

April 2022 and October 2021 Enrollment

**Graduate School of Chemical Sciences and Engineering
Hokkaido University**

**Ph.D Program
(Doctoral Course)**

**Application Guidelines
(Including Working Adult Admission and
International Student Admission Information)**

[Important]

There is a possibility that admission tests may be conducted with different contents from those described in this application guideline to prevent the spread of new coronavirus infection. If there are any changes, they will be posted on our homepage (<http://www.cse.hokudai.ac.jp>), so be sure to check our homepage regularly.

May 2021

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Overview of the Graduate School of Chemical Sciences and Engineering and the Division of Chemical Sciences and Engineering

Hokkaido University reorganized the Department of Chemistry in its Graduate School of Science along with three chemistry-related divisions in its Graduate School of Engineering (the divisions of Chemical Process Engineering, Biotechnology and Macromolecular Chemistry, and Materials Chemistry) to form the Graduate School of Chemical Sciences and Engineering and the Division of Chemical Sciences and Engineering in April 2010 (admission quotas in master's course: 129; admission quotas in doctoral course: 38).

In the Graduate School of Chemical Sciences and Engineering, chemistry and biochemistry professors of science and engineering who are affiliated with the Faculty of Science, Faculty of Engineering, Research Institute for Electronic Science, Institute for Genetic Medicine, and the Institute for Catalysis work closely together on research and education activities. Researchers affiliated with the National Institute for Materials Science, National Institute of Advanced Industrial Science and Technology, RIKEN, and the National Cerebral and Cardiovascular Center participate as instructors in related fields. These diversely experienced instructors offer not only specialized lectures in the Molecular Chemistry and Engineering Course, Materials Chemistry and Engineering Course, and Biological Chemistry and Engineering Course established within the Division of Chemical Sciences and Engineering but also a rich diversity of classes, including lectures in English. As a result, they are able to provide instruction and research guidance so that students will be able to view the field of chemistry from both the perspectives of science and engineering and contribute to society in related fields.

Admission Policy

1. Educational goals

By providing a systematic education that integrates research findings into the various fields of chemistry, such as molecular chemistry, materials chemistry, and biochemistry, the Graduate School of Chemical Sciences and Engineering strives to equip students with both basic and advanced, specialized knowledge in the field of chemistry; to cultivate individuals with broad-based knowledge, a strong sense of discernment, and the ability to use their knowledge in practical applications to meet the needs created by trends toward internationalization, advanced developments in science and technology, and interdisciplinary approaches; and to nurture students who have the depth of knowledge and skills necessary for conducting basic and applied research and who will therefore be well equipped to conduct innovative research going forward.

2. Ideal student image

(Master's Course)

(1) Knowledge/skills

Prospective students are expected to have previously acquired advanced expertise in chemistry or related fields and undertaken original research and development.

(2) Critical-thinking, judgment, and expressive abilities

To respond to internationalization, the sophistication of science and technology, and interdisciplinization, the Graduate School requires prospective students to possess not only a basic background in related fields but also the motivation to acquire diverse knowledge and develop critical thinking, judgment abilities, and practical abilities.

(3) Collaboration

Prospective students are expected to be independent and motivated to learn and work in collaboration with people from various backgrounds.

(4) Prerequisites

Before enrolling in the Graduate School, students are expected to have knowledge and abilities at the undergraduate level in chemistry or related fields.

(Doctoral course)

(1) Knowledge/skills

Prospective students are expected to have previously acquired advanced expertise in chemistry or related fields and undertaken original research and development.

(2) Critical-thinking, judgment, and expressive abilities

To respond to internationalization, the sophistication of science and technology, and interdisciplinization, the Graduate School requires prospective students to possess not only a basic background in related fields but also the motivation to acquire diverse knowledge and develop critical thinking, judgment abilities, and practical abilities.

(3) Collaboration

Prospective students are expected to be independent and motivated to learn and work in collaboration with people from various backgrounds.

(4) Prerequisites

Before enrolling in the Graduate School, students are expected to have acquired knowledge and research abilities at the master's level in chemistry or related fields.

3. Basic policy for admission selection

At the Graduate School of Chemical Sciences and Engineering, we admit students who desire to specialize in the fields of science and engineering and obtain a master's or doctoral degree in the field of general chemistry, as well as students who seek a doctoral degree while working. Details such as the evaluation method are specified in the application guidelines. To measure language proficiency, which is indispensable for success on the international stage, we request the submission of scores for an English test that is conducted globally.

(1) Master's program

- General selection

Besides requiring comprehensive academic abilities related to the basics of chemistry, we conduct written and oral examinations related to specialization; evaluate basic specialized subjects in molecular chemistry, material chemistry, and biochemistry; and evaluate advanced, specialized knowledge in specialized subjects, as well as judgment ability and level of proficiency in the background of related fields, to ascertain practical ability. In addition, through oral examinations, we evaluate candidates' attitude of independence, willingness to collaborate with diverse people, motivation for the future, and ability to learn and research at the undergraduate level. Selection will be made by comprehensively judging the examination results, including language ability based on the English test score.

The written test may be exempted for those who have demonstrated excellent academic performance at their previous academic institution or who have outstanding achievements, such as research and development at companies.

- Entrance examination for international students

Considering the level of education overseas, we evaluate expertise and operational ability in basic or related fields of chemistry through an oral examination. Prospective students are expected to have an attitude of independence, be willing to collaborate with various people, and have motivation for the future. Language ability will also be evaluated based on the score of the English test.

(2) Doctoral program (general selection / examination for working adults / international student selection/ AGS selection)

An oral examination is conducted to evaluate expertise and operational ability in chemistry and related fields, as well as basic research abilities for advancing original research in the doctoral program, with the addition of presentation ability. Prospective students are expected to have an attitude of independence, be willing to collaborate with various people, and have motivation for the future. Language ability will also be evaluated based on the score of the English test.

I. General Admission and Working Adult Admission

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1. Admission Quotas

Division	No. of Admission Quota	School Web Site
Chemical Sciences and Engineering	38	www.cse.hokudai.ac.jp

Notes:

The number of admission quotas includes several slots for working adult and international student applicants.

Individuals expecting to remain employed at the time of admission may apply through the working adult admission process.

2. Application Qualifications (for those who wish to be admitted in April 2022)

- (1) Individuals who have been awarded a master's degree or professional degree from a Japanese university (the term "professional degree" used hereinafter shall refer to the professional degree prescribed in Article 5-2 of the Degree Regulations [Ordinance of the Ministry of Education, Science and Culture No. 9 of 1953] pursuant to stipulations in Article 104, Clause 3, of the School Education Act); this includes those who are expected to be awarded such a degree by March 2022.
- (2) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree or professional degree from a foreign university by March 2022. (hereinafter referred to as "individuals from a foreign educational system")
- (3) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree or professional degree by March 2022 by taking a correspondence course in Japan offered by a foreign school (hereinafter referred to as "individuals from a foreign educational system via correspondence course")
- (4) Individuals who have completed a graduate school coursework of a foreign university at an educational institution in Japan and have been awarded a degree equivalent to a master's degree or professional degree. The institution needs to be positioned within the school education system of that foreign country as an educational body with a graduate school course and is required to be designated by the Japanese Minister of Education, Culture, Sports, Science, and Technology. This includes those who expect to be awarded such a degree by March 2022 (hereinafter referred to as "individuals who have completed coursework in a school designated as equivalent to a graduate school").
- (5) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree by March 2022 from the United Nations University as prescribed in Article 1(2) of the Act on Special Measures Incidental of Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Act No.72 of 1976), which was established under the December 11, 1972 resolution of the General Assembly of the United Nations (hereinafter referred to as "individuals from the UN University").
- (6) Individuals who have completed their formal education by taking a correspondence course

through a non-Japanese university, an educational institution which received the designation by (4), or the United Nations University, who have passed an examination or a screening equivalent to the regulations by Article 16.2 in Standards for the Establishment of Graduate Schools, and who are recognized to have an academic ability equivalent to Master's degree holders by the Graduate School, or who will obtain it by March 2022 (hereinafter referred to as "individuals from a foreign university who have been passed a Qualifying Examination").

- (7) Individuals designated by the Minister of Education, Culture, Sports, Science, and Technology (1989 Notice No. 118, Ministry of Education, Science and Culture).
- (a) Those who have graduated from a university; have conducted research for two years or longer at a university, research institution, etc.; and are recognized by this graduate school as possessing equivalent or greater academic capabilities as those of a person who has a master's degree based on its research achievements, etc.
- (b) Those who have completed 16 years of school education in a foreign country or 16 years of school education of a foreign country by taking a correspondence course in Japan offered by a school of that foreign country; have conducted research for two years or longer at a university, research institution, etc.; and are recognized by this graduate school as possessing equivalent or greater academic capabilities as those of a person who has a master's degree based on its research achievements, etc.
- (8) Applicants who are recognized by the graduate school as possessing the equivalent or greater academic skill as that of a person who has a master's degree or professional degree based on an individualized admission qualification investigation and who will be 24 years of age as of March 31, 2022 (hereinafter referred to as "individuals who apply through an individualized admission qualification investigation")

Notes:

1. See page 20 for application qualifications if you wish to be admitted in October 2021.
2. If you have any questions regarding the Application Qualifications, contact the Administration Office of the Graduate School of Chemical Sciences and Engineering (hereafter referred to as "CSE office").

3. Preliminary Review of Application Qualifications (Application Period, Etc.) May 28 (Fri.) through June 3 (Thu.), 2021

We will conduct a preliminary review of application qualifications before accepting applications from individuals applying based on the following qualifications:

- (7) Individuals designated by the Minister of Education, Culture, Sports, Science, and Technology
(8) Individuals who apply through an individualized admission qualification investigation

Individuals applying based on the application qualifications listed above should submit the documents indicated in section 5, "Application Documents," with the exception of item No. 2 (submission form for the validated portion of the prescribed payment slip), during this period.

The applicant should not pay the examination fee when requesting a preliminary review of application qualifications. The examination fee is to be paid as per instructions in the notes below. (Please submit documents to "6. Where to Apply" by registered mail, they must be received by the deadline indicated.)

Notes:

The results of the preliminary review of application qualifications will be mailed out around late June 2021. Those who are deemed eligible to apply should pay the examination fee as per section 7, "Examination Fee," during the period indicated in section 4 "Application Period." After payment is

made, please submit the validated portion (portion E) of the prescribed payment slip to the university. If you do not pay the examination fee by the deadline indicated, your application will not be processed.

Applicants residing outside Japan who are allowed to submit their applications via the Internet should follow the on-screen instructions to arrange payment of the examination fee and the administrative fee (¥500).

Note that Japanese government (MEXT) scholarship students, China Scholarship Council (CSC) supported students, Hokkaido University President's Fellowship recipients, and Hokkaido University Special Grant Program international students (as well as those who are expecting to receive one of these scholarships) may be exempt from paying the examination fee. If there is a possibility that you will be eligible for an exemption, please contact the CSE office in advance.

4. Application Period

June 22 (Tue.) through June 29 (Tue), 2021

Individuals applying based on application qualification (1), (2), (3), (4), (5), (6), listed in section 2, "Application Qualifications," should submit the documents indicated in section 5, "Application Documents," during this period.

Please submit your documents to "6. Where to Apply" by registered mail within above period. Documents are valid postmark until June 29. Documents will not be accepted at the counter.

5. Application Documents

(1) Individuals wishing to apply through the **general admission** process should submit following documents.

No.	Documents to Be Submitted	Application Qualifications			Notes
		(1)	(2) (3) (4) (5)	(6) (7) (8)	
1	Admission application, resume, examination admission card, and examinee photo card	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Prescribed forms
2	Submission form for the validated portion of the prescribed payment slip	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	Prescribed form (a) See section 7, "Examination Fee," and complete the payment of the examination fee. (b) Payment of entrance examination fee is not required for Japanese government (MEXT) scholarship students and students who have completed a master's course and continue to study in the doctoral course etc.
3	Summary of your master's thesis or an abstract of your research achievements	<input type="radio"/>	<input type="radio"/>		(a) Those who have been awarded any master's degree or any professional degree should provide a summary of their master's thesis or other materials equivalent to a master's thesis (unspecified format, approximately two A4-sized pages). (b) Those expecting to be awarded a master's degree should provide an abstract of the research conducted over the course of their master's program (up to 3,000 characters) or other equivalent materials.
4	List of research achievements and copies of key research papers			<input type="radio"/>	Unspecified format
5	Certificate verifying your research history			<input type="radio"/>	Unspecified format This certificate is to be issued by the university dean or research institute director or your research advisor and indicates your research topic and period of research.
6	Transcript from the applicant's (undergraduate) university and graduate school attended	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	(a) This is not required of graduates of the Graduate School of Chemical Sciences of Hokkaido University. (b) Individuals applying based on the application qualification (8) must submit their transcript from the last school attended.

No.	Documents to Be Submitted	Application Qualifications				Notes
		(1)	(2) (3) (4) (5)	(6) (7) (8)		
7	Certificate of graduate school completion (or expected completion) or a degree certificate * This is not required of graduates of the Graduate School of Chemical Sciences and Engineering of Hokkaido University.	○	○	○		(a) Those who graduated or will graduate from a graduate school in People's Republic of China (excluding Hong Kong and Macau) must submit the following documents in addition to a Certificate of (Expected) Graduation. Graduates: a. Online Verification Report of Higher Education Qualification Certificate (教育部学历证书电子注册备案表) b. Graduation Diploma (毕业证书) and Degree Diploma (学位证书) Expected Graduates: a. Online Verification Report of Student Record (教育部学籍在线验证报告) * Obtain documents "a" above by requesting it at "中国高等教育学历证书查询": http://www.chsi.com.cn/xlcx/bgys.jsp . Also, be sure that there are 15 or more days left until the expiration date of the online verification at the time of its submission. (b) Individuals applying based on the application qualification (6) must submit a confirmation letter pertaining to the Qualifying Examination.
8	English score reporting form and the score sheet of an English-language proficiency examination (TOEFL test or TOEIC test)	○	○	○		Pursuant to section 8, "Submission of English Scores," applicants must submit the English score reporting form (prescribed form) and the score sheet of an English-language proficiency examination (TOEFL test or TOEIC test) taken in or after April 2019.
9	Envelope in which the examination admission card is to be mailed	○	○	○		Prescribed envelope (a) Write your name, address, and postal code on the envelope provided and affix ¥384 worth of postage stamps to it. (b) If your address changes after you submit your application, be sure to inform the CSE office.
10	Contact information stickers used to mail the notification of examination results and other information	○	○	○		Prescribed form (a) Write your name, address, and postal code on the stickers. (b) If your address changes after you submit your application, be sure to inform the CSE office.
11	Envelope in which preliminary review results are to be mailed to the applicant			△		*Only for Individuals applying based on the application qualification (7), (8) A standard-sized, self-addressed envelope bearing ¥84 in postage is required.
12	A copy of your Residence card	△	△	△		This is required only for international student applicants. Those who live outside of Japan should submit a copy of their passport.

Note: ○ indicates that the document is required;

△ indicates that the document only needs to be submitted by specified individuals.

(2) **Working adult applicants** should submit the following documents:

No	Documents to Be Submitted	Notes
1	Admission application, resume, examination admission card, and examinee photo card	Prescribed forms
2	Letter of approval for taking the entrance examination	Unspecified format This is required only for those who are currently employed as public officials. The letter must be issued by someone who has authority over human resource matters at their place of employment.
3	Submission form for the validated portion of the prescribed payment slip	Prescribed form (a) See the section 7, “Examination Fee,” and complete the payment of the examination fee. (b) Those applying based on application qualification (1) (see section 2, “Application Qualifications”) should submit this form along with their applications. Other applicants should complete the payment in accordance with the “Notes” in section 3, “Preliminary Review of Application Qualifications (Application Period, Etc.),” and submit this form within the period shown in the section 4, “Application Period.”
4	List of research achievements and copies of key research papers	Unspecified format
5	Certificate verifying your research history	Unspecified format This certificate is to be issued by the university dean or research institute director or your research advisor and indicates your research topic and period of research.
6	Transcript from the last school attended (university or higher)	This is not required of graduates of the Graduate School of Chemical Sciences and Engineering of Hokkaido University.
7	Certificate of graduate school completion or a degree certificate **This is not required of graduates of the Graduate School of Chemical Sciences and Engineering of Hokkaido University.	(a) Those who graduated or will graduate from an educational Institution in People's Republic of China (excluding Hong Kong and Macau) in their most recent academic history must submit the following documents in addition to a Certificate of (Expected) Graduation. Graduates: a. Online Verification Report of Higher Education Qualification Certificate (教育部学历证书电子注册备案表) b. Graduation Diploma (毕业证书) and Degree Diploma (学位证书) Expected Graduates: a. Online Verification Report of Student Record (教育部学籍在线验证报告) * Obtain documents “a” above by requesting it at “中国高等教育学历证书查询”: http://www.chsi.com.cn/xlcx/bgys.jsp . Also, be sure that there are 15 or more days left until the expiration date of the online verification at the time of its submission. (b) Individuals applying based on the application qualification (6) must submit a confirmation letter pertaining to the Qualifying Examination.
8	English score reporting form and the score sheet of an English-language proficiency examination (TOEFL test or TOEIC test)	Pursuant to section 8, “Submission of English Scores,” applicants must submit the English score reporting form (prescribed form) and the score sheet of an English-language proficiency examination (TOEFL test or TOEIC test) taken in or after April 2019.

No	Documents to Be Submitted	Notes
9	Envelope in which the examination admission card is to be mailed	Prescribed envelope (a) Write your name, address, and postal code on the envelope provided and affix ¥384 worth of postage stamps to it. (b) If your address changes after you submit your application, be sure to inform the CSE office.
10	Contact information stickers used to mail the notification of examination results and other information	Prescribed form (a) Write your name, address, and postal code on the stickers. (b) If your address changes after you submit your application, be sure to inform the CSE office.
11	Envelope in which preliminary review results are to be mailed to the applicant	*Only for Individuals applying based on the application qualification (7), (8) This is required of all applicants except those applying based on application qualification (1). (See section 2 “Application Qualifications.”) A standard-sized, self-addressed envelope bearing ¥84 in postage is required.

6. Where to Apply

Administration Office, Graduate School of Chemical Sciences and Engineering, Hokkaido University (CSE Office)

Kita 13, Nishi 8, Kita-ku, Sapporo, 060-8628 Japan

Tel: (+81)-11-706-7246

Note:

Application is only accepted by mail. Be sure to use registered mail and write “Graduate School Admission Application” in red on the front of the envelope.

7. Examination Fee

¥30,000

- (a) **Not required of individuals expecting to complete a master’s degree program or a professional degree program in any of graduate schools of Hokkaido University.**
- (b) **Japanese government (MEXT) scholarship students, China Scholarship Council (CSC) supported students, Hokkaido University President’s Fellowship recipients, and Hokkaido University Special Grant Program international students (as well as those who are expecting to receive one of these scholarships) may be exempt from paying the examination fee. If there is a possibility that you will be eligible for an exemption, please contact the CSE office in advance.**
- (c) Applicants should pay the examination fee at a bank or other financial institution (including Japan Post Bank) in Japan using the enclosed prescribed payment slip and attach the validated portion (portion E) of the payment slip to the submission form. Applicants residing outside Japan and admitted to apply via Internet should follow the on-screen instructions to arrange for the payment of the examination fee and the administrative fee (¥500).
- (d) In principle, entrance examination fees are not refundable. Only the following cases are refundable:
 - If an individual paid the examination fee but did not apply for admission (did not submit an application or submitted an application that was not accepted)
 - If the examination fee was accidentally paid twice
 - If an individual, who is not required to pay the examination fee has made payment.

8. Submission of English Scores

Submit your English score reporting form (prescribed form) at the time of application. Also, submit your English score sheets as follows.

Either of the English-language proficiency examination score sheets listed in (a) or (b) below, **from examinations taken in or after April 2019.**

(a) TOEFL test official score sheet

Submit the Examinee Score Report sent to the examinee by the U.S. Educational Testing Service (ETS). A printout of test results posted online shall be considered invalid.

On the Score Report Preferences screen shown during the process of applying to take the TOEFL iBT test, be sure to select “Web-accessible Score Report and a printed copy mailed to you” to ensure that a Examinee Score Report is mailed to you.

(b) TOEIC test score sheet

Submit the Official Score Certificate. A printout of test results posted online shall be considered invalid.

Please note that scores from examinations such as the TOEFL -ITP test score sheet, TOEFL IP test and TOEIC Bridge test shall be considered invalid.

Important Notes

- (a) Even if you do not submit an English examination score sheet, your graduate school examination fee will not be refunded.
- (b) If you submit more than one score sheet, the best score submitted shall be used. Individuals who have already submitted scores at the time of application may submit new scores on during the period on July 29 (Thu.) to August 2 (Mon.), 2021 by registered mail.
- (c) English score sheet will be returned after the exam date.

9. Selection Method

Admission decisions will be made based on a comprehensive review (oral examination, etc.) of the applicant’s master’s thesis or equivalent paper and the applicant’s knowledge of the subject matter and foreign-language skills.

For working adult applicants, the review of the applicant’s knowledge of the subject matter and foreign-language skills will be replaced with a review (oral examination, etc.) of the results of the applicant’s research conducted as a working adult.

10. Examination Schedule, Etc.

August 19 (Thu.) or August 20 (Fri.), 2021

Note:

The oral examination schedule, examination venue, and other details will be provided when the examination admission card is sent out.

Examination Date	Time	Examination Subject	Examination Venue
Aug. 19 (Thu.) or Aug. 20 (Fri.)	From 9:00 a.m. or from 1:00 p.m.	Oral examination	To be specified when the examination admission card is sent out

11. Announcements of the Result

The examination admission numbers of those who passed the examination will be posted in the entrance hall of the School of Engineering, the first-floor hall of the School of Science Bldg. 2, and the first-floor hall of the School of Engineering's Materials Engineering and Chemistry Bldg. at 10:00 a.m. (tentatively) on **September 10 (Fri.), 2021**. In addition, all examinees will be notified of their results individually.

(Information about whether an applicant has passed or failed the examination will not be provided over the phone.)

12. Enrollment Procedures and Expenses

Details regarding enrollment procedures are provided in the notifications mailed to those who have been accepted.

Enrollment fee: ¥282,000

Note:

Not required of students continuing into this doctoral course from a master's degree program or professional degree program in a graduate school of Hokkaido University.

First semester tuition for academic year 2022: ¥267,900 (estimated)

Total annual amount: ¥535,800 (estimated)

Notes:

1. If any revision is made while the student is enrolled, the new amount will be applied from the time of the revision.
2. If the enrollment fee is not paid during the admission procedure period, the applicant will be treated as having no intent to enroll.
3. If tuition is not paid for one semester, the student will be expelled, and his/her record of enrollment will be deleted. If you are having problems paying tuition due to financial hardship, you may be eligible for a tuition exemption or deferral.

13. Important Notes

- (1) Be sure to bring your examination admission card with you on the day of the entrance examination and place it on your desk.
- (2) Incomplete applications may not be accepted. Be sure that there are no errors in your application.
- (3) If the name on your certificate of graduation or other documents is different from your current name, for example, your surname has changed, attach a certificate of family registry or other official document that verifies the change.
- (4) If any falsified information is found in the application documents, the applicant's admission may be revoked.
- (5) Our graduate school generally does not allow dual enrollment.

14. Long-Term Study Program

The long-term study program is available to students who want to study systematically over a period of time longer than the standard course term (three years for a doctoral course) due to full-time employment or other circumstances that limit the time to attend classes and conduct research. Students must apply for this program and receive the approval from the graduate school. Once approved, the student will pursue a systematic course of study over a specified length of time. Those wishing to take advantage of this system should carefully read and follow the application instructions in the section entitled "Information on the Long-Term Study Program" on page 23. Be sure to consult with your prospective academic advisor in advance regarding this program.

15. Others

- (1) Examination admission cards will be sent out in **mid-July 2021** to those whose applications have been accepted.
- (2) Applicants who are physically disabled and who may need special accommodations to take examinations and attend classes should notify the CSE office of their condition by June 29 (Tue.), 2021.
- (3) If you wish to receive a copy of the application guidelines by mail, send a self-addressed stamped envelope with your request. (The envelope should be large enough to fit an A4-sized booklet and be stamped with ¥250 worth of postage stamps or ¥540 if you prefer express delivery.)
Address the outer envelope to the Graduate School of Chemical Sciences and Engineering Administration Office and write "Request for Ph.D Program Application Guidelines" in red on the front. Also, enclose a note indicating the telephone number where you can be reached.

If you have any questions regarding the application process, contact the office below.

Administration Office, Graduate School of Chemical Sciences and Engineering, Hokkaido University
(CSE Office)

Kita 13, Nishi 8, Kita-ku, Sapporo, 060-8628 Japan

Tel: (+81)-11-706-7247

c-sougou@cse.hokudai.ac.jp

II. International Student Admission

[Important] There is a possibility that admission tests may be conducted with different contents from those described in this application guideline to prevent the spread of new coronavirus infection. If there are any changes, they will be posted on our homepage (<http://www.cse.hokudai.ac.jp>), so be sure to check our homepage regularly.

1. Admission Quotas

Division	No. of Admission Quota	School Web Site
Chemical Sciences and Engineering	Several	www.cse.hokudai.ac.jp

2. Application Qualifications (for those who wish to be admitted in April 2022)

Individuals who are recognized as possessing the skills and capabilities required based on a recommendation from a specialized professor (hereinafter referred to as “the prospective supervisor”) in this graduate school whom the applicant would like to have as his/her research advisor after enrollment and individuals who fulfill one of the following application qualifications:

- (1) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master’s degree or professional degree from a foreign university by March 2022.
- (2) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master’s degree or professional degree by March 2022 by taking a correspondence course in Japan offered by a foreign school
- (3) Individuals who have completed a graduate school coursework of a foreign university at an educational institution in Japan and have been awarded a degree equivalent to a master’s degree or professional degree. The institution needs to be positioned within the school education system of that foreign country as an educational body with a graduate school course and is required to be designated by the Japanese minister of education, culture, sports, science, and technology. This includes those who are expected to be awarded such a degree by March 2022.
- (4) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master’s degree by March 2022 from the United Nations University as prescribed in Article 1(2) of the Act on Special Measures Incidental of Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Act No.72 of 1976), which was established under the December 11, 1972 resolution of the General Assembly of the United Nations.
- (5) Individuals who have completed their formal education by taking a correspondence course through a non-Japanese university, an educational institution which received the designation by (3), or the United Nations University, who have passed an examination or a screening equivalent to the regulations by Article 16.2 in Standards for the Establishment of Graduate Schools, and who are recognized to have an academic ability equivalent to Master’s degree holders by the Graduate School , or who will obtain it by March 2022.
- (6) Individuals designated by the Minister of Education, Culture, Sports, Science, and Technology (1989 Notice No. 118, Ministry of Education, Science and Culture), i.e., individuals who have completed 16 years of school education in a foreign country or 16 years of school education of a foreign country by taking a correspondence course in Japan offered by a school of that foreign country; have conducted research for two years or longer at a university, research institution, etc.; and are recognized by this graduate school as possessing equivalent or greater academic capabilities as those of a person who has a master’s degree based on its research findings, etc.

- (7) Applicants who are recognized by the graduate school as possessing the equivalent or greater academic skill as that of a person who has a master's degree or professional degree based on an individualized admission qualification investigation and who will be 24 years of age as of March 31, 2022.

Notes:

1. **Applicants must contact their prospective supervisor in advance.**
2. **See page 20 for application qualifications if you wish to be admitted in October 2021.**
3. **If you have any questions regarding the Application Qualifications, contact the Administration Office of the Graduate School of Chemical Sciences and Engineering (hereafter referred to as "CSE office").**

3. Preliminary Review of Application Qualifications (Application Period, Etc.)

May 28 (Fri.) through June 3 (Thu.), 2021

We will conduct a preliminary review of application qualifications before accepting applications from individuals applying based on the following qualifications: (6), (7). The applicants should submit the documents indicated in section 5, "Application Documents," with the exception of item No. 2 (submission form for the validated portion of the prescribed payment slip), during this period.

The applicant should not pay the examination fee when requesting a preliminary review of application qualifications. The examination fee is to be paid as per instructions in the notes below. (Please submit documents to "6. Where to Apply" by registered mail, they must be received by the deadline indicated.)

Notes:

The results of the preliminary review of application qualifications will be mailed out around late June 2021. Those who are deemed eligible to apply should pay the examination fee as per section 7, "Examination Fee," during the period indicated in section 4, "Application Period." After payment is made, please submit the validated portion (portion E) of the prescribed payment slip to the university. If you do not pay the examination fee by the deadline indicated, your application will not be processed.

Applicants residing outside Japan who are allowed to submit their applications via the Internet should follow the on-screen instruction to arrange payment of the examination fee and the administrative fee (¥500).

Note that Japanese government (MEXT) scholarship students, China Scholarship Council (CSC) supported students, Hokkaido University President's Fellowship recipients, and Hokkaido University Special Grant Program international students (as well as those who are expecting to receive one of these scholarships) may be exempt from paying the examination fee. If there is a possibility that you will be eligible for an exemption, please contact the CSE office in advance.

4. Application Period

June 22 (Tue.) through June 29 (Tue.), 2021

Please submit your documents to "6. Where to Apply" by registered mail within above period. Documents are valid postmark until June 29. Documents will not be accepted at the counter.

5. Application Documents

No.	Documents to Be Submitted	Notes
1	Admission application, resume, examination admission card, and examinee photo card	Prescribed forms
2	Submission form for the validated portion of the prescribed payment slip	Prescribed form Complete the payment in accordance with the “Notes” in section 3, “Preliminary Review of Application Qualifications (Application Period, Etc.),” and submit this form within the period shown in section 4, “Application Period.”
3	A recommendation letter from your prospective supervisor	Unspecified format
4	Summary of your master’s thesis or an abstract of your research achievements	(a) Those who have been awarded any master’s degree or any professional degree should provide a summary of their master’s thesis or other materials equivalent to a master’s thesis (unspecified format, approximately two A4-sized pages). (b) Those expecting to be awarded a master’s degree should provide an abstract of the research conducted over the course of their master’s program (up to 3,000 characters) or other equivalent materials.
5	A transcript from the applicant’s (undergraduate) university and graduate school attended	
6	A certificate of graduation from your (undergraduate) university and a certificate of graduate school completion (or expected completion) or a degree certificate	<p>*If you are relevant to the both (a) and (b), submit all of the required documents according to (a) and (b)</p> <p>(a) Those who graduated from a university in People's Republic of China (excluding Hong Kong and Macau) must submit the following documents in addition to a Certificate of (Expected) Graduation. Graduates: a. Online Verification Report of Higher Education Qualification Certificate (教育部学历证书电子注册备案表) b. Graduation Diploma (毕业证书) and Degree Diploma (学位证书) * Obtain documents “a” above by requesting it at “中国高等教育学历证书查询”: http://www.chsi.com.cn/xlcx/bgys.jsp. Also, be sure that there are 15 or more days left until the expiration date of the online verification at the time of its submission.</p> <p>(b) Those who graduated or will graduate from a graduate school in China (excluding Hong Kong and Macau) must submit the following documents in addition to a Certificate of (Expected) Graduation. Graduates: a. Online Verification Report of Higher Education Qualification Certificate (教育部学历证书电子注册备案表) b. Graduation Diploma (毕业证书) and Degree Diploma (学位证书) Expected Graduates: a. Online Verification Report of Student Record (教育部学籍在线验证报告) * Obtain documents “a” above by requesting it at “中国高等教育学历证书查询”: http://www.chsi.com.cn/xlcx/bgys.jsp. Also, be sure that there are 15 or more days left until the expiration date of the online verification at the time of its submission.</p> <p>(c) Individuals applying based on the application qualification (5) must submit a confirmation letter pertaining to the Qualifying Examination.</p>

No.	Documents to Be Submitted	Notes
7	English score reporting form and the score sheet of an English-language proficiency examination (TOEFL test or TOEIC test)	Pursuant to section 8, "Submission of English Scores," applicants must submit the English score reporting form (prescribed form) and the score sheet of an English-language proficiency examination (TOEFL test or TOEIC test) taken in or after April 2019.
8	Letter of recommendation from your academic advisor at the last school attended	Unspecified format This is not required for those who are currently enrolled in Hokkaido University, and wish to study under the guidance of the same academic supervisor after enrolling in the doctoral course.
9	Envelope in which the examination admission card is to be mailed	Prescribed envelope (not required for those who live outside of Japan) (a) Write your name, address, and postal code on the envelope provided and affix ¥384 worth of postage stamps to it. (b) If your address changes after you submit your application, be sure to inform the CSE office.
10	Contact information stickers used to mail the notification of examination results and other information	Prescribed form (not required for those who live outside of Japan) (a) Write your name, address, and postal code on the stickers. (b) If your address changes after you submit your application, be sure to inform the CSE office.
11	Envelope in which preliminary review results are to be mailed to the applicant	(Not required for those who live outside of Japan) A standard-sized, self-addressed envelope bearing ¥84 in postage is required.
12	A copy of your Residence card	Those who live outside of Japan should submit a copy of their passport.
13	Other required documents from the accepting professor	

6. Where to Apply

Administration Office, Graduate School of Chemical Sciences and Engineering, Hokkaido University
(CSE Office)

Kita 13, Nishi 8, Kita-ku, Sapporo, 060-8628 Japan

Tel: (+81)-11-706-7246

Note:

Application is only accepted by mail. Be sure to use registered mail and write "Graduate School Admission Application" in red on the front of the envelope.

7. Examination Fee

¥30,000

- (a) **Japanese government (MEXT) scholarship students, China Scholarship Council (CSC) supported students, Hokkaido University President's Fellowship recipients, and Hokkaido University Special Grant Program international students (as well as those who are expecting to receive one of these scholarships) may be exempt from paying the examination fee. If there is a possibility that you will be eligible for an exemption, please contact the CSE office in advance.**
- (b) Applicants should pay the examination fee at a bank or other financial institution (including Japan Post Bank) in Japan using the enclosed prescribed payment slip and attach the validated portion (portion E) of the payment slip to the submission form. Applicants residing outside Japan and admitted to apply via Internet should follow the on-screen instructions to arrange for payment of examination fee and the administrative fee (¥500).
- (c) Examination fees already paid will not be refunded for any reason except as follows:
- If an individual paid the examination fee but did not apply for admission (did not submit an

- application or submitted an application that was not accepted)
 - If the examination fee was accidentally paid twice
- (d) In principle, entrance examination fees are not refundable. Only the following cases are refundable:
- If an individual paid the examination fee but did not apply for admission (did not submit an application or submitted an application that was not accepted)
 - If the examination fee was accidentally paid twice
 - If an individual, who is not required to pay the examination fee has made payment.

Note:

For more detailed information on the methods of paying the examination fee, contact your accepting professor.

8. Submission of English Scores

Submit your English score reporting form (prescribed form) at the time of application. Also, submit your English score sheets as follows.

Either of the English-language proficiency examination score sheets listed in (a) or (b) below, **from examinations taken in or after April 2019.**

(a) TOEFL test official score sheet

Submit the Examinee Score Report sent to the examinee by the U.S. Educational Testing Service (ETS). A printout of test results posted online shall be considered invalid.

On the Score Report Preferences screen shown during the process of applying to take the TOEFL iBT test, be sure to select “Web-accessible Score Report and a printed copy mailed to you” to ensure that a Examinee Score Report is mailed to you.

(b) TOEIC test score sheet

Submit the Official Score Certificate. A printout of test results posted online shall be considered invalid.

Please note that scores from examinations such as the TOEFL -ITP test score sheet, TOEFL IP test and TOEIC Bridge test shall be considered invalid.

Important Notes

- (a) Even if you do not submit an English examination score sheet, your graduate school examination fee will not be refunded.
- (b) If you submit more than one score sheet, the best score submitted shall be used. Individuals who have already submitted scores at the time of application may submit new scores on during the period on July 29 (Thu.) to August 2 (Mon.), 2021 by registered mail.
- (c) English score sheet will be returned after the exam date.

9. Selection Method

Admission decisions will be made based on a comprehensive review (oral examination, etc.) of the applicant’s master’s thesis or equivalent paper and the applicant’s knowledge of the subject matter and foreign-language skills.

If you apply for a special program approved by the Graduate School of Chemical Sciences and Engineering, you may be exempt from taking the entrance examination, and thus may only be subject to the document review.

10. Examination Schedule, Etc.

August 19 (Thu.) and August 20 (Fri.), 2021

Examination subjects are based on the general admission.

11. Announcements of the Result

The examination admission numbers of those who passed the examination will be posted in the entrance hall of the School of Engineering, the first-floor hall of the School of Science Bldg. 2, and the first-floor hall of the School of Engineering's Materials Engineering and Chemistry Bldg. at 10:00 a.m. (tentatively) on September 10 (**Fri.**), **2021**. In addition, all examinees will be notified of their results individually.

(Information about whether an applicant has passed or failed the examination will not be provided over the phone.)

12. Enrollment Procedures and Expenses

Details regarding enrollment procedures are provided in the notifications mailed to those who have been accepted.

Enrollment fee: ¥282,000

First semester tuition for academic year 2022: ¥267,900 (estimated)

Total annual amount: ¥535,800 (estimated)

Notes:

1. If any revision is made while the student is enrolled, the new amount will be applied from the time of the revision.
2. If the enrollment fee is not paid during the admission procedure period, the applicant will be treated as having no intent to enroll.
3. If tuition is not paid for one semester, the student will be expelled, and his/her record of enrollment will be deleted. If you are having problems paying tuition due to financial hardship, you may be eligible for a tuition exemption or deferral.

13. Important Notes

- (1) Be sure to bring your examination admission card with you on the day of the entrance examination and place it on your desk.
- (2) Incomplete applications may not be accepted. Be sure that there are no errors in your application.
- (3) If any falsified information is found in the application documents, the applicant's admission may be revoked.
- (4) Our graduate school generally does not allow dual enrollment.

14. Long-Term Study Program

Our graduate school has a long-term study program. Those wishing to take advantage of this system should carefully read and follow the application instructions in the section entitled "Information on the Long-Term Study Program" on page 23.

15. Others

- (1) Examination admission cards will be sent out around in **mid-July 2021** to those whose applications have been accepted (with the exception of those who are applying for a special program approved by this graduate school).
- (2) Applicants who are physically disabled and who may need special accommodations to take examinations and attend classes should notify the CSE office of their condition by June 29 (Tue.), 2021.

If you have any questions regarding the application process, contact the office below.

Administration Office, Graduate School of Chemical Sciences and Engineering, Hokkaido University
(CSE Office)

Kita 13, Nishi 8, Kita-ku, Sapporo, 060-8628 Japan

Tel: (+81)-11-706-7247

c-sougou@cse.hokudai.ac.jp

Application Qualifications (for October Enrollment)

*For any questions, please contact Administration Office at Graduate School of Chemical Science and Engineering

I. General Admission and Working Adult Admission

- (1) Individuals who have been awarded a master's degree or professional degree from a Japanese university (the term "professional degree" used hereinafter shall refer to the professional degree prescribed in Article 5-2 of the Degree Regulations [Ordinance of the Ministry of Education, Science and Culture No. 9 of 1953] pursuant to stipulations in Article 104, Clause 3, of the School Education Act); this includes those who are expected to be awarded such a degree by September 2021.
- (2) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree or professional degree from a foreign university by September 2021. (hereinafter referred to as "individuals from a foreign educational system")
- (3) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree or professional degree by September 2021 by taking a correspondence course in Japan offered by a foreign school (hereinafter referred to as "individuals from a foreign educational system via correspondence course")
- (4) Individuals who have completed a graduate school coursework of a foreign university at an educational institution in Japan and have been awarded a degree equivalent to a master's degree or professional degree. The institution needs to be positioned within the school education system of that foreign country as an educational body with a graduate school course and is required to be designated by the Japanese Minister of Education, Culture, Sports, Science, and Technology. This includes those who expect to be awarded such a degree by September 2021 (hereinafter referred to as "individuals who have completed coursework in a school designated as equivalent to a graduate school").
- (5) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree by September 2021 from the United Nations University as prescribed in Article 1(2) of the Act on Special Measures Incidental of Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Act No.72 of 1976), which was established under the December 11, 1972 resolution of the General Assembly of the United Nations (hereinafter referred to as "individuals from the UN University").
- (6) Individuals who have completed their formal education by taking a correspondence course through a non-Japanese university, an educational institution which received the designation by (4), or the United Nations University, who have passed an examination or a screening equivalent to the regulations by Article 16.2 in Standards for the Establishment of Graduate Schools, and who are recognized to have an academic ability equivalent to Master's degree holders by the Graduate School, or who will obtain it by September 2021 (hereinafter referred to as "individuals from a foreign university who have been passed a Qualifying Examination").
- (7) Individuals designated by the Minister of Education, Culture, Sports, Science, and Technology (1989 Notice No. 118, Ministry of Education, Science and Culture).
 - (a) Those who have graduated from a university; have conducted research for two years or longer at a university, research institution, etc.; and are recognized by this graduate school as possessing equivalent or greater academic capabilities as those of a person who has a master's degree based on its research achievements, etc.
 - (b) Those who have completed 16 years of school education in a foreign country or 16 years of school education of a foreign country by taking a correspondence course in Japan offered by a

school of that foreign country; have conducted research for two years or longer at a university, research institution, etc.; and are recognized by this graduate school as possessing equivalent or greater academic capabilities as those of a person who has a master's degree based on its research achievements, etc.

- (8) Applicants who are recognized by the graduate school as possessing the equivalent or greater academic skill as that of a person who has a master's degree or professional degree based on an individualized admission qualification investigation and who will be 24 years of age as of September 30, 2021 (hereinafter referred to as "individuals who apply through an individualized admission qualification investigation")

II. International Student Admission

Individuals who are recognized as possessing the skills and capabilities required based on a recommendation from a specialized professor (hereinafter referred to as "the accepting professor") in this graduate school whom the applicant would like to have as his/her research advisor after enrollment and individuals who fulfill one of the following application qualifications:

- (1) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree or professional degree from a foreign university by September 2021.
- (2) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree or professional degree by September 2021 by taking a correspondence course in Japan offered by a foreign school
- (3) Individuals who have completed a graduate school coursework of a foreign university at an educational institution in Japan and have been awarded a degree equivalent to a master's degree or professional degree. The institution needs to be positioned within the school education system of that foreign country as an educational body with a graduate school course and is required to be designated by the Japanese minister of education, culture, sports, science, and technology. This includes those who are expected to be awarded such a degree by September 2021.
- (4) Individuals who have been awarded or are expected to be awarded a degree equivalent to a master's degree by September 2021 from the United Nations University as prescribed in Article 1(2) of the Act on Special Measures Incidental of Enforcement of the Agreement between the United Nations and Japan regarding the Headquarters of the United Nations University (Act No.72 of 1976), which was established under the December 11, 1972 resolution of the General Assembly of the United Nations.
- (5) Individuals who have completed their formal education by taking a correspondence course through a non-Japanese university, an educational institution which received the designation by (3), or the United Nations University, who have passed an examination or a screening equivalent to the regulations by Article 16.2 in Standards for the Establishment of Graduate Schools, and who are recognized to have an academic ability equivalent to Master's degree holders by the Graduate School , or who will obtain it by September 2021.
- (6) Individuals designated by the Minister of Education, Culture, Sports, Science, and Technology (1989 Notice No. 118, Ministry of Education, Science and Culture), i.e., individuals who have completed 16 years of school education in a foreign country or 16 years of school education of a foreign country by taking a correspondence course in Japan offered by a school of that foreign country; have conducted research for two years or longer at a university, research institution, etc.; and are recognized by this graduate school as possessing equivalent or greater academic capabilities as those of a person who has a master's degree based on its research findings, etc.

(7) Applicants who are recognized by the graduate school as possessing the equivalent or greater academic skill as that of a person who has a master's degree or professional degree based on an individualized admission qualification investigation and who will be 24 years of age as of September 30, 2021.

Information on the Long-Term Study Program

1. Overview

This program is available to students who would not be able to complete the program within the standard course term (three years) due to full-time employment or other circumstances (including responsibilities related to the care of elderly or disabled family members or the raising of children) and therefore want a longer period of time to conduct their studies systematically. Students must file an application and may be approved for a systematically planned course of study (hereinafter referred to as “long-term study”) after an individual review.

2. Eligibility

Individuals who are applying for the long-term study program must meet one of the terms listed below, be unable to make a commitment to full-time studies as a consequence of the circumstances described, and would therefore like to extend in advance the number of years over which they will conduct their studies (research).

- (1) Individuals who are engaged in full-time employment, such as those currently employed by government agencies or companies (excluding those who will continue to receive salaries while being relieved of their work duties), and self-employed individuals
- (2) Individuals who are engaged in temporary or part-time employment that is deemed by this graduate school to adversely affect their studies
- (3) Individuals who have responsibilities, such as raising children or caring for other family members, that are deemed by this graduate school to adversely affect their studies to the same degree as the responsibilities listed in item (2) above

3. Enrollment Period

The allowable length of period under the long-term study program is up to six years for the doctoral course. Study periods for long-term study applicants are approved in one-year increments.

The maximum length of enrollment (including the period for time off, etc.) for a student who has been approved for long-term study is up to six years in the doctoral course, the same maximum length of time as students under the standard term of study.

The period of time off that this graduate school will allow is the same for students under either the standard term of study or long-term study program, i.e., three years for doctoral students.

4. Application Procedures

(1) Application Deadline

In general, those wishing to apply for the long-term study program should apply at the time they submit their admission applications.

(2) Submission of Documents

Submit the following documents to CSE office:

- (a) An Application for long-term study (form 1)
- (b) A Long-term study plan (form 2)
- (c) Documents verifying your reasons for needing long-term study approval

(3) Review and Notification of Results

Applications for the long-term study program will be reviewed by the graduate school, and applicants will be notified of the results of that review.

(Notification of results: late - August [tentatively])

5. Contraction or Extension of the Long-Term Study Period

If deemed necessary by the graduate school, approval may be granted for a contraction or extension of the long-term study period once, and only once, during the student's period of enrollment. However, the long-term study period can only be contracted from six years to four years (one year beyond the standard three-year course term) or five years to four years.

6. Tuition Fee

The tuition of students who have been approved for the long-term study program shall be calculated in annual amounts by dividing the total tuition for the standard term of study (annual tuition \times 3 years) by the number of years for which the long-term study has been approved. In cases where the tuition amount is revised or a change to the long-term study period is approved, tuition will be recalculated at that time. However, any tuition already paid will not be adjusted retroactively.

※Be sure not to pay the tuition for your current term of study until you are notified of whether your application for the long-term study program or a change thereof has been approved.

7. Other

To request an application form or clarify any issues, contact CSE office.

Handling of Personal Information

- (1) All personal information collected by Hokkaido University will be completely protected in compliance with the Act on the Protection of Personal Information Held by Independent Administrative Agencies, etc., and other related acts and pursuant to the Hokkaido University Personal Information Management Regulations.
- (2) Names, addresses, and other personal information provided to the university through application procedures will be used solely for (a) enrollee selection, (b) the announcement of exam results, (c) admission procedures, (d) surveys and research on enrollee selection methods, and (e) related processes.
- (3) Some of these processes may be outsourced by the university to a contracted service provider (hereinafter referred to as “contractor”). All or some of the personal information provided by applicants may be provided to the contractor only as needed to perform the tasks for which it has been contracted.
- (4) Personal information obtained through application procedures will be used only for those who are admitted for (a) school administration purposes (student registration, academic counseling, etc.), (b) student support services (health management, scholarship applications, etc.), and (c) tuition and other administrative purposes.
- (5) Of the personal information described in item (4) above, only names and addresses will be used to facilitate communication with students from the Hokkaido University Frontier Foundation and organizations related to Hokkaido University, such as (a) the Hokkaido University Athletic Union, and (b) the Hokkaido University School of Engineering and School of Science Alumni Association.

Graduate School of Chemical Sciences and Engineering, Hokkaido University

List of Instructors and Their Fields of Research

Molecular Chemistry and Engineering Course					
No.	Laboratory	Staff	Research Contents	Faculty	
Microscopic Chemical Analyses Unit					
01	Quantum Chemistry	Professor	Tetsuya TAKETSUGU	Development of "Predictive" Chemical Theory for Reaction, Electron, and Spectroscopy and programs, as well as advanced computational chemistry applications. First-principle excited-state reaction dynamics, theory-guiding catalytic design with element strategy, development of a large-scale electronic structure theory, near-field molecular theory, reaction informatics.	Faculty of Science
		Associate Professor	Masato KOBAYASHI		
		Associate Professor	Makoto WAKESHIMA		
		Assistant Professor	Takeshi IWASA		
02	Theoretical Chemistry	Professor	Satoshi MAEDA	Development of new theories and computational programs aimed at predicting reaction pathways in molecules and materials, and their applications. The main targets of the applications are organic reaction, photoreaction, enzyme reaction, catalysis, and crystal phase transition.	Faculty of Science
		Associate Professor	Keisuke TAKAHASHI		
		Assistant Professor	Yu HARABUCHI		
03	Physical Chemistry	Professor	Kei MURAKOSHI	Surface electrochemistry; detection, characterization and photoexcitation of target molecules on solid surfaces under electrochemical potential control for novel photoenergy conversion systems and interdigit devices. Electrochemical synthesis of nano-materials with well-defined defect density, hetero-atom insertion, and chirality for novel catalysis.	Faculty of Science
		Assistant Professor	Hiro MINAMIMOTO		
		Assistant Professor	Tomohiro FUKUSHIMA		
		Assistant Professor	Xiaowei LI		
		Assistant Professor	Ruifeng ZHOU		
04	Analytical Chemistry	Professor	Kosei UENO	Nanophotonics. Analytical chemistry and photochemistry of nanostructured materials in the minute spatial domain using laser and microspectroscopy.	Faculty of Science
		Assistant Professor	Keisuke IMAEDA		
Fine Chemical Reactions Unit					
05	Organic Reaction	Associate Professor	Hisanori SENBOKU	Synthetic chemistry, electroorganic synthesis, organofluorine chemistry Synthesis and structural analysis of unique functional molecules.	Faculty of Engineering
		Associate Professor	Yasuhide INOKUMA		
		Assistant Professor	Tomoki YONEDA		
06	Organoelement Chemistry	Professor	Hajime ITO	The research purpose of our laboratory is development of novel synthetic reactions, valuable catalytic process and new functional materials in the field of organoelement chemistry. We aim to challenge to establish a new chemistry frontier that includes organometallics, heteroatom chemistry and coordination chemistry.	Faculty of Engineering
		Associate Professor	Tatsuo ISHIYAMA		
		Associate Professor	Koji KUBOTA		
07	Organic Synthesis	Professor	Takeshi OHKUMA	Molecular catalysis, catalytic asymmetric reactions, practical organic synthesis.	Faculty of Engineering
		Associate Professor	Noriyoshi ARAI		
		Assistant Professor	Taiga YURINO		
08	Organic Transformations	Associate Professor	Yasunori YAMAMOTO	Synthetic organic chemistry, organometallic chemistry, development of catalytic organic reactions and catalytic asymmetric reactions using organoboron compounds, development of chiral catalytic process	Faculty of Engineering
09	Organometallic Chemistry	Professor	Masaya SAWAMURA	Catalyst design using supramolecules, solid surfaces, and light for the development of transformative chemical reactions. Quantum chemical calculations for exploring chemical reaction mechanisms and catalyst design.	Faculty of Science
		Lecturer	Yohji SHIMIZU		
		Assistant Professor	Arteaga Arteaga FERNANDO		
10	Organic Chemistry I	Professor	Takanori SUZUKI	Structural and physical organic chemistry on novel heat- and light-responsive redox systems and strained molecules.	Faculty of Science
		Associate Professor	Yusuke ISHIGAKI		
		Assistant Professor	Ryo KATOONO		
Catalytic Reactions Unit					
11	Catalytic Transformation	Professor	Atsushi FUKUOKA	Molecular design of heterogeneous catalysts and application to renewable energy and environmental protection. Depolymerization of biomass such as cellulose and chitin, low-temperature oxidation of ethylene and keeping freshness of vegetables and fruits, partial oxidation of methane and catalysis of mesoporous materials.	Institute for Catalysis
		Associate Professor	Kiyotaka NAKAJIMA		
		Assistant Professor	Hirokazu KOBAYASHI		
		Assistant Professor	Abhijit SHROTRI		
12	Macromolecular Science	Professor	Tamaki NAKANO	Design and synthesis of chiral polymers and supramolecular systems having innovative functions such as pharmaceutical activities, light emission, electronic and ionic conduction, separation, and catalytic activities focusing on helical polymers, π -stacked polymers, liquid crystals, and biopolymers.	Institute for Catalysis
		Associate Professor	Zhiyi SONG		
		Assistant Professor	Masayoshi BANDO		
13	Catalyst Material	Professor	Kenichi SHIMIZU	Development of metal nanocluster catalyst for direct synthesis of chemicals. Development of supported metal catalysts for automobile emission control. Surface chemistry and surface spectroscopy for catalyst design.	Institute for Catalysis
		Professor	Mayumi NISHIDA		
		Associate Professor	Shinya FURUKAWA		
		Assistant Professor	Takashi TOYAO		
14	Catalysis Theory	Professor	Jun-ya HASEGAWA	Theoretical and computational chemistry for catalysis. Analysis of potential energy surface and dynamics of catalytic reactions. Development of chemical concepts, theoretical and computational models, and first-principle molecular simulation method for catalytic reactions.	Institute for Catalysis
		Associate Professor	Kenji IIDA		
		Assistant Professor	Min GAO		
Chemical Process Engineering Unit					
15	Chemical System Engineering	Professor	Takao MASUDA	Simultaneous catalytic reaction and separation processes, production of inedible biomass-derived useful chemicals by catalysis, upgrading of heavy oil to lighter fuels by catalysis.	Faculty of Engineering
		Associate Professor	Yuta NAKASAKA		
		Assistant Professor	Takuya YOSHIKAWA		
16	Material Design and Engineering	Professor	Shin MUKAI	Material design and engineering, adsorption engineering, separation engineering, precise structural controlling of porous materials, development of new production systems of nanomaterials, development of devices for reaction and separation using nanomaterials, material recycling.	Faculty of Engineering
		Assistant Professor	Shinichiro IWAMURA		
		Assistant Professor	Nobuhiro IWASA		
17	Chemical Reaction Engineering	Associate Professor	Isao OGINO	Design and development of chemical reaction processes, reaction engineering, design and tuning of structures and microenvironments of catalysts and separation materials for sustainable chemical processes, tailoring reactive environments in electrode materials through electromagnetic treatments.	Faculty of Engineering
18	Chemical Energy Conversion Systems	Associate Professor	Naoto TSUBOUCHI	Clean carbon technology for efficient reduction of CO ₂ emissions: fundamental research about advanced and novel technologies for biomass, low rank coals, heavy oil residues and low-valued natural gas.	Faculty of Engineering

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Materials Chemistry and Engineering Course					
No.	Laboratory	Staff	Research Contents	Faculty	
Molecular Materials Chemistry Unit					
19	Coordination Chemistry	Associate Professor Assistant Professor Assistant Professor	Atsushi KOBAYASHI Masaki YOSHIDA Yu SUN	Development of the chemistry concerning photofunctional metal complexes. In particular, the construction of assembled metal complexes and the investigation of their structures, spectroscopic properties, and functionalities such as chromic luminescence and photocatalysis.	Faculty of Science
20	Molecule & Life Nonlinear Science	Professor Assistant Professor Assistant Professor	Tamiki KOMATSUZAKI Yuta MIZUNO Goro NISHIMURA	Practical-oriented theoretical chemistry. The fundamental principles of chance and necessity of chemical reactions, and new concepts and methodologies to bridge theory and experiments for biological molecular systems.	Research Institute for Electronic Science
Inorganic Materials Chemistry Unit					
21	Structural Inorganic Chemistry	Associate Professor Associate Professor	Mikio HIGUCHI Yuji MASUBUCHI	Preparation of emerging functional ceramics, microstructure control of ceramics and their property evaluation, new oxynitrides for optical, electromagnetic and chemical application. Growth of oxide single crystals for optical devices.	Faculty of Engineering
22	Inorganic Synthesis Chemistry	Professor Associate Professor Assistant Professor	Kiyoharu TADANAGA Akira MIURA Nataly Carolina ROSERO NAVARRO	Development of functional inorganic materials using liquid phase. Preparation of nano-structured thin films and materials for energy conversion and storage by solution processes.	Faculty of Engineering
23	Solid State Chemistry	Professor Associate Professor	Toshihiro SHIMADA Taro NAGAHAMA	Synthesis and new functions of nano-structured solids and thin films including inorganic nanomaterials, organic semiconductors, spintronics devices and nanocarbons.	Faculty of Engineering
24	Nanostructured Functional Materials	Professor Professor Associate Professor Assistant Professor Assistant Professor	Junji NISHII Yasutaka MATSUO Madoka ONO Masaya FUJIOKA Melbert JEEM	Fabrication and characterization of new optical and electrical functional materials with nano-structures to realize a strong coupling with photon or electron.	Research Institute for Electronic Science
25	Nano Ceramics	Guest Professor Guest Professor	Tetsuo UCHIKOSHI Naoki KUWATA	Design of nano/micro-structures, control of functional properties and analysis of ion dynamics of new functional ceramics based on processing science of fine particles and powders.	National Institute for Materials Science
26	Applied Materials Chemistry	Guest Professor Guest Professor	Katsuya KATO Norihito KIJIMA	Preparation of ceramics nanoparticles and their applications for biocatalysis and biosensing. Synthesis, crystal structure, and functional properties of inorganic materials for energy storage.	National Institute of Advanced Industrial Science and Technology
Frontier Materials Chemistry Unit					
27	Electronic Materials Chemistry	Professor Associate Professor Assistant Professor	Kazuhisa AZUMI Hitoshi KOIZUMI Hiroto TACHIKAWA	Designing high performance and long life materials using surface finishing, electrochemistry and structural control techniques (Azumi), physical chemistry of organic electronic materials and their application to electronic devices (Koizumi) and computational chemistry (Tachikawa).	Faculty of Engineering
28	Interfacial Electrochemistry	Professor Associate Professor Assistant Professor	Hiroki HABAZAKI Yoshitaka AOKI Sho KITANO	Fabrication of functional oxide nanofilms, nanoporous films and functional surfaces using electrochemical processes, tailoring of novel materials for batteries and fuel cells for next generation.	Faculty of Engineering
29	Advanced Materials Chemistry	Professor Associate Professor Lecturer Assistant Professor	Yasuchika HASEGAWA Koji FUSHIMI Yuichi KITAGAWA Sunao SHOJI	Development of strong-luminescent and opto-magnetic nano-materials based on photochemistry, advanced electrochemical analyses using novel micro electrodes.	Faculty of Engineering
30	Material Chemistry	Professor Associate Professor Associate Professor	Kazuki SADA Akira KAKUGO Atsushi MIURA	Discovery of new physical phenomena and development of new functional materials through fabrication of complex systems beyond their hierarchy from nanometer to millimeter by controlling intermolecular interactions among chemical and biological components.	Faculty of Science
Functional Materials Chemistry Unit					
31	Interfacial Energy Conversion Materials Chemistry	Guest Professor Guest Professor	Hidenori NOGUCHI Akihiro OKAMOTO	Fundamental study of chemical-electric energy conversion including novel batteries, and fuel cell catalyst, and genetically-engineered microbial electrode catalysts. In situ determination of geometric, electronic and molecular structures at solid/liquid interfaces and electron transfer dynamics by ultra fast laser spectroscopy.	National Institute for Materials Science
32	Superconducting Materials	Guest Professor Guest Associate Professor	Kazunari YAMAURA Yoshihiro TSUJIMOTO	Emphasizes materials synthesis, advanced characterizations, and studies of materials properties, all aimed at developing materials that have potential for applications. We focus on strongly correlated electrons, multi-ferroic properties, half-metal properties, and the like.	National Institute for Materials Science
33	Photo Functional Materials	Guest Professor Guest Professor	Jinhua YE Naoto SHIRAHATA	Research and development of nano-structured semiconductor materials with novel functionalities (photocatalyst, light-emitters, etc), and their applications in the fields of environment preservation, new energy production, information technology, biomedical applications.	National Institute for Materials Science
34	Nano-Assembled Materials Chemistry	Guest Professor Guest Professor	Masafumi YOSHIO Takuya MASUDA	Development of nanostructured functional materials that contribute to highly efficient energy conversion devices such as fuel cells, lithium ion batteries, and actuators, and understanding of interfacial physicochemical phenomena by in-situ observation techniques.	National Institute for Materials Science

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Biological Chemistry and Engineering Course					
No.	Laboratory	Staff	Research Contents	Faculty	
Biomolecular Chemistry Unit					
35	Biological Chemistry	Professor	Kazuyasu SAKAGUCHI	Functional regulation of tumor suppressor-related proteins through post-translational modification and localization. Function and evolution of oligomeric structure in tumor suppressor protein p53. Regulation of differentiation, metabolism, and function in innate immune cells.	Faculty of Science
		Associate Professor	Rui KAMADA		
36	Biostructural Chemistry	Professor	Koichiro ISHIMORI	Functional and structural characterization and molecular design of proteins using spectroscopy.	Faculty of Science
		Associate Professor	Takeshi UCHIDA		
		Associate Professor	Jun HARADA		
		Assistant Professor	Yoshiyuki KAGEYAMA		
37	Bioorganic Chemistry	Professor	Yota MURAKAMI	Studies of structure-function of chromatin and chromosome, which is involved in maintenance and expression of genetic information; studies of regulatory mechanism of cell shape and movement.	Faculty of Science
		Professor	Masayuki TAKAHASHI		
		Lecturer	Shinya TAKAHATA		
38	Bioanalytical Chemistry	Professor	Manabu TOKESHI	Development of bio- and medical-analysis systems using microdevices and new measurement technologies.	Faculty of Engineering
		Associate Professor	Hirofumi TANI		
		Associate Professor	Masatoshi MAEKI		
		Assistant Professor	Akihiro ISHIDA		
Biofunctional Chemistry Unit					
39	Mechanistic Organic Chemistry	Professor	Hideaki OIKAWA	Elucidation of mechanisms on enzymatic reactions in the biosynthesis of bioactive natural products, and their applications to the organic synthesis to provide useful chemical library.	Faculty of Science
		Associate Professor	Atsushi MINAMI		
		Assistant Professor	Taro OZAKI		
40	Organic Chemistry II	Professor	Keiji TANINO	Total synthesis of natural products having a complex structure and novel bioactivities. Development of efficient methodologies and new reactions to construct polycyclic skeleton with various functional groups on the basis of carbocation chemistry, heteroatom chemistry, and organometallic chemistry.	Faculty of Science
		Associate Professor	Takahiro SUZUKI		
		Assistant Professor	Kazutada IKEUCHI		
41	Chemistry of Molecular Assemblies	Associate Professor	Shinichiro SATO	Synthesis and computational chemistry of functional molecular assemblies based on soft matter such as synthetic polymers and carbohydrate chains.	Faculty of Engineering
		Associate Professor	Takuya YAMAMOTO		
42	Polymer Chemistry	Professor	Toshifumi SATOH	Synthesis of various architecturally complex polymers; molecular design of functional polymers such as stimuli-responsive polymers and conductive polymers; the study of micro-phase separation using block copolymers; creation and application of environmental zero-waste macromolecular materials with multi-functions.	Faculty of Engineering
		Associate Professor	Kenji TAJIMA		
		Associate Professor	Takuya ISONO		
43	Biosynthetic Chemistry	Professor	Ken'ichiro MATSUMOTO	Biosynthesis of useful and unnatural chemicals using engineered biosynthetic systems, and in vitro evolution of enzymes to achieve the goal. The targets are biodegradable plastics, biocompatible polymers, chiral compounds and CO ₂ fixation.	Faculty of Engineering
		Associate Professor	Toshihiko OOI		
		Assistant Professor	Chiaki HORI		
		Assistant Professor	Hiroya TOMITA		
44	Laboratory of Chemical Biotechnology	Guest Professor	Tomohiro HIRAISHI	Elucidation of reaction mechanism of bio-based polymer-degrading enzymes, and development of highly functional and efficient enzymes for biotechnological applications. Nucleic acid antibody. Macromolecular system for genetic diagnosis, structural and functional studies of DNA conjugates, and base-substituted type sensitive morphogenesis system.	RIKEN
		Guest Professor	Masahiro FUJITA		
Cell Engineering Unit					
45	Applied Biochemistry	Professor	Tohru DAIRI	Search for and characterization of novel primary/secondary metabolic pathways in microorganisms and their application for production of useful compounds by biosynthetic and metabolic engineering.	Faculty of Engineering
		Associate Professor	Yasushi OGASAWARA		
		Assistant Professor	Yasuharu SATOH		
46	Cell Processing Engineering	Professor	Mutsumi TAKAGI	Cell processing engineering (process development with stem cells, noninvasive quality estimation of adherent mammalian cells), animal cell cultivation engineering for pharmaceuticals production, cell control using clock gene, bioreactor chemistry (structural analysis of cellulose and related enzymes).	Faculty of Engineering
		Associate Professor	Tomoki ERATA		
		Assistant Professor	Masashi FUJIWARA		
47	Cell Engineering	Guest Professor	Hiroshi HOSODA	Regenerative medicine, artificial organs, endovascular treatment, biomedical materials, cardiovascular medicine, vascular regeneration, cell therapy.	National Cerebral and Cardiovascular Center Research Institute
Molecular Medical Biochemistry Unit					
48	Signaling in Cancer and Immunology	Professor	Akinori TAKAOKA	Research on molecular mechanisms underlying cellular response to infection and cancer. (i) Pathogen recognition receptors (innate sensors) and their signaling pathways, (ii) Innate immune response against cancer)	Institute for Genetic Medicine
		Lecturer	Seichi SATO		
		Assistant Professor	Taisho YAMADA		
49	Establishment of Biological Asymmetry	Professor	Fumio MOTEGI	Cell and developmental mechanisms underlying cell polarity, soma-germ fate dichotomy, asymmetric cell division, and morphogenesis. Development of new optical techniques for in vivo molecular imaging.	Institute for Genetic Medicine

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