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

By: El-Shahawi, MS (El-Shahawi, M. S.), Al-Jahdali, MS (Al-Jahdali, M. S.), Bashammakh, AS (Bashammakh, A. S.), Al-Sibaai, AA (Al-Sibaai, A. A.), Nassef, HM (Nassef, H. M.)

SPECTROCHIMICA ACTA PART A-MOLECULAR AND BIOMOLECULAR SPECTROSCOPY
Volume: 113  Pages: 459-465
DOI: 10.1016/j.saa.2013.04.090
Published: SEP 2013

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/m2) 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.

Keywords
Author Keywords: Schiff bases; Chelates; Bond length; Racha parameters; Electrode mechanism; Thin layer voltammetry

KeyWords Plus: COPPER(II) THIOSEMICARBAZONE COMPLEXES; COORDINATION-COMPOUNDS; NICKEL(II) COMPLEXES; CRYSTAL-STRUCTURE; BEHAVIOR; DERIVATIVES; OXIDATION; LIGANDS; ACID

Author Information
Reprint Address: El-Shahawi, MS (reprint author)
Organization-Enhanced Name(s)
King Abdulaziz University
Addresses:
Organization-Enhanced Name(s)
King Abdulaziz University
E-mail Addresses: malsaeed@kau.edu.sa

Funding
