

Guidelines for preparing reports

Inorganic Chemistry – CHM 3610L

Organization of the Research Report

Scientific research reports, irrespective of the field, utilize the method of scientific reasoning. The problem is defined as clearly as possible, a hypothesis is created, experiments are devised to test the hypothesis, experiments are conducted, and data is analyzed and conclusions are drawn. A typical report is organized as follows:

- Title (with authors and affiliation)
- Abstract
- Introduction
- Experimental
- Results and Discussion
- Conclusions
- References

Title and Title Page

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

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

All of the above may appear on a single cover page.

Abstract

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

A primary objective of an abstract is to communicate to the reader the core of the report. The reader will then be the judge of whether to read the full report.

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*; 2nd, American Chemical Society: Washington, DC, 1997, pg 20).

The opening paragraphs should illustrate the nature of the problem and why it is of interest. This section should describe clearly and 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 association between the current experiment and the scope and limitations of earlier work should be made so that the reasons for the experiment and the approach used will be understood.

Experimental

This section should describe what was actually done in the laboratory. It is a short description of the laboratory notebook. The procedures, chemicals and manufacturers, techniques, instrumentation, and special precautions are described to give an experienced reader sufficient information 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 some 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. The placement will depend on the nature of the project and the discretion of the writer. The current literature is a good place to view example experimental sections.

Results and Discussion

In the results section the 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.

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 presented in the introduction?

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

Conclusions

A separate section outlining the main conclusions of the project is appropriate if conclusions have not already been stated in the 'Results and Discussion' section. Directions for future work or modifications to the procedure, where appropriate, may also be expressed in 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 as a separate section.

References

Literature references should be listed 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 primary literature, not merely websites. 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. The recommended format is found in the Inorganic Chemistry journal published by the American Chemical Society.

Acknowledgments

Thank staff, faculty, and students who assisted with data collection, analysis, or experimental issues.

Supporting Information

Include trivial calculations, figures, and any data that does not appear in the manuscript text.

Preparing the Report

The personal computer and word processing software 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. UNF offers a variety of resources (e.g. ChemDraw, SciFinder Scholar) at <http://www.unf.edu/coas/chemistry/students.html>. These are essential tools of the technical writer. All manuscripts should routinely be checked for spelling and all paper should be carefully proofread before being submitted for a grade.

Your report should be written in your own words and follow appropriate citation style for any facts cited. In this laboratory course, use the ACS reference style guidelines (www.lib.berkeley.edu/CHEM/acsstyle.html). You may find it practical 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. *An electronic copy of the laboratory report must be submitted by e-mail or by flash drive during office hours.* Any source referenced in the report must be presented upon request.

References

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