Chem 248 Literature supplement: Hexamminecobalt(III) – Probing Metal Ion Binding Sites in Nucleic Acids

For this assignment, you will read the paper "Hexamminecobalt(III) – Probing Metal Ion Binding Sites in Nucleic Acids by NMR Spectroscopy" by Rowinska-Zyrek et al. (*Z. Anorg. Allg. Chem*. **2013**, 639 (8-9), 1313-1320), and answer the following questions. Your answers will be handed in at the beginning of class on _____. The assignment is worth _____ points.

1) a. What properties of hexamminecobalt(III) make it a good substitute for hydrated magnesium in physiologically relevant systems?

   b. What are the limitations of $[Co(NH_3)_6]^{3+}$ as a mimic for hydrated Mg^{2+}?

2) What roles do metals play in the proper functioning of RNA?

3) What evidence do the authors consider the best indicator of whether a mimic has changed the RNA structure relative to its native form?

4) The authors give several examples to illustrate the effects of $[Co(NH_3)_6]^{3+}$ substitution on ribosome function. List one example from each category, and explain what the effects of substitution on the different categories tell us about Mg^{2+} binding.