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Electrochemical Oxidation of Azacrown Transition Metal Complexes on a Graphite Electrode

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Abstract

Azacrown compounds and their 3d-transition metal complexes undergo oxidation on a graphite electrode in aqueous and organic solutions. The macrocyclic ligands are oxidized to radical cations which are involved in further electrode reactions. The one-electron oxidation of diazabenz-18-crown-6 and triazabenz-18-crown-6 is reversible. Diaza-18-crown-6, as well as cyclam and its derivatives are oxidized irreversibly and at more positive potentials. The central atom in the species resulting from the oxidation of the Co(II), Ni(II), and Cu(II) complexes has the oxidation state 3+. The voltammetric characteristics of the oxidation of the macrocyclic complexes are solvent-dependent.
