Japan Association of Mineralogical Sciences

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JAPAN ASSOCIATION OF MINERALOGICAL SCIENCES AWARDEES

The Japan Association of Mineralogical Sciences (JAMS) is proud to announce the recipients of the 2017 Society Awards. The **JAMS Award for Young Scientists** will be presented to two scientists who are under 37 years of age and have made exceptional contributions to mineralogical and related sciences. The **JAMS Award for Applied Mineralogy** will be presented to one scientist who has made remarkable contributions in the field of applied mineralogy. The **JAMS Research Paper Award** will be presented to the authors of excellent papers that were published in the *Journal of Mineralogical and Petrological Sciences* (*JMPS*) and *Ganseki-Kobutsu-Kagaku* (*GKK*) in the past three years. All the places mentioned in this article are located in Japan, unless stated otherwise.

JAMS Award for Young Scientists: Takeshi Sakai

Takeshi Sakai is an assistant professor at the Geodynamics Research Center (GRC), Ehime University. He received his PhD from Tohoku University under the supervision of Professor Eiji Ohtani. Sakai has studied the equations of state of minerals and related phases (e.g. NaCl, Fe, Fe–Ni, Fe–Ni–S alloys, and $MgSiO_3$ post-perovskite) at multi-megabar conditions using a laser-heated diamond anvil cell (LHDAC) technique and synchrotron powder X-ray diffraction. In these studies, he discussed the pressure scale problem and the effect of the uniaxial stress in the samples. His study on Fe–Ni alloy revealed that the effect of the nickel on alloy elasticity might be important at conditions operating at Earth's inner core and that the degree of the core density deficit strongly depends on the pressure scale. Sakai also established the equation of state model for $MgSiO_3$ post-perovskite, based on the Keane model for the equation of state, to extract meaningful physical properties at multi-megabar conditions. Both the experimental and theoretical equations of state for $MgSiO_3$ post-perovskite were found to be in very good agreement up to 300 GPa and 5,000 K. Sakai's newly developed equations of state should be applicable to the mantle of super-Earths in other solar systems, as well as the core–mantle boundary of our own Earth. Recently, he has been developing the double-stage diamond anvil cell technique by using a focused ion beam system to generate pressures beyond the limits of the conventional diamond anvil cell. The difficulty of aligning two second-stage micro-anvils (having a tip size of 3 μm) was solved via the "paired micro-anvil method". This method is highly reproducible and is expected to open up new frontiers in high-pressure mineral physics.

JAMS Award for Young Scientists: Takuya Echigo

Takuya Echigo is an associate professor at the Department of Earth Resource Science, Graduate School of International Resource Sciences, Akita University. He received his PhD from the University of Tsukuba under the supervision of Professor Mitsuyoshi Kimata. He has studied the genesis and crystal chemistry of organic minerals and the surface structures and reactivity of nanosized iron (oxyhydr)oxide minerals by a variety of techniques including single-crystal X-ray diffraction, micro-Fourier transform infrared/Raman spectroscopy, transmission electron microscope, and X-ray photoelectron spectroscopy. He has classified organic minerals into two groups—ionic organic minerals and molecular organic minerals—according to their crystal structures and chemical bonds. Based on this structural classification and on carbon isotopic characteristics, Echigo has revealed that the formation of structural units of organic minerals (such as organic acid anions and polycyclic aromatic hydrocarbon molecules) must come before their migration and concentration during the formation process of organic minerals. He also investigated the interaction between organic molecules and nanominerals using ascorbic acid and synthetic hematites that had different size and morphology. His experimental study demonstrated that size, morphology, surface structure, and aggregation state have a significant influence on the reductive dissolution rates of hematite nanoparticles. In addition, he applied high-angle annular dark-field scanning transmission electron microscopy (HAADF-STEM) tomography to observe the internal structure of synthetic hematite nanocrystals and found nanoscale pores (nanopores) within these crystals. By combining the microscopic observations and the dissolution experiments, Echigo showed that the nanopores are highly reactive sites for reductive dissolution. His findings are of fundamental importance to understanding how certain crystal morphologies, internal structures, defects, and reactive sites occur in nanocrystals that have formed from poorly crystalline precursors. He was also the first to report the occurrence of Al/Si disorder in anorthite (An92) from anorthite megacrysts in the ejecta from the 1940 eruption of Miyakejima volcano. Although this Al/Si disordered anorthite can be interpreted as a metastable phase, this finding broke the Al-avoidance rule in tectosilicate minerals and significantly contributed to feldspar mineralogy/crystallography.

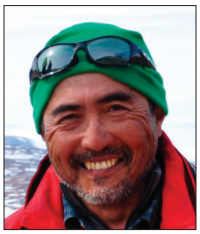
JAMS Award for Applied Mineralogy: Hitoshi Ohsato

Hitoshi Ohsato received his Doctor of Science degree in 1984 from the Mineralogical School, University of Tokyo, in single crystal structure analysis. He obtained a Master of Engineering degree from the Department of Ceramics, Nagoya Institute of Technology in 1970 on the fabrication/measurements of ceramics. Ohsato has researched methods of designing new ceramic materials based on the relationship between crystal structures and their properties by applying mineralogy, which covers all application areas of science and technology. His major research areas in applied mineralogy are microwave/millimeter-wave dielectrics, multilayer ceramic capacitors, and piezoelectric materials.

Within the field of microwave/millimeter-wave dielectrics, he began with the discovery of a super-lattice of pseudo-tungsten bronze with a high-quality factor and a dielectric constant. He also developed silicates, such as forsterite, willemite, and indialite/cordierite, as millimeter-wave dielectrics with high-quality factors and low dielectric constants. Furthermore, for multilayer ceramic capacitors, he performed basic research on highly reliable multilayer capacitors with Ni electrodes that prevented the reduction of $BaTiO_3$. This research also clarified the role of the dopants in the *A* and *B* crystallographic sites of $BaTiO_3$ through the measured changes in lattice parameters at temperatures higher than the Curie point. Ohsato's group has also advanced the development of lead-free piezoelectric ceramics by finding the morphotropic phase boundary of $(Na_{0.5}K_{0.5})NbO_3$–$LiNbO_3$. In 2008, he retired from his professorship at the Nagoya Institute of Technology but continued to work there as a project professor. He later joined the Nagoya Industrial Science Research Institute as a senior researcher. He spent two-and-a-half years on the Brain-Korea 21 Project in Hoseo University (Korea), which aims to nurture and develop education reform in the Republic of Korea.

Currently, Hitoshi Ohsato is working at the University of Oulu (Finland) on cordierite/indialite glass ceramics for low-temperature co-fired ceramics (LTCCs). The basic aim of this research is to develop novel millimeter-wave LTCCs for the fifth-generation of wireless communication. Based on his active research experience and expertise, he was nominated as a Fellow of the American Ceramic Society in 2016 and was awarded a visiting professorship grant at the University of Oulu by the Nokia Foundation in 2016.

JAMS Research Paper Award: Toshisuke Kawasaki, Yoichi Motoyoshi



Ti-in-garnet thermometer for ultrahigh-temperature granulites. Journal of Mineralogical and Petrological Sciences, 2016, 111(3), 226-240.

JOURNAL OF MINERALOGICAL AND PETROLOGICAL SCIENCES

SPECIAL ISSUE ON "JADEITE AND JADEITITE"

This special journal issue was planned after the designation of jadeitite and jade as the national stone of Japan by JAMS in 2016; see Tsuchiyama (2017) [*Elements* vol. 13, p. 51]. The eleven papers in the special issue cover the fields of mineralogy, petrology, geochemistry, geochronology, mineral physics, and planetary science from different perspectives.

Vol. 112, No. 5, October 2017

JADEITE AND JADEITITE

Gem sparkles deep: Preface of the special issue on 'Jadeite and jadeitite' – Tatsuki TSUJIMORI, Hiroshi MIYAJIMA and Ritsuro MIYAWAKI

Reviews

Jadeitite (jadeite jade) from Japan: History, characteristics, and perspectives – Tatsuki TSUJIMORI and George E. HARLOW

Jadeitites and associated metasomatic rocks from serpentinite mélanges in the Nishisonogi unit, Nagasaki Metamorphic Complex, western Kyushu, Japan: a review – Tadao NISHIYAMA, Yasushi MORI and Miki SHIGENO

Early Paleozoic jadeitites in Japan: An overview – Tatsuki TSUJIMORI

Jadeitite from Itoigawa, Niigata Prefecture, central Japan – Hiroshi MIYAJIMA

Jadeite and jadeitite-bearing rock in the Sanbagawa and the Kamuikotan belts Japan: A review –Takao HIRAJIMA

Jadeite in shocked meteorites and its textural variations – Eiji OHTANI, Shin OZAWA and Masaaki MIYAHARA

Original Articles

In-situ U-Pb zircon age dating deciphering the formation event of the omphacite growth over relict edenitic pargasite in omphacite-bearing jadeitite of the Itoigawa-Omi area of the Hida-Gaien belt, central Japan – Keitaro KUNUGIZA, Eizo NAKAMURA, Atsushi GOTO, Katsura KOBAYASHI, Tsutomu OTA, Hiroshi MIYAJIMA and Kazumi YOKOYAMA

Phase relation in the $NaAlSiO_4$-SiO_2-H_2O system for the hydrothermal precipitation of jadeite, albite, natrolite, and analcime in jadeitite of the Itoigawa-Omi area, Japan – Atsushi GOTO, Keitaro KUNUGIZA and Hiroshi MIYAJIMA

Chemical composition of fluid inclusions in the Yorii jadeite-quartz rocks from the Kanto Mountains, Japan – Mayuko FUKUYAMA, Tatsuhiko KAWAMOTO and Masatsugu OGASAWARA

Cathodoluminescence petrography of P-type jadeitites from the New Idria serpentinite body, California – Naoko TAKAHASHI, Tatsuki TSUJIMORI, Masahiro KAYAMA and Hirotsugu NISHIDO

Density of jadeite melts under high pressure and high temperature conditions – Tatsuya SAKAMAKI