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## JAMS AWARDEES

The Japan Association of Mineralogical Sciences (JAMS) is proud to announce the recipients of its 2015 society awards. The **JAMS Award for Young Scientists** is being awarded in 2015 to three scientists who are all under 37 years of age and have made exceptional contributions to mineralogical and related sciences. The **JAMS Award for Applied Mineralogy** is being awarded in 2015 to one scientist who has made remarkable contributions in the field of applied mineralogy. The **JAMS Research Paper Award** is being awarded to the authors of one excellent paper among the *Journal of Mineralogical and Petrological Sciences (JMPS)* and *Ganseki-Kobutsu-Kagaku (GKK)* that were published in the previous three years. Congratulations to the awardees!

### JAMS Award for Young Scientists to Satoshi Okumura



**Satoshi Okumura** is an assistant professor at the Department of Earth Science, Graduate School of Science, Tohoku University (Sendai, Japan). He received his PhD from Tokyo Institute of Technology under the supervision of Professor Satoru Nakashima. His research topic involved the rheology and volatile content of magma in order to understand the mechanism of explosive–effusive bifurcation in volcanic eruptions and volatile emissions. He investigated the coupled effect of magma rheology and degassing by combining a high-temperature and high-pressure torsional deformation apparatus with synchrotron radiation X-ray radiography and computed tomography at SPring8 (i.e. the Super Photon Ring – 8 GeV facility at the Japan Synchrotron Radiation Research Institute in Harima Science Park City, Hyogo Prefecture). He reported that it is the shear localization in vesicular magma that controls the rate of magma outgassing and, hence, the explosivity of a volcanic eruption. He also found that shear localized sections within a magma show a transition between viscous flow and frictional sliding, depending on the timescales of deformation and viscous relaxation. He investigated the amount of water and carbon dioxide present in magma and their kinetic processes, such as diffusion and reactions in silicate melts, and demonstrated that there is a large amount of carbon dioxide coming to the Earth's surface via deep-sea volcanism. Okumura's research, using new experimental and analytical techniques, has contributed to the understanding of volcanic eruptions and the behavior of volatiles in magma.

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### JAMS Award for Young Scientists to Yusuke Seto



**Yusuke Seto** is a senior assistant professor at the Graduate School of Science, Kobe University (Japan). He obtained his PhD from Kyoto University under the supervision of Professor Masao Kitamura. Seto has used high-pressure experiments to study the decomposition processes of carbonates within oceanic plates that have been subducted into the Earth's mantle. He discovered that magnesite, which was believed to be a major host for carbon in the mantle, decomposes into an assemblage of carbon dioxide and perovskite via reactions with

SiO<sub>2</sub>, and that when the lower mantle is reached the carbon dioxide itself can break down to oxygen and diamond. He has also contributed to the structural determination of high-pressure polymorphs of carbon dioxide, including CO<sub>2</sub>-V. Another of his notable research projects is concerned with a microscopic study of COS (cosmic symplectite), which is the isotopically anomalous ( $\delta^{17,18}\text{O}_{\text{SMOW}} \sim +180\%$ ) material discovered in the primitive carbonaceous chondrite Acfer 094. He found that COS consists of symplectically intergrown magnetite and pentlandite at the tens of nanometer scale, and inferred that the material had formed by the sulfurization and oxidization of metal grains either in the solar nebula or on an icy planetesimal.

### JAMS Award for Young Scientists to Nobuhiko Nakano



**Nobuhiko Nakano** is an assistant professor at the Division of Earth Sciences, Faculty of Social and Cultural Studies, Kyushu University, Fukuoka (Japan). He obtained his PhD at Kyushu University under the supervision of Professor Yasuhito Osanai. Nakano studied several metamorphic terranes in Southeast Asia, Central Asia, and Antarctica, and reported on

the metamorphic evolution of various rock types, including ultrahigh-temperature granulites, ultrahigh-pressure eclogites, amphibolites, and blueschists. He combined pressure-temperature path with geochemical and geochronological results in order to clarify the tectonic evolution of the continent–continent collision orogenesis in the north to central Vietnamese metamorphic terranes, the Mongolian Altai Mountains, and the Sør Rondane Mountains of Antarctica. The tectonic models proposed by Nakano are considered to be very useful in explaining metamorphic evolution, from protolith formation to subsequent continental collision. His models involve a period spanning over 100 million years and have, therefore, provided strong constraints on Gondwana assembly and the development of Asian crust.

### JAMS Award for Applied Mineralogy to Takeshi Toyoda



**Takeshi Toyoda** is a research specialist at the Industrial Research Institute of Ishikawa Prefecture (Japan). Toyoda developed thermoelectric materials and thermoelectric conversion modules in order to realize a type of energy-harvesting technology that can recover electrical energy through the power generation from waste heat. His research has focused on ceramic semiconductors, and he succeeded in the development of new materials as a result of crystallographic and mineralogical research. In particular, he demonstrated a new control

factor for thermoelectric properties using a “natural superlattice” composed of a Ruddlesden–Popper (RP) structure with Mn-layered perovskite. His work has clarified the soft-chemical solution method for synthesizing the La-doped RP single-phase CaO(CaMnO<sub>3</sub>)<sub>n</sub> (n=2): this is an advanced thermoelectric layered material that combines the high electrical conductivity of CaMnO<sub>3</sub> with the low thermal conductivity of CaO rock-salt structured block layers. In collaboration with ACTREE Corporation, Toyoda is currently developing thermoelectric conversion modules using a printed electronics technique and is also developing a thermoelectric power generating system for industry products.

### JAMS Research Paper Award to Tomoki TAGUCHI and Masaki ENAMI (2014)



For their paper, “Coexistence of jadeite and quartz in garnet of the Sanbagawa metapelite from the Asemi-gawa region, central Shikoku, Japan”, published in the *Journal of Mineralogical and Petrological Sciences*, 109, 169-176.

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### Original Articles

**3D chemical mapping of Mn-calddera shaped zoning garnet found from the Sanbagawa metamorphic belt of the Besshi district, SW Japan** Kenta YOSHIDA and Takao HIRAJIMA

**The mineralogical characterization of argentic cryptomelane from Xiangguang Mn-Ag deposit, North China** Chenzi FAN, Ling WANG, Xingtiao FAN, Yu ZHANG and Linghao ZHAO

**SHRIMP U-Pb zircon ages of granitoids adjacent to Chitradurga shear zone, Dharwar craton, South India and its tectonic implications** Abdulla NASHEETH, Takamoto OKUDAIRA, Kenji HORIE, Tomokazu HOKADA and Madhusoodhan SATISH-KUMAR

### Letters

**Thermal equation of state of lawsonite up to 10 GPa and 973 K** Nao CAI, Toru INOUE and Takumi KIKEGAWA

**Cathodoluminescence characterization of enstatite** Syuhei OHGO, Hirotsugu NISHIDO and Kiyotaka NINAGAWA