Spectro-Electrochemistry of Diethyldithiocarbamate Complexes of Ni(II), Pd(II) and Pt(II)

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The electrochemical behaviour of Na(Et₂NCS₂) and M(Et₂NCS₂)₂ (M= Ni(II), Pd(II) and Pt(II); Et₂NCS₂ = diethyldithiocarbamate) as studied by cyclic voltammetry in the acetonitrile-(n-Bu)₄NBF₄ solvent-electrolyte couple at room temperature vs. Ag/Ag⁺ reference electrode. Constant potential electrolyses of the complexes were carried out at their first oxidation peak potentials and monitored in situ by UV-VIS spectrophotometry. The electrolysis of Ni(Et₂NCS₂)₂ in solution yielded the dimer of the ligand, (Et₂NCS₂)₂, and Ni²⁺(sol) as final products. During this electrochemical process the formation of a Ni(III) complex species as an intermediate has been observed. The electrochemical oxidation of bis(diethyldithiocarbamato) complexes of Pd(II) and Pt(II) yielded [Pd(Et₂NCS₂)₃]⁺ and [Pt(Et₂NCS₂)₃]⁺, respectively.