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Design, synthesis and reactivity with dichloro-bis(triphenylphosphine) platinum(II) of two triazenide compounds

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1. Introduction

The study of metal complexes containing triazenido [RN=N-NR']⁻ ligands has increased greatly during the past two decades, because of their potential reactivity in relation to their several modes of coordination [1,2]. Triazenido compounds can serve as a monodentate (a), a bidentate chelating (b) and a bridging ligand (c) (Scheme 1) [3–11]. Although complexes with 1,3-(aryl) triazenes are well known [12–14], relatively few complexes with other triazenido ligands have been developed [15,16].

With this mind, we have extended our interests to the design, synthesis and reactivity with transition metals of new triazenido ligands (Scheme 1d), which can delocalize electron density and donate π electron density to the metal atoms and control the organization of metal complexes [17]. In our lab, two triazenes, namely 1-[(2-carboxymethyl)benzene]-3-[2-pyridine]triazene (HL) and 1-[(2-carboxymethyl)benzene]-3-[o-aminobenzoic acid]triazene (H₂L') have been synthesized and characterized. The reaction of Pt(PPh₃)₂Cl₂ and HL or H₂L' gives two platinum(II) complexes Pt(PPh₃)₂(L)Cl (1) and Pt(PPh₃)₂(L') (2), respectively. In this paper, we describe the synthesis and characterization of the two new triazenes, as well as the platinum(II) complexes thereof.

2. Experimental

All reactions were performed under air. All chemicals were purchased and were used without further purification. Triazenes HL

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ABSTRACT

In the presence of sodium nitrite, the reaction of methyl anthranilate and 2-aminopyridine or o-aminobenzoic acid gives two triazenes, 1-[(2-carboxymethyl)benzene]-3-[2-pyridine]triazene (HL) and 1-[(2-carboxymethyl)benzene]-3-[o-aminobenzoic acid]triazene (H₂L'), respectively. In the presence of Et₃N, the reaction of Pt(PPh₃)₂Cl₂ and HL or H₂L' produces two triazenido platinum(II) complexes, Pt(PPh₃)₂(L)Cl (1) and Pt(PPh₃)₂(L') (2), respectively, which have been characterized by X-ray crystallography, ³¹P NMR spectra, UV-Vis spectra, emission spectra and cyclic voltammetry. When excited at 310 nm, complexes 1 and 2 show luminescence at 432 and 442 nm, respectively, which is consistent with the trend of the lowest-energy absorption wavelengths of 1 (376 nm) and 2 (379 nm). Complexes 1 and 2 exhibit one or two redox waves and follow the order 1 (0.97 V) \rightarrow 2 (0.89 and 0.07 V), which is also in accordance with the trend of the lowest-energy absorption spectra of 1 (376 nm) and 2 (379 nm).

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and H_2L' were prepared by modification of a literature procedure [18].

2.1. Physical measurements

Electronic spectra were recorded on a Hitachi U-3010 (UV–Vis) spectrophotometer for the solution in CH₃CN. ¹H NMR spectra were measured on a Bruker AM 500 spectrometer in CDCl₃. ³¹P NMR spectra were measured on a Bruker AV 600 spectrometer in CD₂Cl₂, chemical shifts were quoted to 85% H₃PO₄. Electrochemical experiments were carried out with an Auto Lab instrument with a platinum wire working electrode, a platinum plate counter electrode, and an AgCl/Ag electrode as the reference electrode. For the experiments performed in CH₃CN as solvent (ca. 1.1×10^{-5} mol L⁻¹) containing in 0.1 mol L⁻¹ tetra-*n*-butylammonium perchlorate (TBAP) as supporting electrolyte, the potentials were referenced to an AgCl/Ag electrode. Luminescent spectra were recorded on a LS-55 Perkin–Elmer fluorescence spectrophotometer at room temperature.

2.2. Synthesis

2.2.1. Synthesis of HL

A solution of methyl anthranilate (10 mmol) in water (5 mL) was mixed with 1 mol L⁻¹ HCl (30 mL, 30 mmol) at 0 °C. An aqueous solution (15%) of sodium nitrite (15 mmol) was added dropwise with stirring. Once the amine was dissolved, a solution of 2-aminopyridine in ethanol (10 mmol) was added at 0 °C and the mixture was stirred for 8 h. The reaction mixture was



Note

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Scheme 1. Generic triazenido binding modes and new triazenes.

neutralized with a 15% aqueous of CH₃CO₂Na to give a yellow precipitate. The reaction mixture was filtered, and the solid was purified by crystallization at -4 °C from 8:2 ethyl acetate/hexanes to obtain yellow crystals, which were collected and dried in *vacuo* (1.9 g, 71%). *Anal.* Calc. for C₁₃H₁₂N₄O₂: C, 60.9; H, 4.7; N, 21.9. Found: C, 60.17; H, 5.04; N, 21.56%. ¹H NMR (CDCl₃, ppm): δ 8.58 (d, *J* = 1 Hz, 1H, py), 8.05 (d, *J* = 2.6 Hz, 1H, Py), 7.96 (d, *J* = 2.8 Hz, 1H, Py), 7.82 (t, *J* = 2.7 Hz, 1H, Py), 7.60 (t, *J* = 2.7 Hz, 2H, Ar), 7.25 (t, *J* = 1.7 Hz, 1H, Ar), 7.16 (t, *J* = 2.7 Hz, 1 Hz, Ar), 3.97 (s, 3H, – OCH₃).

2.2.2. Synthesis of H_2L'

The procedure was performed in the same way as that for the synthesis of HL except that 2-aminopyridine was replaced by o-aminobenzoic acid. H₂L' was obtained (52%). *Anal.* Calc. for C₁₅H₁₃N₃O₄: C, 60.20; H, 4.35; N, 14.05. Found: C, 60.26; H, 4.34; N, 14.10%. ¹H NMR (CDCl₃, ppm): δ 8.36 (d, *J* = 4.8 Hz, 1H, Ar), 8.08 (d, *J* = 5.0 Hz, 1H, Ar), 7.98 (d, *J* = 4.8 Hz, 1H, Ar), 7.90 (d, *J* = 3.6 Hz, 1H, Ar), 7.62 (m, 2H, Ar), 7.45 (t, *J* = 2.3 Hz, 1H, Ar), 7.21 (t, *J* = 2.4 Hz, 1 Hz, Ar), 3.98 (s, 3H, –OCH₃).

2.2.3. Synthesis of $Pt(PPh_3)_2(L)Cl(1)$

To a solution, containing ligand HL (0.31 g, 1.2 mmol) and triethylamine (0.12 g, 1.2 mmol) in CH₃OH/CH₂Cl₂ (20 mL, 1:1), Pt(PPh₃)₂Cl₂ (0.76 g, 0.96 mmol) was added and stirred for 10 min. The solution was allowed to slowly evaporate to afford yellow crystals, which were collected and dried in *vacuo* (0.38 g, 41.4%). *Anal.* Calc. for C₄₉H₄₄ClN₄O₂P₂Pt: C, 58.03; H, 4.34; N, 5.53. Found: C, 58.14; H, 4.35; N, 5.51%. UV–Vis [CH₃CN, λ_{max}/nm (ε /L mol⁻¹ cm⁻¹)]: 244 (2.7 × 10⁴), 376 (1.4 × 10⁴). ³¹P NMR (CD₂Cl₂, ppm): δ 6.61 (d, 1P, *J*_{PtP} = 1320 Hz), δ 13.35 (d, 1P, *J*_{PtP} = 1663 Hz).

2.2.4. Synthesis of $Pt(PPh_3)_2(L')$ (2)

To a solution, containing ligand H₂L' (0.26 g, 0.89 mmol) and triethylamine (0.10 g, 1.0 mmol) in CH₃OH/CH₂Cl₂ (20 mL, 1:1), Pt(PPh₃)₂Cl₂ (0.60 g, 0.76 mmol) was added and stirred for 15 min. The solution was allowed to slowly evaporate to afford yellow crystals, which were collected and dried in *vacuo* (0.42 g, 55.7%). *Anal.* Calc. for C₅₁H₄₃N₃O₄P₂Pt: C, 60.06; H, 4.22; N, 4.12. Found: C, 59.93; H, 4.21; N, 4.13%. UV–Vis [CH₃CN, λ_{max}/nm (ε/L mol⁻¹ cm⁻¹)]: 248 (3.1 × 10⁴), 379 (1.7 × 10⁴). ³¹P NMR (CD₂Cl₂, ppm): δ 5.28 (d, 1P, *J*_{PtP} = 1657 Hz), δ 8.96 (d, 1P, *J*_{PtP} = 1282 Hz).

2.3. X-ray crystallography

Data were collected with a Bruker SMART CCD area detector using graphite monochromated Mo K α radiation (0.71073 Å) at room temperature. All empirical absorption corrections were applied by using the sADABS program [19]. The structures were solved using direct methods and the corresponding non-hydrogen atoms were refined anisotropically. All the hydrogen atoms of the ligands were placed in calculated positions with fixed isotropic thermal parameters and included in the structure factor calculations in the final stage of full-matrix least-squares refinement. All calculations were performed using the SHELXTL computer program [20]. Table 1 listed details of the crystal parameters, data collection and refinement for HL, **1** and **2**. The selected bond distances and angles for HL, **1** and **2** were listed in Tables 2–4.

Table 1Crystallographic data for HL, **1**, and **2**.

Parameter	HL	1	2
Empirical formula	$C_{13}H_{12}N_4O_2$	$C_{49}H_{44}ClN_4O_2P_2Pt$	$C_{51}H_{43}N_3O_4P_2Pt$
Formula weight	256.27	1013.36	1018.91
λ (Å)	0.71073	0.71073	0.71073
Crystal system	monoclinic	monoclinic	orthorhombic
Space group	P2(1)/c	P2(1)/c	Pbca
Unit cell dimensions			
a (Å)	15.064(3)	12.355(3)	20.555(4)
b (Å)	6.197(1)	20.634(4)	20.730(4)
c (Å)	27.545(6)	17.305(4)	21.009(4)
α (°)	90.00	90.00	90.00
β (°)	99.30(3)	94.30(3)	90.00
γ(°)	90.00	90.00	90.00
Ζ	4	4	8
$D_{\rm calc}~({ m Mg}~{ m m}^{-3})$	1.342	1.530	1.512
F(000)	1072	2028	4080
θ Range for data collection (°)	3.09-27.48	3.08-25.34	3.23-25.35
Reflections collected/ unique	21 893/5713	30 106/7787	87 771/8179
Data/restraints/ parameters	5713/0/344	7787/0/533	8179/0/551
Goodness-of-fit (GOF) on F ²	1.154	1.148	1.038
Final R indices	$R_1 = 0.1123$,	$R_1 = 0.0470$,	$R_1 = 0.0459$,
$[I > 2\sigma(I)]$	$wR_2 = 0.3209$	$wR_2 = 0.1125$	$wR_2 = 0.1249$
R indices(all data)	$R_1 = 0.1454$,	$R_1 = 0.0575$,	$R_1 = 0.0781$,
	$wR_2 = 0.3504$	$wR_2 = 0.1170$	$wR_2 = 0.1460$

Table 2					
Selected bond distances (Å) and angles (°) for HL.					
N(2)-N(3)	1.264(4)	N(2)-N(1)	1.336(4)		
N(3)-C(1)	1.423(5)	N(1)-C(9)	1.372(5)		
N(3) - N(2) - N(1)	1118(3)	N(2) - N(3) - C(1)	113 2(3)		

119.6(3)

Table 3

N(2)-N(1)-C(9)

Selected bond distances (Å) and angles (°) for 1.

Pt(1)-N(1)	2.078(5)	Pt(1)-P(2)	2.2496(16)
Pt(1) - P(1)	2.2724(17)	Pt(1)-Cl(1)	2.3569(16)
N(1)-N(2)	1.309(7)	N(1)-C(1)	1.385(9)
N(3)-N(2)	1.307(7)	N(3)-C(6)	1.429(8)
N(1)-Pt(1)-P(2)	89.93(15)	N(1)-Pt(1)-P(1)	170.49(15)
P(2)-Pt(1)-P(1)	99.28(6)	N(1)-Pt(1)-Cl(1)	85.81(15)
P(2)-Pt(1)-Cl(1)	174.90(6)	P(1)-Pt(1)-Cl(1)	85.11(6)
N(2)-N(1)-C(1)	116.2(5)	N(2)-N(1)-Pt(1)	123.0(4)
C(1)-N(1)-Pt(1)	120.3(4)	N(2)-N(3)-C(6)	110.5(5)
N(3)-N(2)-N(1)	112.7(5)		

Table 4						
Selected	bond	distances	(Å) and	angles	(°)	for

Pt(1)-N(1)	2.040(5)	Pt(1)-O(4)	2.061(5)
Pt(1) - P(2)	2.2396(18)	Pt(1)-P(1)	2.2997(18)
N(1)-N(2)	1.321(8)	N(1)-C(1)	1.405(9)
N(2)-N(3)	1.267(7)		
N(1)-Pt(1)-O(4)	83.5(2)	N(1)-Pt(1)-P(2)	94.13(17)
O(4) - Pt(1) - P(2)	174.70(16)	N(1)-Pt(1)-P(1)	168.74(17)
O(4) - Pt(1) - P(1)	86.74(15)	P(2)-Pt(1)-P(1)	96.02(7)
N(2)-N(1)-C(1)	114.3(6)	N(2)-N(1)-Pt(1)	126.5(4)
C(1)-N(1)-Pt(1)	118.6(5)	N(3)-N(2)-N(1)	115.4(6)

3. Results and discussion

3.1. Synthesis and characterization

1-[(2-Carboxymethyl)benzene]-3-[2-pyridine]triazene (HL) was synthesized by the reaction of methyl anthranilate, sodium nitrite, and 2-aminopyridine in 71% yield. ¹H resonances were found in the range of 8.6–7.1 ppm for the aromatic protons, 3.97 ppm for the methyl group (Supporting information, Fig. S1 ¹H NMR spectrum of HL).

 H_2L' was synthesized by the reaction of methyl anthranilate, sodium nitrite, and o-aminobenzoic acid in 52% yield. ¹H resonances were found in the range of 8.1–7.1 ppm for the aromatic protons, 3.97 ppm for the methoxy group (Supporting information, Fig. S2 ¹H NMR spectrum of H_2L').

Scheme 2 shows the procedure of the synthesis of complexes **1** and **2**. Complex **1** was obtained as orange crystals by the reaction of HL and Pt(PPh₃)₂Cl₂ in CH₃OH/CH₂Cl₂. The ³¹P NMR spectrum of Pt(PPh₃)₂Cl₂ showed one resonance with ¹⁹⁵Pt satellite peak at 16.06 ppm (¹J_{Pt-P} = 2267 Hz) for P atoms of PPh₃ (Supporting information, Fig. S3 ³¹P NMR spectrum of Pt(PPh₃)₂Cl₂). The ³¹P NMR spectrum of complex **1** exhibited two resonance with ¹⁹⁵Pt satellite peaks at 6.61 ppm (¹J_{Pt-P} = 1320 Hz) and 13.35 ppm (¹J_{Pt-P} = 1663 Hz) for P atoms of two PPh₃ molecules, respectively (Supporting information, Fig. S4 ³¹P NMR spectrum of complex **1**).

Complex **2** was obtained as yellow crystals by the reaction of H_2L' and $Pt(PPh_3)_2Cl_2$ in CH_3OH/CH_2Cl_2 . The ³¹P NMR spectrum of complex **2** showed two resonance with ¹⁹⁵Pt satellite peaks at 5.28 ppm (${}^{1}J_{Pt-P} = 1657$ Hz) and 8.96 ppm (${}^{1}J_{Pt-P} = 1282$ Hz) for P atoms of two PPh₃ molecules, respectively (Supporting information, Fig. S5 ³¹P NMR spectrum of complex **2**).

3.2. Crystal structures

3.2.1. Crystal structure of HL

X-ray quality crystals of HL were obtained by hexane diffusion into an ethyl acetate solution of HL. An ORTEP view of HL is displayed in Fig. 1. HL contains a rigid N(2)=N(3) double bond. The N(1)-N(2) and N(2)-N(3) bond distances are 1.336(4) and 1.264(4) Å, which are different from those found in 1,3-bis-(2-carboxymethyl)benzene triazene (1.296(3) and 1.293(3) Å) [10]. N(1)-N(2)-N(3) bond angle is 111.8(3)°.

3.2.2. Crystal structure of complex 1

As shown in Fig. 2, the platinum center geometry is square planar with Pt(1), N(1), Cl(1), P(1) and P(2) atoms lying on a plane. The Pt atom is coordinated by two P atoms of PPh₃ ligands, one chloride ion, and one nitrogen atom of L⁻ ligand. Pt–P bond distances are 2.2724(17) and 2.2496(16) Å, respectively. The important feature of the structure is the monodentate bonding of the L⁻ ligand to



Scheme 2. Schematic representation of the synthesis of complexes 1 and 2.



Fig. 1. ORTEP plot of HL.



Fig. 2. ORTEP plot of complex 1.

the Pt. The Pt–N bond length 2.078(5) Å is in agreement the value of 2.09(2) reported for trans- $[PtH(dtt)-(PPh_3)_2]$ (dtt = 1,3-di-p-tolyltriazenido) [21] and is slightly shorter than the distance found in $[NBu_4][Pt(C_6F_5)_2(PhNNPh)(Cl)_2]$ (2.1215 Å) [22]. The bond distance of Pt and Cl (2.3569(16) Å) is slightly longer than that found in $[NBu_4][Pt(C_6F_5)_2(PhNNPh)(Cl)_2]$ [22].

The two N–N bond lengths (1.309(7) and 1.307(7) Å) are virtually equal in the monodentate platinum complex **1**, owing to the delocalization of the π -electrons in the triazenido moiety. The N(1)–N(2)–N(3) angle takes a value of 112.7(5)°, slightly larger than that of the free HL ligand (111.8(3)°).

3.2.3. Crystal structure of complex 2

During the reaction of Pt(PPh₃)₂Cl₂ and H₂L', two Cl⁻ ions were both replaced by an L'²⁻ ligand. As shown in Fig. 3, the platinum atom has a slightly distorted square planar coordination. Complex **2** is completed by one Pt atom, two *cis* PPh₃ molecules, and one L'²⁻ ligand. Compared with complex **1**, complex **2** contains one chelate triazenido ligand (L'²⁻). The Pt–P bond distances are 2.2997(18) and 2.2396(18) Å, which are similar to those found in complex **1**. The bond distance of Pt and N is 2.040(5) Å, which is shorter than that found in complex **1** (2.078(5) Å). The distance of Pt and O is 2.061(5) Å.



Fig. 3. ORTEP plot of complex 2.

3.3. Electronic spectra

The electronic spectra of HL, H₂L', Pt(PPh₃)₂Cl₂, **1** and **2** were recorded in CH₃CN (Table 5). HL exhibited two bands at 276 and 363 nm, and H₂L' showed three bands at 229, 257 and 376 nm. Complex **1** exhibited two bands at 244 and 376 nm, and complex **2** showed two bands at 248 and 379 nm. Compared with those of HL and H₂L', the absorption maxima of low-energy bands of complexes **1** (376 nm) and **2** (379 nm) were red-shifted to a longerwavelength region. This is assignable to spin–orbit coupling from the heavy atom effect of the platinum(II) ion as well as a Pt \rightarrow L MLCT transition upon deprotonated HL or H₂L' binding to the platinum(II) ion [23].

The UV–Vis spectra also were used to investigate the reactivity of Pt(PPh₃)₂Cl₂ and HL or H₂L' and assist the understanding of the formation of complexes **1** and **2**. As shown in Fig. 4, in the presence of Et₃N, after 2 min mixing of Pt(PPh₃)₂Cl₂ and HL at molar ratio 1:1, the UV–Vis spectra showed two new absorbance peaks at 238 and 356 nm. At the same time, the color of the solution changed from deep-red to light yellow. Furthermore, the intensities of the absorption band at 356 nm decreased, accompanied by a red shift from 356 to 358 nm, specifying the formation of complex **1** (Scheme 3). After 15 min, there were no changes in the intensities of the absorbance, the position of bands, or the color of the solution.

As shown in Fig. 5, after 2 min mixing H_2L' and $Pt(PPh_3)_2Cl_2$ at molar ratio 1:1, the UV–Vis spectra showed two new absorbance peaks at 241, and 366 nm. At the same time, the color of the solution changed from red to yellow. Furthermore, the intensities of

Table 5

Photo-physical and electrochemical data for HL, H_2L' , 1 and 3 in CH_3CN .

	CH ₃ CN	CH₃CN	CH ₃ CN ^a		
	$\lambda_{abs} (nm)$	λ_{em} (nm)	$E_{\rm ox1}$	E _{ox2}	E _{red}
HL H ₂ L' Pt(PPh ₃) ₂ Cl ₂ 1 2	276, 363 229, 257, 376 241 244, 376 248, 379	420 428 399 432 442	1.04 0.97 ^b 0.43 0.96 0.89	1.48 1.26 1.28 ^b	0.07 ^b

^a Potential in V vs. Ag/AgCl at 100 mV/s.

^b Peak potential for irreversible wave.



Fig. 4. UV-Vis spectral changes of the reaction of HL and Pt(PPh₃)₂Cl₂.



Scheme 3. The possible mechanism of the formation of complex 1.



Fig. 5. UV–Vis spectral changes of the reaction of H₂L' and Pt(PPh₃)₂Cl₂.

absorption bands at 244 and 366 nm decreased, accompanied by a red shift from 366 to 370 nm, specifying the formation of complex **2** (Scheme 4). After 15 min, there were no further changes of intensities of the absorbance, the place of bands, or the color of the solution.



Scheme 4. The possible mechanism of the formation of complex 2.

3.4. Emission spectra

The emission spectra of HL, H₂L', Pt(PPh₃)₂Cl₂, **1** and **2** were measured in CH₃CN at room temperature. As shown in Fig. 6, when excited at 310 nm, HL and H₂L' displayed a band at 420 and 428 nm, respectively. The emission energy of complex **1** appeared at 432 nm, and complex **2** exhibited reduced emission energy at 442 nm. Clearly, compared with that of **1**, the emission of **2** is red-shifted. The emission wavelength **1** (432 nm) < **2** (442 nm) is consistent with the trend of the lowest-energy absorption wavelengths of **1** (376 nm) and **2** (379 nm).

3.5. Electrochemical properties

The electrochemical data for complexes **1** and **2**, together with the free ligands HL and H_2L' were summarized in Table 5.

The free ligands HL and H₂L' displayed two redox waves and followed the order HL (1.48 and 1.04 V) \rightarrow H₂L' (1.26 and 0.97 V). This is in accordance with the trend of the lowest-energy absorption spectra of HL (363 nm) and H₂L' (376 nm). Complexes **1** and **2** exhibited one or two redox waves and followed the order **1** (0.97 V) \rightarrow **2** (0.89 and 0.07 V). This is also in accordance with the trend of the lowest-energy absorption spectra of **1** (376 nm) and **2** (379 nm).

As shown in Fig. 7, compound $Pt(PPh_3)_2Cl_2$ exhibited one reversible redox potential at 0.429 V, and one irreversible oxidation at 1.28 V, which corresponding to two successive one-electron oxidations of $Pt(PPh_3)_2Cl_2$ (Pt^{III}/Pt^{II} and Pt^{IV}/Pt^{III}). The CV of com-



Fig. 6. Emission spectra of HL, H₂L', Pt(PPh₃)₂Cl₂, 1 and 2 in CH₃CN.



Fig. 7. CV of HL, $Pt(PPh_3)_2Cl_2$ and 1 in $CH_3CN/0.1$ mol L^{-1} [Bu₄N]ClO₄ at 100 mV s⁻¹ scan rate.



Fig. 8. CV of $H_2L',\ Pt(PPh_3)_2Cl_2$ and 2 in $CH_3CN/0.1\ mol\ L^{-1}$ $[Bu_4N]ClO_4$ at 100 mV s^{-1} scan rate.

plex **1** revealed a reversible wave at 0.96 V corresponding to a one-electron oxidation of **1** (Pt^{III}/Pt^{II}), which was anodically shifted compared to that of the compound $Pt(PPh_3)_2Cl_2$ (0.429 V), indicating that it is easier to reduce the Pt(II) ion in **1** than that in $Pt(PPh_3)_2Cl_2$.

As shown in Fig. 8, the CV of complex **2** revealed one reversible redox potential at 0.89 V, and one irreversible reduction at 0.07 V. The former process corresponds to a one-electron oxidation of **2** (Pt^{III}/Pt^{II}), and the latter is assigned to a one-electron reduction of **2** (Pt^{II}/Pt^{II}). The higher platinum-based oxidation potentials for **1** (0.96 V) than for **2** (0.89 V) is due to the electron-deficient nature of HL, making oxidation of **1** more difficult than that of **2**.

In summary, the present study shows that the 1,3-RR'-triazenide ligands, 1-[(2-carboxymethyl)benzene]-3-[2-pyridine]triazene and 1-[(2-carboxymethyl)benzene]-3-[o-aminobenzoic acid]triazene give two new platinum(II) complexes. Currently we are exploring this further, including the design and synthesis of new triazenes, as well as their reactivity.

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Appendix A. Supplementary material

CCDC 757905, 772099 and 772100 contain the supplementary crystallographic data for this paper. These data can be obtained free of charge from The Cambridge Crystallographic Data Centre via www.ccdc.cam.ac.uk/data_request/cif. Supplementary data associated with this article can be found, in the online version, at doi:10.1016/j.ica.2011.02.091.

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