

# Guidelines for preparing reports

## Inorganic Chemistry – CHM3610C

### Organization of the Research Report

Most scientific research reports, irrespective of the field, parallel the method of scientific reasoning. That is: the problem is defined, a hypothesis is created, experiments are devised to test the hypothesis, experiments are conducted, and conclusions are drawn. This framework is consistent with the following organization of a report:

- Title
- Abstract
- Introduction
- Experimental Details
- Results
- Discussion
- Conclusions and Summary
- References

### Title and Title Page

The title should reflect the content and emphasis of the project described in the report. It should be as short as possible and include essential key words.

The author's name (*e.g.*, Jane B. Doe) should follow the title on a separate line, followed by the author's affiliation (*e.g.*, Department of Chemistry and Physics, University of North Florida), and the date.

All of the above could appear on a single cover page. Acknowledgments and a table of contents can be added as preface pages if desired.

### Abstract

The abstract should, in the briefest terms possible, describe the topic, the scope, the principal findings, and the conclusions. It should be written last to reflect accurately the content of the report. The lengths of abstracts vary, but seldom exceed one or two sentences.

A primary objective of an abstract is to communicate to the reader the essence of the report. The reader will then be the judge of whether to read the full report or not.

## **Introduction**

"A good introduction is a clear statement of the problem or project and why you are studying it." (Dodd, J. S., Ed. *The ACS Style Guide*; American Chemical Society: Washington, DC, 1986.).

The nature of the problem and why it is of interest should be conveyed in the opening paragraphs. This section should describe clearly but briefly the background information on the problem, what has been done before (with proper literature citations), and the objectives of the current project. A clear relationship between the current project and the scope and limitations of earlier work should be made so that the reasons for the project and the approach used will be understood.

## **Experimental Details or Theoretical Analysis**

This section should describe what was actually done. It is a succinct exposition of the laboratory notebook, describing procedures, chemicals and manufacturers, techniques, instrumentation, special precautions, and so on. It should be sufficiently detailed that other experienced researchers would be able to repeat the work and obtain comparable results. The model and names of the instrument manufacturer and the specific scan conditions should be included.

If the experimental section is lengthy and detailed, as in synthetic work, it can be placed at the end of the report or as an appendix so that it does not interrupt the conceptual flow of the report. Its placement will depend on the nature of the project and the discretion of the writer.

## **Results**

In this section, relevant data, observations, and findings are summarized. Tabulation of data, equations, charts, and figures can be used effectively to present results clearly and concisely. Schemes to show reaction sequences may be used here or elsewhere in the report.

## **Discussion**

The crux of the report is the *analysis* and *interpretation* of the results. What do the results mean? How do they relate to the objectives of the project? To what extent have they resolved the problem?

The "Results" and "Discussion" sections are interrelated and can often be combined as one section.

## **Conclusions and Summary**

A separate section outlining the main conclusions of the project is appropriate if conclusions have not already been stated in the 'Discussion' section. Directions for future work are also suitably expressed here.

A lengthy report, or one in which the findings are complex, frequently benefits from a paragraph summarizing the main features of the report the objectives, the findings, and the conclusions.

The last paragraph of text in manuscripts prepared for publication is customarily dedicated to acknowledgments. However, there is no rule about this, and research reports or senior theses frequently place acknowledgments following the title page.

## **Citing References**

Literature references should be collated at the end of the report and cited in one of the formats (e.g. numbered) described in The ACS Style Guide or standard journals. Do not mix formats. All references should be checked against the original literature. Never cite a reference that you have not read yourself. Double check all journal year, volume, issue, and inclusive page numbers to insure the accuracy of your citation.

## **Preparing the Report**

The personal computer and word processing have made manuscript preparation and revision a great deal easier than it used to be. Students should have the opportunity to use a word processor and have access to graphics software that allows numerical data to be graphed, chemical structures to be drawn, and mathematical equations to be represented. These are essential tools of the technical writer. All manuscripts should routinely be checked for spelling (programs to check spelling are helpful), and all manuscripts should be carefully proofread before being submitted. Preliminary drafts should be edited by the faculty advisor before the report is presented in final form.

Your report should be written in your own words and follow appropriate citation style for any facts cited. In this laboratory, use the reference style for ACS Inorganic Chemistry. See <http://pubs.acs.org>. You may wish to use RefWorks (<http://www.refworks.com/>) to handle the bibliography. There is a learning curve, but you will find it useful and it will save you time in the long term.

## References

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