

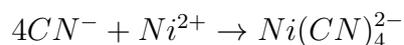
## Module 2: Synthesis of Coordination Compounds and Kinetics

### Pre-Lab questions.

- 1.- Describe briefly the Crystal Field Theory.
- 2.-What is a Coordination Compound?
- 3.-Describe some properties of  $[\text{Co}(\text{NH}_3)_4(\text{CO}_3)]\text{NO}_3$  and its structure.
- 4.-Write down the reaction that you are going to do in the Lab.
- 5.-What is the crystal field stabilization energy?
- 6.-Calculate the crystal field stabilization energy for a tetrahedral cobalt(II) complex. Cobalt(II) is a  $d^7$  ion. Hint: There is no low-spin tetrahedral ( $\text{ML}_4$ ) complex.

Extra.

7.-Cyanide solution (12.73 mL) was treated with 25.00 mL of  $\text{Ni}^{2+}$  solution (containing excess  $\text{Ni}^{2+}$ ) to convert the cyanide into tetracyanonickelate(II):



Excess  $\text{Ni}^{2+}$  was then titrated with 10.15 mL of 0.01307 M EDTA.  $\text{Ni}(\text{CN})_4^{2-}$  does not react with EDTA. If 39.35 mL of EDTA were required to react with 30.10 mL of the original  $\text{Ni}^{2+}$  solution, calculate the molarity of  $\text{CN}^-$  in the 12.73 mL sample.

”You must be the change you wish to see in the world.”  
Mahatma Gandhi

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