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Spectroscopic and electrochemical characterization of some Schiff base metal complexes containing benzoin moiety

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Abstract

The ligation behavior of bis-benzoin ethylenediamine (B2ED) and benzoin thiosemicarbazone (BTS) Schiff bases towards Ru3+, Rh3+, Pd2+, Ni2+ and Cu2+ were determined. The bond length of M-N and spectrochemical parameters (10Dq, beta, B and LFSE) of the complexes were evaluated. The redox characteristics of selected complexes were explored by cyclic voltammetry (CV) at Pt working electrode in non aqueous solvents. Au mesh (100 w/in.) optically transparent thin layer electrode (OTTLE) was also used for recording thin layer CV for selected Ru complex. Oxidation of some complexes occurs in a consecutive chemical reaction of an EC type mechanism. The characteristics of electron transfer process of the couples M2+/M3+ and M3+/M4+ (M = Ru3+, Rh3+) and the stability of the complexes towards oxidation and/or reduction were assigned. The nature of the electroactive species and reduction mechanism of selected electrode couples were assigned. (C) 2013 The Authors. Published by Elsevier B.V. All rights reserved.

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