

Objectives and Descriptions of the Division of Earth and Planetary Materials Science  
(five-year doctor's course)

### Objectives

Understanding the origin, evolution and dynamics of the Earth and other planets over a broad time span from the formation of the solar system to the present, from the standpoint of materials science, is a fundamental goal of Earth and planetary science. The objective of this division is to train talented young researchers with high abilities to conduct scientific researches and education toward this goal, so that they will potentially become the next generation of leaders in the international Earth and planetary science community. To that end, the educational environments of the division, unlike many conventional Japanese-style graduate schools, have been created to cater for the education of graduate students who have strong desire to pursue a career in scientific research.

### Descriptions

This division has adopted a doctoral degree program that has a maximum period of five consecutive years after enrollment and does not require a prior Master's degree. In this way, students will be able to study with a clear goal of obtaining a doctoral degree at the start of the program. For those who have demonstrated exceedingly high abilities and performance, it is possible to earn a doctoral degree in a minimum of three years after completing an undergraduate program. Students who had an educational background in a field other than earth sciences may find the five-year period beneficial and sufficient to systematically build up the necessary knowledge and skills in earth materials science. All graduate students in this division are entitled to receive financial supports, in the form of fellowship or research assistantship, for a maximum of five years to cover their tuition fees and living expenses. It is hoped that this will enable them to concentrate on their research and education and to develop a sense of responsibility as a researcher.

In order to complete the program and receive a doctoral degree, the students must pass a qualifying examination (proposal defense) that will be held within the period before two and a half years after enrollment, as well as a final oral examination (final defense) near the end of the program, in addition to completing required course work. Those who failed to pass the proposal defense will no longer qualify for financial supports, and will be advised to withdraw from the program. Each of these examinations will be held by an examination committee that includes leading researchers from overseas, in addition to faculty members from the division; and the evaluations will be based on internationally recognized standard.

In this division, graduate students with diverse nationalities will be supervised and taught in English, and will benefit from a unique international atmosphere of research and education that allows them to interact closely with the world-class faculty and other researchers. The Institute for Planetary Materials, which is hosting the division, has been designated as a joint-use and collaborative research center in the field of Earth and planetary materials science by the Ministry of Education, Culture, Sports, Science and Technology, and is constantly the host for collaborative researchers both from Japan and worldwide. Graduate students will thus be able to conduct their research under the guidance of front-line

researchers, and develop hands-on scientific communication skills and high research skills in his/her field of specialty. Administrative staffs fluent in English communications are available to assist international students in various ways with their study in Japan.

By providing such an international research and educational environment, the division endeavors to educate the next generation of independent, world-class researchers and to contribute to the advancement of knowledge.

Policy for Acceptance of Admitted Students  
Division of Earth and Planetary Materials Science  
(five-year doctor's course)

The Five-year Doctor's Program aims at fostering researchers with strong abilities in scientific research from the standpoint of materials science, in order to understand the origin, evolution and dynamics of the Earth and planets over a broad time span from the formation of the solar system to the present. The course recruits people from both Japan and overseas, who have strong interests in Earth and planetary materials science and are highly motivated and devoted to pursue a career to become a world-class researcher.

## I . Admission Quota

October 2018 Admission

Division name	Quota
Division of Earth and Planetary Materials Science	A few

## II . Application Guidelines

### 1. Eligibility for Application

Applicants must fall into one of the following categories by September 2018 to be eligible for application:

- (1) Applicants who have graduated from a university accredited by the School Education Law.
- (2) Applicants who have received a bachelor's degree pursuant to Article 104 Paragraph 4 of the School Education Law (Law No. 26, 1947) (see Note 1).
- (3) Applicants who have completed a 16-year curriculum of education in a foreign country (see Note 2).
- (4) Applicants who have completed a 16-year curriculum of education of a foreign country in Japan via correspondence education offered by schools in that country.
- (5) Applicants who have completed a curriculum of education from a foreign university in Japan, which conforms to that country's educational system (limited to those equivalent to a 16-year curriculum in that country) and has been designated by the Minister of the Ministry of Education, Culture, Sports, Science and Technology (MEXT) of Japan.
- (6) Applicants who have received a bachelor's degree from a foreign university or other foreign school (limited to those received an evaluation on their comprehensive situation of education and research activities etc. by a person who received certification from the foreign government or the related agencies or the equivalent which meets other criteria established by the Minister of MEXT) by completing the course of three or more years (including completing the course of the foreign university in Japan via correspondence education, and completing the course of educational facility positioned in the foreign school education system which meets other criteria established by the Minister of MEXT).
- (7) Applicants who have completed a postsecondary course in a specialized training college designated by the Minister of MEXT (limited to courses that are four years or longer and also meet other criteria established by the Minister of MEXT) after the date of designation (See MEXT decree No. 169, 2005).
- (8) Applicants designated by the Minister of MEXT (See MEXT decree No. 5, 1953).
- (9) Applicants who are enrolled in another graduate school pursuant to the provisions of the School Education Law Article 102 Paragraph 2, and are judged to have appropriate academic ability to receive graduate school education (see Note 3).
- (10) Applicants who are judged to have academic ability equivalent to or exceeding that of a university graduate through individual qualification examination, and have reached the age of 22 (see Note 4).

- (11) Applicants who have attended university for three or more years (or the equivalent as certified by the Minister of MEXT), and are judged to have acquired sufficient credits with excellent academic records from a graduate school (see Note 5).
- (12) Applicants who have completed a 15-year curriculum of education in a foreign country, and are judged to have acquired sufficient credits with excellent academic records from a graduate school (see Notes 5 and 6).
- (13) Applicants who have completed a 15-year curriculum of education of a foreign country in Japan via correspondence education offered by schools in that country, and are judged to have acquired sufficient credits with excellent academic records from a graduate school (see Note 5).
- (14) Applicants who have completed a curriculum of education from a foreign university in Japan that conforms with that country's educational system (limited to those equivalent to a 15-year curriculum in that country) and are judged to have acquired sufficient credits with excellent academic records from a graduate school (see Note 5).

(Note 1) "1. Eligibility for Application (2)" refers to the following:

① Applicants who can submit a certificate of bachelor's degree (or proof of acceptance of application for the certificate of bachelor's degree) issued by the National Institution for Academic Degrees and Quality Enhancement of Higher Education (NIAD-QE).

② Applicants who are enrolled in an advanced course accredited by NIAD-QE according to Article 6 Paragraph 1 of the Degree Regulations (Notification No. 9 of Ministry of Education, Science and Culture, 1953), and can provide proof from the president of the Junior College or Technical College, where the course is established, for the expectation of the applicant's graduation and application for a bachelor's degree.

(Note 2) Applicants corresponding to "1. Eligibility for Application (3)" refers to those who have completed a 16-year of curriculum of regular school education in a foreign country. Applicants, who have skipped grade(s), but have completed the 16<sup>th</sup> year of the curriculum in a country where 16 years are normally required before graduation from a university, are regarded equivalent to the above even if under the age of 22 .

(Note 3) Applicants corresponding to "1. Eligibility for Application (9)" refers to those who wish to transfer from another graduate program currently enrolled via early admission, and can submit "⑭ Certificate of Period of Enrollment in Another Graduate Program" in "(5) Documents Required for Application" of "4. Application Procedures".

(Note 4) Applicants corresponding to "1. Eligibility for Application (10)" refers to those who are judged to be eligible for application after qualification evaluation on the basis of application documents, entrance examinations (written and oral) and interview. When the academic ability of the applicants can be ascertained from the submitted documents, the written examination may be waived.

(Note 5) Applicants "judged to have acquired sufficient credits with excellent academic records from a graduate school", referred to in "1. Eligibility for Application" (11-14), are prescribed separately.

(Note 6) Applicants who have "completed a 15-year curriculum of education in a foreign country", referred to in "1. Eligibility for Application" (12), include those who have completed university education after skipping grade(s) in a country where it normally takes 15 years of education before graduation from a university.

## 2. Review of eligibility

For applicants corresponding to “1. Eligibility for Application” (10) to (14), a preliminary review of eligibility will be conducted. Submit the following documents during the period indicated below to: the Graduate School Section, Academic Affairs Division, Graduate School of Natural Science and Technology, Okayama University.

### Submission period for eligibility review

October 2018 enrollment (first recruitment)	April 26, 2018 to May 7, 2018
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### Documents to be submitted for eligibility review

① Form of eligibility for application (see Note 1)	Use the provided form [Qualification Review (1)].
② Record of academic performance (see Note 1)	Use the provided form [Qualification Review (2)]. Please briefly describe the scientific findings of your past research related to your desired major. Attach a reprint or photocopy of published papers, and a summary or abstract of meeting presentations.
③ Certificate of research participation (see Note 1)	Use the provided form [Qualification Review (3)]. This should be filled by your affiliated institution.
④ Academic transcript	Submit a transcript issued by the president or dean of the most recent university from which you graduated.
⑤ Graduation certificate	Submit a certificate issued by the president or dean of the most recent university from which you graduated.
⑥ Statement of purpose (see Note 1)	Use the provided form [Qualification Review (6)].
⑦ Additional information (see Note 2)	If you possess licenses or certifications related to your field of study, attach a copy on A4 paper with a brief explanation.

(Note 1) Forms ①, ②, ③ and ⑥ are attached to the end of the application form.

(Note 2) Submit only if necessary.

## 3. For applicants with disabilities

Applicants with disabilities, requiring special support during the entrance examination or graduate study, may consult us before application submission during the period shown below. Please try to make contact early in order to allow enough time for the necessary arrangement to be made and for informing you the outcome.

End of consultation period	May7, 2018
Method of Consultation	Request a copy of “Pre-consultation Document for Application”, and submit along with a medical certificate (and a copy of disability certificate if available) for consultation.
Inquiries	Graduate School Section, Academic Affairs Division, Graduate School of Natural Science and Technology, Okayama University 3-1-1, Tsushima-naka Kita-ku, Okayama, 700-8530, Japan Phone: 086-251-8576

#### 4. Application Procedure

##### (1) Submission methods

Applicants should submit the “Documents Required for Application” in (5) during the “Submission Period for Application” described in (2). Please either deliver the documents to the office (open between 8:30 am and 5:00 pm), or send via “registered express mail”, with “Application Enclosed for the Division of Earth and Planetary Materials Science, Graduate School of Natural Science and Technology, Okayama University,” marked in red on the envelope, ensuring that it arrives before the end of the submission period. Perspective applicants should contact the supervisor he/she wishes to work with in advance to discuss research projects. Those who are interested in organic geochemistry should contact faculty in the Department of Analytical Planetary Chemistry.

##### (2) Submission period for application

October 2018 enrollment (first recruitment)	May24, 2018 ~ June6, 2018
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##### (3) Submit to:

Graduate School Section, Academic Affairs Division,  
Graduate School of Natural Science and Technology,  
Okayama University  
3-1-1, Tsushima-naka Kita-ku, Okayama, 700-8530, Japan  
Phone: 086-251-8576

##### (4) Remarks

- ① No revisions of the applications are allowed after submission.
- ② Applications will not be returned for any reason after submission.
- ③ Applications that are incomplete or do not have sufficient application fee payment accompanied will not be accepted.
- ④ In case any of the application materials are found fraudulent, the admission may be revoked even after enrollment.
- ⑤ Certificates with applicant’s former name (e.g., maiden name) are acceptable. In this case, please

attach a document prepared by the applicant in person, indicating your present and former names, and the date the change took place.

(5) Documents required for application

① Application for admission, Curriculum vitae, Admission ticket for examination	The applicant should fill out, in person, the provided forms.
② Photographs	Submit two portrait photos, sized 4 cm (height) x 3 cm (width), taken within the last three months. It must show the front-facing view of the upper body without a hat. Write your name on the back of the photographs. Glue them on the “Applications for admission” and “admission ticket for examination”.
③ Entrance examination fee	<p>¥30,000 (additional bank transfer fee required)</p> <p>Pay at the counter (not from ATM) of a financial institution (including the Japan Post Bank and Japanese post office) using the attached “Application Fee Payment Form”, and glue the “Official entrance examination fee transfer application” provided by the financial institution on the “admission ticket for examination”.</p> <p>About refunds of the application fee:          Except for the following cases, the submitted application fee will not be refunded.</p> <p>A. Application fee was submitted, but application was not completed or accepted.</p> <p>B. Application fee was submitted twice accidentally.</p> <p>C. In general, international students sponsored by the Japanese government do not need to pay application fee. However, for those whose scholarship ends by September 30th, 2018, the payment is necessary. Note that if extension of the scholarship term is approved, the application fee will be refunded.</p>
④ Letters of recommendation	<p>Submission is optional. Consult with the faculty member you plan to work with in advance.</p> <ul style="list-style-type: none"> <li>• Two original letters from two supervisor(s) or equivalent (any format).</li> </ul>
⑤ Undergraduate academic transcript (see note)	Submit a certificate issued by the president or dean of the university you attended.
⑥ Graduate school academic transcript (see note)	Submit a certificate issued by the president or dean of the graduate school (for applicants who have attended graduate school).
⑦ Certificate of (expected) graduation (see note)	Submit a certificate issued by the president or dean of the university from which you graduated or expect to graduate.

⑧ Certificate of (expected) completion of graduate program (see note)	Submit a certificate issued by the president or dean of the graduate school (for applicants who have attended graduate school).
⑨ Thesis, etc.	For applicants who have attended graduate school, submit one of the followings: <ul style="list-style-type: none"> <li>• Abstract of Master thesis (about 2,000 words on A4 paper, format not specified) for those who have obtained a Master's degree</li> <li>• Progress report (about 2,000 words on A4 paper, format not specified) and other materials such as meeting presentation materials (if available), for those who expect to complete a Master program, but do not have a Master thesis.</li> </ul>
⑩ Research plan	On A4 paper, format not specified.
⑪ Summary of past research	On A4 paper, format not specified.
⑫ Certificate of research participation	Only for applicants corresponding to “1. Applicant Eligibility” (3) or (4). Submit a certificate using the provided form.
⑬ Certificate of bachelor's degree or proof of acceptance of application for the certificate of bachelor's degree	Only for applicants corresponding to “1. Applicant Eligibility” (2). For those who expect to receive a bachelor's degree, submit a certificate of expected graduation for the advanced course enrolled and a proof for the expectation of the applicant's application for a bachelor's degree issued by the president of the Junior College or Technical College (Format unspecified)
⑭ Certificate of the period of attendance in graduate school in another course	Only for applicants corresponding to “1. Applicant Eligibility” (9).
⑮ Admission ticket for the examination forwarding envelope	On the envelope, put ⑯ address label and a 362 JPY postage stamp.
⑯ Label of Contact Address	Fill in all necessary information.

(Note) Applicants who were judged to be qualified for application at the “review of eligibility” stage do not need to submit items ⑤ to ⑧. Applicants who graduated or expect to graduate from Okayama University do not need to submit items ⑤ to ⑧.

(6) About the use of personal information

The application documents and personal information contained will be used for the purpose of admission selection. The name and examination number of successful applicants will also be used in the tuition management system. For enrolled students, the personal information from the application documents (e.g. name, sex, date of birth, present address, university graduated) will be registered in the student information system. When requests for applications for admission fee exemption, admission fee deferral and tuition exemption, and application for the Japan Student Services Organization scholarships were made, the scores of the entrance examination and academic transcripts submitted may be used to help judge the academic ability of the applicants.



5. Delivery of admission ticket for the examination

An admission ticket for the examination will be mailed to each applicant on the following date. If you have not received your admission ticket three days before the examination, contact the office (p. 11).

October 2018 enrollment (first recruitment)	June7, 2018
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6. Selection Method

The selection for admission will be conducted based upon comprehensive review of the submitted documents and the oral examination result. Depending on the review outcome of the documents submitted, applicants may be exempted from oral examination. Notification of the exemption of oral examination will be sent out at the same time as the delivery of the admission ticket for examination.

Oral examination will be conducted on the following date. Notification of the location will be sent out later by the director of the Division of Earth and Planetary Materials Science.

October 2018 enrollment (first recruitment)	June11, 2018, 9:30am
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Note 1. The date and time of the oral examination above might be changed after applicants are contacted.

Note 2. If no information about the date, time, or place of the oral examination has been received by June 9th, please inquire to the office in charge. (p. 10).

7. Announcement of selection results

The announcement of selection results will be posted as follows. The examination numbers of successful applicants will be posted on the bulletin board. Documentations for admission will be mailed out to the successful applicants on the same day. The examination numbers of successful applicants will subsequently be posted on the web site (<https://www.gnst.okayama-u.ac.jp/admission>). Telephone inquiries regarding the selection results are not accepted.

	Date	Posting location
October 2018 enrollment (first recruitment)	June29, 2018, 10:00 am	Bulletin board in front of the administrative office, Graduate School Section, Academic Affairs Division (1st floor, faculty of engineering Bldg. 1), Graduate School of Natural Science and Technology, Okayama University

8. Enrollment procedures

(1)Method of enrollment procedures

Successful applicants will be accepted into the graduate school after having completed the enrollment procedures. Details will be separately informed to successful applicants later.

(2)Period of enrollment procedures

The period for enrollment procedures has been scheduled as follows. However, successful applicants will be

informed about details later.

October 2018 enrollment (first recruitment)	September 18, 2018 to September 19, 2018
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9. Others

(1) Expected admission fee and tuition

admission fee                    ¥282,000

tuition fee                      ¥267,900 (half a year)    ¥535,800 (annual)

If the fees are revised at enrollment or during your graduate program, the revised fees will apply from the date of revision. Additional expenses such as Personal Accident Insurance for Students Pursuing Education and Research are also necessary.

(2) Scholarship

In this division, all graduate students who have demonstrated scholastic excellence and also need financial support are eligible to receive IPM's scholarship to cover his/her tuition fee and living expenses. Support for travel fee to Japan is also possible.

(3) For inquiries about your application, contact the following office:

Graduate School Section, Academic Affairs Division,  
Graduate School of Natural Science and Technology,  
Okayama University  
3-1-1, Tsushima-naka, Kita-ku, Okayama, 700-8530, Japan

Phone: 086-251-8576

E-mail: agf8576@adm.okayama-u.ac.jp

(4) The next examination scheduled is the “October 2018 enrollment (second recruitment) and April 2019 enrollment (first recruitment)”.

### III Majors

Department	Course Content	Course Name	Instructor
Department of Analytical Planetary Chemistry	To understand the origin and evolution of the Earth and planets through chemical, isotopic, chronological and structural analyses of natural samples and experimental products	Fundamental earth and planetary chemistry	Akio Makishima, Professor
		Stable isotope geo- and cosmochemistry	Takuya Moriguti, Associate Professor
		Chemical Geodynamics	Eizo Nakamura, Professor
		Chronology of earth and planetary materials	Katsura Kobayashi, Professor
		Origin of solar system materials	Eizo Nakamura, Professor Takuya Kunihiro, Associate Professor
		Mantle geochemistry	Ryoji Tanaka, Associate Professor
		Earth and Planetary Geology	Hiroshi Kitagawa, Assistant Professor
		Analytical planetary chemistry on the early solar system	Takuya Kunihiro, Associate Professor
Department of Experimental Planetary Physics	To understand the evolution and dynamics of the Earth and planets via ultrahigh-pressure and temperature experiments and physical property measurements of deep Earth and planetary materials, as well as structural analysis of minerals, magmas and fluids by spectroscopic and diffraction techniques.	Experimental high-pressure earth science	Takashi Yoshino, Associate Professor
		Equation of state for earth and planetary materials	Akira Yoneda, Associate Professor
		Rheology	Daisuke Yamazaki, Associate Professor
		Crystal chemistry of earth and planetary materials	Masami Kanzaki, Professor
		Spectroscopic techniques in earth and planetary sciences	Xianyu Xue, Professor
		Experimental magmalogy	Shigeru Yamashita, Associate Professor
		Volatile element geo-and cosmochemistry	Eizo Nakamura, Professor Ryoji Tanaka, Associate Professor
		Planetary exploration: From meteorites to the Solar System	Matthew Izawa, Assistant Professor
		Physics of liquids at high pressure	Takuo Okuchi, Associate Professor
		Topics in High-Pressure Earth and Planetary Science	Andrew Japhcoat, Professor

Department of Organic Geochemistry (Related Courses)	To understand the materials evolution of the early solar system and the origin of life by analyzing the origin and evolution of CHONS chemical species.	Organic geo- and cosmochemistry	Eizo Nakamura, Professor Akio Makishima, Professor
		Analysis of organic materials on earth and planets	Akio Makishima, Professor
		C-O-H-N-S volatiles in silicate melts and crystals	Eizo Nakamura, Professor Takuya Moriguti, Associate Professor
		Astrobiology	Eizo Nakamura, Professor Katsura Kobayashi, Professor