Electronic Supplementary Information for Dalton Transactions

Reactions of $R_2P–P(SiMe_3)Li$ with $[(R'_3P)_2PtCl_2]$. A General and Efficient Entry to Phosphanylphosphinidene Complexes of Platinum. Syntheses and Structures of $[(\eta^2\text{-}P{=}P^iPr_2)Pt(p\text{-}Tol_3P)_2]$, $[(\eta^2\text{-}P{=}P^tBu_2)Pt(p\text{-}Tol_3P)_2]$, $[\{\eta^2\text{-}P{=}P(N^iPr_2)_2\}Pt(p\text{-}Tol_3P)_2]$ and $[\{(Et_2PhP)_2Pt\}_2P_2]$

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Supplementary materials

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Table 2. Crystal data and structure refinement for [{η^2-P=P^{i}Pr$_2$}Pt(*p*-Tol$_3$P)$_2$·toluene] (**4·toluene**), [{η^2-P=P^{t}Bu$_2$}Pt(*p*-Tol$_3$P)$_2$·toluene] (**6·toluene**), [{η^2-P=P(N^{i}Pr$_2$)$_2$}Pt(*p*-Tol$_3$P)$_2$·toluene] (**13·toluene**) and [{(Ph$_2$EtP)$_2$Pt}$_2$P$_2$] (**14**)

Identification code	**4·toluene**	**6·toluene**	**13·toluene**	**14**
Empirical formula	C55 H64 P4 Pt	C57 H68 P4 Pt	C61 H78 N2 P4 Pt	C56 H60 P6 Pt2
Formula weight	1044.03	1072.08	1158.22	1309.04
Temperature	120(2) K	120(2) K	100(2) K	120(2) K
Wavelength	0.71073 Å	0.71073 Å	0.71073 Å	0.71073 Å
Crystal system	Triclinic	Triclinic	Monoclinic	Monoclinic
Space group	$P\bar{1}$	$P\bar{1}$	P 2$_1$/c	P 2$_1$/c
Unit cell dimensions	a = 13.2476(5) Å	a = 13.3097(8) Å	a = 15.336(3) Å	a = 19.5441(16) Å
	b = 13.3322(5) Å	b = 13.4111(10) Å	b = 24.002(5) Å	b = 9.6862(10) Å
	c = 15.2573(6) Å	c = 15.3900(12) Å	c = 18.974(7) Å	c = 29.7907(17) Å
	α= 74.503(3)°	α = 77.834(6)°	α = 90°	α = 90°
	β = 77.636(3)°	β = 77.293(6)°	β = 125.737(19)°	β = 107.751(9)°
	γ = 75.331(4)°	γ = 76.611(6)°	γ = 90°	γ = 90°
Volume	2480.93(16) Å^3	2569.7(3) Å^3	5669(3) Å^3	5371.1(8) Å^3
Z	2	2	4	4
Density (calculated)	1.398 Mg/m^3	1.386 Mg/m^3	1.357 Mg/m^3	1.619 Mg/m^3
Absorption coefficient	2.992 mm^{-1}	2.890 mm^{-1}	2.627 mm^{-1}	5.417 mm^{-1}
F(000)	1064	1096	2384	2568
Crystal size	0.16 x 0.12 x 0.06 mm^3	0.21 x 0.12 x 0.03 mm^3	0.28 x 0.26 x 0.21 mm^3	0.2 x 0.07 x 0.01 mm^3
Theta range for data collection	2.09 to 25.10°	2.11 to 26.00°	2.74 to 27.50°	2.22 to 25.50°
Index ranges	-15<=h<=15, -15<=k<=15,	-15<=h<=16, -15<=k<=16,	-19<=h<=17, -31<=k<=30,	-23<=h<=23, -11<=k<=11,

	-15<=l<=18	-13<=l<=18	-24<=l<=24	-36<=l<=31
Reflections collected	17416	18854	41630	27697
Independent reflections	8813 [R(int) = 0.0341]	10040 [R(int) = 0.0746]	13012 [R(int) = 0.0396]	9542 [R(int) = 0.1484]
Completeness to theta = 25.50°	99.8 %	99.4 %	99.9 %	95.3 %
Absorption correction	Analytical	Analytical	Analytical	Analytical
Max. and min. transmission	0.815 and 0.673	0.861 and 0.662	0.614 and 0.53879	0.981 and 0.427
Refinement method	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2
Data / restraints / parameters	8813 / 13 / 517	10040 / 0 / 572	13012 / 12 / 622	9542 / 54 / 581
Goodness-of-fit on F^2	1.042	0.990	1.108	1.140
Final R indices [I>2sigma(I)]	R1 = 0.0376, wR2 = 0.0924	R1 = 0.0494, wR2 = 0.1131	R1 = 0.0346, wR2 = 0.0734	R1 = 0.1227, wR2 = 0.2875
R indices (all data)	R1 = 0.0528, wR2 = 0.1040	R1 = 0.0786, wR2 = 0.1276	R1 = 0.0396, wR2 = 0.0752	R1 = 0.1777, wR2 = 0.3115
Largest diff. peak and hole	1.781 and -0.855 e·Å^{-3}	2.563 and -1.373 e·Å^{-3}	3.246 and -0.937 e·Å^{-3}	4.351 and -4.018 e·Å^{-3}