

Organization and Activities of the Doctoral Program in Earth Evolution Sciences (Geological Sciences) for the Academic Year 2020

Organization

During the year from April, 2020 to March, 2021, several promotions and appointments were made in the Doctoral Program in Earth Evolution Sciences (Geological Sciences) so that our research and teaching activities were enforced.

Professor:

Arakawa, Yoji, D. Sc., petrology, geochemistry and geochronology
Sugihara, Kaoru, Ph.D. (Sc.), carbonate sedimentology, paleontology
Tsunogae, Toshiaki, Ph.D. (Sc.), metamorphic petrology and crustal evolution
Yagi, Yuji, Ph.D. (Sc.), seismology, structural geology

Associate Professor:

Agematsu, Sachiko, Ph.D. (Sc.), paleontology
Fujino, Shigehiro, Ph.D. (Sc.), sedimentology, stratigraphy, paleoseismology
Ikehata, Kei, Ph.D. (Sc.), petrology, resource geology
Kamata, Yoshihito, Ph. D. (Sc.), stratigraphy, tectonics
Kurosawa, Masanori, Ph.D. (Sc.), mineralogy and geochemistry
Kyono, Atushi, Ph.D. (Sc.), structural physics of minerals
Maruoka, Teruyuki, Ph.D. (Sc.), geochemistry
Ujiie, Kohtaro, Ph.D. (Sc.), structural geology

Assistant Professor:

Fujisaki, Wataru, Ph.D. (Sc.), geochemistry
Mukai, Hiroki, Ph.D. (Sc.), mineralogy, resource geology and environmental science.
Okuwaki, Ryo, Ph.D. (Sc.), seismology, structural geology
Tanaka, Kohei, Ph.D., vertebrate paleontology

Professor (National Museum of Nature and Science):

Kohno, Naoki, D. Sc., mammalian paleontology
Shigeta, Yasunari, D. Sc., ammonite paleontology

Associate professor (National Museum of Nature and Science):

Tsutsumi, Yukiyasu, Ph.D. (Sc.), geochronology

Research and Teaching Assistants:

Otani, Satoshi, B.A.
Ozaki, Shiro
Shimizu, Masahiro

Administrative Staff:

Kuwahara, Mutsuko
Yasuda, Yoko

Doctor and Master's Theses

The following doctor and master's theses were completed during the academic year 2020 under the supervision of the members of the Doctoral Program in Earth Evolution Sciences.

Doctor of Philosophy (Science or Geosciences):

Tamura, Tomoya (2020) Influence of atranorin on the dissolution of silicate minerals: An experimental study on rock weathering in volcanic regions by lichens
Uthup, Sam (2021) Episodic Crustal Evolution of the Southern Granulite Terrane: Implications for the Bhavani Suture Zone and Shevaroy Granulite Block, Southern India.
Wang, Ding (2021) Effects of Deep-sea Anoxic Events on Thrust Faulting in Subduction Zone: Insights from the Jurassic Accretionary Complex in the Chichibu and Mino Belts
Weiwei, C. (2020) The Study of Two Stage Gold Mineralization in the Xiong'er Shan Goldfield

Master of Science or Geoscience:

Chisyaki, Masato (2021) Palaeobathymetry based on a large dataset of bivalves in Japan
Guo, Zixuan (2021) A Revision of Phylogeny and Paleobiogeography of Kentriodontids (Cetacea: Odontoceti)

- Ishihara, Kotoko (2021) Thermal property changes in quartz ground in planetary ball mill
- Kinebuchi, Ibuki (2021) Oxidization mechanism and structural change of magnetite
- Kinoshita, Ken (2021) Mineralogical study of potteries from Tell el-Kerkh 2 Neolithic site, northern Syria
- Moteki, Akinori (2021) Introduction of uncertainty of P-phase arrival time into waveform inversion for source process
- Nishi, Ayumi (2021) Fluid-rock interaction and formation of high-grade metamorphic rocks in the Trivandrum Block, southern India
- Tsuda, Takuya (2021) Studies on the chemical properties of granitic origin high salt concentration fluids by polyphase inclusion
- Okada, Takeaki (2021) Evaluation of Garnet-Clinopyroxene Geospeedometry and its Application to High-Grade Metamorphic Rocks
- Sasaki, Minoru (2021) Sedimentary Environments and Taphonomy of fossil shell beds in the Pliocene Mita Formation, Toyama City, Toyama Prefecture, Central Japan –Sedimentological Examination from Grain Size Analysis–
- Ujibe, Yuya (2021) The taxonomy of Jurassic ultranaporid radiolarians from the Mariana Trench

Master of Arts in Education:

- Matsuzaki, Minami (2021) Development of teaching materials for disaster prevention education in Kerala, South India: Introduction of rock and mineralogical perspectives

Research Activities

Each researcher had the following research activities during the academic year 2020.

Research projects

- Agematsu, S. (2014~): Reconstruction of the Triassic conodont apparatuses.
- Agematsu, S. (2015~): Lower and Middle Paleozoic microfossils and paleoenvironments in Thailand and Malaysia (IGCP 668; Equatorial Gondwanan History and Early Paleozoic Evolutionary Dynamics).
- Arakawa, Y. and Shinmura, T. (2017~): Geological and petrological study of Aso volcano, Kyushu, Japan.
- Arakawa, Y., Matsui, T., and Ikehata, K. (2018~): Mineralogical and petrological studies of anorthite megacrysts in arc volcanic rocks.
- Arakawa, Y. and Ikehata, K. (2014~): Petrological and geochemical investigations of volcanic rocks in Izu-volcanic arc, Japan.
- Fujino, S. (2007~): Stratigraphic records of past earthquakes and tsunamis along the Nankai Trough
- Fujino, S. (2014~): Potential risk of tsunamis generated at submarine active faults in western Japan
- Ikehata, K. (2005~): Petrological and petrochemical studies of volcanic products from active volcano.
- Ikehata, K. (2006~): Development of analytical methods for non-traditional (e.g., Cu, Fe, Zn) stable isotope ratios of materials and its applications to geochemical samples.
- Kamata, Y. (2015~): Stratigraphy and tectonics of the Paleo-Tethys in Thailand and Lao.
- Kamata, Y. (2015~): Stratigraphy and tectonics of Jurassic accretionary complex in Japan
- Kurosawa, M. (2015~) Single fluid-inclusion analysis using particle-induced X-ray emission (PIXE) to elucidate chemical compositions and behaviors of hydrothermal fluids from granites.
- Kurosawa, M. (2018~) Mineralogical studies on archeological artifacts from ancient West Asia.
- Kyono, A. (2015~): Studies on a phase transition mechanism from ferrihydrite to hematite with compression, the effect of water on crystal structure and phase variation of the magnesium carbonate hydrate mineral, the carbon solubility into silica minerals under high-temperature, shock-induced phase transition of iron and aluminum metals, symmetry changes of analcime by formation conditions, and TEM investigation of the interaction between bacteria and mineral surfaces.
- Maruoka, T. (2009~) Geochemical study for understanding the environmental perturbations at the mass-extinction events.
- Mukai, H. (2018~): Microscopic study of weathered granite soil in ion adsorption rare earth deposit.
- Tanaka, K. (2019~): Description and classification of a carcharodontosaurian theropod from Uzbekistan.

Tanaka, K. (2020~): Reconstruction of feeding behavior in tyrannosaurid theropods.

Tsunogae, T. and Santosh, M. (2016~): Crustal evolution of the Gondwana suture zones in India and Sri Lanka.

Tsunogae, T., Dunkley, D.J., and Miyamoto, T. (2014~): Pressure-temperature-time evolution of granulites in East Antarctica.

Tsunogae, T. (2018~): Crustal evolution of the basement rocks in southern Africa.

Ujiie, K. (2007~): Field and microstructural studies of accretionary complexes and fault rocks.

Ujiie, K. (2007~): Fault zone drilling in the Nankai and Japan Trench subduction zones.

Ujiie, K. (2016~): Structural and rheological studies of metamorphic rocks.

Yagi, Y. (2012~): Seismic source process of large and great earthquakes derived from a hybrid back-projection and a waveform inversion.

Research grants

Agematsu, S. (2017~2020): Lower and Middle Paleozoic microfossils and paleoenvironments in Thailand and Malaysia. Grant-in-Aid for Scientific Research (B), JPY 7,800,000.

Fujino, S. (2020–2023): Long-term tsunami history in the Nankai Trough: reliable identification of geological traces and accurate and precise dating., JPY 6,110,000 for 2020..

Ikehata, K. (2019-2022): Study on formation mechanism of seafloor hydrothermal deposits based on copper isotopic measurement. Grant-In-Aid for Scientific Research (C).

Kurosawa, M. (2018~2022) An interdisciplinary study of the origin and transformation of ancient west Asian cities. Grant-in-Aid for Scientific Research on Innovative Areas.

Mukai, H. (2018~2020): A study of minerals adsorbing rare earth elements in ion adsorption type ore. Grant-in-Aid for Early-Career Scientists, JPY 4,160,000.

Tanaka, K. (2019~2021): Reconstruction of Mesozoic bird reproduction. Grant-in-Aid for Research Activity Start-up, JPY 2,860,000.

Tsunogae, T. (2018~2021): Petrology and geochronology of the Neoproterozoic Kuunga orogen and its implications for the evolution of Gondwana Supercontinent. Japan Society for the Promotion of Science, Grant-in-Aid for Scientific Research (B), JPY 15,990,000.

Tsunogae, T. (2019~2020): Petrology and tectonics of the Central Asian Orogenic Belt. Japan Society for the Promotion of Science, Grant-in-Aid for Foreign Post-Doc, JPY 2,300,000.

Ujiie, K. (2016~2020): Science of slow earthquakes. Grant-in-Aid for Scientific Research on Innovative Area (Research in a proposed research area).

Ujiie, K. (2020~2022): Detection of fault frictional heat generation in Ryukyu Limestone and evaluation of active fault seismic slip. Japan Society for the Promotion of Science, Grant-in-Aid for Challenging Research (Exploratory)

Ujiie, K. (2020~2023): Metamorphic rocks in Corsica Island: Key to understanding megathrust slip in cold subduction zones. Japan Society for the Promotion of Science, Grant-in-Aid for Fostering Joint International Research (B)

Ujiie, K. (2021~2025): Slow-to-Fast earthquakes through comparison across global subduction zones. Grant-in-Aid for Transformative Research Areas (A)

Yagi, Y. (2016~): Development of new hybrid back-projection to understand the generation of high frequency waveform in great earthquakes. Japan Society Promotion of Science: Basic Research (C), JPY4.680,000.

Activity Reports for Academic Exchange and Cooperation

During the year from April, 2020 to March, 2021, several programs on academic exchange and cooperation were made in the Doctoral Program in Earth Evolution Sciences.

Chulalongkorn University, the Kingdom of Thailand

- (1) Exchange of Researchers: N/A
- (2) Exchange of Graduate Students: Chanakan Ketthong (research student, Jan 2021~)
- (3) Collaboration Research and/or Class: International Geological Field Excursion B in Thailand (Approximately 20 Japanese students were planning to participate, but cancelled due to COVID-19)

China University of Geosciences (Beijing), P. R. China

- (1) Exchange of Researchers: N/A
- (2) Exchange of Graduate Students: Masanori Ozeki, Xue Fei, Hu Xinkai, Chao Weiwei (under the

double-degree program between University of Tsukuba and CUGB)

- (3) Collaboration Research and/or Class: Joint Field Excursion in Japan was planned, but cancelled due to COVID-19.