



Japan Association of Mineralogical Sciences

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JAPAN ASSOCIATION OF MINERALOGICAL SCIENCES AWARDEES

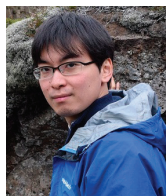
The Japan Association of Mineralogical Sciences (JAMS) is proud to announce the recipients of its 2019 society awards. The **JAMS Award for Young Scientists** is presented to two scientists who are under 37 years of age and who have made exceptional contributions to mineralogical and related sciences. The **JAMS Award for Applied Mineralogy** is awarded to one scientist who has made a remarkable contribution to the field of applied mineralogy. The **JAMS Research Paper Award** is awarded to the authors of one or more excellent papers that were published in the *Journal of Mineralogical and Petrological Sciences (JMPS)* and/or *Ganseki-Kobutsu-Kagaku (GKK)* in the past three years.

JAMS Award for Young Scientists to Kenta Yoshida



Kenta Yoshida is a scientist at the Research Institute for Marine Geodynamics, Japan Agency for Marine-Earth Science and Technology (JAMSTEC), Yokosuka (Japan). He received his PhD from Kyoto University (Japan) under the supervision of Professor Takao Hirajima. Yoshida studies subduction-related material transfer processes, focusing on tiny fluid inclusions in high-pressure metamorphic rocks. Natural fluid inclusions in metamorphic rocks are occasionally very small (<10 μm) and have been difficult to analyze in detail. Using a focused ion beam (FIB) system as a sample handling tool, Yoshida developed new analytical schemes by which to target specific small inclusions chosen by petrographic observation. By combining FIB and cryogenic scanning electron microscopy with fundamental petrography, he identified a Na–Ca–K–Cl aqueous fluid entrapped during the exhumation of an ultrahigh-pressure metamorphic rock. Recently, Yoshida has applied a data-driven statistical approach to the compositional dataset from a series of metamorphic rocks to determine any compositional trends. He revealed an evolutionary change that the metasedimentary rocks have suffered as a result of high-pressure metamorphism, which can be explained by fluid-mediated material transfer under prograde metamorphism. Yoshida is now applying “new” and “old” techniques to a wide variety of subduction-related rocks to figure out material transfer process taking place at plate-convergent margins.

JAMS Award for Young Scientists to Yuki Sugiura



Yuki Sugiura is a research scientist at the Health and Medical Research Institute of the National Institute of Advanced Industrial Science and Technology (AIST) (Tokyo, Japan). Sugiura earned his PhD degree from Waseda University (Japan) under the guidance of Professor Atsushi Yamazaki and Dr Kazuo Onuma of AIST. After working as an assistant professor in the Faculty of Dental Science at Kyushu University, he

was appointed to his current position. Sugiura has worked on understanding the mechanism of calcium carbonate polymorphism formation from the viewpoint of biomineralization and the related field of biomaterials. Calcium carbonate is universally present in invertebrates but is rarely found in vertebrates. Sugiura focuses on the difference in phosphate ion concentration in body fluids between the two biological groups and studies the impact of phosphate ions on calcium carbonate polymorphism in the Ca–CO₃–PO₄ system. He has demonstrated that phosphate ions have two competing effects: (1) they modify the structure of the amorphous phase (the precursor phase of vaterite) to thereby stabilize it in solution; (2) they adsorb onto the surface of the crystalline phase to inhibit growth. Through observing the crystal growth process using an optical microscope combined with the light scattering method, Dr Sugiura calculated the physical constants related to crystal growth of the vaterite phase and quantitatively evaluated the effect that

phosphate ions have. In addition, under physiological conditions, he found that the thermodynamically unstable phase is more likely to form with increasing phosphate ion concentration and that the valence of the phosphate ion is heavily involved in controlling the mechanism by which calcium carbonate polymorphs form. He is currently developing biomaterials that have calcium carbonate as the main component. Igiura has also been studying the behavior of calcium phosphate under in vivo and similar conditions and is developing biomaterials that can contribute to an improved quality of life.

JAMS Award for Applied Mineralogy to Tetsuo Irifune



Tetsuo Irifune is Director of the Geodynamics Research Center and a distinguished professor at Ehime University (Japan). He was the first to synthesize ultrahigh-pressure highly transparent polycrystalline diamond by direct conversion from graphite. This type of diamond was found to be nanocrystalline and to have an extreme hardness, even harder than single crystal diamonds. This ultrahard and optically transparent polycrystalline diamond also has a high thermal stability and was named “nanopolycrystalline diamond” (NPD, also “Hime diamond”). Its exceptional characteristics, such as its high-optical transparency, mean that it has many scientific applications, some of which have led to a number of cutting-edge technologies in high-pressure science and other related research fields. The NPD has been sold as a “binderless diamond tool” by Sumitomo Electric Industries Ltd., a company that had the first commercial product based on ultrahigh-pressure (>10 GPa) synthesis. Professor Irifune has also been applying the ultrahigh-pressure technique to the synthesis of other transparent ceramics and has succeeded in producing “transparent nanoceramics” for the first time. These may also be potentially important in future scientific and industrial applications.

JAMS Research Paper Award to Atsushi Kyono and Tomoya Tamura

The JAMS Research Paper Award goes to authors Atsushi Kyono and Tomoya Tamura for their paper “Pressure-Induced Crystallization of Biogenic Hydrated Amorphous Silica”, which was published in the 2017 *Journal of Mineralogical and Petrological Sciences* (v112, pp 324-335). Congratulations to both authors.

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Original Articles

Experimental investigation of the simultaneous partitioning of divalent cations between löllingite or safflorite and 2 mol/L aqueous chloride solutions under supercritical conditions – Etsuo UCHIDA, Yoshiki SUGINO, Hiroyuki YOKOYAMA

Anorthosites in Nishiyama volcanic products from the Hachijo-jima island, Izu-Bonin arc: The direct evidence for ‘plagioclase control’ in shallow magma reservoir – Masataka AIZAWA, Takuya SAITO, Takumi IMURA, Mitsuhiro YASUI

Crystal chemistry of Sr-rich piemontite from manganese ore deposit of the Tone mine, Nishisonogi Peninsula, Nagasaki, southwest Japan – Mariko NAGASHIMA, Yuko SANO, Takako KOCHI, Masahide AKASAKA, Asami SANO-FURUKAWA

Developments in microfabrication of mineral samples for simultaneous EBSD–EDS analysis utilizing an FIB–SEM instrument: study on an S-type cosmic spherule from Antarctica – Yu KODAMA, Naotaka TOMIOKA, Motoo ITO, Naoya IMAE

Structural and paragenetic evolution of garnet-bearing barroisite schist from the Suo metamorphic complex, SW Japan – Mitsumasa ETO, Shunsuke ENDO