# The Final Report

You will be required to submit a report on the work you have done during your industrial/Erasmus placement. It must be completed and approved by your supervisor during the placement period. Your academic supervisor will be marking your placement year mainly on the basis of this report so it is important to take it seriously. If your report is allowed to leave the site at the end of the project then you will be required to send it to the department by the end of your placement. However, many of the reports will be confidential and will remain on site at the company concerned, and in this case the academic supervisor will visit the company to mark the report.

If your report is to be submitted to the University then two copies are required.

**Report layout**

The report should be done using a word-processor and be normally a mini-thesis, supported as appropriate with schemes, figures and tables of data. There is no page limit but most reports are around 30-40 pages long. This report should be seen as the prime evidence of how you spent your time during the placement. Therefore, it needs to be completed in a professional manner - it should be concise, stand alone as an account, but should not contain large amounts of copied material (either from the web, or any other source).

**Why a report?**

The production of a good piece of technical writing for a project report is as much a part of the project as doing the experimental work. However excellent and original a piece of work the project may be - unless the results can be communicated to other people it may as well not have been done. Communicating results of an investigation in a clear and useful way is a key part of science / technology in both academic and industrial sectors and is the reason for devoting a lot of effort to this aspect.

**What level?**

The main part of the report should be comprehensible for anyone at a similar level but avoid highly specialist information (for example, a complicated mathematical derivation).

**How much detail to include?**

It is not necessary, or even desirable to describe every minute detail of what was done. One of the most important aspects of good technical writing is to be concise, yet remain informative. The ability to select what is essential and to omit what is merely incidental detail, is a skill every scientist needs to develop.

## Guide to writing a project report

The following notes provide a guideline to report writing and more generally to writing a scientific article. Please take the time to read them carefully. Even if your project did not go as well as you had hope, there is no reason why you should not score a high mark for your report if you are prepared to work at it.

## Format of reports

Whilst not mandatory, there are good reasons for the usual format of a report.
Sections that you need to include are:

Title
Authors
Abstract
Table of Contents
Introduction
Results and Discussion
Summary and Conclusions
Experimental Procedures and Characterisation
References
Appendices (if used)

## The first page

This should contain the title, the authors and the date.

## Title

This should convey the area and scope of the project.

For example: The Chemoenzymatic Synthesis of γ-Amino-α-hydroxy Acids: γ-Turn Mimics

## Second page- the abstract

The second page should consist only of the abstract. The idea of the abstract is to provide a brief summary of the report. The reader should be able to pick up from the abstract what the project entailed, how it was undertaken and an indication of what was discovered. An abstract should not review the report, but should rather act as a sampler of the contents of the report. Typically, the abstract should be less than 200 words.

For example:
Pulsed laser photolysis (308 nm) of *cis*-Ru(dppe)$_2$H$_2$ allows the generation of the square planar Ru(dppe)$_2$ transient in solution. In the absence of added ligands the transient decays with pseudo-first-order kinetics by reaction with the starting material in the formation of a dimer. Quenching of the transient by $H_2$ (again, by pseudo-first-order kinetics) regenerates the starting material. In the presence of other quenching ligands, CO and ethene the transient decays in the generation of new products. Second order rate constants for the reactions were determined and found to be: $k_{dimerisation}$ = (5.9 ± 2.6) × 106, $k_H$ = (24.1 ± 2.2) × 106, $k_{CO}$ = (10.1 ± 1.5) × 106, $k_{ethene}$ = (5.9 ± 1.5) × 104 dm$^3$ mol$^{-1}$ s$^{-1}$. Steady-state photolysis of the absence quenches gave a product identified by $^1$H and $^{31}$P

NMR spectroscopy to be either a dimer, or a complex resulting from the intramolecular insertion to form the *ortho*-metalated phosphine ligand. Photolysis under ethene gave a product similarly identified as the $\eta^2$ bound $Ru(dppe)_2(C_2H_4)$ complex. Under CO, the initial product as identified by NMR and IR spectroscopy was found to be $Ru(dppe)_2CO$, but the eventual photoproduct was determined to be $Ru(dppe)(CO)_3$.

**Third page**

This should comprise a table of contents, indicating the page number of the different section.

**Fourth page and onwards**

**Introduction**
This is where you need to outline the underlying concepts (and if required a brief version of any theory) needed to discuss the project.

Remember the point of an introduction is to place the research into its chemical and scientific context, explain the problem or introduce the need for the work- literally to prepare the reader for the results / discussion.

**Results and discussion**
Present your results in a logical sequence, highlighting what is important and how the data you obtained have been analysed to provide the results you discuss. You should discuss what you infer from the data.

Make sure that all figures, schemes and graphs etc. are properly labelled and have a caption. A neat hand drawn diagram is preferable to a poorly made computer diagram or a poor resolution image copied from the web.

**Experimental**
Describe the experiments done, along with all the relevant chemical and technical details. The characterisation data should be recorded along with error analysis etc.

**Summary and conclusions**

This is the section in which you need to put it all together. It differs from the abstract in that, It should be more informative, something that can easily be accomplished because you may devote more words to it. You should include a concise version of your discussion, highlighting what you found out, what problems you had, and what might be done in the future to remedy them. You should also indicate how the investigation could usefully be continued.

**A word on references**

These are very important. Your report should be sufficient to indicate to the reader what you have done, what you found out AND provide enough information for them to repeat the work if they so wished. You will have made use of information from a variety of sources, e.g. the speed of light from a book. In these cases you must include reference to such sources. It maybe that your project showed no evidence for cold fusion, but this might be because the value of the specific heat of water you used was incorrect. By including a reference to the source others can check your work and reduce the time taken

to make further advances. There are generally three types of reference according to the source, journal article, book, and web site. **Book** - you need to cite title, authors, date published, edition (if not first), City of publication and publisher. e.g. Elements of Nuclear Physics, W. E. Burcham, (London) Longman, 1979. **A journal article**- A. Dixon, *Journal of Light*, 2003, **3**, 123-234.

**WEB PAGE REFERENCES ARE NOT ALLOWED**

**Writing the report – how to start and plan**

Identify the story you wish to tell. Often this can be simply done by deciding which diagrams and graphs of data you wish to include.

Draw up a plan of what you want to say and how this fits around the diagrams/graphs you want to use.

Extend your plan to an outline that includes all the section headings you will need.

Check through the outline to see that sequence is sensible and that nothing vital has been ignored.

Check your outline through with someone else.

Write a first full draft of the report.

Check the first draft through for consistency, obvious errors and omissions (e.g. figure captions missing? References still to do?) If you can get a friend to read through it critically so much the better.

Revise the draft and re-check until satisfied.

Submit report.