Electrochemical recovery of metals in deep eutectic solvents

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Ionic liquids have been subject of many researches in the electrodeposition area in the last decades. It is known that this kind of liquids show some advantages when compared to the traditional aqueous media. The electroplating industry traditionally uses aqueous solutions, because of the high solubility of electrolytes and metal salts, resulting in highly conducting solutions. Nevertheless, currently available metallic coatings suffer from hydrogen embrittlement; a major problem caused by gaseous hydrogen produced during water electrolysis. During electroplating with ionic liquids, negligible hydrogen is produced, and coatings will have the better mechanical properties. In hydrometallurgy, aqueous acids or alkalis are predominantly used to dissolve the metal oxides, sulphides, or silicates and further metal recovery processes require strong compounds that are hazardous to the environment such as cyanide for silver and gold recovery. This work will discuss how some ionic liquids have potential as solvents for metal recovery and can be applied for different metals from their mineral matrix.