

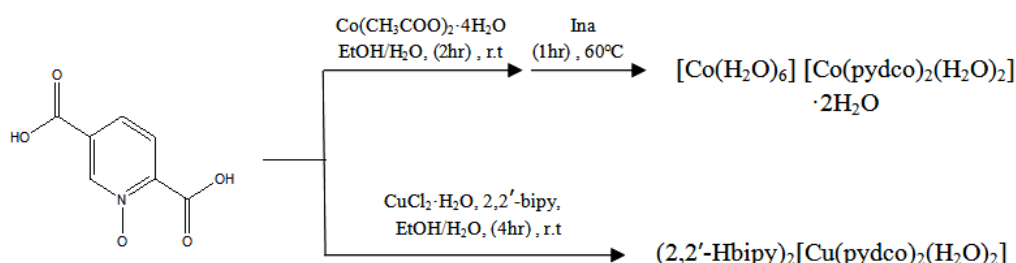
## Coordination complexes of copper and cobalt metal ions containing pyridine-2,5-dicarboxylic acid N-oxide: Synthesis and characterization

Masoud Mirzaei\*, Hossein Eshtiagh-Hosseini, Zahra Hosseini

Department of Chemistry, Ferdowsi University of Mashhad, 917751436 Mashhad, Iran.

(E-mail: mirzaeesh@um.ac.ir)

Recently, the subject of main chemical researches is some how related to the field of noncovalent intermolecular interactions that leading to the formation of unique coordination compounds and gave rise to two new branches of chemical research, that is supramolecular chemistry and crystal engineering. Where as pyridinedicarboxylates have particularly importance in pharmaceutical industry and food chemistry, they have attracted attention of many researchers in synthesis of proton transfer and related coordination compounds. Many studies were carried out on proton transfer between a carboxylic acid and a heterocyclic amine. Therefore we synthesized pyridine-2,5-dicarboxylic acid N-oxide (pydco) hoping to change of coordination modes and geometry of desired complexes of  $\text{Co}^{\text{II}}$  and  $\text{Cu}^{\text{II}}$  metal ions in the presence of heterocyclic amines. The synthesized compounds formulated as  $(2,2'\text{-Hbipy})_2[\text{Cu}(\text{pydco})_2(\text{H}_2\text{O})_2]$  (1),  $[\text{Co}(\text{H}_2\text{O})_6][\text{Co}(\text{pydco})_2(\text{H}_2\text{O})_2] \cdot 2\text{H}_2\text{O}$  (2) ( $2,2'\text{-bipy} = 2,2'\text{-bipyridine}$ , Ina = Isonicotinamide) are characterized by some physico-chemical methods such as elemental analysis, infrared spectra (IR), conductometry, and thermal gravimetric analyses (TGA). Based on the conductivity analysis, high conductivity showed the ionic nature of compounds. According to observed chemical shifts of related bands of carboxylate and N-O functional groups one can confirm that these groups are coordinated to copper and cobalt metal ions in two compounds.



### References

- 1 H. Eshtiagh-Hosseini, M. Mirzaei, M. Biabani, V. Lippolis, M. Chahkandic, C. Bazzicalupi, *Cryst. Eng. Comm.*, 2013, **15**, 6752-6768.
- 2 H. L. Sun, X. L. Wang, L. Jia, W. Cao, K. Z. Wanga, M. Dub, *Cryst. Eng. Comm.*, 2012, **14**, 512-518.
- 3 M. Mirzaei, H. Aghabozorg, H. Eshtiagh-Hosseini, *J. Iran Chem. Soc.*, 2011, **8**, 580.
- 4 H. Eshtiagh-Hosseini, M. Mirzaei, N. Alfi, *Review on Proton Transfer Metal Complexes.*, 2011.
- 5 K. Nakamoto, *Infrared and Raman Spectra of Inorganic and Coordination Compounds*, Wiley, New York, 5th edn, 1997, part B.