

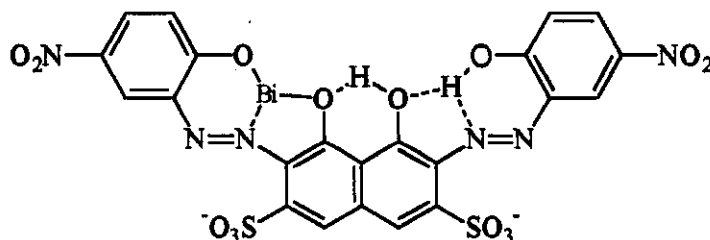
CHAPTER VII

CONCLUSION AND SUGGESTION FOR FUTURE WORK

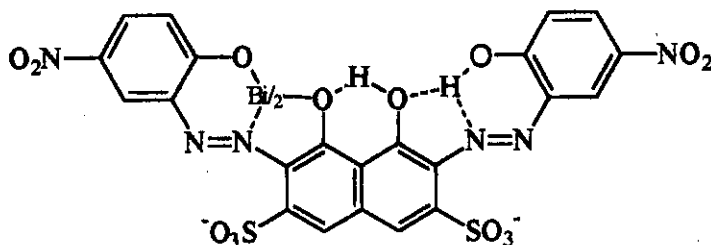
Findings from this study lead to some conclusion and raise recommendation for future work.

- 1) In the preparation of bis-[(O,O'-dihydroxy-nitrophenyl)azo] derivatives of chromotropic acid, the general concept of one-step coupling reaction in the presence of alkaline sodium hydroxide or pyridine and calcium ions as activators may not be appropriate since it seems that monoazo derivatives are largely obtained.
- 2) Two-step coupling reaction seems to be more plausible. Monoazo derivatives are formed first. The monoazo derivatives are then coupled after adjusting the optimal condition, with the solution containing the first monoazo derivatives. Lithium hydroxide seems to be more favorable in helping coupling to occur at positions 2 and 7 of chromotropic acid.
- 3) It is quite interesting to note in this study that the metal-ligand mole ratio might not be the same if the studied final volume is not the same. As found in this study, if the final volume is 100 mL the bismuth(III)-5N dye ratio is 1:1, whereas the ratio of 1:2 is obtained when the final volume is 25 mL. This might be the case where the solution is more concentrated. Therefore the ligands are forced to come close to the metal ions.

The proposed structures of the bismuth(III)-5N dye complex in different final volume are presented below.



Bismuth(III)-5N Dye (1:1)



Bismuth(III)-5N Dye (1:2)

4) In order to observe the effects of $-\text{NO}_2$ group presented in the aromatic amine ring on the reactivity and on the metallochromic property of bis-[(O,O'-dihydroxy-nitrophenyl)azo] derivatives of chromotropic acid, it would be appropriate :

- to purify 4N-dye and 3,5N-dye from monoazo derivatives and from diazonium salts
- to prepare 6N-dye as suggested by Bhagwanth (34).

5) It might be interesting to study metallochromic property of disazo compounds (in replacement of bisazo compounds).

The synthesis might be carried out by fixing one monoazo component and varying the second monoazo component.

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