

The following translation of the „*Ordnung für Promotionsstudien an der Graduiertenschule “Materials for Solar Energy Conversion (MatSEC)” of the Helmholtz Zentrum Berlin für Materialien und Energie GmbH at the Dahlem Research School of the Freie Universität Berlin*” is provided for purposes of information only and is not authoritative; the original German text shall apply in all cases.

**Regulations for Doctoral Studies at the Graduate School of  
Materials for Solar Energy Conversion (MatSEC),  
of the Helmholtz Zentrum Berlin für Materialien und Energie GmbH  
at the Dahlem Research School, Freie Universität Berlin**

**Preamble**

In accordance with § 14 para. 1 (1) of the “*Teilgrundordnung (Erprobungsmodell) der Freie Universität Berlin*” (supplemental chapters of the trial-model constitution of FU Berlin) from the 27<sup>th</sup> of October, 1998 (published in *FU-Mitteilungen* No. 24/1998), the Freie Universität Berlin Faculty Council (*Fachbereichsrat*) of the Department of Biology, Chemistry, and Pharmacy and the Faculty Council (*Fachbereichsrat*) of the Department of Earth Sciences passed on the 18<sup>th</sup> of September and 23<sup>rd</sup> of October 2013, respectively, the following Regulations for Doctoral Studies at the Graduate School of Materials for Solar Energy Conversion (MatSEC) of the Helmholtz Zentrum Berlin für Materialien und Energie GmbH (Helmholtz Zentrum Berlin / HZB) at the Dahlem Research School of the Freie Universität Berlin.<sup>1)</sup>

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<sup>1)</sup> These regulations were approved by the Präsidium of Freie Universität Berlin on November 12, 2013.

## § 1

### Scope

(1) These regulations set out the admissions criteria, application and selection procedure, as well as the content, setup, objectives, organisation, and academic requirements for doctoral studies at the Graduate School of Materials for Solar Energy Conversion (MatSEC) of the Helmholtz Zentrum Berlin at the Dahlem Research School (DRS) of the Freie Universität Berlin.

(2) Representatives from the following universities will participate in training graduate students: BTU Cottbus (BTU), Freie Universität Berlin (FUB), Humboldt-Universität zu Berlin (HUB), and the Technische Universität Berlin (TUB). The Helmholtz Zentrum Berlin für Materialien und Energie GmbH (HZB) is the lead institution.

## § 2

### Components and Objectives[Anm. des Übers.: “Objectives and Components”?] of the Graduate Studies

(1) Doctoral studies at the graduate school consist of scientific research work, in particular the preparation of the dissertation, scientific coursework with the content in accordance with § 8 to § 11, as well as students availing themselves of the graduate advising provided.

(2) The objective of graduate study at the HZB Graduate School of Materials for Solar Energy Conversion (MatSEC) is to train excellent scientists. The doctoral students will be assisted in acquiring the following specific capabilities:

- independent planning and carrying out scientific research,
- advancing research in an area through original scientific contributions,
- presenting and defending the research results before an expert audience,
- acquiring key qualifications, and
- learning to use the German and English languages for presentation of research results.

Doctoral studies are intended to prepare students particularly for taking on junior scientific positions in institutions of higher learning, research institutions, and in various science-related public and private institutions and industry.

## § 3

### Application, Selection, and Admissions Procedures

(1) Public announcement of the doctoral student positions shall be in accordance with the “*Richtlinien für die Ausschreibung von Promotionsstellen an der MatSEC*” (guidelines for the announcement of competitive doctoral student positions at MatSEC) (Annex 3).

(2) Doctoral studies can commence in the winter as well as summer semesters. The application deadline for the winter semester is April 30<sup>th</sup>. The application deadline for the summer semester is September

30<sup>th</sup>. In justifiable cases, exceptions can be considered for applications with a different start date insofar as it is feasible and reasonable to commence studies at that time.

(3) Admissions criteria are:

- a) written confirmation from the board responsible for doctoral studies at the participating university that unconditional admission to doctoral studies is available without limitation of time,
- b) outstanding potential for scientific achievement and development as demonstrated by corresponding academic achievement (certificates and references),
- c) sufficient knowledge of the English language (generally Level B2 of the Common European Framework of Reference for Languages/CEFR),
- d) submission of an outline of activities and experience relevant for the intended course of doctoral study,
- e) brief, persuasive reasons for applying to the doctoral programme, and
- f) participation in an admissions interview in accordance with para. 10, where appropriate.

(4) Applicants for doctoral studies shall direct their online application for doctoral studies together with supporting documents in accordance with 3 a) to e) to the Director **[Anm. des Übers.: Also dem Vorstand, nicht Sprecherin bzw. Sprecher?]** of the Graduate School prior to the application deadlines in accordance with para. 2.

(5) The Admissions Committee bases its acceptance decision to doctoral studies on the applications and documentation in accordance with para. 3 and an admissions interview in accordance with para. 10 when necessary. It can set a deadline allowing suitable applicants to submit missing substantiation or documents, or in cases of doubt, obtain additional written or verbal information from an applicant.

(6) If there are more suitable applicants than there are positions available after completing the selection process, the Admissions Committee prepares a ranking. Determination of ranking is done based on the following criteria:

- a) grades from prior academic degrees and achievements,
- b) previous professional and vocational activities relevant to the proposed course of doctoral study, and
- c) international experience.

In cases of equal ranking, the decision will be made by drawing lots. **[Anm. des Übers.: s. Anm. im \_korr.doc]**

(7) Applicants who are admitted receive a written decision that sets out a deadline for written acceptance of the position and a deadline for matriculation. Failure to meet the deadlines shall result in the position being offered to another applicant. Applicants who are denied admission receive written notice with reasons for the decision.

(8) If sufficient knowledge of the English language cannot be demonstrated, acceptance to MatSEC can be conditional. The doctoral students are then obligated to acquire and demonstrate sufficient knowledge of English (in accordance with § 3 para. 3 (c) ) during the first semester of their doctoral studies.

(9) In cases where admission to **[Anm. des Übers.: “admission to” -> “qualification for” or “criteria for admission to”?]** the selection process of the doctoral programme as set out by the participating universities ceases, admission to the doctoral course of study is rescinded.

(10) The Admissions Committee can invite applicants to participate in an admissions interview. The invitation shall be construed to have been provided with sufficient notice if sent at least ten working days prior to the admissions interview. The deadline shall be suitably extended for invitations to international applicants. Admissions interviews shall be carried out by the Admissions Committee.

(11) Minutes of the admissions interview shall be prepared containing the important reasons behind the assessment of the applicant.

#### **§ 4**

##### **Structure of the Doctoral Studies, Nominal Period of Study, Languages of Instruction**

(1) The course of doctoral studies at the graduate school contains interdisciplinary scientific segments relevant to the research activities planned (§ 8), as well as comprehensive coursework for acquisition of knowledge (§ 9), science management (§ 10), and foreign languages important in science (§ 11).

(2) The nominal period of study for the doctoral programme consists of six semesters.

(3) The language for instruction in the doctoral programme is English.

#### **§ 5**

##### **Organisation of Doctoral Studies and Responsibilities**

(1) The “*Leitlinien für die Ausbildung von Doktoranden und Doktorandinnen im HZB*” (guidelines for training doctoral students at the HZB) in its currently approved version shall apply to the implementation of doctoral studies (Annex 2).

(2) Students will be advised by a team comprising two university-level instructors of an institution accredited for doctoral studies (dissertation supervisor and second) and one scientist as scientific advisor. The scientific advisor can be a member of a national or international scientific institution and shall not be an employee of the organisations participating in MatSEC.

(3) The doctoral committee shall establish the kind and scope of academic coursework the student must complete based upon the research anticipated for the doctoral studies and in consultation with the

student as well as the Spokesperson of MatSEC, taking into account the stipulations in § 8 to § 11. The coordinator of MatSEC shall be informed about the content of the course of studies set out at the beginning of the training programme.

(4) Regular active participation in all organised activities that are part of the course of scientific study under § 8 is obligatory, as well as availing oneself of the graduate advising provided.

## **§ 6**

### **Level of Achievement for the Course of Study and Advising Offered**

The level of achievement for students to have successfully fulfilled the requirements of the course of doctoral studies and advising at the MatSEC Graduate School consists of accumulating thirty achievement points (*Leistungspunkte/LP*).

## **§ 7**

### **Scientific Research Work and Participation in International Research Programmes**

(1) The scientific research work in accordance with § 2 para. 1 shall serve as substantiation of the ability to carry out research independently.

(2) The content of the doctoral research work planned shall be based on the research topics of the doctoral student's supervisors and instructors as a rule. The doctoral students take part in international research programmes initiated by their doctoral committee as part of the dissertation programme.

(3) Research residencies at appropriate national and international research institutions are anticipated as part of the scientific research work. Their location, frequency, and duration shall be determined in each case by the research milestones actually achieved.

## **§ 8**

### **Planned Course of Doctoral Studies, Type of Instruction and Learning**

The instructional and learning modes listed in paragraph (1) – (3) in particular are intended for acquiring achievement points (*Leistungspunkte/LPs*) during the course of the planned doctoral studies as part of a total of thirty LPs.

(1) Specialised scientific knowledge segment

#### *(a) Technical courses*

Technical courses can be selected from a broad range of interdisciplinary topics (see Annex 1 attached). Two modules should be completed during the doctoral studies (see coursework schedule attached). The in-depth study of a subject is intended to facilitate acquisition of specialised knowledge by doctoral student in scientific areas that are necessary for successful completion of the

planned dissertation and extend knowledge that has been acquired during undergraduate and masters studies already completed.

The doctoral students shall select these in consultation with their doctoral committee.

The "Safety Assessment, Comparing Safety Records, and Public Recognition of Various Energy Supplies" course is mandatory for all students at the graduate school.

*(b) Transmission of knowledge*

In this segment of graduate education, the doctoral students learn to communicate their knowledge to pupils and undergraduate students.

*(i) The HZB Laboratory for School Children:* doctoral students will have the opportunity to design and carry out a day of lectures and experiments in the laboratory for school children at the HZB at least once during the course of their doctoral studies.

*(ii) Mentorship/Assistance:* doctoral students at the graduate school will have the opportunity themselves of advising Bachelor and Masters' candidates on their theses.

*(c) Colloquia / seminars / excursions / conferences*

*(i) Research colloquia:* this monthly colloquium regularly brings together everyone at the graduate school and provides an introduction to the research groups as well as discussion of current topics in the various research areas of the graduate school. In addition, others are invited to lectures including scientists from other institutions and partner organisations. Moreover, the doctoral students present their results at regular intervals in the form of lectures.

*(ii) Doctoral seminars:* doctoral seminars within the graduate school take place quarterly. Doctoral students learn to present their own work in the doctoral seminar as well as discussing theirs and others' research projects and results at a generally comprehensible level in both the German and English languages. The doctoral seminar is organised by the doctoral students themselves.

*(iii) Excursions to industrial facilities:* excursions to industrial facilities enable doctoral students to obtain insight into industrial processes and become acquainted with aspects of this potential occupational area.

*(iv) Young Scientist Conference:* a scientific conference entitled "Multinary Compound Semiconductors for Solar Energy Conversion – Challenges and Breakthroughs" is organised by the doctoral students themselves during the fifth semester. In addition, the doctoral students organise a committee that receives support for its work from the executive management of the graduate school. This conference is meant to be international in scope and be open to doctoral students in the field worldwide. Keynote lectures by respected scientists and contributions (lectures or poster presentations) constitute the scientific programme of this conference.

(2) Core expertise segment

*Professional Skills Modules*: modules for acquiring key qualifications are provided. Courses from the Dahlem Research School and the HZB qualify for this.

(3) Moreover, doctoral students have the opportunity to take part in summer school and tutorials in the field of solar energy research, such as QuantSol and the International Summer University on Energy (both organised by the HZB), for example. Doctoral students must consult with their committee regarding participation in these activities.

(4) Course offerings from the Research Training Groups (*Graduiertenkollegs*) of the German Research Foundation (DFG), through collaborations with the Max Planck Research Schools, or other research groups at other universities or non-university institutions can be incorporated into the students' doctoral studies.

## **§ 9**

### **Acquisition of Expertise in the Area of Knowledge Transfer**

Doctoral students are expected to regularly present the results of their research activity at scientific conferences and publish in scientific journals. Moreover, suitable opportunities to lecture on the broader connections of their research area will be accorded them through their doctoral committee.

## **§ 10**

### **Acquisition of Expertise in the Science Management Branch**

Doctoral students are intended to acquire experience in planning research projects, canvassing for third-party funding as well as developing general abilities in research management, and in the organisation and coordination of scientific activities.

## **§ 11**

### **Acquisition of Expertise in Foreign Languages**

Doctoral students whose first language is not English must additionally expand their knowledge of English over the course of their studies so that they have the facility of communicating in scientific English both orally and in written form.

Doctoral students at MatSEC are strongly encouraged to acquire knowledge of the German language. LPs can be acquired for supplemental German language courses (Annex 1).

## **§ 12**

### **Reporting Requirements and Completion / Termination of Doctoral Studies**

(1) Formal progress reports

In order to be able to track the work and detect in a timely manner any problems that may arise, doctoral students shall present formal progress reports to their committees at 6, 18, and 30 months that address the progress, status, and further planning of their work. The report together with comments from the

committee will be presented to the Spokesperson of MatSEC and its coordinator. Students will be examined as to whether satisfactory participation in the doctoral study programme can be ascertained as well as satisfactory progress with regard to their dissertation. Timely fulfilment of their research tasks is required, especially regarding the preparation of the dissertation as well as the performance requirements in accordance with § 8 to § 11.

(2) In case a negative conclusion is reached, the Director of MatSEC shall decide about the continued enrolment of the student in the graduate school on the basis of the **[Anm. des Übers.: Unklar ob vote/judgement/recommendation gemeint ist. Falls Votum: einfache Mehrheit? Einstimmig? 2/3? Mehrheitlich Meinung? Mehrheitliche Empfehlung?]** of the student's doctoral committee. The student shall be given timely prior notice in written form that a successful conclusion of the dissertation is at serious risk. The student and the student's doctoral committee shall meet, consult, and identify the problems, and suitable steps will be determined. If the Spokesperson of MatSEC is also a member of the doctoral committee, the Spokesperson's representative will take over this task. A decision about continued enrolment in or expulsion from the doctoral programme shall be made by the Spokesperson of MatSEC only after conclusion of a suitable period of time as a rule and a hearing comprising the participants in the advising meeting.

(3) If all of the prescribed requirements are fulfilled, a certificate and performance evaluation of the successfully concluded doctoral study at MatSEC shall be issued.

### **§ 13**

#### **Effective Date**

These regulations take effect the day of publication in the *FU-Mitteilungen* (gazette of the Freie Universität Berlin).