

# Welcome to the Department of Materials and Environmental Chemistry!

You are most welcome as a PhD student at the Department of Materials and Environmental Chemistry (MMK) and to an exciting period in your life. The information you can get from the following pages will hopefully help you during your studies and although most of what you need to know can be found here, you should never hesitate to ask your supervisors, fellow PhD students or anybody at MMK for additional information and advice.

The next 4 – 5 years will be a period of hard work, success, frustration, happiness, lack of time, international travels & contacts, always feeling that there is another paper to read, seminars to present, or courses to attend, all of which are parts of the process of becoming a scientist. Your work both as an instructor in the courses and within the research project will be an important contribution to the future advances in science and for the reputation of MMK. As a PhD student, you are a member of the department who can influence the decisions taken by the Department Board and also, of course, take part in the social life.

To meet the requirement for the PhD degree you have to present and defend successfully a thesis, obtain 60 course credits (ECTS), as well as fulfill all learning goals of the PhD education. The thesis will be based on your research work as presented in typically four papers (or equivalent) in international scientific journals. A good way to keep the general knowledge of the field alive and to widen it is to take part in the seminars given at MMK.

*Good luck with your studies and research!*

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## General information

With you being responsible for your own PhD studies, it means that you take the courses that are required and influence on the direction the research project shall go. Your supervisor will guide you and it is noteworthy that she/he has 5% the working time set aside to the supervision of you.

Beside of you and the supervisor(s) there are other persons involved in the PhD study program at MMK. The Head of the Department, the persons responsible for the respective PhD programs "ämnesansvariga", and the study director for the PhD education have different responsibilities when it comes to the PhD education at MMK. The Head of the Department has a general managerial role, the "ämnesansvariga" lead the research education in the particular subject and the study director for the PhD education has an overreaching role in the steering of the research education. For example, if you would have problems with your relation to your supervisor(s) or other colleagues at MMK you should contact the Head of the Department or the ämnesansvariga. There will be a yearly appraisal talk when you meet with a senior researcher and discuss the working environment and the progress of your PhD studies. There are different ways to stay updated about what is going on at Stockholm University (SU) and MMK. Detailed information is presented on our web page (<http://www.mmk.su.se/>), and the notice boards in the Department, we also suggest that you carefully read mails sent by the Head of the Department, the directors of studies, the people in the administration, IT – responsible, etc. There is an MMK info meeting about once per month, where you will get information about latest news. Another important way to keep in touch and actively participate is to take part in the MMK's PhD student council. There is a newsletter, Universitetsnytt, distributed to everyone at Stockholm University. Important information is also available on the SU web site, (<http://www.su.se>), the Faculty of Science has a web site ([www.science.su.se](http://www.science.su.se)) and also the chemistry section (<https://www.kemi.su.se/english/>), where you among other things can find detailed information and forms related to the PhD defense procedures.

As a member of Stockholm University Student Union ([www.sus.su.se/](http://www.sus.su.se/)), you can get help and different benefits, for example, discounts on SL tickets and in different stores. Beside of the SUS/SU, you can also become a member of several other administrative groups within at MMK, which allow you to be actively involved in the development of the Department.

# The PhD program at the Department of Materials and Environmental Chemistry

## Rules, Regulations and Instructions

### *Learning outcomes*

The aim of the PhD program is that the student shall acquire knowledge and understanding, competence and skills, as well as judgement and approach in the chosen field of research. The learning outcomes according to the Higher Education Ordinance are given below:

#### Knowledge and understanding

For the Degree of Doctor the third-cycle student shall demonstrate:

- Broad knowledge and systematic understanding of the research field as well as advanced and up-to-date specialized knowledge in a limited area of this field.
- Familiarity with research methodology in general and the methods of the specific field of research in particular.

#### Competence and skills

For the Degree of Doctor the third-cycle student shall demonstrate:

- Capacity for scholarly analysis and synthesis as well to review and assess new and complex phenomena, issues and situations autonomously and critically.
- Ability to identify and formulate issues with scholarly precision critically, autonomously and creatively, and to plan and use appropriate methods to undertake research and other qualified tasks within predetermined time frames and to review and evaluate such work
- Through a dissertation the ability to make a significant contribution to the formation of knowledge through his or her own research
- Ability in both national and international contexts to present and discuss research and research findings authoritatively in speech and writing and in dialogue with the academic community and society in general
- Ability to identify the need for further knowledge
- Capacity to contribute to social development and support the learning of others both through research and education and in some other qualified professional capacity.

#### Judgement and approach

For the Degree of Doctor the third-cycle student shall demonstrate:

- Intellectual autonomy and disciplinary rectitude as well as the ability to make assessments of research ethics.
- Specialized insight into the possibilities and limitations of research, its role in society and the responsibility of the individual for how it is used.

### *Study plans*

There is a General Study Plan for each PhD program, and in addition each PhD student has an Individual Study Plan (ISP), in which the student after a discussion with the supervisor(s) writes a research plan for coming year and a brief plan for the whole program. This study plan should be updated annually.

Only courses taken at SU will be registered in LADOK automatically. Courses taken at other universities must be registered manually. The PhD student is responsible for that the courses are reported and registered in LADOK. LADOK is an IT-system where all courses taken are registered.

The following instructions concern the mandatory activities of the PhD programs, and are meant to complement the ISP:

1. At latest two months after starting the PhD program, the student should submit the first ISP to the Study Director of the PhD programs who will give a feedback. A final version should then be written and signed by the PhD student and the supervisors. The plan should contain the aim and a short description of the research project(s), planned experiments and courses.
2. Participation during the first year(s) of the PhD program in the set of short PhD courses arranged by the Chemistry Section:
  - Teaching chemistry 2 ECTS
  - Philosophy of science and ethics 3 ECTS
  - Writing science (Writing a scientific article) 3 ECTS
  - Arrhenius seminar for PhD students (Communicating science) 1 ECTS
  - PhD seminar course 5 ECTS
  - Advanced course in the research subject 12 or 15 ECTS

**Sum: 24 or 29 ECTS**

The advanced courses within the respective research subject are: Materials Chemistry (15 ECTS), Inorganic Chemistry (15 ECTS), Analytical Chemistry (12 ECTS), and Physical Chemistry (15 ECTS). It is strongly recommended to complete this course before the Midterm seminar. The taken course certifies that you have a general knowledge in the specific PhD study subject. Book the exam date with the respective PhD program responsible "ämnesansvarige", who also decides on the course literature

4. Participation in PhD student seminar course at MMK.  
There are three PhD seminar courses at MMK; Materials chemistry, Inorganic and structural chemistry, Physical and Analytical chemistry. The courses run during the semesters during your whole research education. There will typically be one seminar per month
5. Writing and updating the ISP  
New PhD students must have an ISP ready within two months after starting the doctoral studies at MMK. The ISP must be updated at least once per year.

## 6. Midterm seminar

Midterm seminar (or presentation of a licentiate thesis) is held in the middle of your PhD program. The purpose of this evaluation is to make sure that the PhD program is progressing well, both scientifically and “socially”, for the student, as well as for the supervisor.

Two weeks before the midterm seminar, the student sends a written project description, a brief summary of the work performed, a description of future plans, and a synopsis of the thesis to an internal evaluator at MMK. The seminar and evaluation are chaired by the evaluator committee and besides the PhD student, the supervisor, and preferably also the assistant supervisor are present. The seminar is a 30-minute presentation, including questions, on obtained scientific results and future plans, and is followed by a discussion between the PhD student, committee members, and the supervisors. The guidelines for the procedure during the Midterm seminar can be found here:

[Guidelines from the faculty for the research education](#)

*Other activities that may be included for fulfillment of your PhD exam*

1. PhD courses arranged by the Department or other departments and universities.
2. Undergraduate courses at the advanced level taken before acceptance to the PhD program and not included in the undergraduate degree or part of the requirements for acceptance to the PhD program, can be included and give credits in the PhD program at a maximum of 30 ECTS (normally not more than 15 ECTS), after agreement with the supervisor and the PhD program responsible, “ämnesansvarige”.
3. Participation in international PhD courses, schools, workshops. The number of credits given for these courses depends on the course and is decided by the PhD program responsible; "ämnesansvarige".

Given credits will be registered in LADOK by the department administration, based on provided documents, verifying that the course has been taken/passed.

Chemistry sections ethical guidelines:

<https://www.kemi.su.se/english/education/ethical-guidelines#Cheating%20and%20Plagiarism>

### *Research ethics*

Scientific research is performed by empirical studies, experiments, computational studies or observations which have to be conducted in accordance with sound scientific, and ethical principles. Each person involved in scientific research must have an ethically correct approach to the work associated with the research, such as planning, conducting experiments or computational studies, collection of data, interpretation of results, as well as distribution of information. The way in which scientific results have been produced must be documented and raw data have to be preserved and available for scrutiny. Data must not be omitted arbitrarily in order to make a better argument, invented, or stolen from other

researchers. Plagiarism of other people's texts, or even one's own texts, is not allowed. All forms of falsification during scientific research and scientific publication are serious and may lead to suspension, and in the worst case to legal measures.

## **The thesis**

The most common and preferred format of the thesis is what is called "sammanläggningsavhandling" in Swedish. The thesis should be written in English. This format of a thesis consists of a collection of papers and an introduction of the area of the thesis and a summary of the thesis work as presented in the papers, with key references. The introduction is often in the format of a review where you also refer to your own papers. Note that there should also be a Swedish summary, which should also be given to the person managing the MMK homepage.

Remember that you must be very careful to give references to data and information you use in your thesis and encapsulated papers. You are not allowed to copy sentences from the literature, not even from your own papers. If you need to directly cite a particular phrasing that should be clearly shown with citation marks and a proper reference to the source must be given. Note that in most cases a permission to include already published papers must be obtained from the publisher. There are normally standard procedures for this, often posted at the journal's website.

During the internal review of a thesis the text will be scanned for plagiarism using the program Urkund.

It is a good idea to have a look in some recent PhD thesis from MMK.

Helpful information can be found at the homepage of the [Faculty of Science](#):

### *Requirement for the thesis*

The thesis should typically be based on a minimum of four research papers. With this minimum the PhD student should have taken a leading role on at least two papers e.g. as first author (shared first authorship is acceptable). The research papers are typically published or submitted to a journal/conference for publication. As a rule of thumb at least two papers should be published.

### *Time schedule from pre-dissertation to dissertation*

The following schedule is meant to be of assistance, to the PhD student and the supervisor, when a dissertation is planned, so that no obstacles or delays would occur.

Note that some of the deadlines are *not* negotiable!

<b>Responsible</b>	<b>Task</b>
Main supervisor	The main supervisor discusses with "ämnesansvarig" about suggestions for opponent, committee members and the chairperson for the defense procedure. It is normally the main supervisor who contacts the intended opponent to check his/her availability. All committee members must have "docent" competence and the gender perspective must be considered.
PhD student	Two thesis defenses in Chemistry cannot take place simultaneously, therefore the calendar should be checked: <a href="http://www.science.su.se/om-oss/kalendarium/disputationer">http://www.science.su.se/om-oss/kalendarium/disputationer</a>
PhD student	Contact the student expedition at KÖL to check when the Magnéli Hall is available: <a href="mailto:exp@kol.su.se">exp@kol.su.se</a>  On Fridays theses defenses have higher priority in the Magnéli Hall than other bookings.
PhD student	Register dissertation at Studentavdelningen: <a href="mailto:disputationer@studadm.su.se">disputationer@studadm.su.se</a> Include the following information in the mail: Your personal number: Supervisor and email to supervisor: Date and time  You will get an <b>ISBN number</b> from there!
PhD student	<b>Book the Magnéli Hall:</b> <a href="mailto:exp@kol.su.se">exp@kol.su.se</a>
PhD student	Register all publications included in the thesis and the summary electronically in DiVA (Stockholm University Publication Database) and ask for permission for reprint of all the included publications from the publisher. If material is taken from others work (figures etc.), permission is required from the publisher.  Login to DiVA: <a href="http://su.se/biblioteket/publicera/registrera-i-diva">http://su.se/biblioteket/publicera/registrera-i-diva</a>  A "spikblad" (prepared by the librarian) will be sent to you. The "spikblad" must be sent to the printers during test printing. Make sure all information (date, time, address, ISBN etc.) in the "spikblad" is correct. <b>Questions</b> on DiVA, templates, posting etc. You can also book an appointment for an hour of individual instructions on questions regarding electronic publishing. E-mail: <a href="mailto:diva@sub.su.se">diva@sub.su.se</a> Tel. 08-16 14 50

Ämnesansvarig <b>10-13 weeks</b> prior to the defense	Internal review of the thesis including check for self-plagiarism. This step must be ready before a suggestion for opponent and committee members is sent to the faculty.
Ämnesansvarig <b>7-10 weeks</b> prior to the defense date	Sends suggestions for opponent, committee members, chairperson for the defense, and a contact person to the faculty, at least seven weeks before the thesis defense or seven weeks before the last day of the semester if the thesis defense is after the semester ends.
	Decision from the faculty on opponent and faculty members.
Main supervisor <b>6 weeks</b> prior to the defense date	Send articles and the summary (.pdf) to the opponent and the evaluation committee directly after there is a decision from the faculty. *
PhD student	Send a pdf-version of the thesis to the opponent and the committee members at least six weeks before the thesis defense.*  Ensure that the language is carefully checked before printing the thesis.
PhD student	Contact the printer at least six weeks before the thesis defense to start the process of thesis printing*. About 2-3 test prints may be needed. Every test print takes 24 h. Consult the web page of the Faculty of Science at SU to find out the minimal number of copies of the thesis that must be printed. Bring a printing agreement "Beställningsrutin för doktorsavhandling". Prepare 2 copies which must be signed by you, the Head of Department and the printing company at the first test printing. Printing of thesis takes <u>5 working days</u> and the thesis must be delivered from the printer <u>2 days</u> before the "spikdag".  It is recommended to talk to the printing company about a time plan for the printing (There are often many dissertations during the spring and they may be busy).
Main supervisor	The printed thesis (and the final version as pdf-file) is sent to the opponent and the committee members as soon as it is printed, at least three weeks before the thesis defense or three weeks before the end of the semester.
PhD student <b>3 weeks</b> prior to the thesis defense	<b>Spikdag!</b> Nailing of thesis.

\* Six weeks before the last day of the semester if the thesis defense is after the end of the semester.

## The dissertation

The dissertation is the “grand finale” of the PhD program at which the PhD student gets a chance to show that he/she has become a scientist. The dissertation in English runs according to the following schedule:

- The chairperson of the dissertation opens the dissertation.
- The student gets a chance to announce (important) errata or withdraw the thesis. A printed list of errata should also be available if the errata are many and/or complex.
- The opponent gives a 10–15 min introduction to the field to the thesis.
- The PhD student gives a 25–30min summary of the most important conclusions from the thesis work. PLEASE do practice so that you stay within this time!!!
- Discussion of the thesis work lead by the opponent
- Questions by the examination committee
- Questions from the audience
- Chairperson closes the dissertation
- The examination committee together with the supervisor and the opponent discusses the thesis and the defense of the thesis, in closed chambers. The committee can also elect not to invite the supervisor and the opponent. The examination committee decides on whether the student should pass or not. The opponent and the supervisor should not be present when the decision is taken.
- The chairperson of the examination committee announces the decision.

In order to get the PhD degree certificate the student must apply to the University Student Office.

1. Fill in the form "Ansökan om examensbevis" ("Application for Degree Certificate").
2. Attach a LADOK certificate to the application. The certificate must include the formulation: "har godkänts på samtliga prov inom doktorandutbildningen" ("has passed all required examinations within research education").
3. Include a certificate of change of name, where relevant.
4. Send all of this to:

### Mailing address

Stockholms universitet  
Studentavdelningen  
Universitetsvägen 2B  
106 91 Stockholm  
[disputation@science.su.se](mailto:disputation@science.su.se)

### Visiting address

Studenthuset  
Examensärenden  
Telephone: 08-162000

## Finances & social security

As PhD student you can have a financed PhD-position “doktorandanställning”, and in specific exceptions, a scholarship. The total time of a “doktorandanställning” is 48 months of full employment (100%), but since many PhD students within the Department are engaged as teaching “course assistants” and/or in other activities, the total time of employment may vary from 4 to 5 years.

### “Doktorandanställning”

A “doktorandanställning” includes all the rights of a regular time-limited employment, and the salary is taxable. The salary is negotiated between the trade unions and SU, usually once a year, and is in principal the same for all PhD students at SU, although individual variations may occur due to special circumstances. There are three salary levels (can be checked [here](#)) depending on what stage in the PhD program the student has reached.

If you get ready with your PhD studies before the stipulated four years you will have the right to keep your employment at MMK for another maximum of 6 months (within the four years). You may then work under supervision of either your PhD supervisor or some other supervisor at MMK.

The department has the right to ask you to work up to 20% of your time without giving prolongation, however, this is not common practice.

### Travel scholarships and other scholarships

Internal scholarships at Stockholm University are yearly available for application. The announcements are usually distributed to all PhD students within the Department. The fellowships most frequently awarded are from foundations like K & A Wallenberg (KAW), KB Augustinsson and JF Liljewalch Jr. The deadline for application for KAW is usually during late fall and for the other two during early spring. A scholarship may cover a substantial part of the cost for participation in a congress, etc.

**Hint:** You are encouraged to apply for scholarships for attending conferences, et c. To have received scholarships is also good for your CV.

### *Teaching and other tasks at the Department*

Teaching, participation in Department groups and performing KLARA inventory, as duties within the “doktorandanställning”, are included in the salary and will not be shown as a specific item in your monthly salary report. KLARA inventory is a part of your group activity and responsibility. Teaching can give 10 or 20 % prolongation of your contract, corresponding to 0.5 and 1 additional year, respectively. Becoming a member of different Department groups may give a small prolongation, which is hourly based on the group meetings (for more information you can ask students from PhD council group).

You may teach as an instructor ("assistant") at undergraduate courses at the basic level or at advanced level courses. The length of teaching corresponds to  $\leq 20\%$  of a full-time position = 350 h/year. In practice, this is equal to one 15-credit course or two 7.5 credit courses yearly. Depending on the number of instructors available at the Department you can be asked to teach just after being accepted as a PhD student. If there is an excess of graduate students (who wish to teach), those having been registered as PhD students the longest time will be asked first, although academic competence will be considered as well as proficiency in Swedish. In addition, development of practicals, administrative or computer tasks might be required instead of, or in addition to, teaching.

You should regard the teaching as a great opportunity to practice your pedagogic skills, to get a chance to find out if you really understand the methods you use and to learn new ones, but also to find out how much of the basic knowledge you remember/have forgotten. Furthermore, being an instructor is a good way to develop and practice your leadership skills.

For more information concerning teaching duties contact the Director of undergraduate studies at the Department. Planning of the teaching schedule normally starts in April for the academic year to come. You will have a chance to comment on the schedule before it is finalized. Efforts will be made not to place your teaching periods when they would conflict with *e.g.* conferences, if possible. In the normal case there will be no teaching or other duties during the last 7 months of your PhD studies.

### *Responsibilities as "assistant"*

To be able to give the students efficient, practical training you must be well prepared both practically and theoretically. Read all the necessary information and theory in advance before the course starts. You are responsible for the practical training of the students. Plan the lab work and make sure that equipment and chemicals are available for each practicum. Equipment required for the practicum that is shared by other members at the Department has to be booked in advance. In some experiments you have to use equipment from a research group within the Department. You must ask in advance if the equipment is available.

You are responsible for the safety of the students (and yourself). Lab reports handed in by the students have to be corrected. This means that you have to read reports, comment on things that are incorrect or unclear, sloppy figures etc. Do not give up and accept a lab report that you do not believe meets the standards you set. Make sure that your students have understood the practicum.

If you have reasons to believe a student of plagiarism or any other form of dishonest behavior, do not act yourself, but contact the course responsible for the course you are teaching.

Hints:

Teaching is a full-time job, meaning that you hardly can continue your own research work, definitely not at full speed. Have a break, you deserve it!

The best way to learn the job is to work on the course with an experienced instructor before you start your own first instructor period. Remember what you demanded from your own lab instructor as an undergraduate student. Reading the course evaluations can help you become a better instructor.

As a lab instructor you are an important representative of the Department. Your success as a lab instructor on the basic course and the advanced courses means that the students will influence others to study our programs and more students will also become interested in the research areas of our Department. It is usually the instructor, not the professor, the student primarily will ask about continuing studies at our Department or how to become a PhD student. Look at your job as an instructor as something positive and educational.

## **Additional information**

Here you can find some additional information that is useful to know, but not directly related to the PhD studies

### **Student accommodation in Stockholm**

The biggest accommodation for students (at all levels) is Stockholm studentbostäder (also known as SSSB <https://www.sssb.se/>). You can register in their system 90 days prior you become a student at Stockholm University Student Union and stay in a waiting-list, collecting days. Membership in the Student Union is a mandatory requirement to keep your place in a queue.

It is also possible to get accommodation from Bostadsförmedlingen Stockholm <https://bostad.stockholm.se/>

Here are some information from Stockholm University on housing options for students in Stockholm.

<https://www.su.se/english/education/admissions/housing-for-international-students>

### **Unemployment insurance**

A-kassan is the organization which will pay you about 80% of your salary when you have no job; Facket (Union) is the union which will defend your rights in case if you got any issues with your employer.

You shall be a member at least before 12 months before the end of your employment, plus, you shall work for quite some time before you join it. You do not have to join them both; you may join just A-kassan. It will cost you monthly a little amount of money depending on your choice of A-kassan and a similar thing is separately for Facket. Choose the right A-kassan which is fitting with your academic background, read well online about it.

Examples of A-kassans:

<https://stsakassa.se/>

<http://www.aea.se/>

<https://sulf.se/jobb-lon-och-villkor/a-kassa/>

There is also organization called Tryghetsstiftelsen <https://www.tsn.se/>, which helps as well unemployed PhD students. They help mostly with such things as job-coaching, paid course in Swedish language at Folkuniversitetet, a course in a project leading, etc.

## **Appendices**

Appendix A: Contact details to the responsible persons for the PhD education.

<https://www.mmk.su.se/education/phd-studies>

Appendix B: Individual study plan

<https://www.mmk.su.se/education/phd-studies>

Appendix C: Instructions for the half-time seminar

<https://www.mmk.su.se/education/phd-studies>

**GOOD LUCK and HAVE FUN!!!**