CHEM61521/ CHEM 61401 PGT Laboratory: The Demonstrator's role

Introduction

Thank you for agreeing to serve as a post graduate demonstrator in the Postgraduate Taught (PGT) synthesis laboratory. In this 4 week laboratory course, we wish to equip the student with practical skills which will enable them to work efficiently and safely in a laboratory setting and to prepare them for more advanced investigations in Semester 2 and research project work. The laboratory component of the course accounts for 10% of CHEM 61521 (Organometallic/Inorganic) and 10% of CHEM 61041 (Organic). Students must attend regularly and a record of their attendance will be taken. The laboratory should not be viewed by the student as a separate unit to be taken alongside theory lectures – it is an integral part of the PGT course. It has been designed not only to exemplify material discussed in lectures, but also to test analytic skills, enable them to present experimental findings in a coherent manner and to apply knowledge and appropriate theory to the solving of problems.

Your duty as a demonstrator is to assist both staff and students in the laboratory by providing advice, checking that what students are doing is safe and sensible and that they make the best use of time. You need to read and understand the experiments and to be aware of safety protocols and the risks associated with them.

In the lab we are teaching the students how to prepare, separate and characterise compounds; how to do this in a safe and scientific manner, and how to make notes, interpret and report what they have done. We are not just testing to see what they can do without assistance.

Demonstrating is a professional undertaking.
You need to be active, vigilant and well informed in order to help the students.

- Before each experiment you will be asked to discuss and sign COSHH forms. Check that all substances used and prepared (including solvents and by-products) are entered on the COSHH form. If an assessment is incomplete then either guide the student through its completion or tell them where they can find the answers. **If in doubt refer to a member of staff.**

Safety is paramount …

- **ALL STAFF and STUDENTS MUST wear eye protection and a laboratory coat while in the lab.**

- We insist students have a valid, signed COSHH form **BEFORE** they do an experiment – students may be asked at any time to show their COSHH form for the experiment that they are doing, if they can't, let a member of staff know. Students not handing in completed COSHH forms will be given zero marks.

- We are trying to encourage good habits; students need to work in a clean and methodical fashion – benches, balances should be kept clean; lab-books must be used to make a note of measurements and quantities, scraps of paper will not do! Samples must be labelled, name date *etc.*

- Students, demonstrators and staff MUST wear safety glasses and conform to acceptable safety and professional behaviour at all times in the lab.

- Make a point of knowing where safety equipment is in the lab. (This includes fire, extinguishers and escape routes)

- **If an incident occurs then inform a member of staff at the earliest opportunity.**

- You are encouraged to discuss mechanisms of reactions and spectral data with the students. Make use of the white boards at the end of each BAY for impromptu mini-tutorials and discussions. Please try to ensure that students understand underlying theory. –
  --**However**: Students are required to answer a series of questions in the formally assessed write-ups: you can give help and assistance with these – **but do not supply them with "the answer"**. You can for example direct the students to a useful text etc. and **guide** them to a solution but their answers form part of their formal assessment so the **final analysis should be their own**. We are not looking for vast amounts of discussion – but some proof that they have had do a little reading.

- Do not be badgered into giving m.p. data *etc.*

LABORATORY ARRANGEMENTS

Timing and Accommodation
The laboratory-based practical course for CHEM 61521 and CHEM 61041 runs for 4 weeks in total, meeting on Thursdays (10.00am – 4.00pm) and Fridays (1.00pm – 4.00pm), and is accommodated in the "synthesis laboratory" which occupies the second floor of the new teaching laboratories. Please note that the lab will be closed on Thursdays from 12.30-1.30 pm

Course schedule and experiment tasks

Students are required to complete 4 practical experiments and one unknown identification as shown below. One practical experiment is completed in each week of the course.
Week 1: CHEM 61521

Experiment 1: Ferrocene

Week 2: CHEM 61521

Experiment 2: Acetylferrocene

Week 3: CHEM 61041

Experiment 3: Dibenzylideneacetone
Experiment 5: Identification of an Organic Unknown

Week 4: CHEM 61041

Experiment 4: Stilbene

Experiments 1 and 2 contribute 10% total to the CHEM 61521 Inorganic unit.

Experiments 3 and 4 contribute 10% total to the CHEM 61041 Organic unit.

Experiment 5 (Organic unknown) will contribute 10% to the CHEM 61041 Organic unit and will be marked by the student's organic tutor. The unknown will be issued to students in laboratory week 3 (Experiment 3 is relatively short and therefore time is available to run spectra on samples provided).

Marking: Demonstrator responsibilities

A. Samples from each experiment will be assessed for quality/yield (marked out of 10) by BAY demonstrators. Demonstrators should complete the appropriate form (Sample results form -1 form for each experiment for each student). Marking guides for sample quality and yield will be provided for each experiment. Return the form to the student's folder. **Please be vigilant as plagiarism/miscalculation of yields etc. can sometimes be a problem.**

B. You will be asked to give the students in your BAY **formative** "Feedback" for Experiment 1 (Ferrocene) during the laboratory class. Please mark experiment 1 with the help of the marking guide that will be supplied to you for this purpose. Make sure that the student includes reasonable aims/objectives; a discussion section (which is to be written in English); a proper written experimental section (*JCS* style) and a conclusion (including lit. refs.). Students will be given a comprehensive write-up guide and template which they should follow: please encourage students to read this before they attempt their write-ups.

C. You may also be assigned to mark specific experiments (2, 3 or 4). In this case you will be asked to mark all scripts for all students and you will receive additional payment for these marking duties.

Attendance

The students will need to be in the labs most of the time – and an attendance register will be taken. If someone is regularly missing or regularly turning up for just a short while please make a note of that and bring that to the attention to Graham Booth or myself (please send an e-mail to me so that I have a record). It is imperative that both staff and PG demonstrators arrive punctually for the start of the lab. Planning plays a key part of the lab: students should leave the laboratory by 12.30/4.00 pm as appropriate.

M Whiteley July 2014