Kinetics of electrochemical Eu^{3+} to Eu^{2+} reduction in aqueous media

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Supporting Information

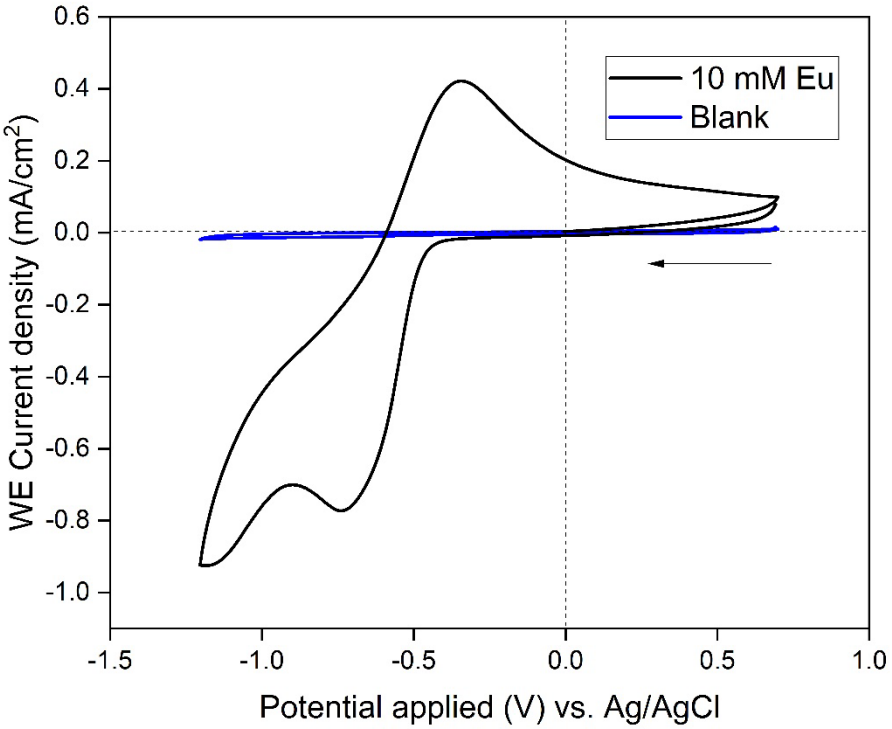


Fig. S1. Cyclic voltammogram recorded at 100 mV/s scan rate in 1 mol.L^{-1} $NaClO_4$, blank measurement without europium, and with 10 mmol.L^{-1} europium added

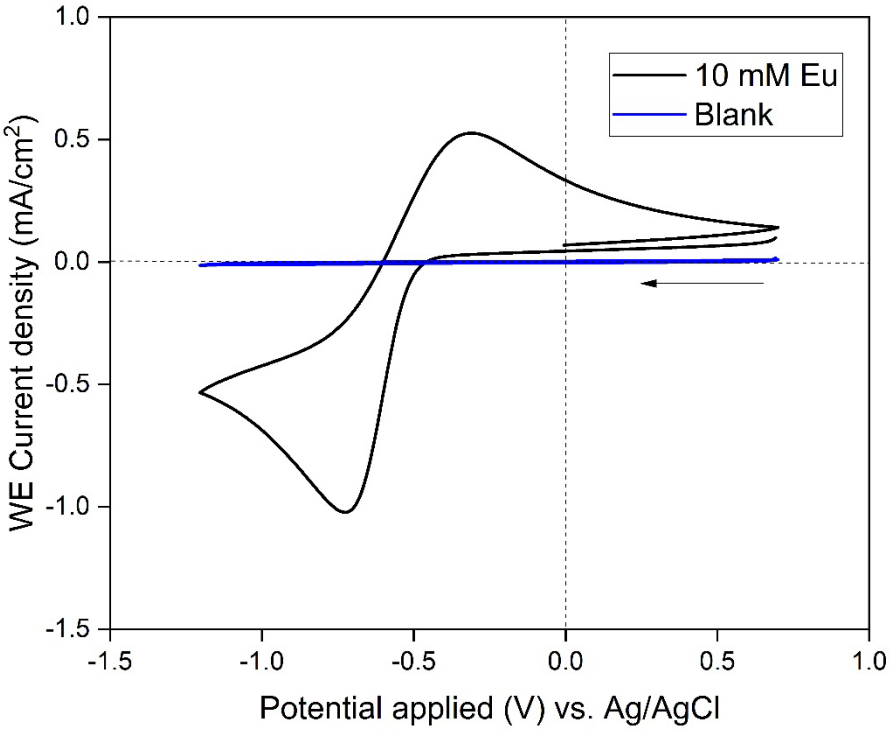


Fig. S2. Cyclic voltammogram recorded at 100 mV/s scan rate in 0.1 mol.L^{-1} $CaCl_2$, blank measurement without europium, and with 10 mmol.L^{-1} europium added

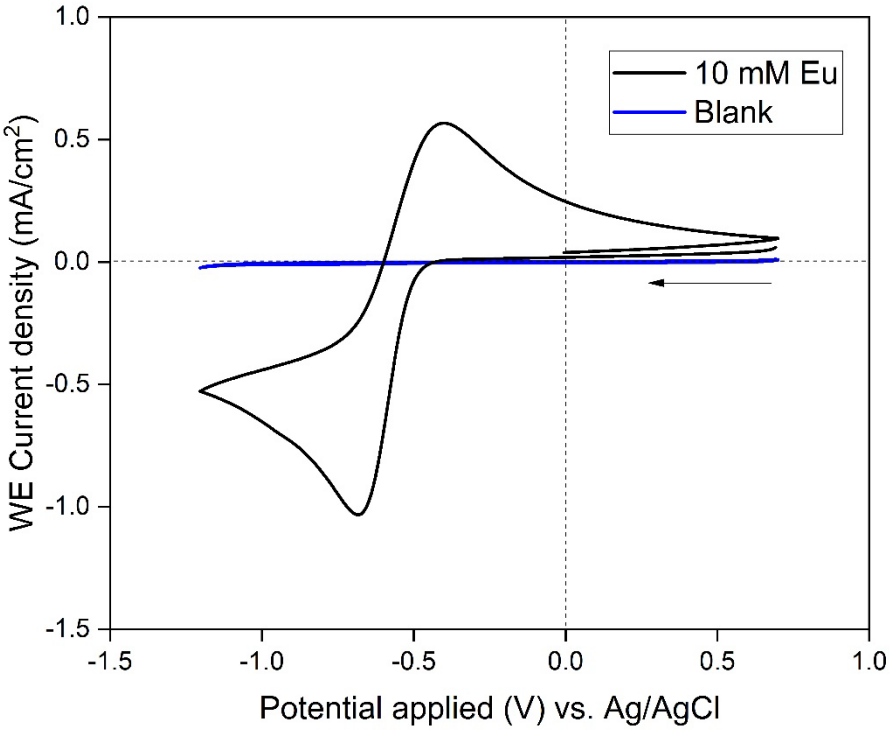
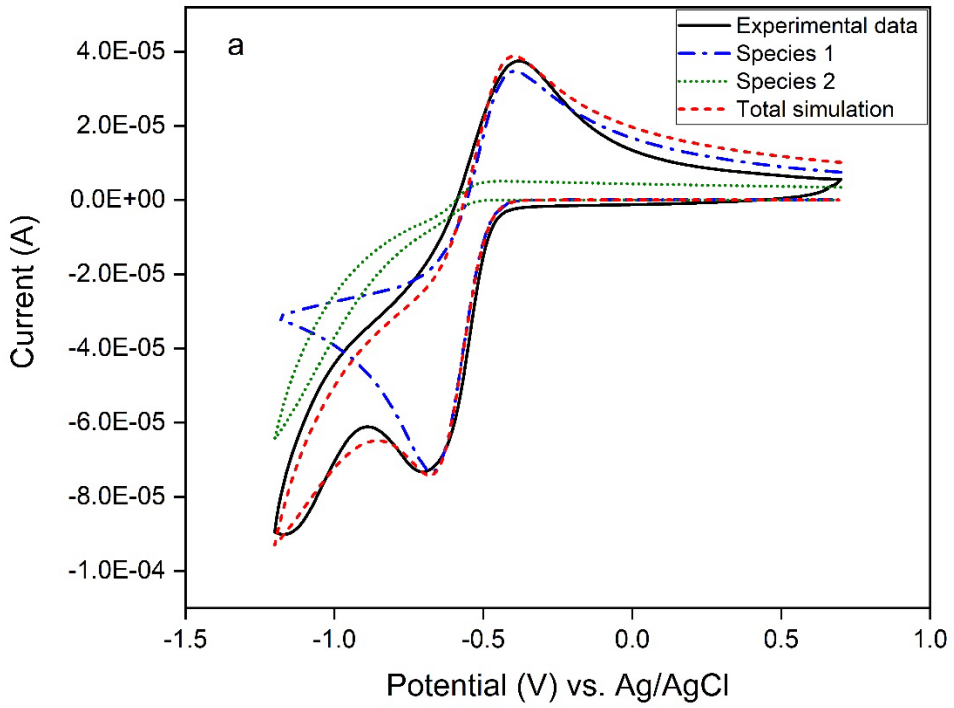
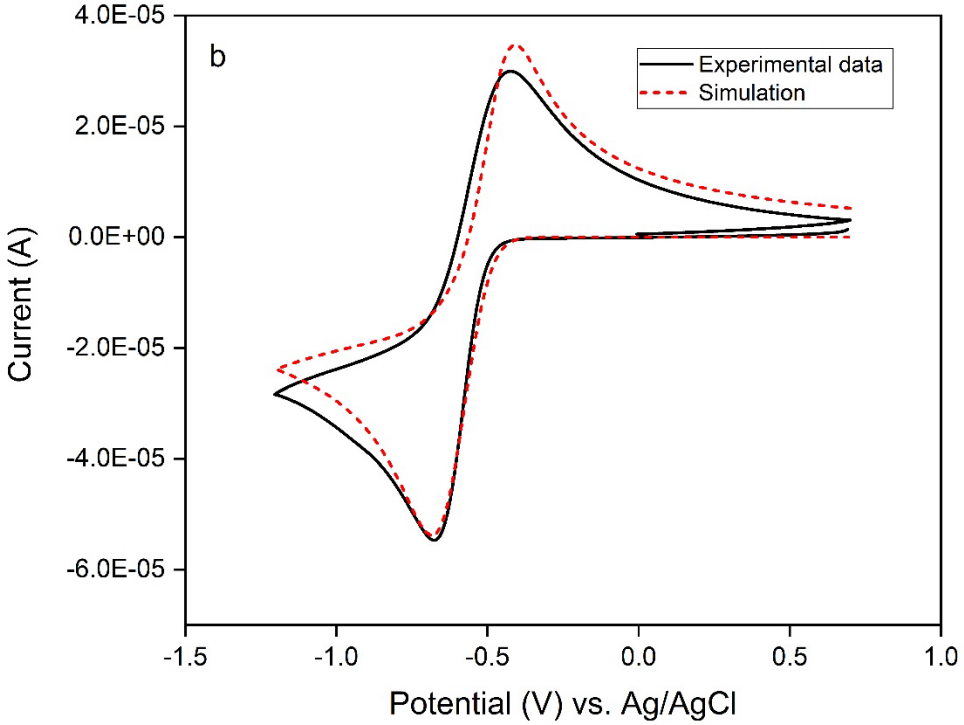


Fig. S3. Cyclic voltammogram recorded at 100 mV/s scan rate in 0.1 mol.L^{-1} $Ca(NO_3)_2$, blank measurement without europium, and with 10 mmol.L^{-1} europium added


a
Experimental data
Species 1
Species 2
Total simulation
4.0E-05
2.0E-05
0.0E+00
-2.0E-05
-4.0E-05
-6.0E-05
-8.0E-05
-1.0E-04
Current (A)
-1.5
-1.0
-0.5
0.0
0.5
1.0
Potential (V) vs. Ag/AgCl


b
Experimental data
Simulation
4.0E-05
2.0E-05
0.0E+00
-2.0E-05
-4.0E-05
-6.0E-05
Current (A)
-1.5
-1.0
-0.5
0.0
0.5
1.0
Potential (V) vs. Ag/AgCl

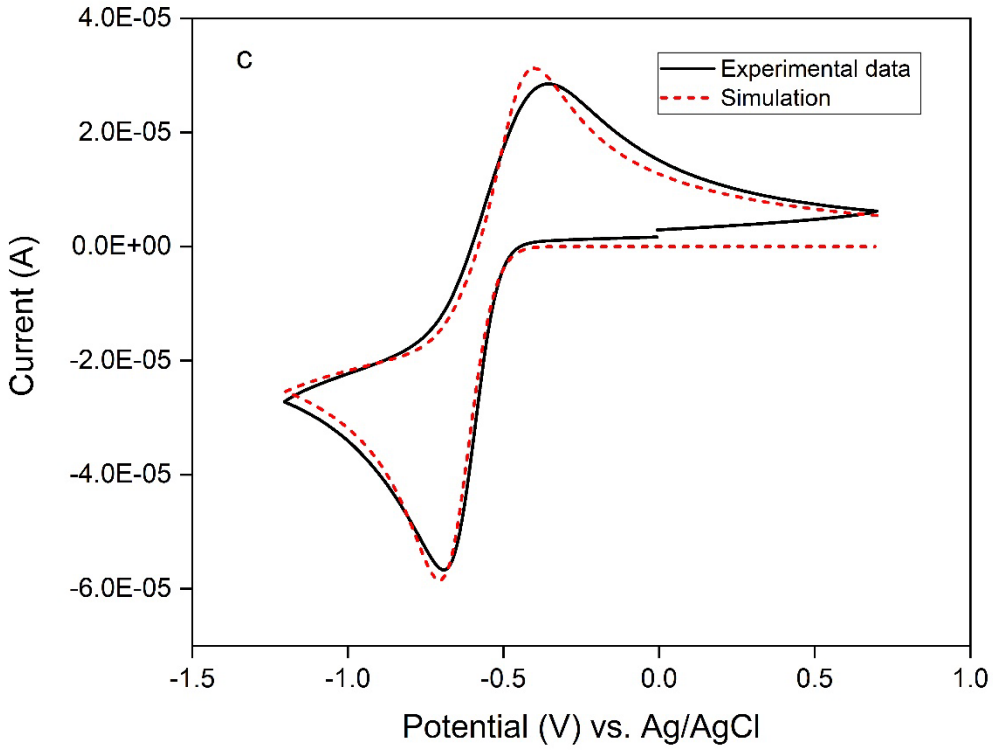


Fig. S4. Cyclic voltammograms recorded at 50 mV/s scan rate and corresponding simulations of 10 mmol.L^{-1} europium a) 1 mol.L^{-1} $NaClO_4$ b) in 0.1 mol.L^{-1} $Ca(NO_3)_2$ c) 0.1 mol L^{-1} $CaCl_2$

Table S1. Kinetic parameters deduced from the digital simulations.

Medium	$E^{0`}$ (V vs. Ag/AgCl)	D x 10^{6} (cm^2/s)	k (cm/s)	α
1 $mol.L^{-1}$ $NaClO_4$	-0.5	2.1	1.90×10^{-4}	0.435
0.1 $mol.L^{-1}$ $Ca(NO_3)_2$	-0.52	5.3	1×10^{-3}	0.23
0.1 $mol.L^{-1}$ $CaCl_2$	-0.535	4.9	2×10^{-4}	0.495

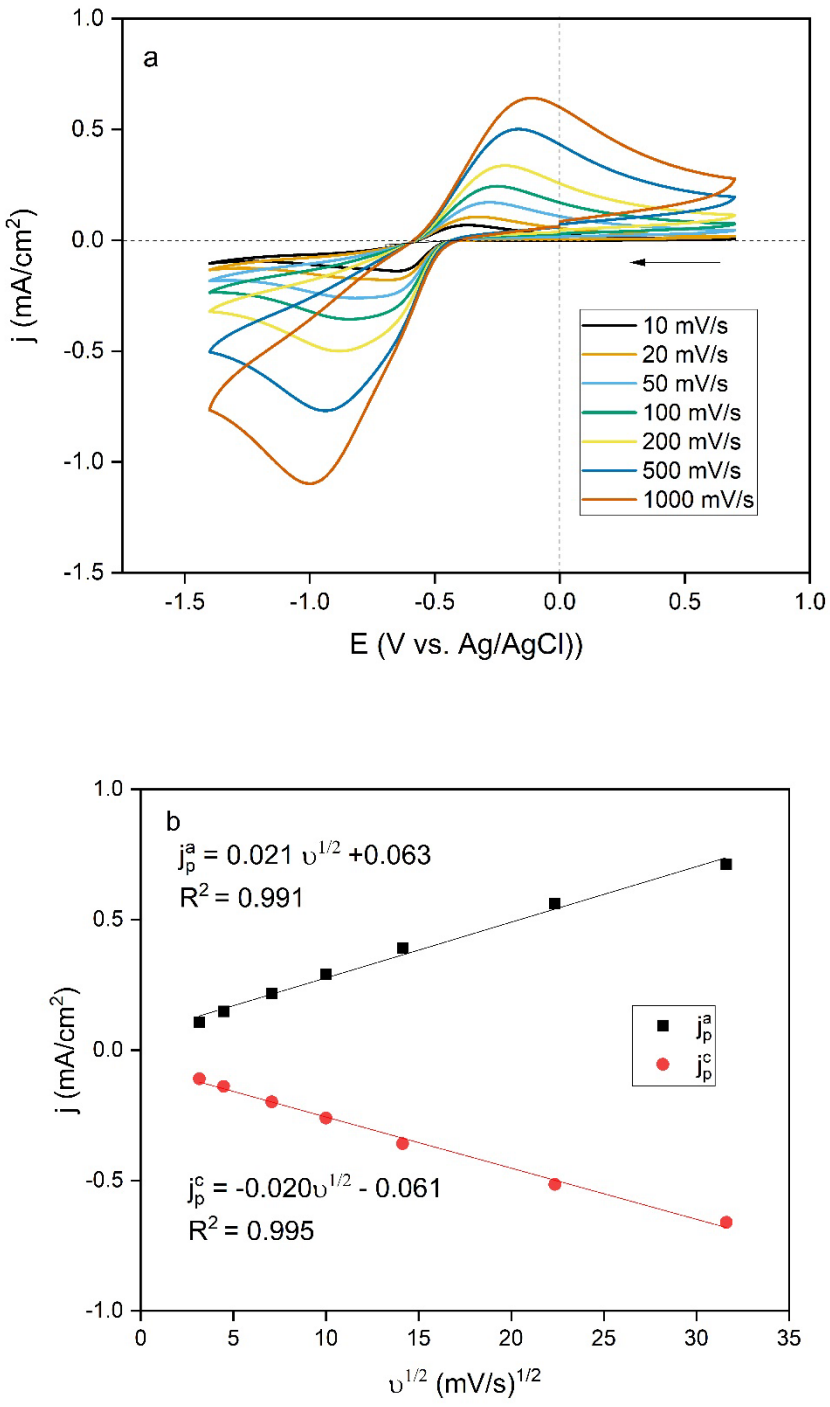


Fig. S5. a) Cyclic voltammograms (second cycles) of 10 mmol L^{-1} Eu in 3 mol L^{-1} $CaCl_2$ at various scan rates b) Anodic and cathodic peak densities with respect to the square root at these scan rates.

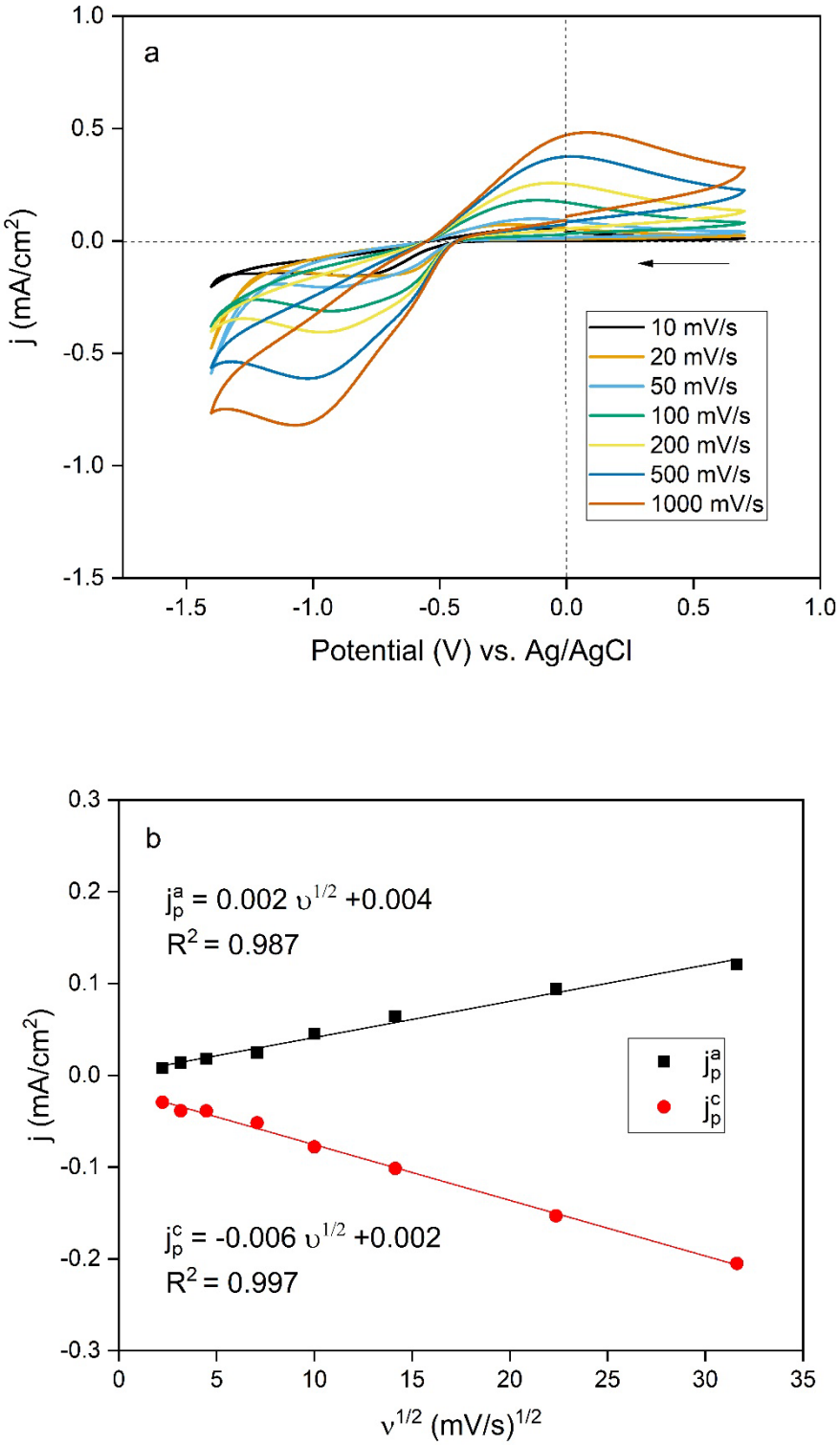


Fig. S6. a) Cyclic voltammograms (second cycles) of 10 mmol L^{-1} Eu in 3 mol L^{-1} $Ca(NO_3)_2$ at various scan rates b) Anodic and cathodic peak densities with respect to the square root at these scan rates.