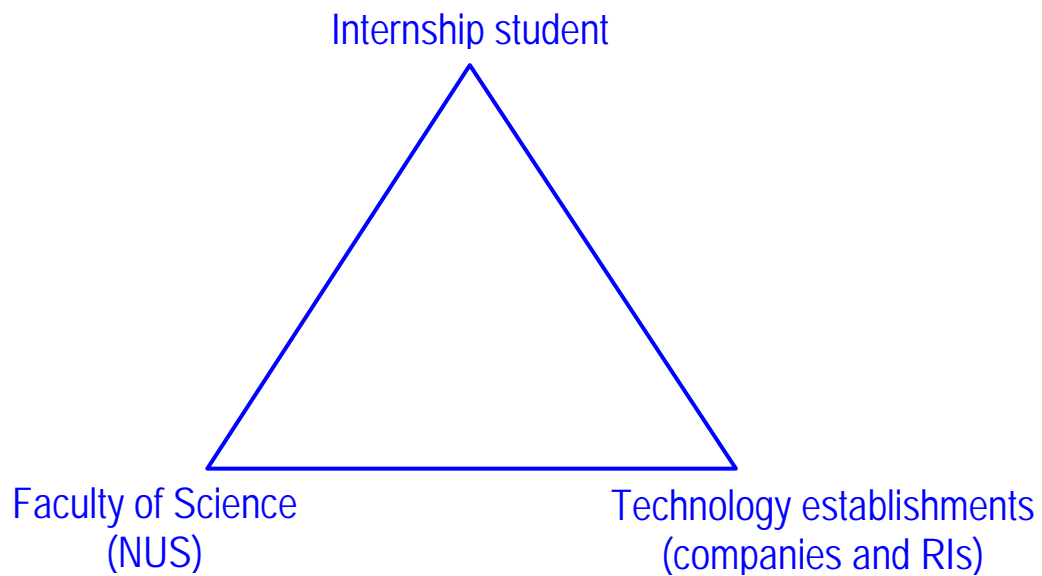


Professional Placement Programme (PPP)  
Faculty of Science  
Department of Materials Science

Notes to students of the Materials Science PPP2006

ZHANG Yong-Wei



## ***1. Overview of the Professional Placement Programme (PPP)***

The PPP is an integral module in the Bachelor of Applied Science programme initiated by the Faculty of Science in 1998. Students are attached full time to companies in partnership with the Faculty for a specified period to gain real-life working experience. This is currently being offered as a compulsory module in the following Applied Science degree programmes: Food Science and Technology, Applied Chemistry (both conducted by the Department of Chemistry) and Materials Science (Department of Materials Science). The module provides 8 modular credits. For students of Materials Science, the PPP module is offered in Semester I of Year 3.

## ***2. The Materials Science PPP***

In the Materials Science PPP, students are placed in selected company/ RI programmes to work full time alongside senior scientists and engineers on R&D and/or technological projects in a materials science and technology field. The placement may be with a company or a research institute (RI). In the Materials Science PPP, an effort is made to seek internship placements in which the student will be primarily engaged in challenging research or technology projects commensurate with a graduate science education. In this way, activities in the Internship Company/ RI will complement the regular lecture modules to provide a complete educational experience. The PPP attachment is 24 weeks in duration and will cover the period 3 Jul –15 Dec 2006 for Academic Year 2006.

We believe this provides vital opportunities for the student to gain hands-on experience and contribute to current projects in the research and/or technical sectors, so that they can appreciate the organisation and management of corporate R&D and/or technical support activities in Singapore.

We believe this provides also vital opportunities for the company/ RI to gain access to our best Materials Science students and through them to Science research facilities, and develop the essential long-term synergism between science and industry.

## ***3. The relationship between you, the Company and the University in PPP***

### ***(a) Role of the University***

The University (through the Department) is responsible to identify and negotiate placements and setup the framework for PPP, and award you 8 modular credits when you satisfactorily complete the module.

#### ***(a)(i) Self-initiated placements***

Notwithstanding the above, if you know of an establishment that may be able to offer you a placement that would satisfy the guidelines in Section 3(b)(i) below, you need to notify the Materials Science PPP Coordinator before 1 Apr 2006. Negotiations can only be made between the Department and the company/ RI, and the final decision as to the suitability of the proposed placement rests with the Department.

#### ***(a)(ii) PPP advisor***

An advisor (appointed from the Materials Science academic staff) will be assigned to you to monitor your progress and be your immediate point-of-contact with the Department throughout your PPP.

*(a)(iii) Your status*

During this period, you remain a full-time student in NUS. Your PPP allowance is not subjected to income taxation, and you are not entitled to CPF contributions. You do not require a work permit for the PPP (even if you are a non-local student).

You are protected by the regular student medical insurance (NTUC Income administered by University Health and Wellness Centre: total protection of \$15,000; medical claims up to a maximum of \$4,000 per incident). The internship company or research institute in turn is protected by a Public Liability Insurance Policy taken by NUS.

You will continue to enjoy access to NUS libraries, internet account and sports facilities. You will also continue to enjoy access to department research facilities and faculty research facilities for the benefit of your project.

**NB. Because PPP is a full-time module, you are not allowed to take any other modules concurrently.**

*(a)(iv) Your Materials Science PPP administrators*

They are Dr ZHANG Yong-Wei (mseyzw@nus.edu.sg) (PPP Coordinator) and Mdm Karen Kan ([msekank@nus.edu.sg](mailto:msekank@nus.edu.sg)) (PPP Officer) for Academic Year 2006.

*(b) Role of the Internship Company or Research Institute*

The participating company/ RI is responsible to provide a safe working environment to host your internship, to provide a supervisor to whom you will report, and a monthly allowance for your work.

*(b)(i) Guidelines to the participating company/ RI*

We provide the following guidelines to the participating company/ RI:

- Project assigned should be consistent with the normal job description of a university science graduate.
- The project would have significant scientific and/or technological content related to materials science and technology.
- The project could be a short-term project/ or a part of a continual development or long-term effort.
- The company/ RI would provide a supervisor to monitor and review your progress regularly.
- The company would allow you to participate in general company/ RI activities, such as technical meetings and seminars.
- The company/ RI would own all intellectual properties arising from your work in the PPP, and the right to vet your PPP report and presentation.
- Leave matters:
  - Paid leave.* This is currently specified as a maximum of 5 days at the discretion of the company/ RI. Your entitlement will be made known to you in your Letter of Offer.
  - Medical leave.* Medical leave has to be certified according to your company procedures or NUS procedures.
  - Special leave* for competition and cultural events (if you represent Singapore or NUS in these activities) has to be approved by your Internship Company/ RI on a case-by-case basis.
  - Compassionate leave* may be granted at the discretion of the company/ RI.

**NB. Taking excess leave over the specified entitlement may result in deduction of your allowance. Furthermore, excessive leave may result in your termination from the PPP.**

- The company would pay you not less than our specified minimum allowance over the duration of the PPP.

*(c) Your role*

Although you are a full-time student, you are placed under administration of the company/ RI during the period of attachment.

*(c)(i) What this means*

- You will report to your designated supervisor in the company/ RI who shall have authority over your project, work hours, dress code and leave matters.
- You are subject to company rules and regulations. Violators will be reported to the Department, and serious or repeat offenders may be terminated from the PPP.
- You will take reasonable steps to protect the intellectual properties of the company/ RI.

*(c)(ii) Appeals*

If you are seriously unhappy with the work (or lack of) that you have been assigned, you must contact your PPP advisor preferably within the first month! If notified early and we decided that the case has merit, we may be able to seek an alternative placement for you.

**4. Time-table of events for Materials Science PPP2006**

24 Feb 06	Deadline for submission one-page resumè and university transcript to Mdm Karen Kan. Please submit 5 copies of each.
01 Apr 06	Deadline for self-initiated placements.
24 Feb 06	Start of project placement selection. Participating companies and projects will be posted (first come, first post) for you to view on the Materials Science intranet and at the Materials Science departmental office. If you decide to choose a particular project placement, you will need to sign up for the project placement with Mdm Kan. Please note that you will <u>not</u> be allowed to change your mind once you have made your selection. One week after the posting, for cases with more than one candidate competing for a placement, a public balloting will be conducted by Mdm Kan. Unsuccessful candidates at this stage will be pooled together to compete for placements in the remaining postings, and by further balloting if necessary, until all students have been provisionally placed. Soon after (you will be individually notified), if your provisional placement company wishes to interview you, you will have to make yourself available for the interview. If you are successful, a Letter of Offer will be made out to you, informing you of your reporting date/time, dress code, reporting supervisor and leave entitlement. If you are rejected by the company/ RI at this stage, you will be put into another round of the placement attempts.
14 Apr 06	End of project placement selection.
03 Jul 06	Official start of Materials Science PPP2006.
15 Dec 06	Official end of Materials Science PPP2006.
30 Dec 06	Deadline for submission of PPP report and feedback form. PPP presentation.

## 5. *Safety first*

Companies are required to provide a safety orientation for you in the first week of the PPP and provide a safe working environment. You are however responsible for your own safety.

- No sandals in laboratories.
- No loose hair in laboratories.
- Wear goggles (and face-shield if necessary) in chemical or hazardous work.
- If you are unsure of a procedure or tool or chemical, please seek advice.
- Check out the Materials Safety and Data Sheet (MSDS) which are available on the web (see for example, <http://www.msds-serach.com/>).
- Check out the chemical safety handbooks are available in libraries (see for example, chemical safety sheets: working safely with hazardous chemicals, Kluwer Academic, 1991).

**If you think you have spotted an unsafe situation, contact your supervisor (and your company's safety officers) right away. If this is not resolved, contact your PPP advisor!**

## 6. *Expectations Management*

### *(a) How the PPP can benefit you*

The PPP can contribute to your personal growth in the following ways by providing opportunities for the following (non-exhaustive):

- Induction to a real-life working environment at zero cost.
- Opportunities to meet interesting colleagues, superiors and subordinates, and learn workplace social skills.
- Opportunities to learn company/ RI organisational structures and how the company/ RI operates in Singapore.
- Opportunities to be presented with difficult and/or stressful situations and learn how to cope with them and make decisions with incomplete knowledge.
- Opportunities to make contacts and new friends.
- Time to clarify your career thoughts.
- Opportunities to acquire new technical knowledge and skills.
- And finally of course, you may choose to work with the company in the future!

An early acquisition of these skills (which are potentially more valuable than exam-oriented skills) will undoubtedly help steer you well on your future career path and in your general interaction with people.

### *(b) What the PPP is not*

You should not expect to be given structured learning programmes or be spoon-fed. Learning how to take initiative and think on your own is an important aspect of the programme.

You should also not expect the PPP to be directly related to what you have learnt in coursework. It is the role of the Materials Science practical laboratories to fill this need and amplify what you have learnt in coursework.

Furthermore, unlike programmes in polytechnics and vocational institutes, a university science education aims to train you to do rational thinking and life-long learning so that you can excel in a wide range of environments. It is not its purpose to provide you with technical recipes for operating tools.

*(c) How to get the most out of PPP (in other words, how to make an impact)*

- Be alert
  - Be attentive
  - Be smart
  - Be initiative (and be prepared to speak up)
- but
- also be polite. No one likes arrogant uncivilised people.

You get as much from the programme as you put in: Don't wait for events to take place - make them happen yourself!  
A golden rule to bear in mind: If you make your boss look good, he/ she will also think highly of you.

## *7. Frequently-received feedback (FRF) and Response*

- *"Give more work"*. Get it yourself: There is nothing to stop you from looking over your shoulders to see what else you can take part in, so long as you keep your supervisor in the loop. There is also nothing to stop you from doing more than you are told. Do not be afraid to take initiative and ownership.
- *"Seniors should be required to brief juniors to avoid them plunging into the wilderness"*. This is being incorporated into Materials Science PPP2006. Your juniors (and coursemates) will have the opportunity to hear what you have done.
- *"Make PPP optional for polytechnic students"*. The nature and objective of the Materials Science PPP differs from that of the polytechnics, so we believe that polytechnic graduates too will derive value from participating in the programme.
- *"Have projects that are relevant to our course modules"*. As we explained above, this is not an aim of the Materials Science PPP.
- *"Send at least two people to the same company so that there is at least someone of similar age group to talk with and have lunch with"*. Interactions across age groups can be very illuminating.
- *"Allow us to view projects on the intranet"*. This is being implemented now.
- *"Student, company and university should all take greater interest in the programme"*. The roles of the student, company and university are distinct. The university provides the framework, the company gets your contribution and you as the intern student get to learn as much as you can out of the environment. The success of the PPP depends on your initiative and the opportunities given to you. By making the first move, you can make things happen. This is exactly the same when you go overseas and attach to the large companies.

## *8. Documentation*

There are a number of forms to take note of.

- *Student's log sheet*. You will have to fill in the log sheet and get it endorsed by your company/ RI supervisor weekly. This log sheet will protect you in case of a dispute with your supervisor, and will have to be handed in to the Department at the end of the attachment.
- *Student's feedback form*. You will have to submit this feedback form to the Department at the end of the attachment.
- *Performance evaluation form*. Your company/ RI supervisor will submit this directly to the Department at the end of your attachment.
- *Progress report*. Your PPP advisor will keep track of this.
- *PPP report*. You will have to submit a technical report not more than 20,000 words and preferably not less than 5,000 words in length, to the Department by **30 Dec 2006** to fulfill the conditions of the PPP module.

- *Report clearance form.* You will have to get your company/ RI supervisor to sign this form to clear your report and presentation for release to the Department. This form protects you in case of a dispute over breach of confidentiality.

## 9. Guidelines for writing the Materials Science PPP2006 report

- Do not exceed 20,000 words (i.e. do not exceed about 50 pages, 1.5-line-spacing). Write about 5,000 words (i.e. about 15 pages, 1.5-line-spacing).
- Do not lift write-ups from company brochures or reports for your introduction. This normally does not fit well into your report. Do not write unnecessary details.
- Do not simply repeat machine/ tool recipes, or lift descriptions from manuals. Instead provide an explanation for what is happening.
- Do not include photographs of mundane machines/ tools, such as balance and magnetic stirrers.
- Do write about your project (or some of its highlights). Do write like a scientist: (i) give an introduction to the problem you were trying to solve or the process you were monitoring, (ii) what experiments/ analyses you have done to understand the problem or the process, and (iii) what scientific/ technological conclusions you have learnt as a result. Provide an explanation for the steps you have taken and for your observations.
- Do consolidate and compile your data so that they have value. If you have several related data sets, for example, putting them together on the same plot will deliver more value and impact and plotting them separately.
- Finally do clear with your company supervisor using the Report Clearance form before submission.

The suggested structure for the final PPP report is as follows.

- *Cover page.*
- *Table of contents.* Please number your pages.
- *Summary.* Summarise the PPP project and conclusion in not more than 200 words.
- *Introduction.* Brief outline of problem or process and what is known about it, and why it is relevant.
- *Methods/ Process/ Experimental.* Describe the methods and principal activities in your project.
- *Results and Discussion/ Discussion.*
- *Conclusions.* Summarise the main results.
- *References.* List references to pertinent literature here together with the bibliographic marker in the main text showing where the reference has been referred to.
- *Acknowledgements.* Acknowledge training provided by your employer, the technical assistance received from other persons, source of your materials etc. *Please do not thank the PPP administrators – we did not and will not make any technical contribution to your work.*
- *Appendices.* If any.

The report should be typed on white A4 paper with font size 12 and 1.5-line-spacings, and thermal bound.

## 10. Guidelines for preparing the Materials Science PPP2006 presentation

- Prepare a 12-min presentation (and 3-min of questions and answers). You will not be allowed to exceed the time limit; and if you do, you will find yourself rather rudely interrupted.
- You are recommended to make your presentation on a presentation software, such as Microsoft PowerPoint. The font size must not be smaller than 18 if you want people to be able to read the words.
- For a 12-min presentation, you should normally not use more than 8 slides.

- Your audience would be members of the academic and research staff, your coursemates and your juniors. You will need to make your presentation comprehensible to a non-expert audience if you don't want them to doze off. To do this, you should devote the first half of your presentation (3-5 slides) introducing the background to your subject (and very briefly the company and section in which you worked) and the remaining time to the selected / particular results or understanding that you have obtained. Do not try to tell every experiment that you have attempted in the PPP. If some particular results do not make sense to you, they would most likely not make sense to us either.

## 10. Guidelines for preparing your CV

- Prepare your CV on only one page of white page.
- Do not use NUS logo or official letterhead anywhere on your CV – it is a personal document.
- Emphasise your strengths and/ or experiences which you think set you apart from others.
- The recommended layout is given below:

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Name:	Daniel Tan	Gender:	Male
Date of birth:	17 Jan 81	Citizenship:	Singapore
IC Number:	8101234Z		
Address:	Blk 79, Batu Lane, #14-22, Singapore 160790		
Telephone:	60123456 (home)	Email:	daniel.tan@yahoo.com.sg
	90123456 (handphone)		

Education: *(only from Junior college/ polytechnic onwards)*

1999 National Junior College  
 2002 National University of Singapore

Courses studied at the University: *(and grades, if they are good)*

2002 Analytical chemistry B+, Fundamentals of polymer size B+, Advanced Ceramics A-,...  
 2003 Selected topics in semiconductor devices B,...

Other skills: *(for example, database, computational, programming, R&D tools etc)*

Familiar with C++ Programming.

Familiar with FTIR, UV-vis spectrometry, viscometry, dynamic light-scattering, high-performance liquid and gas chromatographies and theory of polymer gels.

Relevant work experience: *(e.g. previous internships, research (UROP etc), familiarity with instrumental and/or particular technologies, etc)*

2002 Undergraduate research opportunities programme. Worked on the synthesis and characterisation of polymer thermal gels. Published a paper: D.B.H. Tan et al, *Macromolecules*, 79 (2003) 1154.

Awards: *(only from Junior college/ polytechnic onwards)*

2003 Young inventor's medal: Bronze (Singapore Science Centre): built a self-propelled skate.

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These notes were modified from guidelines issued by P. Ho and C-H. Chiu (Materials Science), and S. Jaenicke (Applied Chemistry).