

Module 2: Synthesis of Coordination Compounds and Kinetics

Written Report Guidelines Fall 2012

General tips

- All the writing should be in 3rd person.
- Reports should be double spaced and should be \simeq 10 pages including figures.
- Please hand in everything typed including graphs, calculations, and tables.
- $3n-1$ (n being the weekdays late) points will be deducted from late submissions/missing the oral review.
- Include full derivations in the reports.
- Include all results even if they did not lead to the desired product.
- Put all raw spectra in an appendix at the end of your report (does not count as part of the 10 pages).

Paper Format

1. Your paper should have the following sections:

- a)* Abstract. It is about 1 paragraph single spaced summarizing what was done and the principal results.
- b)* Introduction. 1 or 2 paragraphs double spaced that establish a context for your research.
- c)* Experimental Section. A concise description of what you did in the lab, written such that it would be easy for someone to reproduce your work.
- d)* Results and Discussion (may be 1 or 2 independent sections). Presentation of your results and some discussion as to their significance. This is the main part of the paper. In this case the presentation of the results is expected to be more substantial than the discussion, though some level of discussion is appropriate.
- e)* Conclusion. A paragraph summary of your paper and creative extrapolation, if appropriate.

Necessary components Your paper must contain the following information (this list does not represent the order that the information will appear in your paper):

- Linear plots of all the kinetic runs performed (total of 4). Table of experimentally determined rate constants.
- You should include a kinetics spectrum detailed enough to point out the isosbestic points, but you do not need to include any more spectra than that. You do need a table of the absorbances at 550 nm at each sampling point.
- Assignment of peaks in infrared spectra(attach the spectra as an appendix). Tabulate IR data including the peak value and whether the peak showed a weak (w), medium (m), or sharp (s) peak.

- Inclusion of all equations you used to analyze your data.
- Plot from the determination of ϵ and the values of ϵ . (Tabulate abs vs. conc values)
- Arrhenius plot, activation energy, and the pre-exponential factor A.
- Identification and significance of isosbestic points. (one plot of spectra showing isosbestic points is fine)
- Scheme or schemes summarizing the syntheses and other transformations, showing the correct structure of the cobalt complexes. (if you handwrite out the structures, include the handwritten schemes as an appendix)
- All relevant experimental information. (Procedures, amounts used, etc.)
- Answers addressing each of the questions in the lab manual. These should be incorporated smoothly into the body of the paper, where appropriate. For instance, explanations of some questions may be best placed in the introduction, while others may be better next to plots of data in the results and discussion section.

■ Additional Comments

- Make sure all your figures and schemes are labeled and have captions.
- Make sure plots have the labeled axes and that all reported values have the appropriate number of significant figures and the correct units.
- Use citations where appropriate, in an appropriate format. Definitely cite the lab manual, as well as any other resources you may use to find data or information.
- Keep in mind that your Experimental section should come before your Results and Discussion.
- The lab manual instructions for writing the procedure and introduction are good resources, use them well.

Grading Scheme.

		Points
Abstract	Included appropriate information	5
Introduction	Successfully contextualized the work	5
Experimental	Included all required information Correct IR assignments and spectra Included synthetic schemes with correct molecular structure	15
Results	Lambert-Beer Plot and ϵ value (with tables) Plot of spectral changes vs. time, identified isosbestic points. Plots of all (4) kinetic runs and rate constants (with tables) Arrhenius Plot and Activation Energy (with tables)	40
Discussion	Inclusion of equations used to get kinetic parameters (Provided answers to lab manual questions)	25
Other	Organization (proper placement of components in sections) and citations	10
		100 Total

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5.35 / 5.35U Introduction to Experimental Chemistry
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