

# Organization and Activities of the Doctoral Program in Earth Evolution Sciences (Geological Sciences) for the Academic Year 2010

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## Organization

During the year from April, 2010 to March, 2011, 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 Environmental 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  
Kimata, Mitsuyoshi, D. Sc., mineralogy and crystallography  
Ogasawara, Kenshiro, D. Sc., stratigraphy  
Sashida, Katsuo, D. Sc., Paleozoic and Mesozoic biostratigraphy

### *Associate Professors:*

Agematsu, Sachiko, Ph.D. (Sc.), paleontology  
Hisada, Ken-ichiro, D. Sc., Paleozoic and Mesozoic stratigraphy and sedimentology  
Tsunogae, Toshiaki, Ph.D. (Sc.), metamorphic petrology and crustal evolution  
Ujii, Kohtaro, Ph.D. (Sc.), structural geology  
Yagi, Yuji, D. Sc., seismology, structural geology  
\*Maruoka, Teruyuki, Ph.D., geochemistry

### *Assistant Professor:*

\*Anma, Ryo, Ph.D., structural geology and tectonics  
Fujino, Shigehiro, Ph.D. (Sc.), sedimentology, stratigraphy, paleoseismology  
Komuro, Kosei, D. Sc., ore geology and geochemistry  
Kurosawa, Masanori, Ph.D. (Sc.), mineralogy and geochemistry  
Kyono, Atushi, Ph.D. (Sc.), structural physics of minerals  
Takizawa, Shigeru, D. Sc., structural geology

Cooperative Graduate School System

### *Professor:*

Takada, Akira, D. Sc., volcanology  
Yamazaki, Toshitsugu, D.Sc., paleomagnetism

### *Associate Professor:*

Ishizuka, Osamu, D. Sc., arc magmatism

### *Research and Teaching Assistants:*

Miyamoto, Makoto  
Otani, Satoshi, B.A.  
Ozaki, Shiro  
Shimizu, Masahiro  
Watase, Koichi, B.A.

### *Administrative Staff:*

Hirano, Kozue  
Yasuda, Yoko

## Doctor and Master's Theses

The following doctor and master's theses were completed during the academic year 2009 under the supervision of the members of the Doctoral Program in Earth Evolution Sciences.

Doctor of Philosophy (Science or Geosciences)  
none

Master of Science or Geoscience

Master of Science

Akaiwa, Shunji (2011): Internal structures of the Nankai accretionary prism in Tenryuukai Basin.

Davaa-Ochir, Dashbaatar (2011): Vein type gold deposit at Tsagaan Tsahir Uul in the Bayankhongor Belt, Central-West Mongolia: Features of mineralization and oxygen isotope.

Endo, Daisuke (2011): Petrological and geochemical studies of rhyolites and basalts in Niiijima vol-

cano, Izu volcanic arc, Japan.

- Isowa, Nobuyuki (2011): Molecular Evolution of the Shell Matrix Protein Aspein in Pteriod Bivalves.
- Kawamura, Kouki (2011): Radioralian biostratigraphy and sedimentary environment for the Miocene Horokabetsu-Hiratori areas, Hokkaido, Japan.
- Oshika, Junya (2011): Petrological and petrochemical studies of Nanzaki basanite, Izu Peninsula, Japan.
- Sakai, Kazushi (2011): A hypocenter determination method with travel time difference between observation points.
- Shimizu, Kohsuke (2011): Lateritic Nickel Deposits at the Palawan Island, Philippines: Geochemical Behavior of Nickel in Weathered Soil.
- Suzuki, Mitsuru (2011): Anomalies of rupture velocity in deep earthquakes revealed by back projection method.
- Ueda, Litsu (2011): Lower Carboniferous Corals from the Akiyoshi Limestone.
- Yamaoka, Shinji (2011): Mineralization of Shinano Vein and its Southeast Extension of the Toyoha deposit, Hokkaido: Examination from Mineral Paragenesis and Oxygen Isotope.

#### Master of Arts in Education

- Higuchi, Risa (2011): An Example of New Science Issue Study based on Natural Environmental Investigation (Topography and Geology)
- Machida, Takahiro (2011): Paleontological Study of Suchoji-gai (*Heterocyathus japonicas*).
- Shimizu, Keisuke (2011): Possible Function of Dpp in Gastropod Shell Formation and Shell Coiling.

## Research Activities

Each researcher had the following research activities during the academic year 2010.

#### Research projects

- Agematsu, S. (2007~): Lower Paleozoic conodont, graptolite, and tentaculite from Southeast Asia and Triassic conodont natural assemblage.
- Anma, R. (2010~): Edit a book entitled "Acresionary Prisms and Convergent Margin Tectonics in the Northwest Pacific Basin" to be published from Springer (Joined geological survey in Chilean Patagonia).
- Arakawa, Y. and Shinmura, T. (2007~): Geological and geochemical studies of volcanic rocks in Aso volcano, Japan.
- Arakawa, Y., Matsui, T. and Kimata, M. (2005~): Sr isotopic and mineralogical studies of anorthite megacrysts in arc volcanic rocks.
- Arakawa, Y. (2008~): Petrological and petrochemical studies of volcanic rocks Izu arc and adjacent area.
- Fujino, S. (2011): Sediment transportation and deposition by The 2011 Tohoku Earthquake Tsunami.
- Fujino, S. (2007~): Sediment records of paleo-tsunamis along the Nankai Trough.
- Fujino, S. (2007~): Sediment records of paleo-tsunamis in Aceh Province, northern Sumatra Island.
- Hayashi, K. (2009~) Oxygen isotope study of hydrothermal ore deposits.
- Hisada, K. and Takahashi, M. (2009~): Study on an origin of angiosperm (Thailand).
- Hisada, K. and Charusiri, P. (2009~): Nan project (Environmental research in NE Thailand).
- Komuro, K., Hatta, T. and Shinohara, Y. (2008-2010): Effects of soil environment on the chemistry of food grains with attempts to make a counter-plan.
- Komuro, K. and Ito, T. (2008-2010): Development of oxygen minimum layer in the Pacific Ocean during Neogene.
- Kurosawa, M. (2010~): Single fluid inclusion analysis using particle-induced X-ray emission (PIKE) to elucidate chemical compositions and behaviors of hydrothermal fluids from granite.
- Kurosawa, M. (2010~): Trace element analysis of pegmatite and mantle minerals by using laser-ablation ICP-MS.
- Sashida, K. (2011~): Paleozoic and Mesozoic pa-

leoenvironmental studies in Thailand and peninsular Malaysia.

Tsunogae, T. and Santosh, M. (2009-2015): Crustal Evolution of the Gondwana suture zones.

Tsunogae, T., Osanai, Y., Toyoshima, T., Owada, M., and Hokada, T. (2010-2014): Ultrahigh-temperature metamorphism in East Antarctica.

Tsunogae, T. and Dubessy, J. (2009-2014): Characterization of fluids in high-temperature granulites: evidence from quantitative Raman spectroscopic study.

Ujiie, K. (2007-): Field studies of the Shimanto accretionary complex and fault zones.

Ujiie, K. (2007-): Microstructural investigations of fault rocks in the Shimanto and Nankai accretionary complexes.

Ujiie, K. and many others (2007-): Fault zone drilling in the Nankai, Costa Rica, and Tohoku subduction zones.

Ujiie, K. and Tsutsumi, A. (2009-): Friction experiments on subduction zone materials.

Yagi, Y. (2007-2011): Source process of large earthquakes derived from waveform inversion, and data covariance components.

#### Research grants

Agematsu, S. (2009-2010): Studies on taxonomy, evolution, and paleoecology of Triassic conodonts based on a natural assemblage. Grant-in-Aid for Young Scientists (B), JPY 3,250,000 for 2009.

Anma, R. (2010): Generation of basaltic magmas in extra-back-arc region. Japan Society for the Promotion of Science: JPY 500,000.

Hayashi, K. (2009-2011): Dynamics of fluid boiling and formation of hydrothermal ore deposits. Grant-In Aid for Scientific Research (B), JPY 3,300,000 for 2010.

Komuro, K. (2009-2011): Research and development on the chemical state analysis of mercury in ores and rocks. Project on Platform Tool Development Program for the Promotion of the Use of Marine Resources (MEXT). Contract Research Fund from AIST, JPY 741,331 for 2010.

Kurosawa, M. (2008-2011): Studies on geochemical effect of fluid-inclusion chemistries on groundwater compositions in granitic bodies. Grant-In-Aid for Scientific Research (B).

Takizawa, S. (2008-2010): Ultrafine particle made by a friction—new evolution of material seismology—. Japan Society for the Promotion of Science: Basic Research (A), JPY 25,900,000.

Tsunogae, T. (2008-2011): The origin and evolution of lower crustal fluids. Japan Society for the Promotion of Science: Basic Research (B), JPY 14,690,000.

Tsunogae, T. (2010-2013): Detailed petrological study of Antarctica-India-Madagascar region and the evolution of Gondwana Supercontinent. Japan Society for the Promotion of Science: Basic Research (B), JPY 9,300,000.

Ujiie, K. (2009-2011): Effects of frictional heating-induced clay dehydration on seismic slip on faults. Grant-In-Aid for Scientific Research (B).

Yagi, Y. and Fukahata (2009-2012): Inversion method with data covariance matrix for seismic source process. Japan Society for the Promotion of Science: Basic Research (C), JPY 1,820,000.

### Activity Reports for Academic Exchange and Cooperation

*Chulalongkorn University, the Kingdom of Thailand*

(1) Exchange of Researchers : none

(2) Exchange of Graduate Students :

Wason Kongpermpool (Tokubetsu Kenkyusei; AIEJ Short-term Student Exchange Program, 12 months from March 2011, Hisada, K.)

(3) Collaboration Research : none