

Organization and Activities of the Doctoral Program in Earth Evolution Sciences (Geological Sciences) for the Academic Year 2013

Organization

During the year from April, 2013 to March, 2014, 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

Associate Professors:

Agematsu, Sachiko, Ph.D.(Sc.), paleontology
Enescu, Bogdan, Ph.D. (Sc.), seismology, structural geology
Kamata, Yoshihito, Ph. D.(Sc.), stratigraphy, tectonics
Ujiiie, Kohtaro, Ph.D.(Sc.), structural geology
Yagi, Yuji, Ph.D. (Sc.), seismology, structural geology
*Maruoka, Teruyuki, Ph.D.(Sc.), geochemistry

Assistant Professor:

*Anma, Ryo, Ph.D., structural geology and tectonics
Fujino, Shigehiro, Ph.D.(Sc.), sedimentology, stratigraphy, paleoseismology
Ikehata, Kei, Ph.D. (Sc.), petrology, resource geology
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

Associate Professor:

Ishizuka, Osamu, D. Sc., volcanic arc magmatism

Research and Teaching Assistants:

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

Administrative Staff:

Isaka, Kyoko
Yasuda, Yoko

Doctor and Master's Theses

The following doctor and master's theses were completed during the academic year 2013 under the supervision of the members of the Doctoral Program in Earth Evolution Sciences.

Doctor of Philosophy (Science or Geosciences)

Inose, Hiroaki (2014): Reconstruction of the Stratigraphy of Cretaceous Systems in Eastern Japan.

Master of Science or Geoscience

Endo, Takahiro (2014): Petrogenesis of Incipient Charnockite from the Gondwana Orogeny.

Goto, Kazuki (2014): Thailand: clarification of the accretionary ages in Paleo-Tethys subduction zone.

Hirose, Teppei (2014): Subduction and accretion processes recorded in the Shimanto accretionary complex of eastern Kyushu.

Kanai, Hiromichi (2014): Petrological and petro-

- chemical investigations of Iwanoyama-Iyuzan volcanic chain in Higashi-Izu monogenetic volcano group, Izu-volcanic arc, Central Japan
- Koizumi, Tatsuya (2014): Petrological Study of Mafic-Ultramafic Metamorphic Rocks from Aniyapuram, Southern India.
- Konuma, Takuya (2014): Distribution of Kurosegawa Terrain and Upper Carboniferous Conodont Biostratigraphy in the Southeastern part of the Kanto Mountains, central Japan.
- Ono, Kaori (2014): Accretional process of the Toganono Unit in the 470m long-core sample at Kochi City, Shikoku.
- Sakai, Toru (2014): Analysis of the fault gouge of the Idozawa fault, which developed in the south-east region of Fukushima Prefecture in North-East Japan: the surface area of particles comminuted by fault movement during the 4.11 earthquake.
- Tajima, Yoshiyuki (2014): Magma Mixing Mechanism of Fujiyama in Takahara Volcano, North-east Japan.
- Yamada, Masaki (2014): Discovery of an Approximately 4600 Years Old Paleotsunami Deposit at a Coastal Lowland, Southeastern Kyushu Facing the Nankai Trough.

Master of Arts in Education
none

Research Activities

Each researcher had the following research activities during the academic year 2013.

Research projects

- Agematsu, S. (2012~): Response of biofacies to environmental changes in a pelagic ocean of the Panthalassa during the latest Permian to earliest Triassic period.
- Agematsu, S. (2013~): Transition of the Late Ordovician paleoenvironments in Malaysia.
- Anma, R. (2012~): Quaternary environmental changes and geology of the Western Asia.
- Anma, R. (2011~): Paleo-oceanography in NE Pacific.
- Anma, R. (2005~): Development of oceanic crust at superfast-spread rate.
- Anma, R. (2000~): Structural development of accretionary prism in the Nankai trough.
- Anma, R. (1998~): Magmatism related to subduction of the Chile ridge system.
- Anma, R. (1988~): Emplacement of granite plutons in SW Japan.
- Arakawa, Y. and Shinmura, T. (2010~): Geological and petrological study of Aso volcano, Kyushu, Japan.
- Arakawa, Y., Matsui, T. and Kimata, M. (2010~): Mineralogical and petrological studies of anorthite megacrysts in arc volcanic rocks.
- Arakawa, Y. (2010~): Petrological and geochemical investigations of volcanic rocks in Izu-volcanic arc and adjacent areas.
- Enescu, B. (2011 ~): Dynamic and static stress triggering of earthquake and tremor after the 2011 M9.0 Tohoku-oki earthquake.
- Enescu, B. (2009 ~): Modeling and forecasting of seismicity on the Japanese Islands.
- 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. (2013): Stratigraphy and tectonics of the Paleo-Tethys in Thailand and Lao.
- Kamata, Y. (2013): Stratigraphy and tectonics of Jurassic accretionary complex in Japan
- Komuro, K. and Nakata, M. (2011-13): Analysis of tellurium phases in epithermal gold deposits.
- Komuro, K., Nishido, H. and Kayama, M. (2011-13): Estimation of radiation damages on minerals by cathodoluminescence.
- Kurosawa, M. (2012-2014): Grant-In-Aid for Scientific Research (C) (20012-2014) "Studies on chemical compositions and behaviors of hydrothermal fluids in the M-type granitic bodies"
- Kurosawa, M. (2012-2016): Grant-In-Aid for Scientific Research on Innovative areas (2012-2016) "The construction of databases for chemical compositions and textures of sherds and stone implements from archaeological sites in Western Asia"
- Kyono, A. (2013-): High pressure single-crystal synchrotron x-ray diffraction study on spinels.
- Kyono, A. (2013-): High pressure Raman spectroscopic analysis on hydrogarnets
- Kyono, A. (2013-2014): Temperature induced struc-

ture change of calcium carbonate hydrate.

Maruoka, T. (2009-2013) Geochemical study for understanding the environmental perturbations at the mass-extinction events.

Sashida, K. (2013~): Paleozoic and Mesozoic paleoenvironmental 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.

Ujiiie, K. (2007~): Field studies of the exhumed accretionary complexes.

Ujiiie, K. (2007~): Microstructural investigations of fault rocks in accretionary complexes.

Ujiiie, K. and many others (2007~): Fault zone drilling in the Nankai Trough, Costa Rica, and Japan Trench subduction zones.

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

Yagi, Y. (2012~): Seismic source process of large and great earthquakes derived from a hybrid back-projection and a new inversion that takes into account the uncertainty of Green's function.

Research grants

Anma, R. (2013-2014): Decoding Quaternary Environmental Changes in West Asia Recorded in Sediments. Grant-In-Aid for Scientific Research, no.24101011, JPY10,530,000.

Arakawa, Y. (2013-2015): Precise determination of micro-inclusions within anorthite megacrysts in arc setting, and estimation of their parental magma. Grant-In-Aid for Scientific Research (C), JPY 1,800,000 for 2013.

Fujino, S. (2011-2015): Stratigraphic records of past earthquakes and tsunamis along the Nankai Trough. Program to Disseminate Tenure Tracking System, JPY 15,000,000 for 2013.

Hayashi, K. (2012-2014): Study on hydrothermal ore deposits insight from micro-scale variation of oxygen isotope data. Grant-In Aid for Scientific Research (C), JPY 1,100,000 for 2014.

Hisada, K. (2012-): High-accuracy provenance study of clastics from Mesozoic accretionary complexes on land, Grant-In-Aid for Scientific Research (C) (JPY 1,500,000 for 2013).

Hisada, K. (2012-): Ancient West Asian Civilization as the foundation of all modern civilizations: A counter to the Clash of Civilizations' theory. Grant-In-Aid for Scientific Research on Innovative Areas (MEXT) (JPY 2,700,000 for 2013).

Hisada, K. (2012-): Early diversification of primitive Angiosperms during Jurassic and Cretaceous in Mongolia, Grant-In-Aid for Scientific Research (JPY600,000 for 2013).

Kamata, Y. (2013): Internal structures of the Jurassic accretionary complex and its structural relationship with the Kurosegawa Belt. Grant-In-Aid for Scientific Research (C), JPY 100,000.

Maruoka, T. (2013-): A multi-isotope approach to understanding paleo- environments in West Asia, Grant-in-Aid for Scientific Research on Innovative Areas (MEXT), JPY 11,050,000 for 2013.

Takizawa S. (2011-2014): Formation energy of fault rocks and mylonite. Japan Society for the Promotion of Science Basic Research(C)), 400,000 for 2014.

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

Yagi, Y. (2012-2015): Development of multi-data inversion that takes into account the uncertainty of model. Japan Society Promotion of Science: BasicResearch (C), JPY 5,200,000.

Yagi, Y. (2012-2017): Seismicity of East Asia. Japan Society Promotion of Science: JPY 10,790,000.

Activity Reports for Academic Exchange and Cooperation

Chulalongkorn University, the Kingdom of Thailand

(1) Exchange of Researchers:

none

(2) Exchange of Graduate Students:

none

Exchange of Undergraduate Students:

Auranan Ngamnithiporn (Tokubetsukenkyusei; one month of July 2013, Ken-ichiro Hisada)

Chawisa Phujareanchaiwon (Tokubetsukenkyusei; one month of July 2013, Ken-ichiro Hisada)

(3) Collaboration works:

Joint Geological Excursion with Chulalongkorn University in Japan (Anma, R., Kyono, A. and Hisada, K.)

Other universities or institutions

(1) Exchange Researchers

Abd el-aziz Khairy Abd el-eal (Fellowship from the Egyptian Government, 6 months from January 2014, Yuji Yagi)

(2) Exchange of Graduate students:

None

(3) Collaboration Research:

Enescu, B. (2013 ~): Slow slip and aseismic deformation in subduction zones (with the group of Prof. D. Marsan, University of Savoie, France)

Enescu, B. (2013 ~, as a Visiting Associate Professor at the Institute of Statistical Mathematics (ISM), Tokyo): Statistical modeling of seismicity (with the Research Group of Professor J. Zhuang, ISM)

Enescu, B. (2012 ~): Mapping of the frequency-magnitude distribution of earthquakes along the Japanese subduction zones – implications for the occurrence of megathrust events. (with the Research Group of Prof. S. Wiemer, Swiss Federal Institute of Technology, Zurich).

Enescu, B. (2012~): Dynamic triggering of earthquake and non-volcanic tremor. (with the Research Group of Prof. K. Obara, Earthquake Research Institute, University of Tokyo).