Electronic Supplementary Information for

Synthesis and Structure of Mono-, Bi- and Trimetallic Amine-bis(phenolate) Cobalt(II) complexes

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Summary of Data for **3,** $\{Co[O_2NN']^{AmAmPy}\}_2$

Formula: $C_{40}H_{58}Co_1N_2O_2$

******* Unit Cell Parameters *******		********* Model Refinement *********	
a:	29.293(5)	R factor[all data]:	0.215
b:	10.521(2)	R1 factor[I>2.0sigma(I)]:	0.195
c:	23.542(4)	Rw factor[all data]:	0.546
alpha:	90.000	goodness of fit:	2.134
beta:	90.000	# of observations:	7520
gamma:	90.000	# of variables:	407
volume:	7256(2)	refl/para ratio:	18.5
		maximum shift/error:	0.64
		Refinement program:	SHELXL
		Refinement mode:	Single

****** Space Group Information *****		****** Reflection Corrections ******	
symbol:	Pbcn	absorption applied:	No
number:	60	abs. type:	NUM2
centricity:	centric	abs. range:	0.883-0.978
Z value:	8	decay applied:	No
formula weight:	657.84	decay (%):	0.00
calculated density:	1.204	redundants averaged:	Yes
mu (cm-1):	5.085		
crystal system:	orthorhombic		
laue group:	mmm		
lattice type:	P		

******* Reflection Processing ******		***** Experimental Information ****	
total # processed:	62442	radiation:	Mo
total # unique:	7520	wavelength:	0.7107
R merge (%):	5.68	max. 2theta:	61.8
Wilson B:	3.80	sin(theta)/lambda:	0.7225
		temperature (C):	-120.0

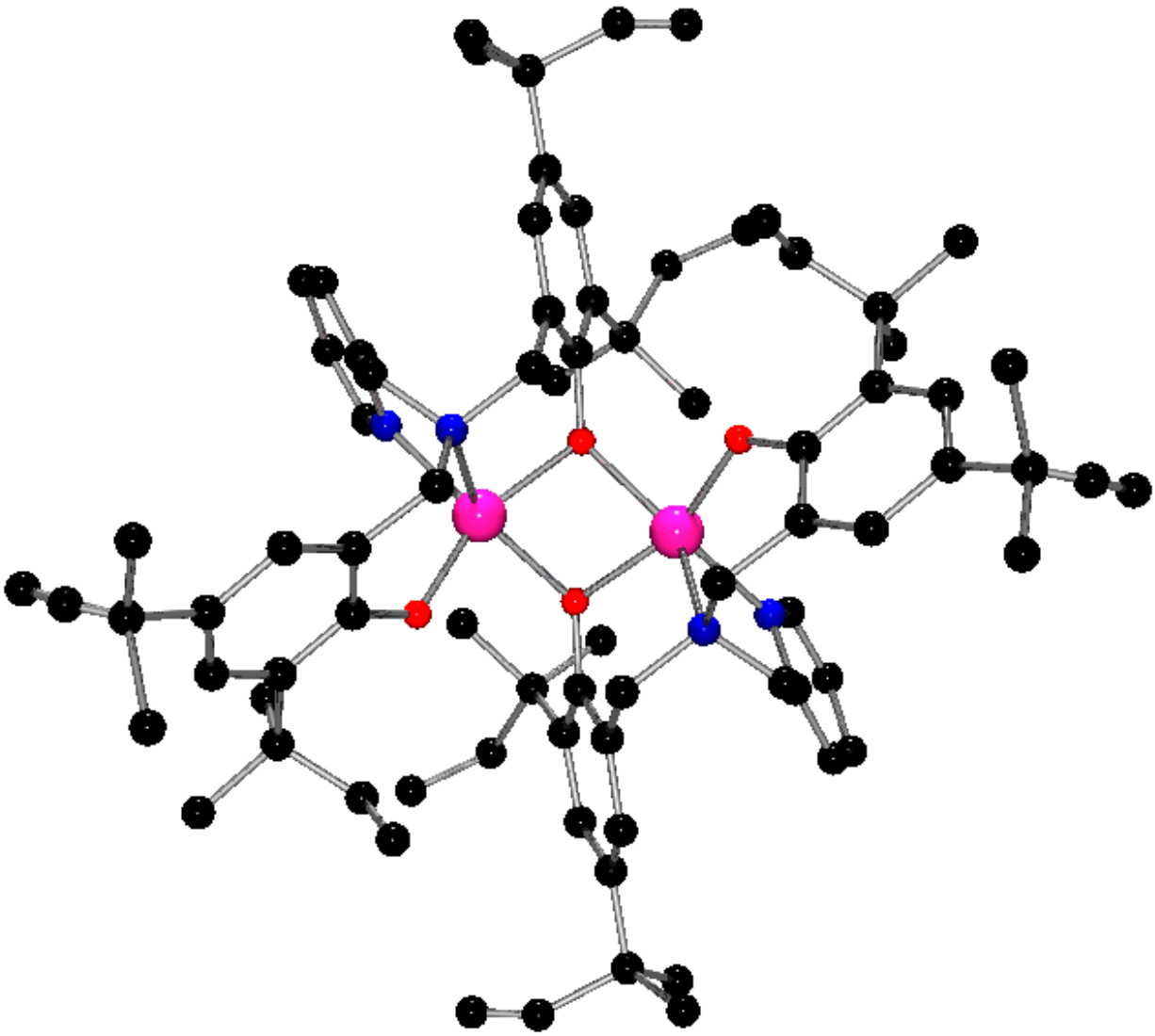

Figure S1: Ball and stick model of **3**, $\{Co[O_2NN']^{AmAmPy}\}_2$

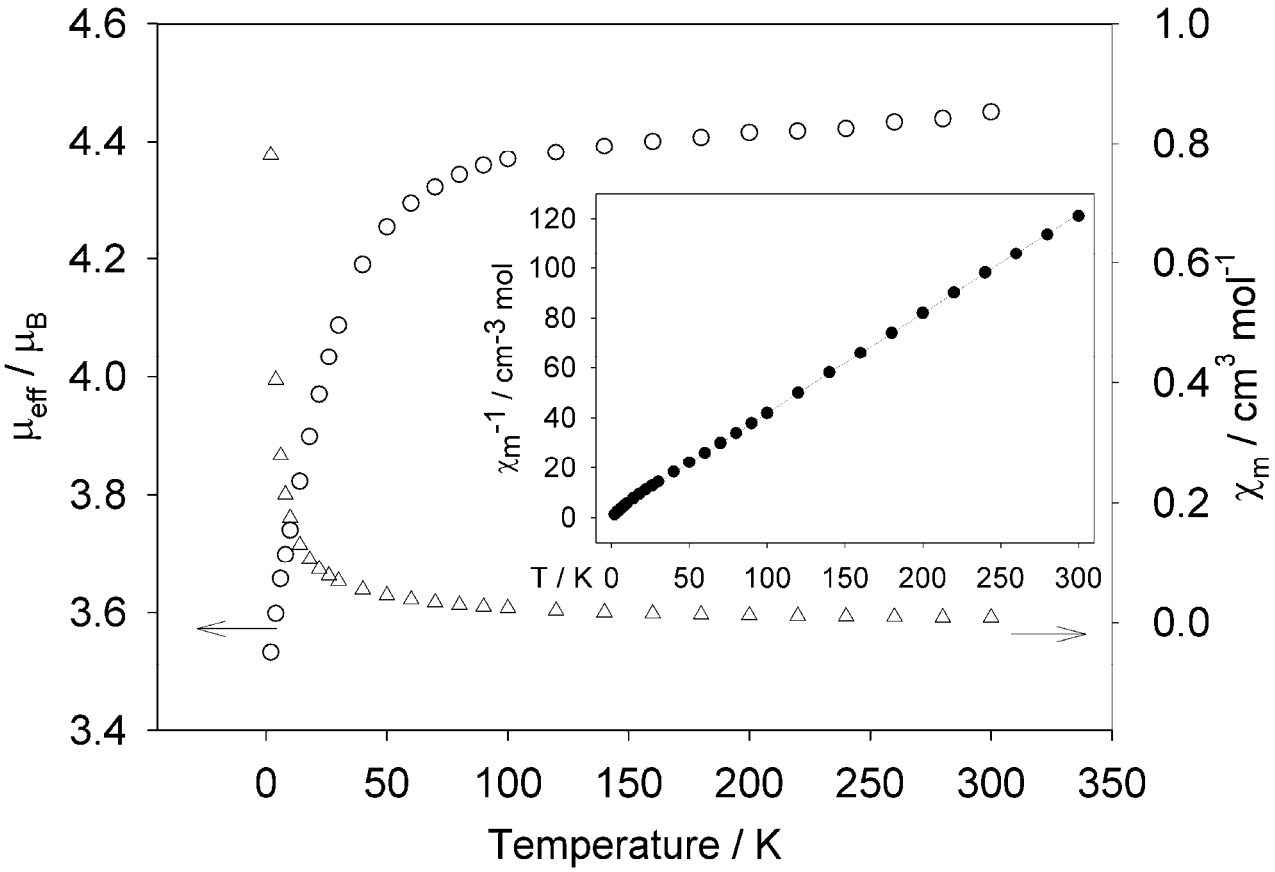

Figure S2: Magnetic moment (○), susceptibility (Δ) and inverse susceptibility (inset) versus temperature data for **1**(CH_3OH). The solid line represents the best fit for the Curie-Weiss model, $\chi_M = C/(T - \theta)$, where $\chi_M^{-1} = 0.4003T + 1.8298$ ($R^2 = 0.9999$) giving a Curie constant, C, of 2.50 emu/mol (resulting in a g-value of 2.3) and $\theta = -4.57$ K.

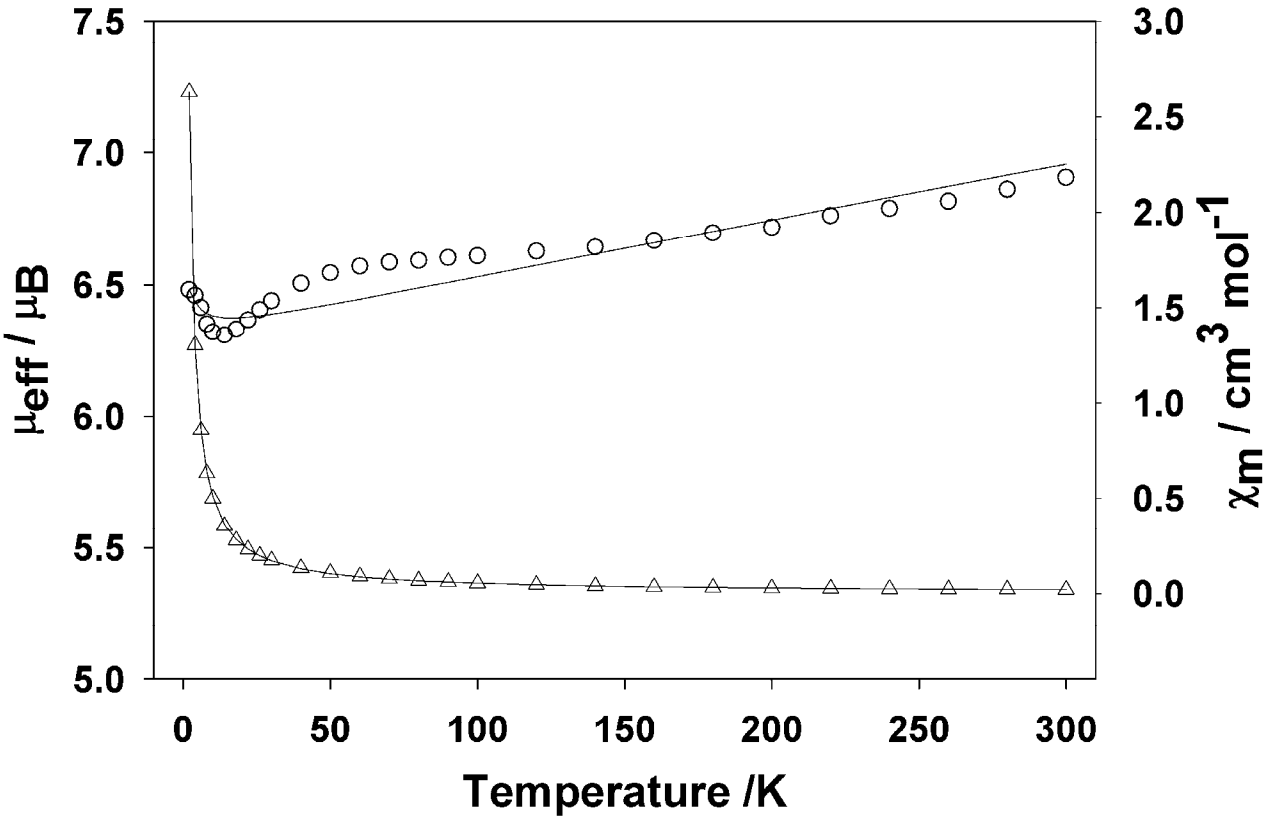

Figure S3: Magnetic moment (○) and susceptibility (Δ) versus temperature data for **3**. The solid lines represent the best fit for the Heisenberg dimer model for two $S = 3/2$ ions.

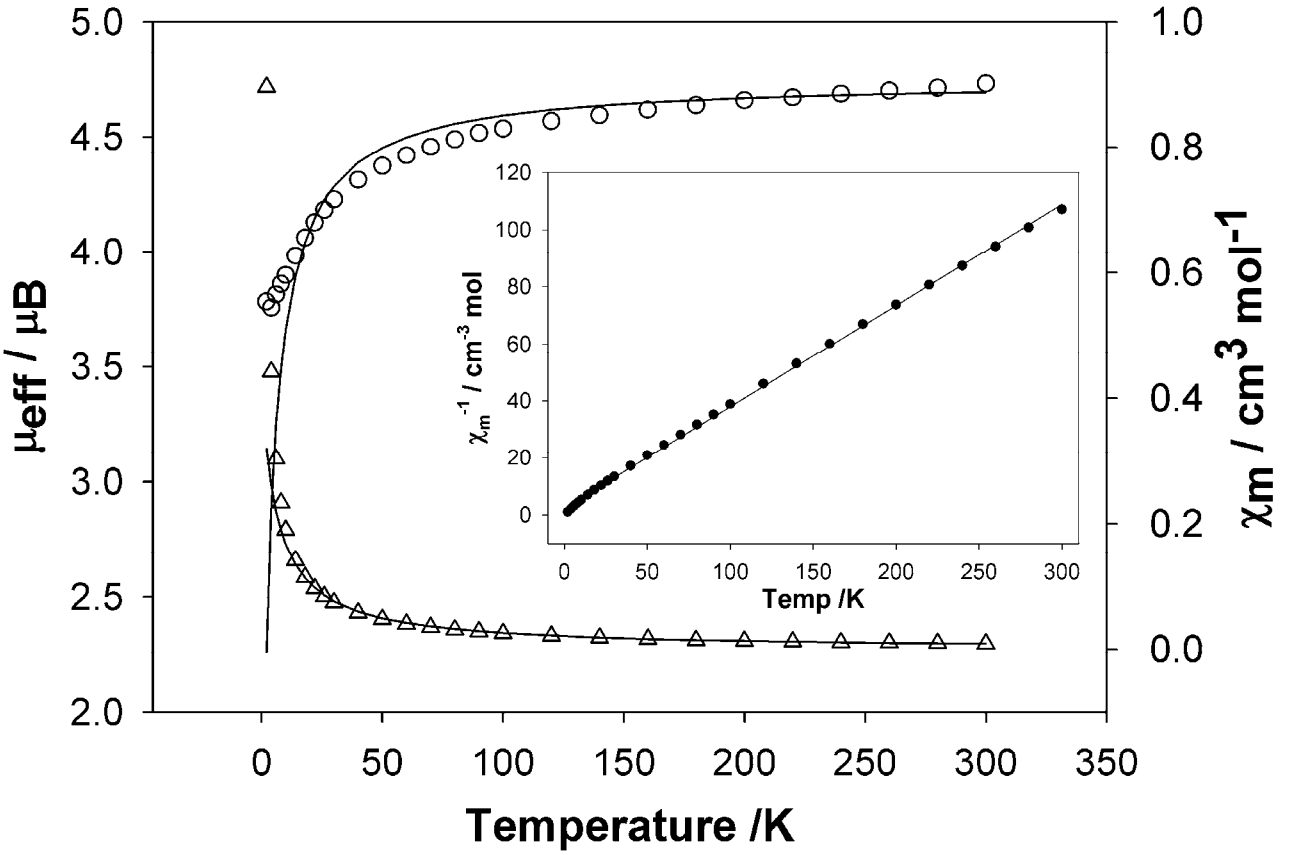

Figure S4: Magnetic moment (○), susceptibility (Δ) and inverse susceptibility (inset) versus temperature data per Co atom for **4**. The solid line represents the best fit for the Curie-Weiss model, $\chi_M = C/(T - \theta)$, where $\chi_M^{-1} = 0.355T + 2.4174$ ($R^2 = 0.9993$) giving a Curie constant, *C*, of 2.82 emu/mol (resulting in a *g*-value of 2.45) and $\theta = -6.81$ K.

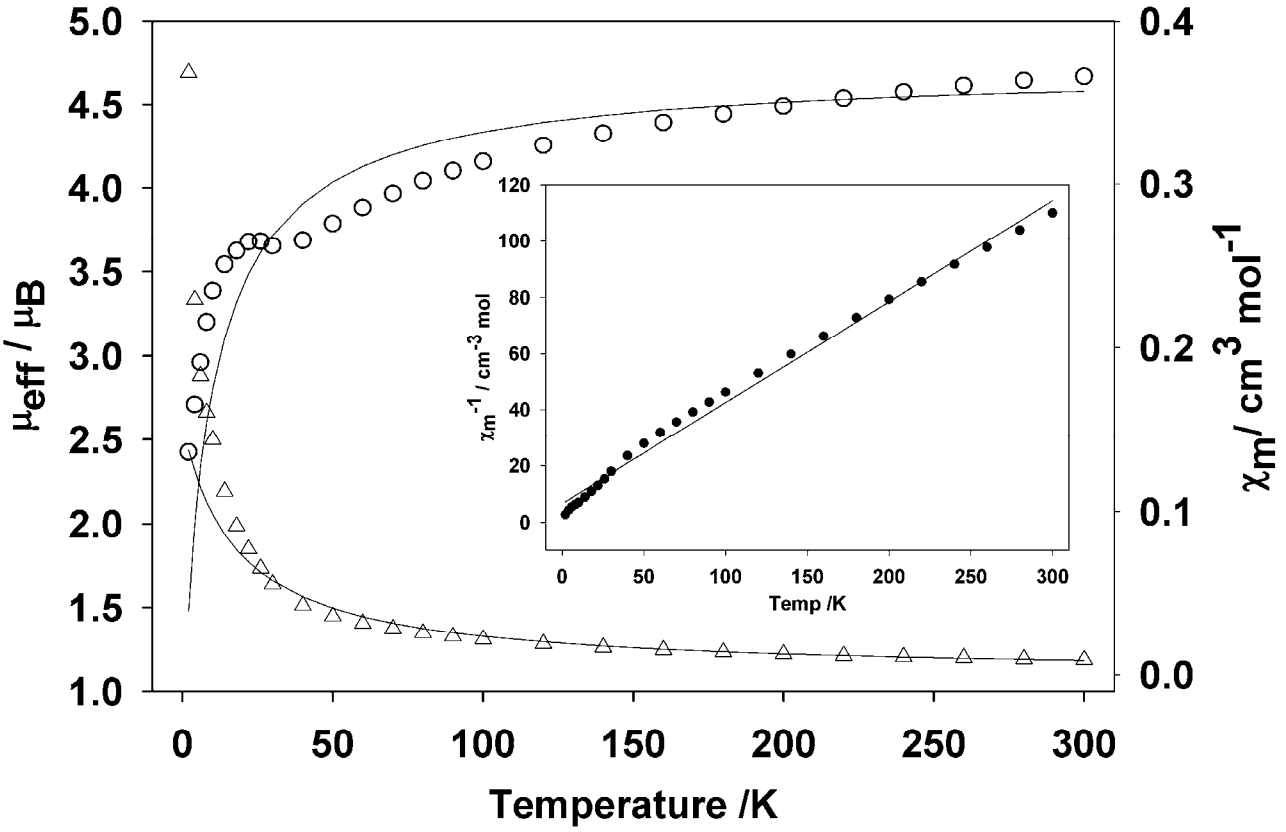

Figure S5: Magnetic moment (○), susceptibility (Δ) and inverse susceptibility (inset) versus temperature data per Co atom for **5**. The solid line represents the best fit for the Curie-Weiss model, $\chi_M = C/(T - \theta)$, where $\chi_M^{-1} = 0.3595T + 6.5754$ ($R^2 = 0.9925$) giving a Curie constant, *C*, of 2.78 emu/mol (resulting in a *g*-value of 2.44) and $\theta = -18.29$ K.

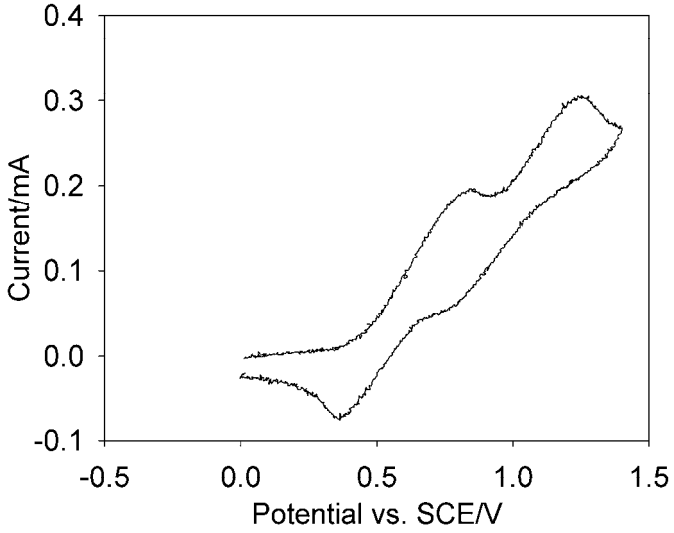

Figure S6: Cyclic voltammagram of **1** in CH_2Cl_2 (0.1M $[(n\text{-}Bu)_4N]PF_6$) at 20 ºC and a scan rate of 100 mV s^{-1}.

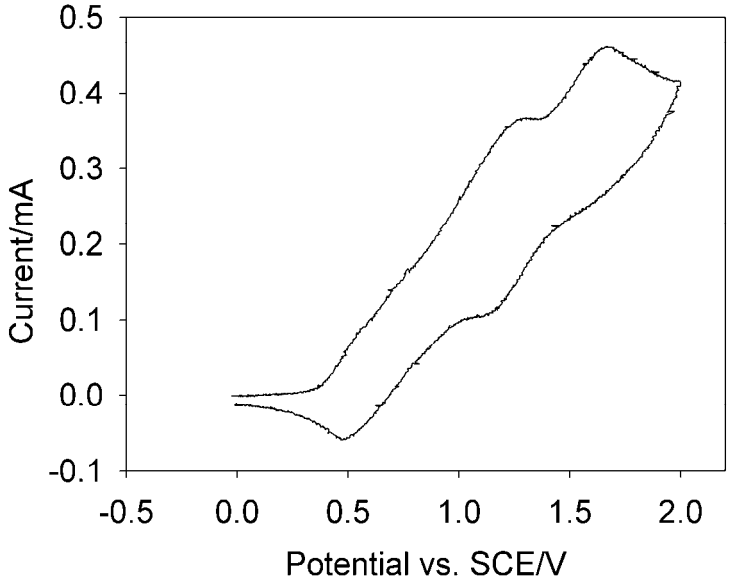

Figure S7: Cyclic voltammagram of **4** in CH_2Cl_2 (0.1M $[(n\text{-}Bu)_4N]PF_6$) at 20 ºC and a scan rate of 100 mV s^{-1}.

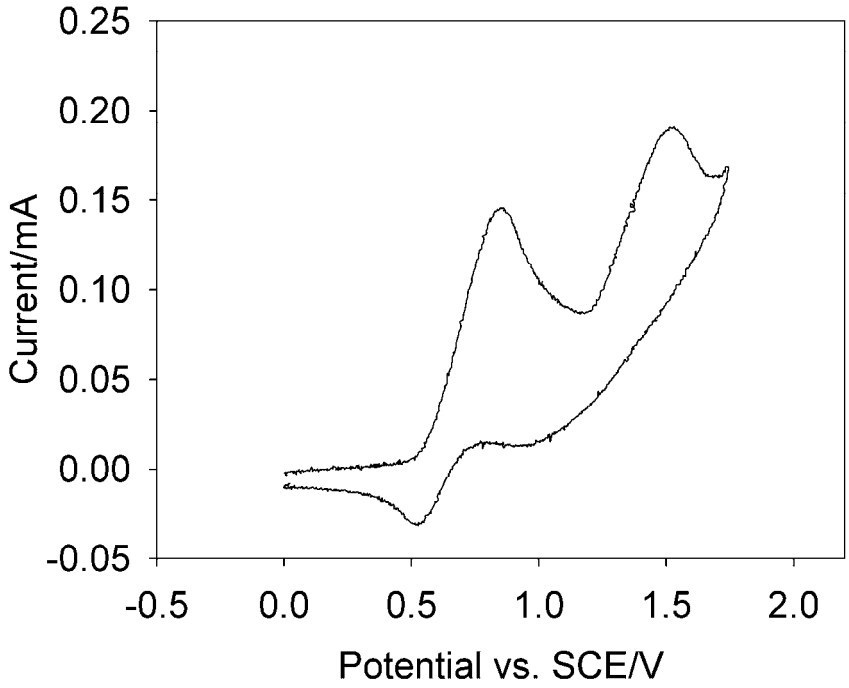

Figure S8: Cyclic voltammagram of $H_2[O_2NN']^{BuBuNMe2}$ in CH_2Cl_2 (0.1M $[(n\text{-}Bu)_4N]PF_6$) at 20 ºC and a scan rate of 100 mV s^{-1}.