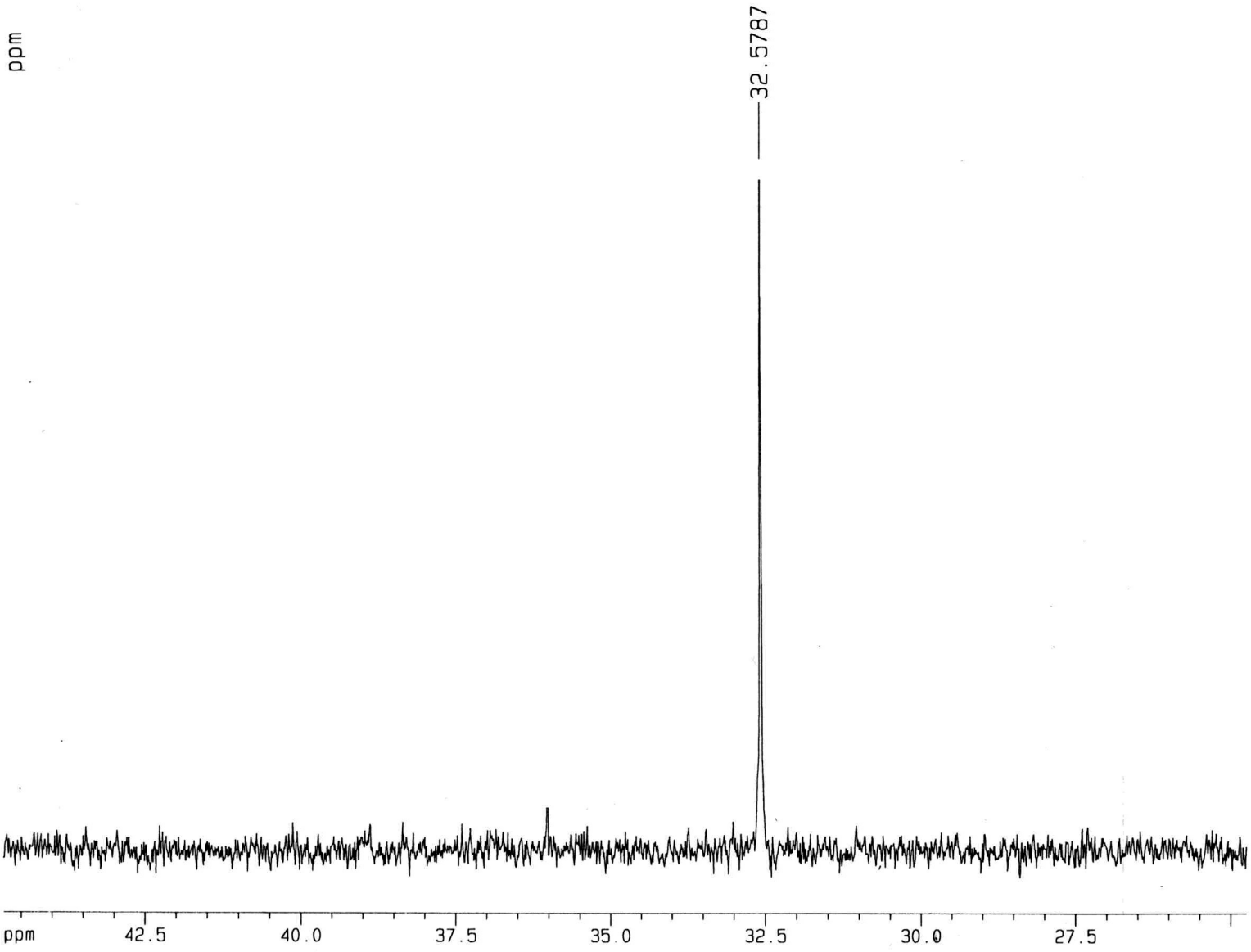


Figure 8. $^{31}P\{^{1}H\}$ NMR spectrum of $[\{Pd(cod)\}_2(\mu\text{-biim})_2Os(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.

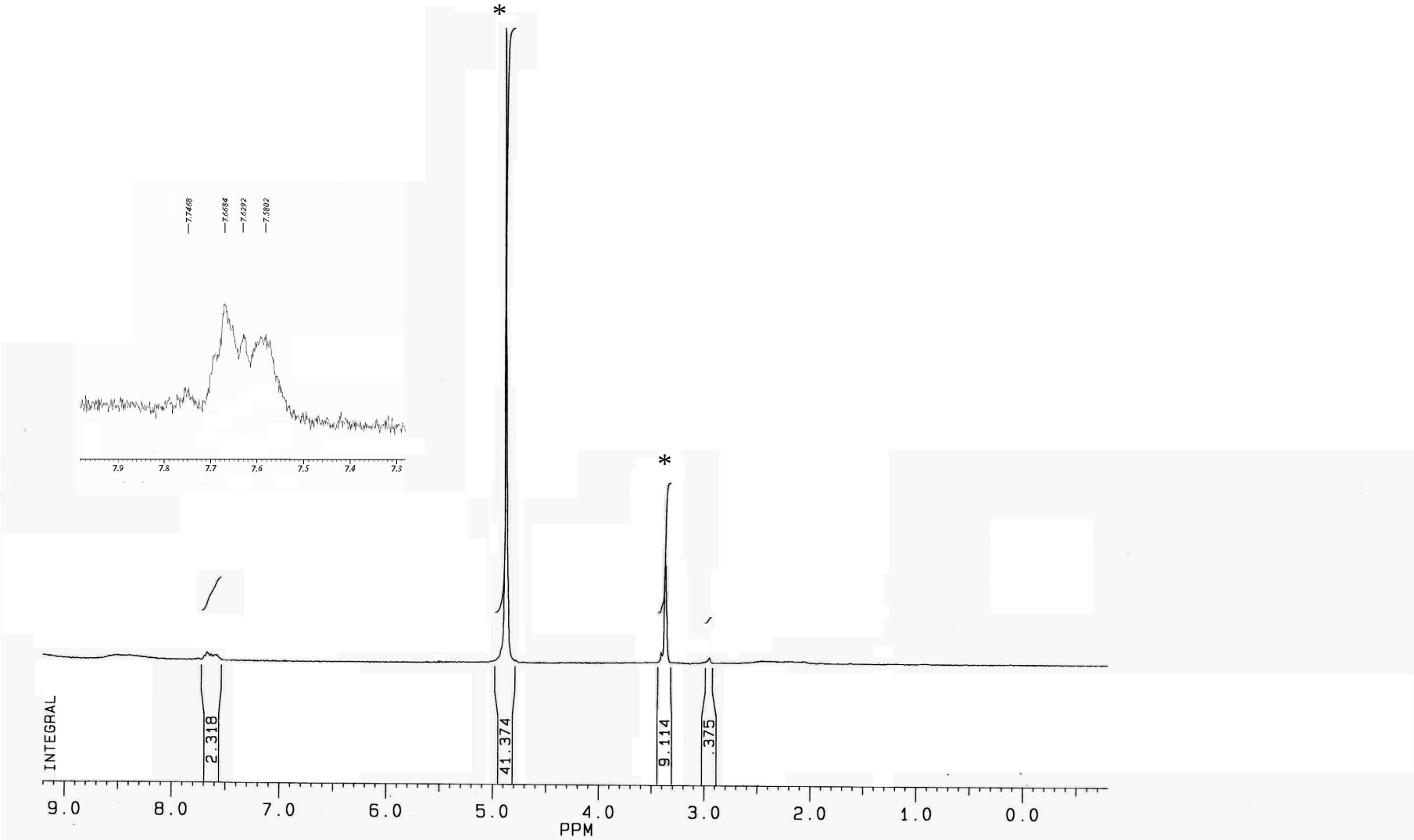


Figure 9. ^{1}H NMR spectrum of $[\{Pd(en)\}_2(\mu\text{-biim})_2Os(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.

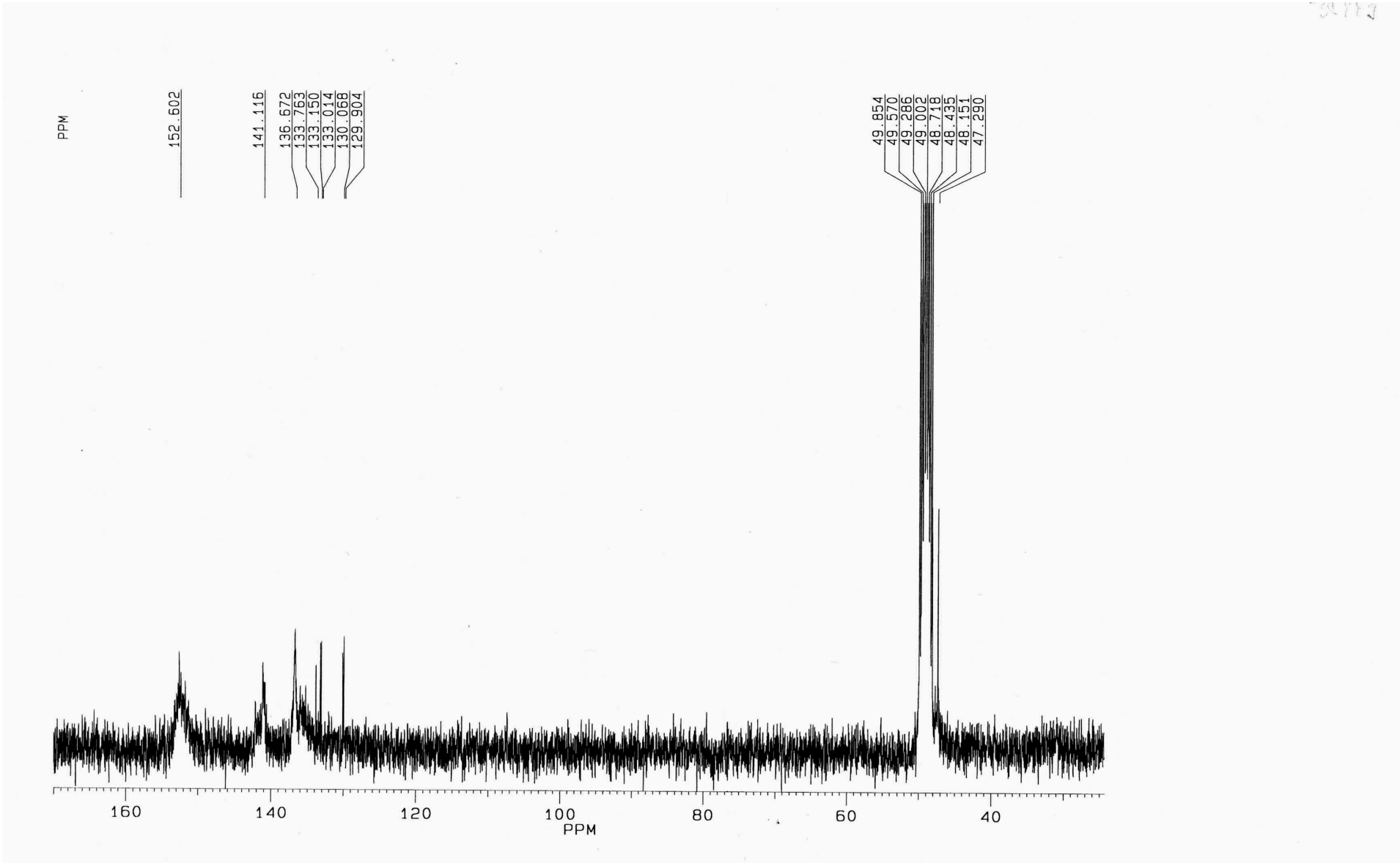


Figure 10. $^{13}C\{^{1}H\}$ NMR spectrum of $[\{Pd(en)\}_2(\mu\text{-biim})_2Os(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.

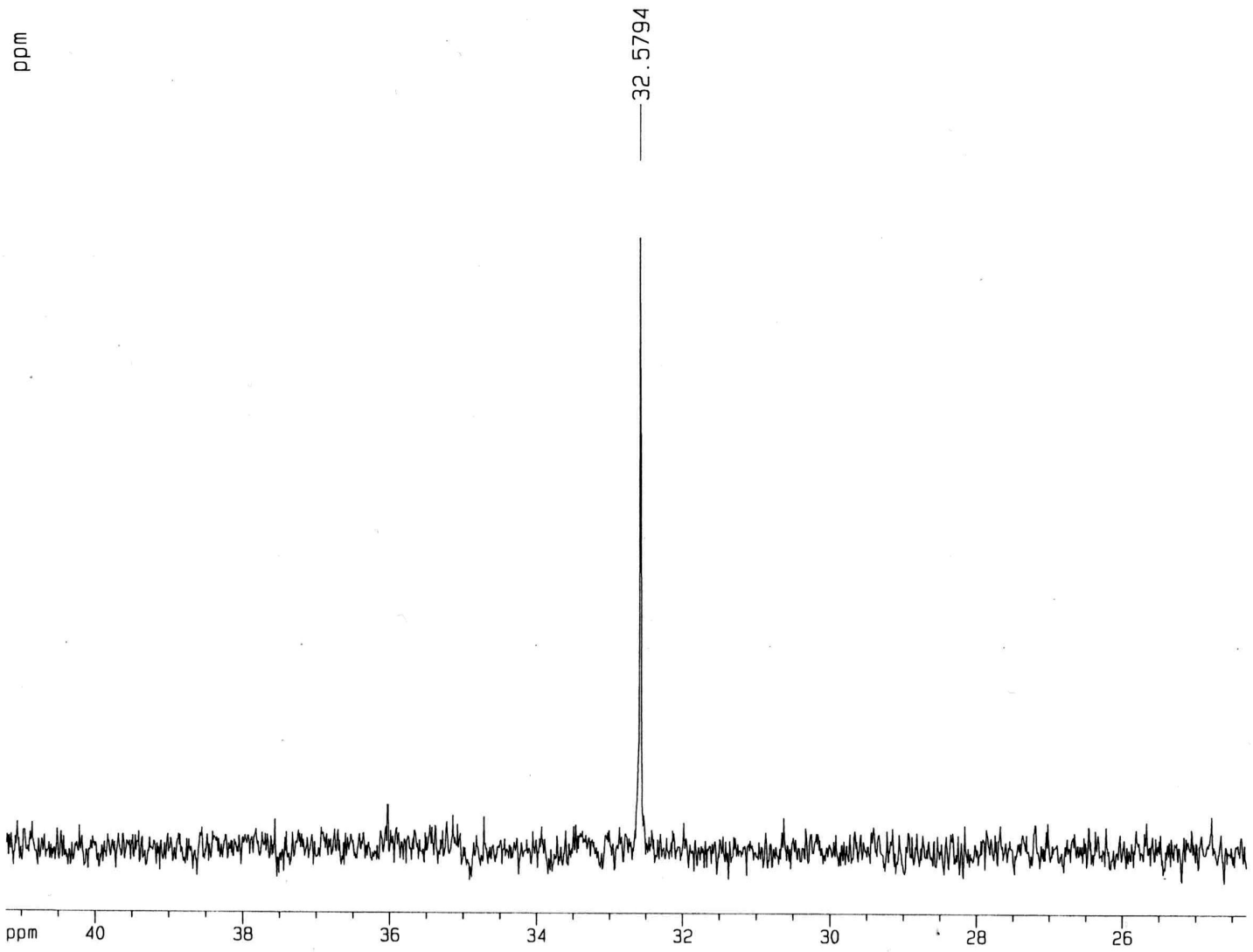


Figure 11. $^{31}P\{^{1}H\}$ NMR spectrum of $[\{Pd(en)\}_2(\mu\text{-biim})_2Os(O{=}PPh_3)_2](NO_3)_3$ in CD_3OD.