University of Malta
Department of Chemistry

CH130 - Chemistry Practicals - B.Sc. (Hons.) I Year

WRITING LABORATORY REPORTS

This paper explains the format to be used in the lab reports.

(1) The report should contain a
   a. **Header** with the date, experiment name and number and the aim. (Note the aim should always start with a '*To …*'.)
   b. **Body** which should be sub-divided as follows:
      1. Introduction
      2. Method
         2.1 Chemicals used
         2.2 Apparatus
         2.3 Procedure
      3. Results and Calculations *or* 3. Results*
         3.1 Results
         3.2 Calculations
      4. Discussion
      5. Conclusion

   (If no calculations are required, as in the case of experiment 5).*
   c. **References and Bibliography**

(2) Report should be written in blue or black ink, ideally using a ball pen.

Extracts from a sample report for experiment 5 together with notes on the relevant section are provided overleaf.

12th November 2001

Experiment 5: Separation Involving the Formation of a Derivative of one of the Components.

Aim: To separate a mixture of naphthalene and biphenyl by the formation of a derivative of naphthalene.

1. Introduction

The separation of a binary mixture of substances with very similar physical properties (e.g. two similar hydrocarbons) **...**

Notes:

- The headings 'Introduction', etc. should be written in blank lines and underlined. They should also be given a heading number (starting with 1. Introduction).
- The scope of the introduction is to (a) inform the reader of the approach being adopted in the experiment; (b) introduce the reader to the relevant theory behind the experiment (only enough to convince the reader that the experiment will work and is worth doing – Aspects of the theory may be elaborated in the 'Discussion' section.).
- It can be based on the information provided in the "introduction" section of the schedules, although (1) You are expected to enhance this information with any additional information you regard as relevant; and (2) You should not transcribe the schedule word by word.
- The theoretical introduction should be approximately 1-2 paragraphs long (i.e. half a page (excluding diagrams) to one page).

2. Method

2.1 Chemical used

A mixture containing 50% w/w naphthalene (BDH, GPR) and biphenyl (Fluka, 98% HPLC)
Methanol (BDH, GPR)
...

2.2 Apparatus

Two boiling tubes, steam bath, 10 ml measuring cylinder, Hirsch funnel, 100ml measuring cylinder, filter paper, melting point apparatus.

2.3 Procedure

1. About 0.5g of acetanilide was accurately weighed **...**

Notes:

- The method section should be sub-divided into three sub headings (1) Chemicals used; (2) Apparatus used, and (3) Procedure.
- The list of chemicals used should include the manufacturer and the grade of the reagent. It should not include distilled water.
- The procedure section (which may be in point form) should include:
  - The method itself;
  - Any observations made during the experiment, e.g. if a precipitate is formed – the colour of the precipitate and other characteristics of the precipitate, the time taken for the precipitate to form etc.;
  - A diagram if (and only if) you feel that it is essential to fully describe the apparatus used;
  - Any precautions i.e. (1) important safety precautions, (2) precautions other than safety precautions taken during the experiment. Note that there is no need to write the full risks and safety information in your report, but only selections, which in your opinion are vital for successful and safe reproduction of your experiment.

3. Results and Calculations

3.1 Results

Mass of mixture used: 5.002 g

Mass of naphthalene recovered: 2.004 g (expected, 2.500g, 80.2 % recovery)

Melting point of naphthalene:

1st reading: 79.5 – 80.0°C
2nd reading: 79.5 – 80.5°C
3rd reading: 79.0 – 80.2°C
Average reading: 79.3 – 80.2 °C
Literature value: 80°C [Aldrich 2001]

...

3.2 Calculations

(if any, none in this case)

Notes:

- If there are any calculations, the format to be used is as presented here. Otherwise, 'Results' should be used as a main heading.
- Note that in quantitative multiple readings analysis, results are to be reported with their associated errors/uncertainties (see http://staff.um.edu.mt/jgri1/teaching/ch130/errors.pdf). However, melting points are usually reported as simple averages.

4. Discussion

Notes:

- In this section you should include:
  1. A brief review of the importance of the experiment into the wider context of chemistry;
  2. A discussion of further aspects of the theory (e.g. the chemical nature of the picrate, …);
  3. An explanation of the method (e.g. Why was concentrated ammonia added before the biphenyl was extracted?);
  4. A discussion of the possible sources of errors in your results, etc.
  5. Notes of how the procedure can be improved;

5. Conclusions and further work

This practical has shown that ...

References:

Aldrich 2001: http://www.sigma-aldrich.com, as on the 14th October 2001.

Atkins 1997: P.W. Atkins, Physical Chemistry, 6th Ed., (1997), OUP, UK.

Bunz 1999: U. H. F Bunz, Y. Rubin and Y. Tobe, 'Chem. Soc. Rev.', 28 (1999) 107.

...

Notes:

- The references section refers to books, web-pages and/or papers from which a quotation is made. All items included need to have a 'label' which is usually in the form of a numeral (1, 2, etc.), the surname of the 1st author and the year of publication, etc. Whichever method you use please be consistent. In this example we have chosen to use the 'surname' (etc.) / year of publication convention as a reference point.
- There are several formats of how to write the actual references. Here we have provided an example of how to refer to a web site [Aldrich 2001], a book [Atkins 1997] and a paper [Bunz 1999].
- When there are four of more authors for a particular work, you should only name the first author followed by ' et al.', e.g. K.E. Evans et al. instead of 'K. E. Evans, M. A. Nkansah, I. J. Hutchinson and S. C. Rogers'.

Bibliography:

P.W. Atkins, Physical Chemistry, 6th Ed., (1997), OUP, UK.

Notes:

- In this section you should include books, web-pages and/or papers which you have used to prepare the report (apart from those from which you have only taken a quotation, in which case they should be included in the 'References' section.