

## Tetsuro Urabe (Japan)

Date and place of birth: 10 January 1949, Okayama, Japan

### Education:

Ph.D., University of Tokyo, 1976, Geology

M.S., University of Tokyo, 1973, Geology

B.S., University of Tokyo, 1971, Geology and Mineralogy

### Current Positions:

2011-present	Member, Commission on the Limits of the Continental Shelf
2008-present	Vice Executive Director, Ocean Alliance, University of Tokyo
2007-present	Adjunct Professor, University of The Air
2000-present	Professor, Department of Earth and Planetary Science, University of Tokyo

### Professional Experience:

2006-2007	Chair, Department of Earth and Planetary Science, University of Tokyo
1996-2000	Chief Geologist, Geological Survey of Japan (GSJ)*
1992-1996	Chief, Experimental Mineralogy Section, GSJ
1990-1991	Deputy Director, Research Planning Office, GSJ
1985-1992	Senior Research Geologist, GSJ
1979-1981	Visiting Researcher, Department of Geology, University of Toronto, Canada
1976-1985	Assistant Professor, Geological Institute, University of Tokyo

(\*Geological Survey of Japan (GSJ), Agency of Industrial Science and Technology, Ministry of International Trade and Industry of Japan: GSJ was reorganized in 2001 into AIST (National Institute of Advanced Industrial Science and Technology).)

### Research Activities:

My current research interests are mainly focused on: (1) the seafloor hydrothermal activities both on the mid-ocean ridge and the arc-backarc systems; (2) the massive sulfide deposits related to hydrothermal activity and the ferromanganese crust deposits as deep-sea mineral resources; (3) the microbial geochemistry of the subseafloor biosphere; (4) the geochemical cycle within and from the hydrothermal systems; and (5) the “rare-metal” mineral resources on land and seafloor. I have led and continue to lead many major sea-going research projects, including: (1) Japan-France-SOPAC *STARMER Project* (1987-1991) on the tectonics and hydrothermal activity in the North Fiji Basin; (2) Japan-US *RidgeFlux Project* (1993-1998) on hydrothermal intensity on the super-fast-spreading East Pacific Rise; (3) *Archean Park Project* (2000-2006) on the deep biosphere related to seafloor hydrothermal

activity, and (4) the current *TAIGA Project* (2008-2012; <http://www-gbs.eps.s.u-tokyo.ac.jp/~taiga/en/index.html>).

### Research Cruise Experience:

(\* As Principal Investigator or Co-Principal Investigator)

May 2011	* <i>R/V Hakureimaru</i> No. 2/BMS cruise to Okinawa Trough, Japan (TAIGA Project)
June 2010	* <i>R/V Hakureimaru</i> No. 2/BMS cruise to Southern Mariana Trough (TAIGA Project)
February 2009	* <i>R/V Natshushima/ROV Hyper Dolphin</i> cruise to Takuyo-Daigo Seamount, northwestern Pacific (JAMSTEC cruise)
June 2004	* <i>R/V JOIDES Resolution</i> Leg 301 of IODP (Integrated Ocean Drilling Program) to Juan de Fuca Ridge, northeastern Pacific
January 2004	* <i>R/V Hakureimaru</i> No. 2/BMS cruise to Southern Mariana Trough, northwest Pacific (Archaean Park Project)
July 2002	* <i>R/V Hakureimaru</i> No. 2/BMS drilling cruise to Izu-Bonin (Archaean Park Project)
June 2001	<i>R/V Hakureimaru</i> No. 2/BMS ( <i>tethered marine drill</i> ) drilling cruise to Izu-Bonin Arc, Japan (Japan-US)
September 1998	* <i>R/V YOKOSUKA/SHINKAI 6500</i> ** submersible cruise to East Pacific Rise (EPR) (Japan-US)
October 1995	* <i>R/V YOKOSUKA SHINKAI 6500</i> cruise to Papua New Guinea (Japan-PNG-SOPAC)
September 1994	* <i>R/V YOKOSUKA/SHINKAI 6500</i> submersible cruise to EPR (Japan-US)
November 1993	* <i>R/V Melville</i> cruise to southern EPR (Japan-US Ridge-Flux project)
December 1991	* <i>R/V Suroit/Cyana</i> submersible cruise to Vanuatu (Japan-France SOPAC STARMER Project)
August 1991	* <i>R/V YOKOSUKA/SHINKAI 6500</i> submersible cruise to North Fiji Basin (Japan-France-SOPAC STARMER Project)
June 1989	<i>R/V Nadir/Nautile</i> submersible cruise to North Fiji Basin (Japan-France-SOPAC STARMER Project)
July 1987	<i>R/V Atlantis II/Alvin</i> submersible cruise to Izu-Bonin Arc, north-western Pacific (US-Japan cruise)
May 1986	<i>R/V Natsushima/SHINKAI 2000</i> submersible cruise to Izu-Bonin Arc, northwestern Pacific (GSJ cruise)
September 1985	<i>R/V Atlantis II/Alvin</i> submersible cruise to Galapagos Rift, off Ecuador (NOAA expedition)

June 1985 *R/V Nadir/Nautila* submersible cruise to Nankai Trough, Japan (Japan-France KAIKO Project)

(as well as 12 more cruises to eastern and western Pacific basin.)

(\*\* DSV SHINKAI 6500: A manned research submersible vehicle of JAMSTEC (Japan Agency for Marine-Earth Science and Technology) with the greatest depth range of activity in the world. It can dive up to a depth of 6,500m.)

#### **Professional Service Experiences:**

2010-present Affiliated Member, Science Council of Japan

2003-present Member, Advisory Committee to the Cabinet for the Extension of the Continental Shelf, Japan

2006-present Member and Chair of subcommittee, Advisory Committee for Natural Resources and Energy, Ministry of Economy, Trade and Industry, Japan

2008-2010 President, *Society of Resource Geology*

1993-1997 Member, Editorial Board, *Economic Geology*

1993-1995 Member, Editorial Board, *Mineralium Deposita*

1988-1990 Editor in Chief, *Mining Geology* (Tokyo)

#### **Professional Associations:**

The Society of Economic Geologists

American Geophysical Union

The Society of Resource Geology

The Geological Society of Japan

The Geographical Society of Japan

The Geochemical Society of Japan

The Society of Ocean Policy

#### **Recent Selected Publications:**

Kawada, Y., Seama, N., & Urabe, T. (2011) The role of seamounts in the transport of heat and fluids: Relations among seamount size, circulation patterns, and crustal heat flow. *Earth and Planetary Science Letters*, 306, 55-65.

Yanagawa, K., Sunamura, M., Lever, M. A., Morono, Y., Hiruta, A., Ishizaki, O., Matsumoto, R., Urabe, T., & Inagaki, F. (2011) Niche separation of methanotrophic Archaea (ANME-1 and -2) in methane-seep sediments of the Eastern Japan Sea offshore Joetsu. *Geomicrobiology Journal*, 28(2), 118-129 (DOI: 10.1080/01490451003709334).

Urabe, T., Okino, K., Sunamura, M., Ishibashi, J., Takai, K., & Suzuki, K. (2009) Trans-crustal advectons and in-situ biogeochemical processes of global seafloor aquifer; the sub-seafloor TAIGA. *Journal of Geography*, 118(6), 1027-1036 (in Japanese with English abstract).

Mori, K., Yamaguchi, K., Sakiyama, Y., Urabe, T., & Suzuki, K. (2009) *Caldisericum exile* gen. nov., sp nov., an anaerobic, thermophilic, filamentous bacterium of a novel bacterial phylum, *Caldiserica* phyl. nov., originally called the candidate phylum OP5, and description of *Caldiseriaceae* fam. nov., *Caldisericales* ord. nov and *Caldisericia* classis nov. *International Journal of Systematic and Evolutionary Microbiology*, 59, 2894-2898.

Kato, S., Yanagawa, K., Sunamura, M., Takano, Y., Ishibashi, J., Kakegawa, T., Utsumi, M., Yamanaka, T., Toki, T., Noguchi, T., Kobayashi, K., Moroi, A., Kimura, H., Kawarabayasi, Y., Marumo, K., Urabe, T., & Yamagishi, A. (2009b) Abundance of *Zetaproteobacteria* within crustal fluids in back-arc hydrothermal fields of the Southern Mariana Trough. *Environmental Microbiology*, doi:10.1111/j.1462-2920.2009.02031.x.

Kato, S., Hara, K., Kasai, H., Teramura, T., Sunamura, M., Ishibashi, J., Kakegawa, T., Yamanaka, T., Kimura, H., Marumo, K., Urabe, T., & Yamagishi, A. (2009a) Spatial distribution, diversity and composition of bacterial communities in sub-seafloor fluids at a deep-sea hydrothermal field of the Suiyo Seamount. *Deep-Sea Research Part I*, 56(10), 1844-1855.

Yanagawa, K., Sunamura, M., Morono, Y., Futagami, T., de Beer, D., Urabe, T., Boetius, A., & Inagaki, F. (2009) Distribution of metabolically active microbial communities in CO<sub>2</sub>-rich marine sediments. *Geochimica et Cosmochimica Acta*, 73, A1472-A1472 (Abstract).

Urabe, T., Iizasa, K., & Ishibashi, J. (2009) The latest frontier of earth science and its application to mineral exploration; Submarine hydrothermal deposits as modern analogy. *Resource Geology*, 59(1), 43-72 (In Japanese with English abstract).

Mori, K., Sunamura, M., Yanagawa, K., Ishibashi, J., Miyoshi, Y., Iino, T., Suzuki, K., & Urabe, T. (2008) First cultivation and ecological investigation of a bacterium affiliated with the candidate phylum OP5 from hot springs. *Applied and Environmental Microbiology*, 74, 6223-6229.

Marumo, K., Urabe, T., Goto, A., Takano, Y., & Nakaseama, M. (2008) Mineralogy and isotope geochemistry of active submarine hydrothermal field at Suiyo Seamount, Izu-Bonin Arc, West Pacific Ocean. *Resource Geology*, 58, 220-248 (Best Article Award).

Urabe, T., Chiba, H., & Kato, Y. (2008) IMA Kobe 2006 Special Issue: Seafloor hydrothermal deposits of arc-backarc systems in western Pacific. *Resource Geology*, 58, 205 (Preface).

Mori, K., Maruyama, A., Urabe, T., Suzuki, K., & Hanada, S. (2008) *Archaeoglobus infectus* sp. nov. a novel thermophilic, chemolithoautotrophic archaeon isolated from a deep-sea rock collected at Suiyo Seamount, Izu-Bonin Arc, western Pacific Ocean. *International Journal of Systematic and Evolutionary Microbiology*, 58, 810-816.

Ishibashi, J., Marumo, K., Maruyama, A., & Urabe, T. (2007) Direct access to the sub-vent biosphere by shallow drilling. *Oceanography*, 20(1), 24-25.

Behrmann, J. H., Yang, J. & CoZone Working Group (2007) Convergent Plate Boundaries and Collision Zones. In: Harms, U., Koeberl, C., & Zoback, M. D., eds., *Continental Scientific Drilling: A Decade of Progress, and Challenges for the Future*. Springer, Heidelberg, pp. 289-334.

Kinoshita, M., Kawada Y., Tanaka A., & Urabe, T. (2006) Recharge/discharge interface of a secondary hydrothermal circulation in the Suiyo Seamount of the Izu-Bonin Arc, identified by submersible-operated heat flow measurements. *Earth and Planetary Science Letters*, 245, 498-508.

Takano, Y., Edazawa, Y., Kobayashi, K., Urabe, T., & Marumo, K. (2005) Evidence of sub-vent biosphere: enzymatic activities in 308 degrees C deep-sea hydrothermal systems at Suiyo Seamount, Izu-Bonin Arc, western Pacific Ocean. *Earth and Planetary Science Letters*, 229, 193-203.

Kuwabara, T., Minaba, M., Iwayama, Y., Inoue, I., Nakashima, M., Marumo, K., Maruyama, A., Sugai, A., Itoh, T., Ishibashi, J., Urabe, T., & Kamekura, M. (2005) *Thermococcus coalescens* sp. nov., a cell-fusing hyperthermophilic archaeon from Suiyo Seamount. *International Journal of Systematic and Evolutionary Microbiology*, 55, 2507-2514.

Hara, K., Kakegawa, T., Yamashiro, K., Maruyama, A., Ishibashi, J., Marumo, K., Urabe, T., & Yamagishi, A. (2005) Analysis of the Archaeal sub-seafloor community at Suiyo Seamount on the Izu-Bonin Arc. *Advances in Space Research*, 35(9), 1634-1642.

Fisher, A. T., Urabe, T., Klaus, A., & the IODP Expedition 301 Scientists (2005) IODP Expedition 301 installs three borehole crustal observatories, prepares for three-dimensional, cross-hole experiments in the northeastern Pacific Ocean. *Scientific Drilling*, 1(1), 6-11.

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