Organization and Activities of the Doctoral Program in Earth Evolution Sciences (Geological Sciences) for the Academic Year 2018

Organization

During the year from April, 2018 to March, 2019, 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. All faculty and administrative staffs were (staffs with an asterisk * are belonging to the Doctoral Program in Integrative Environment and Biomass Sciences, but they are listed in our organization herewith, because they study geological sciences and have lectures on geological sciences for undergraduate students):

Professor:
Arakawa, Yoji, D. Sc., petrology, geochemistry and geochronology
Hayashi, Ken-ichiro, D. Sc., migration of heavy metals, geochemistry of hydrothermal system
Hisada, Ken-ichiro, D. Sc., stratigraphy, sedimentology
Sashida, Katsuo, D. Sc., Paleozoic and Mesozoic biostratigraphy
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
Kamata, Yoshihito, Ph. D. (Sc.), stratigraphy, tectonics
Kurosawa, Masanori, Ph.D. (Sc.), mineralogy and geochemistry
Ujiie, Kohtaro, Ph.D. (Sc.), structural geology
*Maruoka, Teruyuki, Ph.D. (Sc.), geochemistry

Assistant Professor:
Ikehata, Kei, Ph.D. (Sc.), petrology, resource geology
Komuro, Kosei, D. Sc., ore geology and geochemistry
Kyono, Atushi, Ph.D. (Sc.), structural physics of minerals
Tanaka, Kohei, Ph.D., vertebrate paleontology

Cooperative Graduate School System

Professor:
Kohno, Naoki, D. Sc., mammalian paleontology (National Museum of Nature and Science)
Shigeta, Yasunari, D. Sc., ammonite paleontology (National Museum of Nature and Science)

Associate professor
Tsutsumi, Yukiyasu, Ph.D. (Sc.), absolute dating (National Museum of Nature and Science)

Research and Teaching Assistants:
Otani, Satoshi, B.A.
Ozaki, Shiro
Shimizu, Masahiro

Administrative Staff:
Kuwahara, Mutsuko
Yasuda, Yoko

Doctor and Mater's Theses

The following doctor and master's theses were completed during the academic year 2018 under the supervision of the members of the Doctoral Program in Earth Evolution Sciences.

Doctor of Philosophy (Science or Geosciences)
Daren, Fang (2019) Geologic Anatomy of the Upper Triassic Sequence of Eastern Himalayan Orogen: Evidence from Sedimentary and Metamorphic-deformational Analyses.
Minezaki, Tomonari (2019) Tectono-stratigraphy of Upper Carboniferous to Triassic Successions and Petroleum Geology of the Khorat Plateau Basin, Indochina Block, Northeastern Thailand.
Okuwaki, Ryo (2019) Irregular Rupture Evolution During the Large/Great Earthquakes: Resolved by High-Frequency Radiation Sources and Co-seismic Slip Distribution.
Asato, Kaishi (2019) Evolution of *Shikamaia*, Giant Permian Bivalves (Alatoconchidae: Ambonychioidea) from Japan.
Tonomori, Wataru (2019) Evolutionary Consequences of the Structure-Function Relationship of Ankle Joints in the Pinnipeds during their Secondary Ad-

aptation to Life in Water.

Tamaribuchi, Koji (2019) Study on Real-time Monitoring System of Earthquakes.

Pei, Qiuming (2018): The Ore-forming Mechanisms and Spatiotemporal Evolution of Fluorite Deposits in Eastern China: A Case Study from the Shuitou Deposit, Inner Mongonia, China

Master of Science or Geoscience

Ikarashi, Ayumi (2019) Raw Materials of Paleolithic Stone Tools from Asia and their Geological Backgrounds.

Kaneko, Takeshi (2019) Studies on Late Paleozoic Bryozoan Fossils from Hikoroichi Area and Setamai Area, Iwate Prefecture and its Paleobiogeography

Kayano, Keita (2019) Problems in Inverting the Teleseismic Waveforms for the Rupture Process of an Earthquake.

Sazawa, Tsuyoshi (2019) Taxonomy of Late Cretaceous *Nilssonia* (Cycadales) in Japan.

Hiramatsu, Shinichi (2019) Late Miocene Fossil Fish from Sado Island, Niigata Prefecture, Japan.

Fukushima, Yuichi (2019) Lithostratigraphical and Chronological Study of "Toishi-type" Siliceous Claystone from Ahio Belt, Central Japan.

Matsumoto, Naohiro (2019) Larger Foraminifera from the Chichi-jima and Haha-jima, Ogasawara Islands, Japan.

Yamamoto, Gen-ichiro (2019) The Effect of Temperature and Pressure on Hydromagnesite.

He, Mengqing (2019) The Rupture Process of 5 September 2012 Nicoya, Costa Rica M_w7.6 Earthquake.

Yoshida, Tomohiro (2019) Permian to Triassic Lithostratigraphy and Radiolarians in the Nong Pure Area, Western Thailand.

Takeda, Daisuke (2019) Paleocurrent Analysis of Paleotsunami Deposits using X-Ray Computed Tomography (CT) Images.

Yaduda, Risa (2019) Taxonomy and Paleontology of Permian Amphibian Fossils.

Asano, Shiryu (2019) Mineralization of Caserones Porphyry-type Cu-Mo Deposit, III Regoin, Chile: Ore Texture and Fluid Inclusion

Takahashi, Kazuki (2019) Phase Equilibrium Modeling of Metabasites from the Lützow-Holm Complex, East Antarctica: Implications for Granulite-facies Metamorphism and Metasomatism.

Kawatani, Ayako (2019) Marine Mammal Fauna in the Sea of Japan with Special Reference to the Whales from the Middle Miocene Tsurushi Formation, Sado Island, Niigata Prefecture, Japan.

Motohashi, Ginta (2019) Viscous Strengthening Followed by Slip Weakening during Frictional Melting of Chert.

Master of Arts in Education

Kamiyama, Yuri (2019) Use of Geoparks for Disaster Prevention utilizing Geostories of Natural Disaster.

Tominaga, Kyosei (2019) Report of 1986 Kuji River Flooding and Development of class "Action of Flowing Water" using Web Geoscience Library.

Maehara, Takuya (2019) Town Walking Topography Learning using GIS software – as an example of Tokyo 23 wards.

Research Activities

Each researcher had the following research activities during the academic year 2018.

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, and T. 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

Hayashi, K. (2013~): Oxygen isotope study of hydrothermal ore deposits.

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.

Komuro, K. (2013~): Geochemistry and formative environment of bedded manganese deposits in Japan.

Komuro, K. (2015~): Tellurium and selenium mineralization in epithermal gold deposits.

Kurosawa, K. (2015~): Single fluid-inclusion analysis using particle-induced X-ray emission (PIXE) to elucidate chemical compositions and behaviors of hydrothermal fluids from granites.

Kurosawa, K. (2018~): Mineralogical analysis of potteries from the Neolithic sites at northern Syria and northeastern Iran.

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. (2009-2018): Geochemical study for understanding the environmental perturbations at the mass-extinction events.

Sashida, K. (2015~): Paleozoic and Mesozoic paleoenvironmental studies in Thailand and peninsular Malaysia.

Tanaka, K. (2019): Excavation of fossil eggs and eggshells in Tamba, Hyogo, Japan.

Tsunogae, T. and Santosh, M. (2016~2020): Crustal evolution of the Gondwana suture zones in India and Sri Lanka.

Tsunogae, T., Dunkley, D.J., and Miyamoto, T. (2014~2019): Pressure-temperature-time evolution of granulites in East Antarctica.

Tsunogae, T. (2018~2023): 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. (2016~2018): Long-term variations in recurrence intervals of earthquakes and tsunamis and crustal deformations in the Nankai Trough. JPY 1,040,000 for 2018.

Ikehata, K. (2016~2018): Discrimination between essential ejecta and altered ejecta based on copper and iron isotopic measurements. Grant-In-Aid for Young Scientists (B).

Ikehata, K. (2015~2018): In-situ trace and isotopic ratio analysis for seafloor hydrothermal samples. Next-generation technology for ocean resources exploration for Cross- ministerial Strategic Innovation Promotion Program (SIP).

Ikehata, K. (2017~2018): Elucidation of a formation mechanism for hydrothermal native copper. The Japan Mining Promotive Foundation research grant.

Kamata, Y. (2015~): Seismogenic faults of the Jurassic accretionary complex in Japan. Grant-In-Aid for Scientific Research (C), JPY 1553,000

Tanaka, K. (2017~2019): Evolution of reproductive strategy in archosaurs. Research Fellow of Hapan Society for the Promotion of Science (SPD). JPY 9,750,000.

Tsunogae, T. (2018~2021): Petrology of the Kuunga orogen. Japan Society for the Promotion of Science: Basic Research (B), JPY 12,300,000

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

Yagi, Y. (2016~): Development of new hybrid back-pro- jection to understand the generation of high frequency waveform in great earthquakes. Japan Society Promotion of Science: Basic Research (C), JPY 4.680,000.

Activity Reports for Academic Exchange and Cooperation

Chulalongkorn University, the Kingdom of Thailand

(1) Exchange of Researchers:
N/A

(2) Exchange of Graduate Students:
N/A

(3) Collaboration Research and/or Class:
International Geological Filed Excursion B in Thailand (Approximately 20 Japanese students par-

ticipated)

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

(1) Exchange of Researchers:
N/A

(2) Exchange of Graduate Students: Masanori Ozeki, Xue Fei, Chao Weiwei, Pei Qiuming, Fang Daren (under the double-degree program between Tsukuba and CUGB)

(3) Collaboration Research and/ or Class:
Special Filed Excursion on Earth Evolution Sciences in Japan (10 Chinese students and two professors from China participated)