Introduction to Chemistry Lab Reports

This Guide is designed to be used in preparing laboratory reports for all general science and engineering courses at IIT. It introduces some standard conventions and rules for writing reports of professional quality. In addition, it describes the structure of a good laboratory report, outlines the different sections of the report, and explains the need for each of them.

Writing Guidelines for Subject & Verb Tense

Subject is always impersonal. Avoid any reference to a person (e.g. I, we, the man.)

Verb tense is always passive, which means a verb phrase consisting of some form of be (is, was, etc.) plus the past participle (verb used as an adjective).

In technical and scientific articles, especially in the presentation of experimental methods, researchers use the passive voice as a conventional means of impersonal reporting. The passive voice allows them to avoid calling attention to themselves and to omit reference to any subjective thoughts or biases they might have brought to their work. The effect is to lend the article the air of objectivity.

Examples:

YES: The equipment was set up before the experiment was begun.

NO: The TA set up the equipment before we began the experiment.

YES: Distance was calculated using the data from table 2.

NO: We calculated distance using the data from table 2.

Guidelines for Tables, Graphs & Equations

Tables, Graphs & Equations:

They must have:

- An introductory sentence to explain the purpose
- Additional verbal description to explain the table, graph or equation
- Explanatory labels—consistent format and sequential throughout the report

Comprehensive descriptions of tables, graphs and equations will demonstrate to readers that the author is more than just a technician plugging numbers.

Example:

Equations should be embedded in the text of the report and formatted using the "Equation Editor" tool on your word processor, as in the following example:

Using the results listed in Table 1, a percentage difference was calculated for each set of readings taken by the two different instruments (the CMM and Vernier Calipers). Equation 1 was used to calculate this percentage difference. It can be written as:

\[ E = \left( \frac{m_1 - m_2}{\Delta m} \right) \times 100 \]

Equation 1

where:

- \( E \) is the percentage difference;
- \( m_1 \) is the measurement by CMM;
- \( m_2 \) is the measurement by Vernier Calipers
- \( \Delta m \) is the difference of the two instruments.
## Chemistry Lab Report: Description of Contents

<table>
<thead>
<tr>
<th><strong>Heading &amp; Title</strong></th>
<th><strong>Chemistry Lab Report: Sample</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Objective:</strong></td>
<td><strong>Objective:</strong></td>
</tr>
<tr>
<td>The objective can only be one sentence long, so choose your words carefully. Include the chemical property that you are trying to measure and the chemical technique used. Use action verbs such as “investigate,” “determine,” “measure,” or “plot” in stating your objective.</td>
<td>The purpose of this experiment was to determine the density of an irregular solid using the displacement method developed by Archimedes.</td>
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<tr>
<td><strong>Procedure:</strong></td>
<td><strong>Procedure:</strong></td>
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<tr>
<td>The procedure section should only be one paragraph. Do not copy from the book! Describe the procedure in your own words without using complicated chemical terms.</td>
<td>A graduated cylinder filled with water to a volume of 60 mL was placed on a balance and the balance was zeroed. A sufficient amount of an unknown irregular solid was carefully placed in the graduated cylinder so the volume of water displaced was approximately 5.0 mL. The weight, initial volume, and final volume were recorded.</td>
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<tr>
<td><strong>Specialized Chemical Techniques:</strong></td>
<td><strong>Specialized Chemical Techniques:</strong></td>
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<tr>
<td>Summarize any new chemical technique that was learned during the experiment.</td>
<td>The fundamental technique of measuring liquids was studied using a graduated cylinder. The proper use of an electronic balance was also explored.</td>
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<tr>
<td><strong>Final Result:</strong></td>
<td><strong>Final Result:</strong></td>
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<tr>
<td>Describe your interpretation of the experiment's outcome.</td>
<td>The final result of the experiment revealed an irregular solid, similar to solid gold. The use of the electronic balance was unsuccessful because the graduated cylinder fell off the balance and broke.</td>
</tr>
<tr>
<td><strong>Conclusion:</strong></td>
<td><strong>Conclusion:</strong></td>
</tr>
<tr>
<td>Write two sentences at the most for this section. State the conclusions of your experimental findings and any observations that had an effect on the final results.</td>
<td>Based on the final result and on known literature values, the irregular solid was most likely solid gold. Trial 2 had to be eliminated from the final results because the graduated cylinder fell off the balance and broke.</td>
</tr>
<tr>
<td><strong>Attachments:</strong></td>
<td><strong>Attachments:</strong></td>
</tr>
</tbody>
</table>
| List any additional sections that you have attached to the report. Data Sheet and Post Lab Exercises (with answers) should always be attached. | - Data Sheet for Density of a Solid  
  - Post Lab Exercises for Density of a Solid |