Thu. Sep 14, 2023

Oral presentation | R1: Characterization and description of minerals (Joint Session with The Gemmological Society of Japan)

1:30 PM - 4:30 PM JST | 4:30 AM - 7:30 AM UTC | 820 Sugimoto Campus

R1: Characterization and description of minerals (Joint Session with The Gemmological Society of Japan)

Chairperson:Hiroshi Kitawaki, Masanori Kurosawa, Yasuyuki Banno

1:30 PM - 1:45 PM JST | 4:30 AM - 4:45 AM UTC

[R1-01] Greenland Ruby and Montana Sapphire; Trace element analysis using LA-ICP-MS and Origin determination

*Kentaro EMORI[1], Hiroshi Kitawaki[1] (1. Central Gem Laboratory)

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[R1-02] Comparing study of trace element chemistry of skarn hosted and serpentinite hosted demantoid, a variety of andradite garnet

*Ahmadjan ABDURIYIM[1,2] (1. Tokyo Gem Science LLC, 2. GSTV Gemological Laboratory)

2:00 PM - 2:15 PM JST | 5:00 AM - 5:15 AM UTC

[R1-03] Rare gem-quality blue-green and green-blue haüyne

*Zhenghao Zhao[1], Hiroshi Kitawaki[1], Makoto Okano[1], Kazuki Komatsu[2] (1. Central Gem Laboratory, 2. Sci. UTokyo)

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[R1-04] The nomenclature and gem identification of unusual red “musgravite”

*Hiroshi KITAWAKI[1], Zhenghao Zhao[1], Kentaro Emori[1], Makoto Okano[1], Yuji Manaka[1], Satoshi Ebitsubo[1] (1. CGL)

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[R1-05] Nno-inclusion in blue sapphire from Diego, Madagascar

*Akira MIYAKE[1], Seika oto[1], Yohei Igami[1], Jun Uzuhashi[2], Tadakatsu Ohkubo[2], Hiroshi Kitawaki[3], Kentaro Emori[3] (1. Kyoto Univ., 2. NIMS, 3. CGL)

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[R1-06] HRSTEM observation of columbite supergroup from Hirukawa, Nakatsugawa, Gifu Prefecture, Japan

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*Yohei IGAMI[1], Akira Miyake[1] (1. Kyoto Univ. Sci)

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[R1-08] Dumortierite and tourmaline from the Takumi Mine, Hyogo Prefecture, Japan

*Yohei SHIROSE[1], Rikako KAMISE[1], Katsuichi NISHIDA, Yoshiteru FUJIWARA (1. Ehime Univ. Sci.)

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[1Lecture-101-11-9add] 休憩

3:45 PM - 4:00 PM JST | 6:45 AM - 7:00 AM UTC

[R1-09] **Minerals from Nagatare area, Fukuoka**

*Seiichiro UEHARA[1] (1. Kyushu Uni. Museum)

4:00 PM - 4:15 PM JST | 7:00 AM - 7:15 AM UTC

[R1-10] Occurrence and genesis of zeolites in gastropod fossils in Miocene sediments in Minamisoma, Fukushima, Japan.

[Presentation award entry]

*Atsushi Ishihara[1], Hiroaki Ohfuji[1] (1. Tohoku Univ. Sci.)

4:15 PM - 4:30 PM JST | 7:15 AM - 7:30 AM UTC

[R1-11] Origins and formation mechanisms of various organic minerals associated with hydrothermal silica veins

*Ryoji Tanaka[1,2], Yuki Inoue[3], Takashi Ishibashi[4], Akihito Hagiwara (1. Sagami Chemical Research Institute, 2. Tokai Univ., 3. Kyushu Univ., 4. Museum of Osaka Univ.)

[zoom] Zoom

Oral presentation | S2: Water Rock Interaction (Special Session)

2:00 PM - 4:30 PM JST | 5:00 AM - 7:30 AM UTC | 821 Sugimoto Campus

S2: Water Rock Interaction (Special Session)

Chairperson:Noriyoshi Tsuchiya

2:00 PM - 2:05 PM JST | 5:00 AM - 5:05 AM UTC

[1Lecture-201-09-1add] コンビーナ挨拶

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[S2-01] Weathering process of Nabari gabbroic body, especially formation of kaolinite/smectite mixed layer mineral

*Shigeru OKUMURA[1] (1. Non)

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[S2-02] Occurrence and mineralogy of smectite in petit-spot basalts from the Northwest Pacific

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*Taro KIDO[1], Norikatsu AKIZAWA[2], Yohey SUZUKI[1] (1. Univ. Tokyo, Sci., 2. Univ. Tokyo, AORI)

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[S2-03] Dissolution behavior of wollastonite, olivine and basalt with natural chelating agents: features and promotion effects

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[S2-04] Two geochemical processes recorded in trace element and Sr-Nd isotopic compositions of the CM1A core samples from the Oman ophiolite

*Masako YOSHIKAWA[1], Tomoyuki Shibata[1], Ikuo Katayama[1], Asyraf Mohamed Aminuddin[2], Ryoko Senda[3], Tomoaki Morishita[2] (1. Hiroshima Univ., 2. Kanazawa Univ., 3. Kyushu Univ.)

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[S2-05] Early stages of serpentinization in the mantle section of the Salahi mantle section in the northern Oman ophiolite

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[S2-09] Fluid induced mylonitization and faulting processes

*Jun-ichi ANDO[1,2], Dyuti Prakash Sakar[1,2], Hirotoshi Kotama[1], Kaushik Das[1,2], Gautam Ghosh[3,2], Naotaka Tomioka[4,2] (1. Hiroshima Univ., 2. Hiroshima Univ. HiPeR, 3. Presidency Univ., 4. JAMSTEC)

[zoom] Zoom

Oral presentation | R7: Petrology, Mineralogy and Economic geology (Joint Session with Society of Resource Geology)

2:45 PM - 4:30 PM JST | 5:45 AM - 7:30 AM UTC | 822 Sugimoto Campus

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Chairperson:Norikatsu Akizawa(Atmosphere and Ocean Research Institute, University of Tokyo), Takuya Echigo(Akita University)

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[R7-01] Decomposition of organic matter by hydrothermal alteration in epithermal Au deposit in Kitami area, Hokkaido, Japan

Misato Kuniba[1], *Takuya ECHIGO[1], Yasushi Watanabe[1] (1. Internat. Resour. Sci., Akita Univ.)

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[R7-02] The coloration Factor of Pale Blue Sepiolite in amygdales in Higashimatsuura basalt from Kabeshima island, Saga Prefecture, SW Japan

[Presentation award entry]

*Satsuki Kio[1], Terumi Ezima[2], Yoshiaki Kon[3], Hikari Minamisawa[4], Masaomi Horita[4] (1. Shinshu Univ. Sci., 2. Shinshu Univ. Sci. , 3. GSJ, AIST, 4. Shinshu Univ. Eng.)

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[R7-03] Formation process of chalcedony at subaqueous volcanism 1 Oku-Matsushima region, Japan

[Presentation award entry]

*Natsuko Sano[1], Tsuyoshi Miyamoto[2], Takahiro Kuribayashi[1], Toshiro Nagase[3] (1. Tohoku Univ. Sci., 2. Tohoku Univ. CNEAS, 3. Tohoku Univ. Museum)

3:30 PM - 3:45 PM JST | 6:30 AM - 6:45 AM UTC

[R7-04] XANES analysis of inclusions containing polycyclic aromatic hydrocarbons in Tahitian mantle xenolith

[Presentation award entry]

*Itaru Mitsukawa[1], Akira Miyake[1], Yohei Igami[1], Yoshio Takahashi[2], Shohei Yamashita[3], Takahiro Kawai[2], Tetsu Kogiso[1], Norikatsu Akizawa[2] (1. Kyoto Univ. Sci., 2. Univ. Tokyo, 3. KEK)

3:45 PM - 4:00 PM JST | 6:45 AM - 7:00 AM UTC

[R7-05] Re-investigation of garnet peridotite xenolith from Salt Lake Crater, Hawaii

*Norikatsu AKIZAWA[1], Akira Ishikawa[2], Ryo Fujita[2], Tomoaki Morishita[3], Akihiro Tamura[3], Takashi Sano[4] (1. Uni. Tokyo, AORI, 2. Tokyo Tech., School Sci., 3. Kanazawa Uni., College Sci. Eng., 4. Natl. Mus. Nat. Sci.)

4:00 PM - 4:15 PM JST | 7:00 AM - 7:15 AM UTC

[R7-06] The preliminary results of piston cylinder experiments to homogenize multiphase solid inclusions observed in high pressure granulites and garnet-bearing peridotite in the Bohemian Massif

*Kosuke NAEMURA[1], Rin Abe[1], Tetsu Kogiso[2] (1. Iwate Univ. Edu., 2. Kyoto Univ. Human Env.)

4:15 PM - 4:30 PM JST | 7:15 AM - 7:30 AM UTC

[R7-07] Application of photon-counting computed tomography to rocks/crystals containing heavy elements

Ayumi Ishiguro[1], Makoto Arimoto[1,3,4], Daichi Sato[1], Takahiro Tomoda[1], Shinsuke Terazawa[5], Satoshi Shiota[5], *Tomoaki MORISHITA[3,2] (1. Kanazawa Univ. Nat. Sci., 2. JAMSTEC, 3. Kanazawa Univ. Sci.Engineer., 4. Waseda Univ. Sci. Engineer. , 5. Proterial Ltd.)

[zoom] Zoom

Oral presentation | R1: Characterization and description of minerals (Joint Session with The Gemmological Society of Japan)

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Chairperson:Hiroshi Kitawaki, Masanori Kurosawa, Yasuyuki Banno

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Keywords: Corundum, LA-ICP-MS, Greenland, Montana, Origin determination

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1. Central Gem Laboratory, 2. Sci. UTokyo

Keywords: Haüyne, Sodalite, Single Crystal X-Ray Diffraction, X-Ray Fluorescence, Spectroscopy

The nomenclature and gem identification of unusual red “musgravite”

*Hiroshi KITAWAKI[1], Zhenghao Zhao[1], Kentaro Emori[1], Makoto Okano[1], Yuji Manaka[1], Satoshi Ebitsubo[1]

1. CGL

Keywords: Musgravite, EDXRF, Raman spectrum, Infrared spectrum

Nno-inclusion in blue sapphire from Diego, Madagascar

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1. Kyoto Univ., 2. NIMS, 3. CGL

Nano-inclusions in Be-containing natural blue sapphires (corundum) from Diego, Madagascar were observed and analysed by transmission electron microscope (TEM) and 3D atomprobe (3DAP). TEM results show that Nano-inclusion has 20-40 nm length and 5-10 nm width, and the nano-inclusion is identified by srilankite, one kind of polymorphs of TiO_2. TEM and 3DAP results show the inclusion consists of Ti, Nb, Ta, Fe, Sn and Be component is found in the boundary between inclusion and matrix phase, corundum.

Keywords: corundum, srilankite, transmission electron microscope, 3D atomprobe

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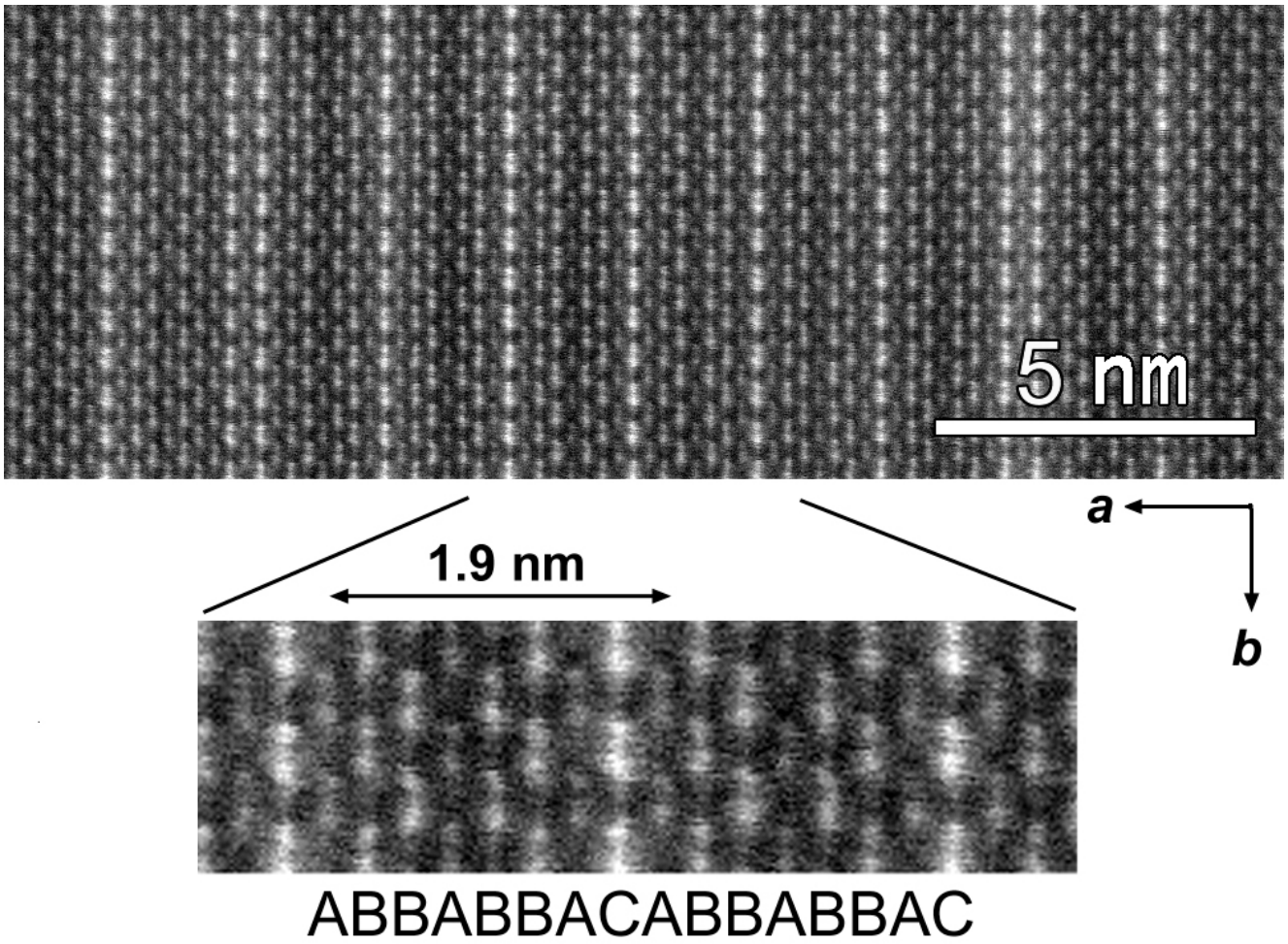
*Toshihiro KOGURE[1], Yasuyuki Banno[2], Taiga Okumura[1]

1. Univ. Tokyo, Sci, 2. AIST

Keywords: columbite group, wolframite, qitianlingite, STEM, selected area diffraction



Determination of local symmetry within the iridescent garnet from Tenkawa by spatially-resolved electron diffractometry

*Yohei IGAMI[1], Akira Miyake[1]

1. Kyoto Univ. Sci

Keywords: iridescent garnet, local symmetry, electron microscopy, 4D-STEM

Dumortierite and tourmaline from the Takumi Mine, Hyogo Prefecture, Japan

*Yohei SHIROSE[1], Rikako KAMISE[1], Katsuichi NISHIDA, Yoshiteru FUJIWARA

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Keywords: dumortierite, tourmaline, Takumi Mine, foitite, magnesio-foitite

Oral presentation

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3:30 PM - 3:45 PM

[1Lecture-101-11-9add]休憩

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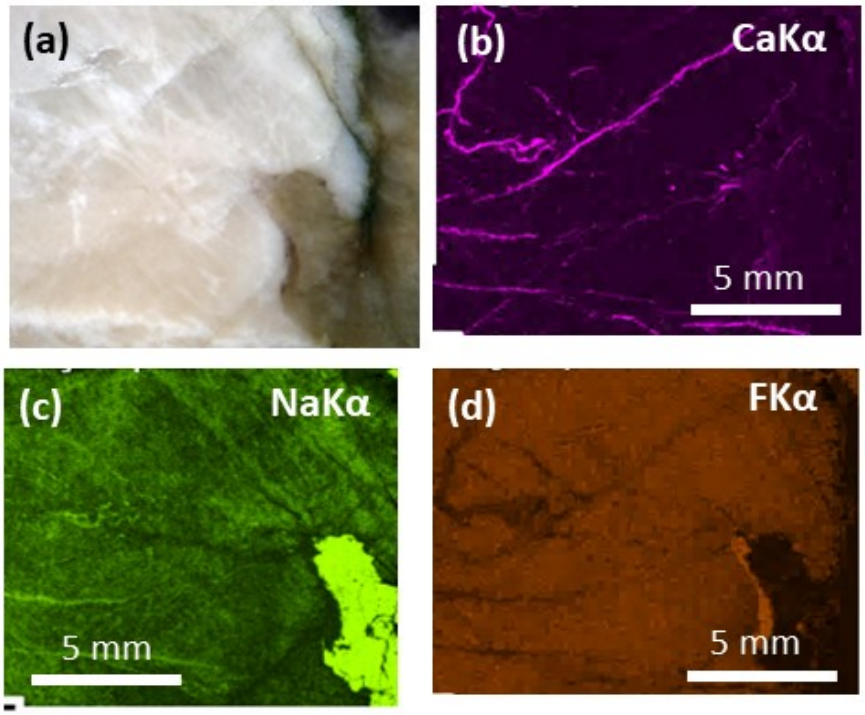

Fig.1. Secondary Ca-Na phosphates veins in Nagatare amblygonite.
(a) Sample photograph.
(b) Ca*Kα* X-ray image obtained by montaged SEM-EDS stage mapping.
(c) Na*Kα* X-ray image. (d) F*Kα* X-ray image.

Occurrence and genesis of zeolites in gastropod fossils in Miocene sediments in Minamisoma, Fukushima, Japan.

*Atsushi Ishihara[1], Hiroaki Ohfuji[1]

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Keywords: Zeolite, Heulandite, Mineralization, fossil

Origins and formation mechanisms of various organic minerals associated with hydrothermal silica veins

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We found polycyclic aromatic hydrocarbon (PAH)-based organic minerals associated with epithermal silica veins at several sites in Japan, including two in Hokkaido. These consist of carpathianite (coronene crystals), benzo[ghi]perylene crystals, picene crystals, and the like. Although some solid-solution behavior is observed, most of them are molecular crystals of organic substances with high purity. This means that fractional crystallization occurs strongly in PAH-based organic minerals. Benzo[ghi]perylene was approved as a new mineral under the name of hokkaidoite.

Keywords: epithermal, polycyclic aromatic hydrocarbon, hokkaidoite, benzo[ghi]perylene, organic minerals

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[zoom]Zoom

Zoom

Oral presentation | S2: Water Rock Interaction (Special Session)

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[zoom] Zoom

Oral presentation

S2: Water Rock Interaction (Special Session)

Chairperson:Noriyoshi Tsuchiya

Thu. Sep 14, 2023 2:00 PM - 4:30 PM 821 (Sugimoto Campus)

2:00 PM - 2:05 PM

[1Lecture-201-09-1add]コンビーナ挨拶

Weathering process of Nabari gabbroic body, especially formation of kaolinite/smectite mixed layer mineral

*Shigeru OKUMURA[1]

1. Non

Keywords: kaolinite/smectite mixed layer mineral, gabbro, weathering, metastable mineral

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*Taro KIDO[1], Norikatsu AKIZAWA[2], Yohey SUZUKI[1]

1. Univ. Tokyo, Sci., 2. Univ. Tokyo, AORI

The clay fraction in petit-spots basalts was characterized using X-ray diffraction (XRD), micro-infrared spectroscopy (micro FT-IR), and scanning electron microscopy attached to an energy-dispersive X-ray spectrometer (SEM-EDS). These results revealed the formation of montmorillonite, an Al-rich smectite, in the petit-spot basalts.

Keywords: mantle xenolith, low-temperature alteration, montmorillonite, clay minerals

Dissolution behavior of wollastonite, olivine and basalt with natural chelating agents: features and promotion effects

*Sena Kikuchi[1], Jiajie Wang[1], Noriyoshi Tsuchiya[1]

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Keywords: Organic acid, chelate agents, Mineral dissolution

Two geochemical processes recorded in trace element and Sr-Nd isotopic compositions of the CM1A core samples from the Oman ophiolite

*Masako YOSHIKAWA[1], Tomoyuki Shibata[1], Ikuo Katayama[1], Asyraf Mohamed Aminuddin[2], Ryoko Senda[3], Tomoaki Morishita[2]

1. Hiroshima Univ., 2. Kanazawa Univ., 3. Kyushu Univ.

Keywords: Oman drilling project samples, Sr-Nd isotopic ratios, trace element compositions

Early stages of serpentinization in the mantle section of the Salahi mantle section in the northern Oman ophiolite

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1. Niigata Univ. Sci., 2. JAMSTEC, 3. Okayama Univ.Sci.

To understand the early stage of serpentinization processe in the oceanic mantle, we conducted microscopic observations, compositional analyses, and Raman spectroscopic analyses of serpentine and associated minerals in the peridotites of the Salahi mantle section of the Oman Ophiolite. The peridotite contains various proportions of low-temperature serpentines such as lizardite and chrysotile. Antigorite, a high-temperature serpentine, is also widely distributed, but its frequency tends to decrease toward the northwestern part of the mantle section. Most of the antigorite forms veins 0.1 mm to 3.0 mm wide. In the antigorite veins, low-temperature serpentines cut parallel to or across the veins. Fe-rich olivine forms 0.02-0.3 mm wide veins, often accompanied by antigorite veins, in the olivine. The Fo content of common olivine is about 90, whereas that of Fe-rich olivine is 71-88. Antigorite veins in contact with Fe-rich olivine are rich in Mg and poor in Fe. Since Mg-Fe interdiffusivity increases with temperature, it is possible that the antigorite veins formed at high temperatures or that they were heated after formation of veins. The cross-cutting relationships observed in the antigorite veins suggest that olivine, antigorite, chrysotile, magnetite, and carbonate minerals formed in that order. Serpentinization is considered to have progressed with a gradual decrease in temperature. The coexistence of olivine, antigorite, and tremolite suggests the possibility of hydrothermal reactions at 500-600˚C. Furthermore, the presence of lizardite and chrysotile in all samples suggests that extensive water infiltration occurred at temperatures lower than 300˚C. Antigorite and talc are less frequently observed in the northwestern part of the Salahi mantle section suggesting a relationship with paleo-ocean ridge segment structure. Near the end of the ridge segment (south of Salahi brock), seawater may have penetrated deep into the mantle and formed antigorite in the early stages of cooling. On the other hand, near the center of the ridge segment and deeper in the mantle (northwestern part of Salahi block), the formation of antigorite may have been delayed because the temperature remained higher.

Keywords: Oman ophiolite, oceanic mantle, serpentinization, antigorite

Oral presentation

S2: Water Rock Interaction (Special Session)

Chairperson:Noriyoshi Tsuchiya

Thu. Sep 14, 2023 2:00 PM - 4:30 PM 821 (Sugimoto Campus)

3:20 PM - 3:30 PM

[1Lecture-201-09-7add]休憩

Timing of B-bearing fluid-rock interaction in a subduction zone: an example from the Sanbagawa metamorphic belt

*Masanori YOKOI[1], Tetsuo KAWAKAMI[1]

1. Kyoto Univ. Sci.

Keywords: boron, fluid, subduction zone, Sanbagawa metamorphic belt, mixing zone

Behavior of fluorine, relationship between mineralization and water-rock interaction: an example of the Jinmu-Mihara fluorite skarn deposit.

*Masahiro SUNADA[1], Yasushi Watanabe[1], Takuya Echigo[1], Shogo Aoki[1], Kotaro Seno[1]

1. Akita Univ. Ers.

Keywords: Fluorine, Skarn deposit, Sanyo-belt, Fluorite mineralization, Jinmu-Mihara deposit

Differences in petrophysics of gabbroic rock in ocean drilling core samples from different regions

*Natsue ABE[1,2], Toshiya Fujiwara[1]

1. Japan Agency for Marine-Earth Science and Technology (JAMSTEC), 2. Kanazawa University

Previous scientific ocean drilling has penetrated various localities for gabbroic rocks, a component of the oceanic lower crust. Drilling has been carried out in the Atlantic Ocean with ODP Legs 153 (Kane FZ), Leg 209 (15°20'N FZ), and IODP Exp. 304 & 305 (Atlantis Massif), in the Indian Ocean with ODP Legs 118 & 176 and IODP Exp. 360 at a location known as Atlantis Bank. In the Pacific Ocean, speckled rock samples were collected from Hess Deep by ODP Leg 147 and IODP Exp. 345. These speckled rock core samples are valuable for elucidating the reality of the oceanic lower crust. We found a significant difference in seismic wave velocities from these regions. The Indian Ocean and Pacific Ocean specimens show a relationship between seismic wave velocity and the density of speckled rock, which is generally assumed to be the lower ocean crust. Still, the Atlantic Ocean speckled rock specimens have a seismic wave velocity of about one km/s slower than speckled rock from other localities with similar densities. Possible causes include (1) differences in mineral composition and degree of alteration, (2) differences in porosity (or crack density), (3) differences in degree of deformation, and (4) differences in formation age (temperature). We would like to present the results of our investigation of these causes and discuss the differences in elastic wave velocities.

Keywords: Gabbro, IODP, Oceanic lower crust, compressional velocity, petrophysics

Fluid induced mylonitization and faulting processes

*Jun-ichi ANDO[1,2], Dyuti Prakash Sakar[1,2], Hirotoshi Kotama[1], Kaushik Das[1,2], Gautam Ghosh[3,2], Naotaka Tomioka[4,2]

1. Hiroshima Univ., 2. Hiroshima Univ. HiPeR, 3. Presidency Univ., 4. JAMSTEC

Keywords: Fault, Mylonite, pressure solution creep, Phyllosilicate mineral, Mantle porphyroclast

Oral presentation

S2: Water Rock Interaction (Special Session)

Chairperson:Noriyoshi Tsuchiya

Thu. Sep 14, 2023 2:00 PM - 4:30 PM 821 (Sugimoto Campus)

[zoom]Zoom

Zoom

Oral presentation | R7: Petrology, Mineralogy and Economic geology (Joint Session with Society of Resource Geology)

Thu. Sep 14, 2023 2:45 PM - 4:30 PM JST | Thu. Sep 14, 2023 5:45 AM - 7:30 AM UTC | 822 Sugimoto Campus

R7: Petrology, Mineralogy and Economic geology (Joint Session with Society of Resource Geology)

Chairperson:Norikatsu Akizawa(Atmosphere and Ocean Research Institute, University of Tokyo), Takuya Echigo(Akita University)

2:45 PM - 3:00 PM JST | 5:45 AM - 6:00 AM UTC

[R7-01] Decomposition of organic matter by hydrothermal alteration in epithermal Au deposit in Kitami area, Hokkaido, Japan

Misato Kuniba[1], *Takuya ECHIGO[1], Yasushi Watanabe[1] (1. Internat. Resour. Sci., Akita Univ.)

3:00 PM - 3:15 PM JST | 6:00 AM - 6:15 AM UTC

[R7-02] The coloration Factor of Pale Blue Sepiolite in amygdales in Higashimatsuura basalt from Kabeshima island, Saga Prefecture, SW Japan

[Presentation award entry]

*Satsuki Kio[1], Terumi Ezima[2], Yoshiaki Kon[3], Hikari Minamisawa[4], Masaomi Horita[4] (1. Shinshu Univ. Sci., 2. Shinshu Univ. Sci. , 3. GSJ, AIST, 4. Shinshu Univ. Eng.)

3:15 PM - 3:30 PM JST | 6:15 AM - 6:30 AM UTC

[R7-03] Formation process of chalcedony at subaqueous volcanism 1 Oku-Matsushima region, Japan

[Presentation award entry]

*Natsuko Sano[1], Tsuyoshi Miyamoto[2], Takahiro Kuribayashi[1], Toshiro Nagase[3] (1. Tohoku Univ. Sci., 2. Tohoku Univ. CNEAS, 3. Tohoku Univ. Museum)

3:30 PM - 3:45 PM JST | 6:30 AM - 6:45 AM UTC

[R7-04] XANES analysis of inclusions containing polycyclic aromatic hydrocarbons in Tahitian mantle xenolith

[Presentation award entry]

*Itaru Mitsukawa[1], Akira Miyake[1], Yohei Igami[1], Yoshio Takahashi[2], Shohei Yamashita[3], Takahiro Kawai[2], Tetsu Kogiso[1], Norikatsu Akizawa[2] (1. Kyoto Univ. Sci., 2. Univ. Tokyo, 3. KEK)

3:45 PM - 4:00 PM JST | 6:45 AM - 7:00 AM UTC

[R7-05] Re-investigation of garnet peridotite xenolith from Salt Lake Crater, Hawaii

*Norikatsu AKIZAWA[1], Akira Ishikawa[2], Ryo Fujita[2], Tomoaki Morishita[3], Akihiro Tamura[3], Takashi Sano[4] (1. Uni. Tokyo, AORI, 2. Tokyo Tech., School Sci., 3. Kanazawa Uni., College Sci. Eng., 4. Natl. Mus. Nat. Sci.)

4:00 PM - 4:15 PM JST | 7:00 AM - 7:15 AM UTC

[R7-06] The preliminary results of piston cylinder experiments to homogenize multiphase solid inclusions observed in high pressure granulites and garnet-bearing peridotite in the Bohemian Massif

*Kosuke NAEMURA[1], Rin Abe[1], Tetsu Kogiso[2] (1. Iwate Univ. Edu., 2. Kyoto Univ. Human Env.)

4:15 PM - 4:30 PM JST | 7:15 AM - 7:30 AM UTC

[R7-07] Application of photon-counting computed tomography to rocks/crystals containing heavy elements

Ayumi Ishiguro[1], Makoto Arimoto[1,3,4], Daichi Sato[1], Takahiro Tomoda[1], Shinsuke Terazawa[5], Satoshi Shiota[5], *Tomoaki MORISHITA[3,2] (1. Kanazawa Univ. Nat. Sci., 2. JAMSTEC, 3. Kanazawa Univ. Sci.Engineer., 4. Waseda Univ. Sci. Engineer. , 5. Proterial Ltd.)

[zoom] Zoom

Decomposition of organic matter by hydrothermal alteration in epithermal Au deposit in Kitami area, Hokkaido, Japan

Misato Kuniba[1], *Takuya ECHIGO[1], Yasushi Watanabe[1]

1. Internat. Resour. Sci., Akita Univ.

Keywords: epithermal gold deposit, organic matter, hydrothermal alteration, clay minerals, Raman spectroscopy

The coloration Factor of Pale Blue Sepiolite in amygdales in Higashimatsuura basalt from Kabeshima island, Saga Prefecture, SW Japan

*Satsuki Kio[1], Terumi Ezima[2], Yoshiaki Kon[3], Hikari Minamisawa[4], Masaomi Horita[4]

1. Shinshu Univ. Sci., 2. Shinshu Univ. Sci. , 3. GSJ, AIST, 4. Shinshu Univ. Eng.

The alkali basalts known as the Higashi-Matsuura basalts are widely distributed on Kabeshima Island, Yobuko area, Saga Prefecture, and pale blue sepiolite has been found in amygdales in the Higashi-Matsuura basalts on the island. A white to light-green sepiolite has been reported previously in Higashi-Matsuura basalts from near Karatsu city (Ishibashi, 1974), but not the sepiolite with a pale blue color. In this study, to investigate of color of the pale blue sepiolite, we analyzed the pale blue sepiolite chemical composition using EPMA, LA-ICPMS and TEM-EDS.
The amygdale minerals in the alkali basalt consist of sepiolite, ilmenite, calcite, Mn oxides and chlorite-like mineral. The pale blue sepiolite has a spongy texture with pores less than 0.5 μm in diameter on the mineral surface and occurs in radial clusters 5-10 μm thick on a yellowish-brown chlorite-like mineral. Quantitative analysis of the pale blue sepiolite showed that it consists mainly of 46.48 wt.% SiO_2, 16.89 wt.% MgO, and 4.69 wt.%Al_2O_3. The trace transition-metal elements detected in the pale blue sepiolite in microscale chemical analysis using LA-ICPMS that might cause coloration in sepiolite are 0.403 wt.% Mn, 0.392 wt.% Fe^{3+}, 0.145 wt.% Cu, 0.036 wt.% Ti, 0.012 wt.% Cr and 0.010 wt.% Ni. However, Fe and Mn are not detected in the nano scale chemical analysis of sepiolite using TEM-EDS. Therefore, Fe and Mn detected in microscale chemical analysis are likely to be due to contamination with other minerals that coexist with the sepiolite, such as Mn oxides and chlorite-like mineral, with Cu being the most abundant transition metal element in the sepiolite.
The result of this study suggests that the transition-metal element Cu is responsible for the pale blue color of the sepiolite. However, Further research is needed to determine whether sepiolite which crystal lattice Cu-containing exhibits pale blue color, because it is no report on the color of Cu bearing sepiolite.

Keywords: Kabeshima Island, sepiolite, copper, alkali basalt

Formation process of chalcedony at subaqueous volcanism 1 Oku-Matsushima region, Japan

*Natsuko Sano[1], Tsuyoshi Miyamoto[2], Takahiro Kuribayashi[1], Toshiro Nagase[3]

1. Tohoku Univ. Sci., 2. Tohoku Univ. CNEAS, 3. Tohoku Univ. Museum

Keywords: Chalcedony, Subaqueous volcanism, Clastic Dyke

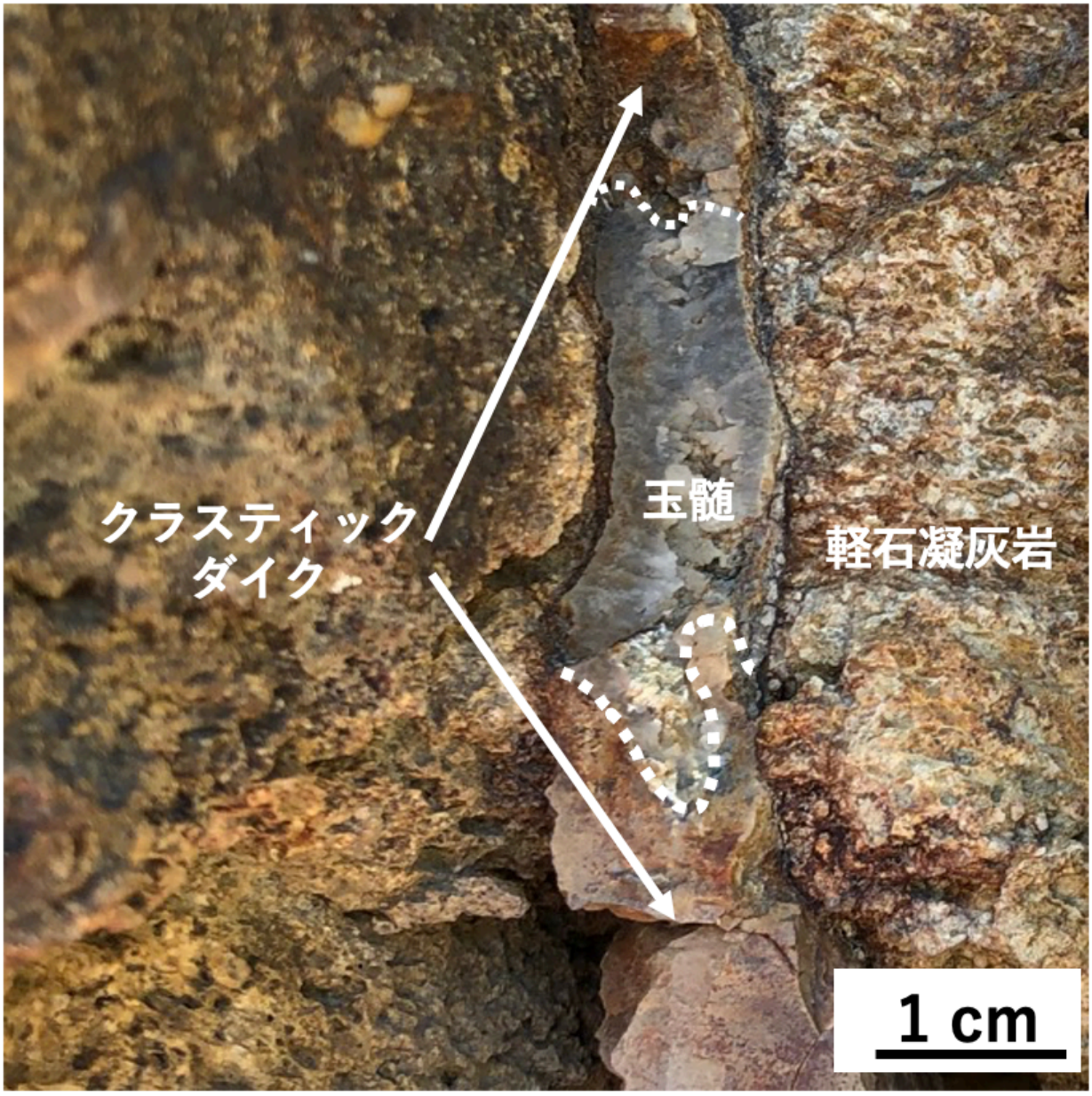

図1. 軽石凝灰岩の割れ目に存在する玉髄

XANES analysis of inclusions containing polycyclic aromatic hydrocarbons in Tahitian mantle xenolith

*Itaru Mitsukawa[1], Akira Miyake[1], Yohei Igami[1], Yoshio Takahashi[2], Shohei Yamashita[3], Takahiro Kawai[2], Tetsu Kogiso[1], Norikatsu Akizawa[2]

1. Kyoto Univ. Sci., 2. Univ. Tokyo, 3. KEK

Keywords: Organic compounds, mantle, pridotite, polycyclic aromatic hydrocarbons, XANES

Re-investigation of garnet peridotite xenolith from Salt Lake Crater, Hawaii

*Norikatsu AKIZAWA[1], Akira Ishikawa[2], Ryo Fujita[2], Tomoaki Morishita[3], Akihiro Tamura[3], Takashi Sano[4]

1. Uni. Tokyo, AORI, 2. Tokyo Tech., School Sci., 3. Kanazawa Uni., College Sci. Eng., 4. Natl. Mus. Nat. Sci.

Keywords: Mantle, Oceanic lithosphere, Garnet, Peridotite

The preliminary results of piston cylinder experiments to homogenize multiphase solid inclusions observed in high pressure granulites and garnet-bearing peridotite in the Bohemian Massif

*Kosuke NAEMURA[1], Rin Abe[1], Tetsu Kogiso[2]

1. Iwate Univ. Edu., 2. Kyoto Univ. Human Env.

In the present-day Alpine Himalayas and the Paleozoic Variscan orogenic belt, ultrapotassic volcanism occurred in the late stages of orogeny. The source of potassium is expected to be subducted pelitic rocks that partially melted and eventually emitted potassium-rich melts to the hanging wall mantle (e.g., Grassi and Schmidt, 2011). This resulted to form phlogopite-bearing peridotite in the mantle wedge, which can generate ultrapotassic magma upon partial melting (durbachite in the Czech Republic and kamafugite in Italy). To quantitatively understand this process, it is first necessary to determine the chemical composition of the partial melts or supercritical fluids both in the subducting plate and in the mantle wedge.High-pressure to ultrahigh-pressure metamorphic rocks may contain melts and supercritical fluids generated in deep plate convergence zones - at depths of 50 to 200 km - that are trapped in high-pressure minerals such as garnet. Melts and supercritical fluids cooled and crystallized to form multiphase solid inclusions. Recently, several studies have focus on their chemical composition and its relationship with post-orogenic ultrapotassic magmatism (e.g. Borghini et al., 2019). To conduct experiments to homogenize the multiphase solid inclusions, a few mm of garnet was first separated from the garnet pyroxene rock and sealed, along with quartz, in a gold capsule. 10% gibbsite was added for hydrous experiment. The samples were kept at 3 GPa and 1000˚C for 24 hours in a piston-cylinder apparatus, then quenched, and observed using an electron microscope. It turned out that most garnet grains are decomposed under wet condition. On the other hand, under dry conditions, the multiphase solid inclusions successfully homogenized whose chemical composition is: SiO_2*=70-74 wt%, Al_2O_3≃12 wt%、MgO=0.3-2.0 wt%, CaO=1.1-1.8 wt%, K_2O=6.0-6.5 wt%. Since the analytical values are 80-87 wt%, the mass of fluid components in the melt is estimated to be 13-20 wt%. On the other hand, melt inclusions in chromite from garnet peridotites is poor in SiO_2 and rich in MgO and CaO, suggesting silica undersaturated melt. This is first preliminary report on homogenization experiments, and we plan to accumulate melt dataset that led to quantitative understanding of the material transfer from subducting plate to the mantle wedge.

Keywords: Continental collision, garnet peridotite, high pressure granulite, multiphase solid inclusion, piston cylinder

Application of photon-counting computed tomography to rocks/crystals containing heavy elements

Ayumi Ishiguro[1], Makoto Arimoto[1,3,4], Daichi Sato[1], Takahiro Tomoda[1], Shinsuke Terazawa[5], Satoshi Shiota[5], *Tomoaki MORISHITA[3,2]

1. Kanazawa Univ. Nat. Sci., 2. JAMSTEC, 3. Kanazawa Univ. Sci.Engineer., 4. Waseda Univ. Sci. Engineer. , 5. Proterial Ltd.

Photon counting CT (PC-CT) uses an energy-resolved X-ray detector, which allows X-rays with a continuous energy spectrum to be detected separately in arbitrary energy regions (Willemink et al. 2018). We report the results of applying a laboratory-built PC-CT to materials containing heavy elements with the characteristic X-ray absorption edge energy in the energy range in which the PC-CT is used. Reference: Willemink et al. (2018) DOI: 10.1148/radiol.2018172656

Keywords: Photon-counting computed tomography

Oral presentation

R7: Petrology, Mineralogy and Economic geology (Joint Session with Society of Resource Geology)

Chairperson:Norikatsu Akizawa(Atmosphere and Ocean Research Institute, University of Tokyo), Takuya Echigo(Akita University)

Thu. Sep 14, 2023 2:45 PM - 4:30 PM 822 (Sugimoto Campus)

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