



# Japan Association of Mineralogical Sciences

<http://jams.la.coocan.jp>

## JAPAN ASSOCIATION OF MINERALOGICAL SCIENCES AWARDEES

The Japan Association of Mineralogical Sciences (JAMS) is proud to announce the recipients of some of its 2012 society awards. The **Japan Association of Mineralogical Sciences Award for Young Scientist** is awarded to a maximum of two scientists per year who are under 37 years of age and who have made exceptional contributions to the mineralogical and related sciences. The **Japan Association of Mineralogical Sciences Award for Applied Mineralogy** is awarded once a year to a scientist who has made remarkable contributions in the field of applied mineralogy. The **Japan Association of Mineralogical Sciences Research Paper Award** is awarded annually to the authors of two excellent publications in 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!

### Award for Young Scientist to Daisuke Nishio-Hamane



Daisuke Nishio-Hamane

Daisuke Nishio-Hamane is on the technical staff for the transmission electron microscope at the Institute for Solid State Physics, University of Tokyo. He obtained his PhD from Hokkaido University under the supervision of Professor Kiyoshi Fujino. He proposed that titanates are promising for investigating the behavior of silicates under ultrahigh pressure. The mineral assemblage in the deep interior of a giant planet is a challenging subject for experimental study because of the significant difference between an experimentally producible pressure and the real pressure in a giant planet. However, Nishio-Hamane discovered that titanate should behave like an analogue of silicate even at low pressure. In contrast with the long-held expectation that  $ABO_3$ -type silicate will decompose into an  $AO + BO_2$  assemblage at ultrahigh pressure, his experimental work suggested that a  $2/3AO + 1/3AB_3O_7$  assemblage has the highest density, and this assemblage may be more stable in the deep interior of a giant planet. He is also expanding his research to include the "missing xenon problem" and "descriptive mineralogy."

### Award for Young Scientist to Kazuki Komatsu



Kazuki Komatsu

Kazuki Komatsu is an associate professor at the Geochemical Research Center, Graduate School of Science, University of Tokyo. He received his PhD from Tohoku University under the supervision of Professor Yasuhiro Kudoh. His remarkable findings include the structure determination of high-pressure polymorphs of aluminum hydroxides,  $\delta$ - and  $\eta$ - $Al(OH)_3$ . These polymorphs were first described in the literature in 1983, but the structures remained unknown in spite of their simple chemical composition. He also determined the positions of hydrogen in both high-pressure phases by using molecular dynamics, Raman spectroscopy, and detailed analysis of X-ray diffraction intensities. Kazuki Komatsu also contributes to an understanding of the phase transition mechanism; for instance,  $\eta$ - $Al(OH)_3$  undergoes a partially irreversible phase transition involving a layer shift under pressure, which can be explained by the difference in the hydrogen bond strength between its lower pressure form, gibbsite, and  $\eta$ - $Al(OH)_3$ . He also revised the previously determined structure of  $\delta$ - $AlOOH$  and even his own study of  $\delta$ - $Al(OH)_3$  by using neutron diffraction to determine their ordered or disordered hydrogen position,

which is difficult to distinguish with X-rays. These studies put into question the previous X-ray investigations of hydrous minerals, and they indicate the importance of revisiting these investigations using neutron diffraction. For the past ten years, he has contributed to the design, construction, and commissioning of PLANET, which is the beamline in J-PARC, Ibaraki, Japan, that is dedicated to high-pressure neutron scattering and imaging studies.

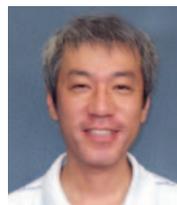
### Award for Applied Mineralogy to Isao Sakaguchi



Isao Sakaguchi

Isao Sakaguchi is from the National Institute for Materials Science, Japan. He is an expert at evaluating defects in materials. His research began with the fabrication of materials, continued with surface treatment, and moved to the evaluation of defects in materials. His techniques of material synthesis included ceramics fabrication using the conventional technique and creating thin films using chemical vapor deposition. In particular, he fabricated semiconducting thin films such as zinc oxide and homoepitaxial diamond. He evaluated luminescence properties based on defects in these thin films. He applied several surface-treatment techniques for bulk materials in order to evaluate the defects in these materials. One of the surface treatments for bulk materials is the ion implantation technique. He developed a new ion implantation system and he applied it to determine the suitable dose to have ZnO exhibit luminescence. His research on defects in materials was performed using secondary ion mass spectrometry. His recent research has focused on defect chemistry in bulk materials and thin films based on self-diffusion and impurity diffusion in semiconducting materials such as ZnO,  $BaTiO_3$ , and nitrides.

## RESEARCH PAPER AWARD



Toshio Nozaka



Terumi Ejima



Masahide Akasaka



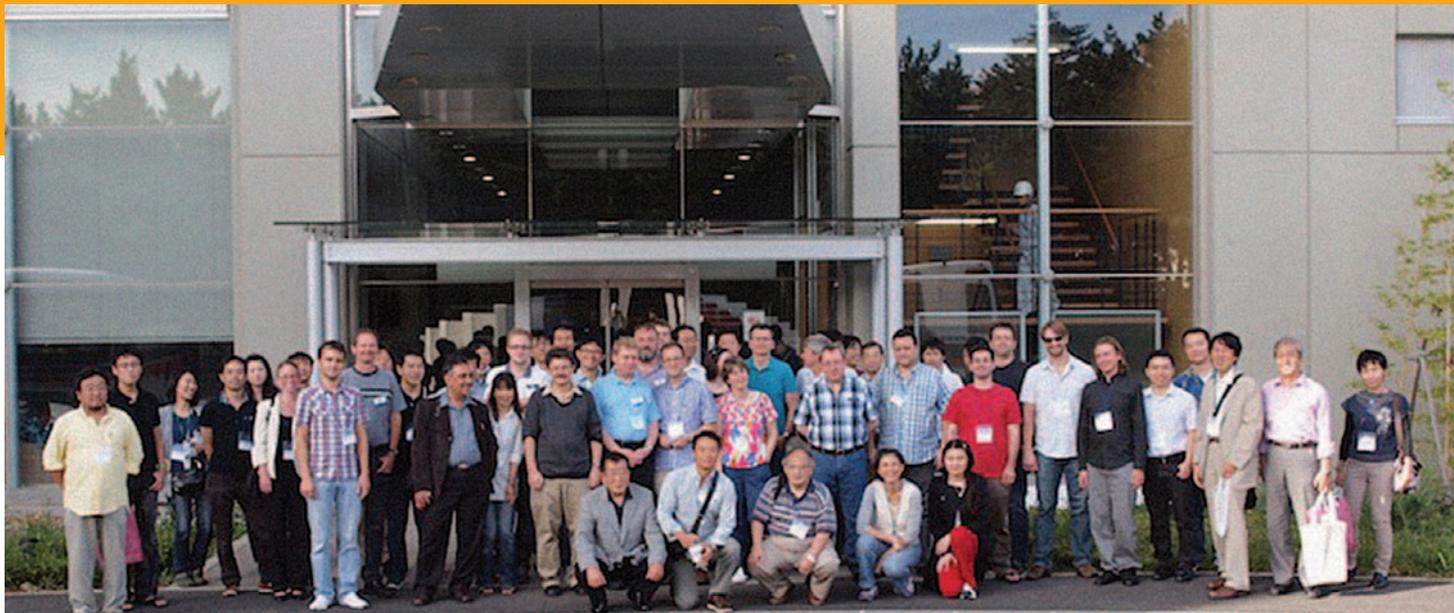
Hiroaki Ohfuji

### Toshio Nozaka and Yuki Ito (2011)

Cleavable olivine in serpentinite mylonites from the Oeyama ophiolite. *Journal of Mineralogical and Petrological Sciences* 106: 36-50

### Terumi Ejima, Masahide Akasaka, and Hiroaki Ohfuji (2011)

Oxidation state of Fe in olivine in a lherzolite xenolith from Oku district, Oki-Dogo Island, Shimane Prefecture, Japan. *Journal of Mineralogical and Petrological Sciences* 106: 246-254



## LAUNCHING THE PLANET BEAMLINE FOR HIGH-PRESSURE NEUTRON DIFFRACTION EXPERIMENTS AT J-PARC

Neutron probes are a promising means for studying hydrous components in Earth and planetary materials. The high-pressure research community in Japan has constructed a new high-pressure beamline, PLANET (pressure-leading apparatus for neutron diffraction), in the spallation neutron facility at J-PARC in Ibaraki Prefecture, Japan. The PLANET beamline has a huge multianvil high-pressure apparatus called "Atsuhime." In addition, several high-pressure devices can be used for neutron diffraction experiments under extreme conditions.



Takehiko Yagi and Hiroyuki Kagi at the ribbon-cutting ceremony in front of the Atsuhime press

On September 26, more than 50 people from the IUCr Commission on High Pressure 2012 meeting visited the PLANET beamline during a conference tour. The opening celebration was held on September 27 and the new beamline was launched. Scientific programs run by the Japanese project team started in November 2012, and the beamline will be open to international users starting in April 2013. Detailed information on the user programs will appear at <http://j-parc.jp/MatLife/en/index.html>. We welcome your participation.

**Hiroyuki Kagi**  
University of Tokyo

Conference tour from the IUCr high-pressure meeting at the main entrance of the Material and Life Science Experimental Facility, J-PARC



Attendees at the opening celebration in front of the PLANET facility

## JOURNAL OF MINERALOGICAL AND PETROLOGICAL SCIENCES, VOL. 107, NO. 5 (OCTOBER), 2012

U-Pb zircon ages of Abukuma granitic rocks in the western Abukuma plateau, northeastern Japan Arc

YOSHIKI KON AND TETSUICHI TAKAGI

Local structure of Zn in Cretaceous-Tertiary boundary clay from Stevns Klint

MAKI OKUBE, SATOSHI SASAKI, AKIRA YOSHIASA, LING WANG, TOMOTAKA NAKATANI, HIDETOMO HONGU, KEI-ICHIRO MURAI, AKIHIKO NAKATSUKA, AND RITSURO MIYAWAKI

Phase relations in  $Mg_3Cr_2Si_3O_{12}$  and formation of majoritic khorringite garnet at high pressure and high temperature

YONGTAO ZOU AND TETSUO IRIFUNE

Syn-eruptive desulfidation of pyrrhotite in the pumice of the Sakurajima 1914–15 eruption: Implication for potential magma ascent rate meter

KEIKO MATSUMOTO AND MICHIIKO NAKAMURA