Supporting information

Bimetallic Ruthenium Complexes Bridged By Divinylphenylene Bearing Oligo(ethylene glycol)methylether: Synthesis, (Spectro)electrochemistry and Lithium Cation Effect

Li Yan Tian,[a] Yuan Mei Liu,[a] Guang-Xuan Tian,[a] Xiang Hua Wu,*[a] Zhen Li,[a] Jun-Feng Kou,[a] Ya-Ping Ou,[b] Sheng Hua Liu,[b] Wen-Fu Fu*[a]

[a] *College of Chemistry and Chemical Enginering, Yunnan Normal University, Kunming 650500, P.R. China*

[b] *Key Laboratory of Pesticide and Chemical Biology, Ministry of Education, College of Chemisty, Central China Normal University, Wuhan 430079, PR China.*

*Corresponding Author, Email: chxhwu@sina.com (X. H. Wu) fwf@mail.ipc.ac.cn (W. F. Fu)

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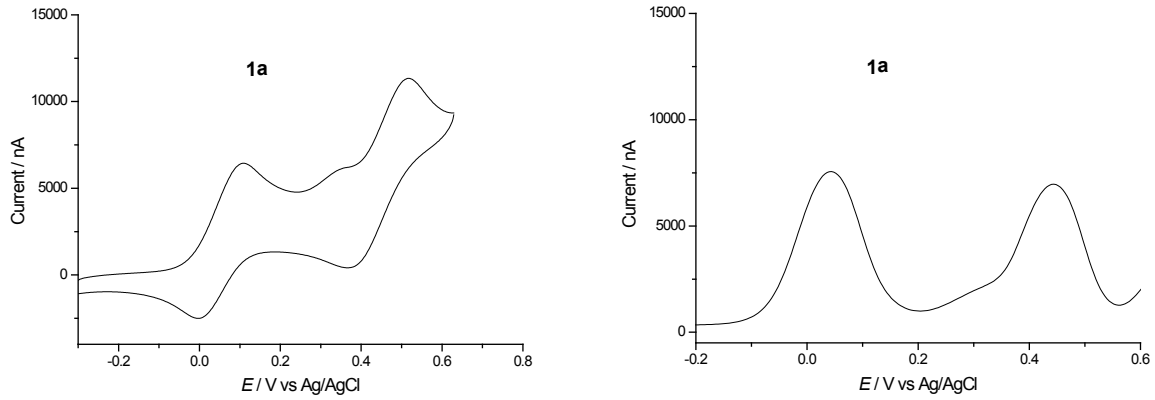

Figure S1. CV of complex **1a** in $CH_2Cl_2/[N^nBu_4][B(C_6F_5)_4]$ at scan rate 100 mV s^{-1} (left). SWV of complex **1a** (scan rate: 100 mV s^{-1}, f = 10 Hz, right).

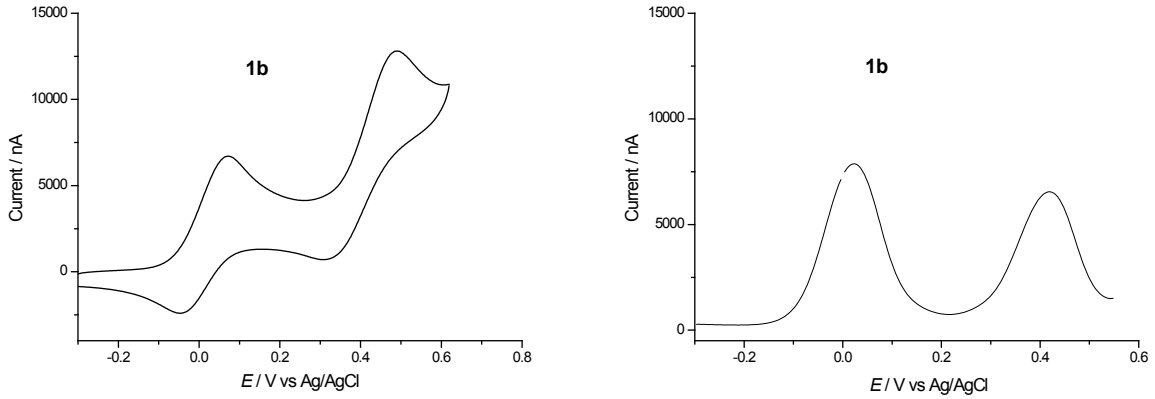

Figure S2. CV of complex **1b** in $CH_2Cl_2/[N^nBu_4][B(C_6F_5)_4]$ at scan rate 100 mV s^{-1} (left). SWVs of complex **1b** (scan rate: 100 mV s^{-1}, f = 10 Hz, right).

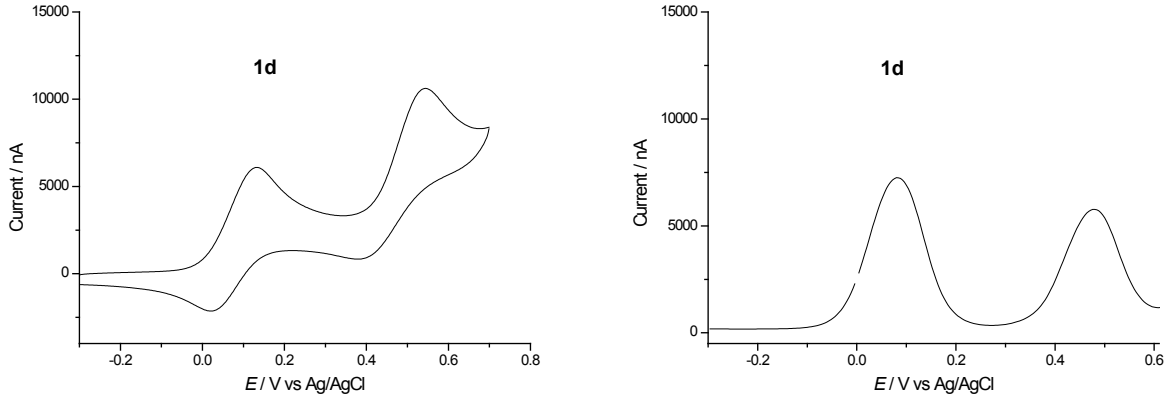

Figure S3. CV of complex **1d** in $CH_2Cl_2/[N^nBu_4][B(C_6F_5)_4]$ at scan rate 100 mV s^{-1} (left). SWVs of complex **1d** (scan rate: 100 mV s^{-1}, f = 10 Hz, right).

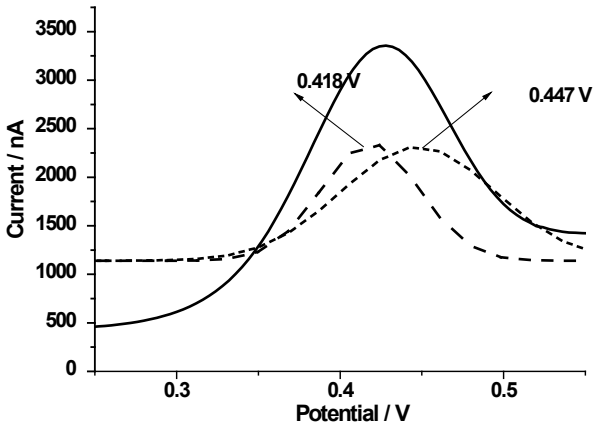

Figure S4. Deconvolution of the potential of complex **1g** after adding 1.0 eq Li^{+}.

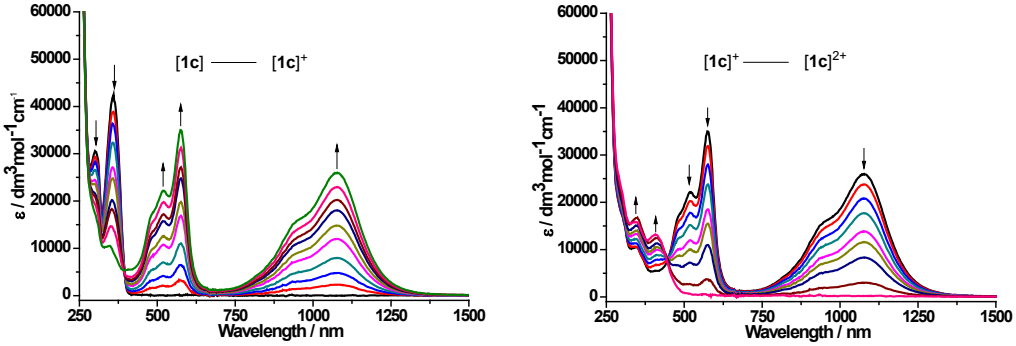

Figure S5. UV-Vis/near-IR spectra of complex $[\mathbf{1c}]^{n+}$ (n = 0-2) in dichloromethane (2.0 mmol L^{-1}) collected during in situ oxidation in a specteoelectrochemical cell (0.05 M $Bu_4N(C_6F_5)_4/CH_2Cl_2$).

Table S1. Crystal data and structure refinement for complexes **1b, 1e and 1f**

	1b	**1e**
Formula	$C_{36}H_{74}Cl_2O_6P_6Ru_2$	$C_{32}H_{66}Cl_2O_4P_6Ru_2$
Fw	1061.81	973.71
Temp(K)	293(2)	293(2)
Wavelength(Å)	0.71073	0.71073
Crystal system	Monoclinic	Monoclinic
Space group	P2(1)/c	P2(1)/c
a(Å)	11.227(2)	14.560(3)
b(Å)	13.259(3)	21.265(4)
c(Å)	17.423(4)	15.947(3)
α(°)	90.00	90.00
β(°)	100.17(3)	101.77(3)
γ(°)	90.00	90.00
V(Å)	2552.8(9)	4833.7(17)
Z	2	4
Density (calculated)(Mg/m^3)	1.381	1.338

Absorption coefficient(mm^{-1})	0.921	0.963
F(000)	1100	2008
θ Range(°)	3.07-27.48	3.01-27.45
Index ranges	-13<=h<=14	-18<=h<=18
	-17<=k<=17	-27<=k<=27
	-22<=l<=22	-20<=l<=20
Reflections collected	21875	41196
Independent reflec.	5791	10964
	[R(int) = 0.0445]	[R(int) = 0.0684]
Refinement method	Full-matrix least-squares on F^2	Full-matrix least-squares on F^2
Data / restraints / parameters	5791 / 0 / 245	10964 / 0 / 416
Goodness-of-fit on F^2	1.070	1.053
Final *R* indices [I>2sigma(I)]	R_1 = 0.0308	R_1 = 0.0579
	wR_2 = 0.0668	wR_2 = 0.1552
R indices (all data)	R_1 = 0.0406	R_1 = 0.1084
	wR_2 = 0.0752	wR_2 = 0.1906
Largest diff. peak and hole	0.401 and -0.373 e. $Å^{-3}$	2.022 and -0.528 e. $Å^{-3}$

Table S2 Selected bond lengths (Å) and angles (deg) for complex **1b, and 1e**

1b		**1e**	
Ru(1)-P(1)	2.3732(9)	Ru(1)-P(1)	2.360(2)
Ru(1)-Cl(1)	2.4758(9)	Ru(1)-Cl(1)	2.4660(18)
Ru(1)-C(1)	2.096(2)	Ru(1)-C(10)	2.111(5)
C(1)-C(2)	1.341(3)	C(10)-C(11)	1.324(8)
C(2)-C(3)	1.473(3)	C(13)-C(12)	1.426(8)
C(5)-O(3)	1.381(3)	O(2)-C(17)	1.385(6)
C(2)-C(1)-Ru(1)	130.7 (2)	C(11)-C(10)-Ru(1)	130.9(4)
C(1)-C(2)-C(3)	127.6(2)	C(10)-C(11)-C(12)	126.9(6)
C(5)-C(3)-C(2)	121.1(2)	C(17)-C(12)-C(11)	121.3(5)
O(3)-C(5)-C(3)	115.8(2)	O(2)-C(17)-C(12)	118.5(5)