Novel schiff base derived uranyl complexes: its synthesis and characterization

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Abstract

Two novel N-salicylidine-2-aminophenol and N-salicylidine-2-aminothiophenol Schiff base ligands were prepared by following the literature procedure. Than by taking these ligands, Uranium(ll) complexes were synthesized. The ligands and complexes were characterized by their IR spectra, melting points, magnetic susceptibility and Uv-visible spectra.

Introduction

A Schiff base can be formed by the condensation reaction of any primary amine with an aldehyde or a ketone under specific conditions. Schiff base was named after Hugo Schiff. Structurally, it "is a nitrogen analogue of an aldehyde or ketone in which the carbonyl group (C=O) has been replaced by an imine or azomethine group" [1].

Schiff bases derived from amino and carbonyl compounds are the important class of ligands that coordinate to metal ions through its azomethine nitrogen. In Schiff bases, the C=N moiety is essential for several antibacterial, antifungal, anticancer and diuretic activities. It has widespread application in food industries, dye companies and biological activities[2]. Owing to their biological activities these compounds have much applications in medicinal and pharmaceutical fields. Transition metal complexes of the ligands derived from pyridoxal and amino acids are important enzyme models.

"Transition metal complexes with Schiff bases derived from 2-formylindole, salicylaldehyde and N-amino Rhodanine show antimicrobial activities. The results showed that the complexes have more biological activity than their ligands in proper experimental conditions" [3].

Macrocyclic Schiff base complexes have been extensively employed in the understanding of molecular processes occurring in biochemistry, material science, catalysis, encapsulation, activation, transport and separation phenomena[4].

Schiff base metal complexes can be act as catalyst like enantioselective oxidation of cyclohexene and styrene by using polymer-supported catalysts[5].

So many Schiff bases with their complexes have important properties like their ability to reversibly bind with oxygen, as a catalyst for the hydrogenation of olefins and form complexes with toxic metals etc[6].

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