Supplementary information

Table 1. Analysis data for the different cyclic voltammograms of copper bromide ions in 0.1M NaOCl

M x10^{-2}	**E_{Pa} Volt**	**E_{pc} Volt x10^{-1}**	**ΔE_P volt**	**(-) ip_a x10^{-4}**	**ipc x10^{-4}**	**i_{pa}/i_{pc}**	**E^0**	**D_a x10^{-11}**	**Dc x10^{-11}**	**$Ep_{c/2}$**	**αna**	**Ks x10^{-4}**	**Γc x10^{-7}**	**Qc x10^{-4}**	**(-)Γa x10^{-7}**	**(-)Qa x10^{-4}**
1.43	0.1830	1.73	0.3560	3.07E	3.63	0.8456	0.0050	6.3611	8.90	0.0045	0.2633	7.21	1.2070	3.66	1.0207	3.09

Table 2 Effect of concentration for ligand LC, 0.1 scan rate at 19.1^{0}C ($Cu^{+1} \leftrightarrow Cu^0$).

L x10-3	EPa	Epc	ΔE_P	ipa X10^{-4}	ipc X10^{-5}	ipa/ipc	E_0	Da X10-11
0.04	0.0799	0.7877	0.7078	1.15	1.51	7.5980	0.4338	1.1677
0.09	0.0696	0.7723	0.7027	1.40	0.853	16.412	0.4210	1.7275
0.13	0.076	0.7823	0.7059	1.45	0.641	22.627	0.4293	1.8528
0.17	0.0735	0.7683	0.6948	1.43	0.653	21.840	0.4209	1.7947
0.22	0.0750	0.7448	0.6697	1.86	1.40	13.263	0.4099	3.0470
1.02	0.0698	0.2876	0.2178	0.842	2.32	3.6257	0.1787	0.6252
1.85	0.0817	0.0061	0.0878	0.707	4.98	1.4200	0.0378	0.4412
2.78	0.0875	0.0027	0.0848	0.231	4.88	0.4738	0.0451	0.005

Table 3 Effect of concentration for ligand LC using 0.1 scan rate at 19.1^{0}C ($Cu^{+1} \leftrightarrow Cu^0$)

Lx10-3	**DcX10-13**	**Epc/2**	**αnac**	**Ks CX10-9**	**Γ cX10-9**	**(+) QcX10-**	**Γ aX10-8**	**(-) Q a X10-**	**Log βj**	**βj**	**(-)ΔG (KJ/mol)**

						5		**4**			
0.04	890	0.0045	0.2633	721	120.70	36.6	10.207	3.09	8.329	213791776	46.612
0.09	2.02	0.082	1.4076	2.06	5.0364	1.53	3.8266	1.16	8.120	131859127	45.438
0.13	0.641	0.7964	1.9463	1.43	2.8358	0.859	4.6544	1.41	8.275	188371398	46.304
0.17	0.362	0.8003	2.5921	1.20	2.1302	0.645	4.8202	1.46	8.140	138254984	45.553
0.22	0.376	0.7873	2.462	1.34	2.1721	0.658	4.7440	1.44	7.961	91534331	44.551
1.02	1.73	0.7787	1.3797	2.75	4.6605	1.41	6.1813	1.87E	4.160	14485.260	23.283
1.85	4.76	0.3410	0.8748	3.22	7.7227	2.34	2.8000	0.848	1.942	87.534	10.867
2.78	21.9	0.0685	0.6261	1220	16.564	5.02	2.3521	0.713	2.273	187.573	12.720

Table 3 Analysis of the first wave of $CuBr_2$ at different concentrations of the depolizer at19.1^{0}C for reaction, ($Cu^{+2} \leftrightarrow Cu^{+1}$).

υ	EPa	Epc	ΔE_P	(-)Ip,a x10-5	Ip,c $x10^{-5}$	ipa/ipc	Eo	Da $x10^{-10}$	Dc $x10^{-11}$	Epc/2	αnac	Ks $cx10^{-5}$	Γ c $x10^{-8}$	(+) Qc $x10^{-4}$	(-) Q a $x10^{-4}$
0.1	0.5899	0.0034	0.5864	1.41	2.52	0.5608	0.296	0.013	0.042	0.0534	52.620	6.95	0.8366	0.25	0.142
0.05	0.0371	0.00777	0.0449	10.3	2.19	4.6871	0.014	0.142	0.064	0.0547	0.2431	0.19	1.4544	0.44	2.07
0.02	0.0516	0.0082	0.0598	12.9	5.92	2.1707	0.021	0.558	1.184	0.0525	3.0905	2.13	9.849	2.98	6.48
0.01	0.0715	0.0329	0.0385	13.6	9.74	1.3997	0.052	1.25	6.400	0.0765	1.0611	1.66	32.377	9.81	13.7