Spectroscopic Study of Lewis Bases Coordinating to Vanadyl-N,N,N,N-Bis (Benzil) Azomethine Bis (1,2-Ethylene Diamine)

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Date of acceptance 19/12/2006

ABSTRACT

Formation constants for the coordination of aniline, pyridine, dimethyl sulfoxide, dimethyl formamide, ethanol, dimethylamine and triethylamine to vanadyl-N,N,N,N-Bis (benzil) azomethine bis (1,2-ethylene diamine) have been determined. The coordinating ability and steric constraints were discussed.

INTRODUCTION

It has been known that transition-metal-oxo-complexes are useful reagent for the oxidation of organic molecules [1]. Studies are explained that coordinating ability of oxo-metalopophyrin are differ from each other depending on the type of lewis base and the steric effect of porphyrin and they have not been shown to be effective-oxidizing agent [2-4], on other hand , oxoiron (IV) porphyrin complexes are extremely reactive species and have only been detected spectroscopically in solution at low temperature when iron (II) porphyrin react with oxygen in the presence of a lewis base [5]. Most of studies focused on oxometalloporphyrins with lewis bases [6-8].

In this paper we report the relative affinities of lewis bases to VO-N,N,N,N-Bis (benzyl) azomethine bis (1,2 ethylene diamine) in order to obtain detail information regarding formation constant and factors effecting on the coordinateg ability of these complexes.

EXPERIMENTAL

The compound of N,N,N,N-Bis (benzyl) azomethine bis (1,2-ethylene diamine) was prepared as described by Khahawar___[9]. The complex [VOBAED] was prepared by dissolving ($6.3x10^{-6}$ mol) of $VOSO_4$ and ($5.3x10^{-6}$ mol) of N,N,N,N-bis (benzyl) azomethine bis(1,2 ethylene diamine) in 30 ml H_2O , the solution then mixed at room temperature for 30 minutes . The precipitate was filtered, washed,and then collected by filtration . A $5.35x10^{-4}$g ($1.1x10^{-6}$ mol) then dissolved in 4ml of CH_2Cl_2 and the lewis base was added with ratio 1:1 .

UV-visible absorption spectra were recorded on UVIDC-650 double beam spectrophotometer at room temperature. In general reaction of VOBAED to lewis bases was represented by equation 1.

RESULTS AND DISCUSSION

The solutions of pure VOBAED in dichloromethane were showed absorption bands at 392,571 and 740 nm . Table 1 show the visible bands maxima of VOBAED (base) in CH_2Cl_2.

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