

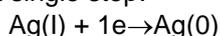
## ELECTROCHEMICAL BEHAVIOUR OF Ag (I) AT Pt ELECTRODE IN THE DEEP EUTECTIC SOLVENT CHOLINE CHLORIDE: 2 ETHYLENGLYCOL AT 343-363 K

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The electrochemical reduction of Ag (I) on a platinum electrode has been studied in the Deep Eutectic Solvent (DES) Choline Chloride: 2 Ethylen glycol (ChCl:2EG) at 343-363 K, by square wave voltammetry (SWV), cyclic voltammetry (CV), convolutive potential sweep voltammetry (CPSV), chronoamperometry (CA), and chronopotentiometry (CP).

It has been found that during cathodic polarization, deposition of metallic Ag from the ChCl-EG onto the platinum surface proceeds in a single step:



which has been found reversible or quasi-reversible depending on the experimental conditions (i.e scan rate).

The diffusion coefficient of Ag(I) (D) has been determined by different techniques and compared with those reported in the literature in other Ionic Liquids (1). The validity of the Arrhenius law was also verified.

It has been found that electro-crystallization of silver on the Pt substrate plays a role at the very first potential of the electrodeposition process.

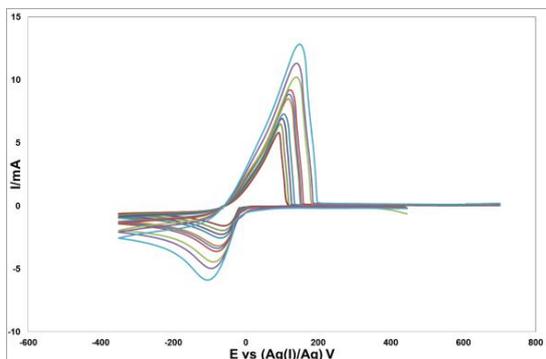


Figure 1: Cyclic Voltammograms obtained with an Ag(I) solution ( $C_0 = 7.43 \cdot 10^{-5} \text{ mol cm}^{-3}$ ,  $T = 363 \text{ K}$ ) on a Pt electrode ( $S = 0.42 \text{ cm}^2$ ). Scan rates ranging from 20 to  $300 \text{ mV s}^{-1}$ .

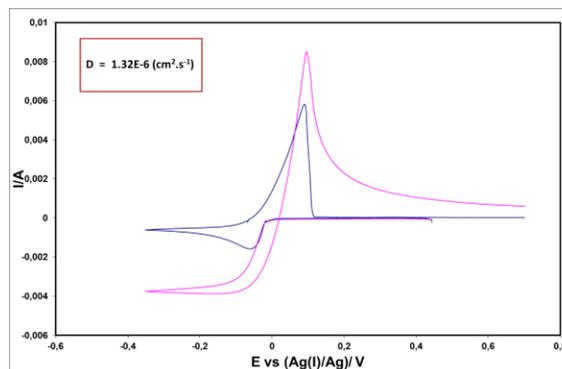


Figure 2.- Cyclic Voltammogram and convoluted curve.

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### References:

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- 2) P. He, H. Liu, Z. Li, Y. Liu, X. Xu, J. Li, Langmuir, 20 (2004) 10260-10267