

Accepted Manuscript

Catalytic (ep)oxidation and corrosion inhibition potentials of Cu^{II} and Co^{II} pyridinylimino phenolate complexes

Mohamed Shaker S. Adam, Ahmad Desoky M. Mohamad

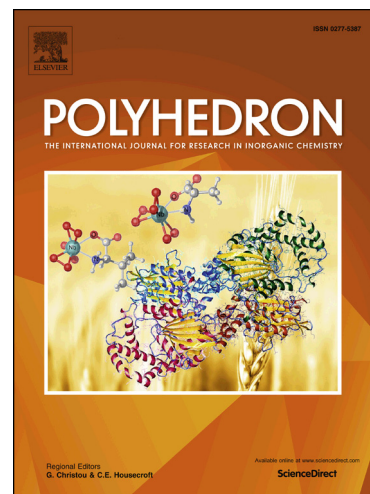
PII: S0277-5387(18)30273-0
DOI: <https://doi.org/10.1016/j.poly.2018.05.035>
Reference: POLY 13182

To appear in: *Polyhedron*

Received Date: 15 February 2018
Accepted Date: 17 May 2018

Please cite this article as: M.S.S. Adam, A.D.M. Mohamad, Catalytic (ep)oxidation and corrosion inhibition potentials of Cu^{II} and Co^{II} pyridinylimino phenolate complexes, *Polyhedron* (2018), doi: <https://doi.org/10.1016/j.poly.2018.05.035>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Catalytic (ep)oxidation and corrosion inhibition potentials of Cu^{II} and Co^{II} pyridinylimino phenolate complexes

Mohamed Shaker S. Adam^{1,2*}, Ahmad Desoky M. Mohamad²

¹ Department of Chemistry, College of Science, King Faisal University, P.O. Box 380 Al Hufuf 31982 Al Hassa, Saudi Arabia (current address).

² Department of Chemistry, Faculty of Science, Sohag University, Sohag-82534, Egypt (permanent address).

E-mail: madam@kfu.edu.sa; shakeradam61@yahoo.com

Abstract

The coordination chemical behavior of pyridinylimino phenolate sodium sulfonate (HPSS) was examined with Cu^{II} and Co^{II} ions to give two novel para-magnetic complexes, CuPSSACl and Co(PSS)₂, respectively. In CuPSSACl, Cu²⁺ ion reacts with HPSS in 1 : 1 and 1 : 2 of Co²⁺ ion to HPSS in Co(PSS)₂, respectively. Various physico-chemical spectroscopic tools were applied to characterize their molecular structures. The spectrophotometric measurements were used to determine the formation constants, K_f . CuPSSACl and Co(PSS)₂ exhibited performed catalytic potential towards the (ep)oxidation of 1,2-cyclooctene by an aqueous H₂O₂ under alternative conditions. The catalytic sufficiency of CuPSSACl and Co(PSS)₂ was influenced by other parameters (temperature, solvent and oxidant). CuPSSACl is more effective catalyst than Co(PSS)₂. The corrosion inhibition of HPSS and its chelates (CuPSSCl and Co(PSS)₂) on carbon steel (CS) in HCl solution were studied using electrochemical (potentiodynamic polarization, PDP and electrochemical impedance spectroscopy, EIS) and surface (SEM and EDX) techniques. The inhibition efficiency incremented with the inhibiting agent concentrations following the sequence: CuPSSCl > Co(PSS)₂ > HPSS. Thermodynamically, those compounds act as mixed-type inhibiting agents and obeyed Langmuir adsorption isotherm *via* chemisorption. SEM and EDX investigations confirmed the protective efficiency of the titled inhibiting agents on CS in HCl.

Key words: Copper (II), cobalt (II), imine, epoxidation, catalysis, corrosion inhibitors, carbon steel.

1. Introduction

Download English Version:

<https://daneshyari.com/en/article/7762463>

Download Persian Version:

<https://daneshyari.com/article/7762463>

[Daneshyari.com](https://daneshyari.com)