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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 $[\text{Co}(\text{NH}_3)_6]^{3+}$ 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 $[\text{Co}(\text{NH}_3)_6]^{3+}$ 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.