Fri. Sep 13, 2024

Oral presentation | T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

9:00 AM - 12:00 PM JST | 12:00 AM - 3:00 AM UTC | ES Hall Higashiyama Campus

T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

Chairperson:Yasuhito Osanai, Masaaki Owada

9:00 AM - 9:25 AM JST | 12:00 AM - 12:25 AM UTC

[T1-01] Decarbonized Society and Essential Metal Resources

「招待講演」

*YOSHITAKA HOSOI[1] (1. JICA)

9:25 AM - 9:50 AM JST | 12:25 AM - 12:50 AM UTC

[T1-02] Japan's current approach to securing mineral resources

「招待講演」

*Kazuhiro YONEMURA[1] (1. JOGMEC)

9:50 AM - 10:15 AM JST | 12:50 AM - 1:15 AM UTC

[T1-03] Critical metal potentiality of Mongolia

「招待講演」

*Sereenen Jargalan[1], M. Arvinzun[2] (1. Mongolian University of Science and Technology, 2. Mongolian Society of Economic Geologists)

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[2Lecture-101-06-4add] 休憩

10:30 AM - 10:55 AM JST | 1:30 AM - 1:55 AM UTC

[T1-04] Geology, sedimentation environment of the
Ovoot khural coal bearing depression, in South Mongolia

「招待講演」

*Magsarjav Ochirbat[2], Sereenen Jargalan[1] (1. Mongolian University of Science and Technology, 2. Mongolian Society of Economic Geologists)

10:55 AM - 11:20 AM JST | 1:55 AM - 2:20 AM UTC

[T1-05] Insights into the mineralogical characteristics of Li-enriched metasomatic albitite from the Iwagi islet, SW Japan

「招待講演」

*Mariko NAGASHIMA[1], Teruyoshi IMAOKA[1] (1. Yamaguchi Univ. Sci.)

11:20 AM - 11:45 AM JST | 2:20 AM - 2:45 AM UTC

[T1-06] Ion adsorption-type REE deposits: the source of HREE

「招待講演」

*Yasushi Watanabe[1] (1. Akita Univ. Int. Res. Sci.)

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[2Lecture-101-06-8add] 休憩

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

9:00 AM - 12:00 PM JST | 12:00 AM - 3:00 AM UTC | ES024 Higashiyama Campus

S2: Water Rock Interaction (Special Session)

Chairperson:Noriyoshi Tsuchiya

9:00 AM - 9:05 AM JST | 12:00 AM - 12:05 AM UTC

[2Lecture-201-10-1add] コンビーナ挨拶

9:05 AM - 9:35 AM JST | 12:05 AM - 12:35 AM UTC

[S2-01] Slab-derived fluid infiltrating back-arc mantle

「招待講演」

*Junji YAMAMOTO[1] (1. Kyushu University)

9:35 AM - 9:50 AM JST | 12:35 AM - 12:50 AM UTC

[S2-02] Geochemical diversity and significance of orthopyroxene pseudomorphs in ultramafic rocks derived from mantle wedges

「発表賞エントリー」

*Takumi Wani[1], Yuji Ichiyama[1], Akihiro Tamura[2], Tomoaki Morishita[2] (1. Chiba University, 2. Kanazawa University)

9:50 AM - 10:05 AM JST | 12:50 AM - 1:05 AM UTC

[S2-03] Petrogenesis and significance of ophicarbonate in the Kanasaki serpentinite body (Kanto Mountains, Central Japan)

*Ryosuke OYANAGI[1,2], Hikaru Sawada[3,2], Qing Chang[2], Madhusoodhan Satish-Kumar[4] (1. Kokushikan Univ., 2. JAMSTEC, 3. Toyama Univ., 4. Niigata Univ.)

10:05 AM - 10:20 AM JST | 1:05 AM - 1:20 AM UTC

[S2-04] CO_2 mineralization in andesitic rocks revealed by hydrothermal experiments and thermal analyses

*Otgonbayar DANDAR[1], Atsushi Okamoto [1], Masaoki Uno[1], Miku Takeya[2] (1. Tohoku University, 2. INPEX)

10:20 AM - 10:30 AM JST | 1:20 AM - 1:30 AM UTC

[2Lecture-201-10-6add] 休憩

10:30 AM - 10:45 AM JST | 1:30 AM - 1:45 AM UTC

[S2-05] Massive and foliated serpentinites from the Udonohana ultramafic body, Western Ehime Prefecture, Japan.

「発表賞エントリー」

*Yui Joguchi[1], Satomi Enju[1] (1. Ehime Univ. Sci. &Egn.)

10:45 AM - 11:00 AM JST | 1:45 AM - 2:00 AM UTC

[S2-06] "Element transport and magnetite decomposition during alteration of the gabbroic vein in serpentinite body from the Bayankhongor ophiolite, Mongolia"

「発表賞エントリー」

*Nomin Tumurkhuu[1], Otgonbayar Dandar[1], Masaoki Uno[1], Manzshir Bayarbold[1], Atsushi Okamoto[1] (1. Tohoku University)

11:00 AM - 11:15 AM JST | 2:00 AM - 2:15 AM UTC

[S2-07] Dissolution reprecipitation - re-equilibration process of feldspar in heat source granite and supercritical geothermal reservoir using borehole samples from Kakkonda granite

「発表賞エントリー」

*Masayoshi Hoshida[1], Masaoki Uno[1], Satoshi Matsuno[1], Astin Nurdiana[1], Noriyoshi Tsuchiya[2,1] (1. Tohoku University, 2. National Institute of Technology, Hachinohe College)

11:15 AM - 11:30 AM JST | 2:15 AM - 2:30 AM UTC

[S2-08] Formation mechanism of "cleavable olivine"

*Jun-ichi ANDO[1,2], Naotaka Tomioka[3,2], Hirokazu Maekawa[4] (1. Hiroshima Univ., 2. Hiroshima Univ., HiPeR, 3. JAMSTEC, 4. Osaka Metropolitan Univ.)

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[S2-09] Experimental study to elucidate sulfide chimney development process and power generation characteristics in submarine hydrothermal systems

「発表賞エントリー」

*Kentaro Toda[1], Atsushi Okamoto[1], Dandar Otgonbayar[1], Misaki Takahashi[1], Yoshinori Sato[1] (1. Tohoku Univ. Environmental Sci)

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[S2-10] Carbonation of Mantle Peridotite: An Approach From Fluid Inclusion Analysis and Hydrothermal Experiments

*Tatsuhiko KAWAMOTO[1] (1. Shizuoka University)

Oral presentation | S3: Rheology and Material Transfer in Mantle and Crust (Special Session)

9:00 AM - 10:00 AM JST | 12:00 AM - 1:00 AM UTC | ES025 Higashiyama Campus

S3: Rheology and Material Transfer in Mantle and Crust (Special Session)

Chairperson:Miki Tasaka(Shizuoka University)

9:00 AM - 9:15 AM JST | 12:00 AM - 12:15 AM UTC

[S3-10] Rheological evolution of olivine during formation of the mantle lithosphere

*Katsuyoshi MICHIBAYASHI[1,2], Takeo Okuwaki[1], Itsuki Natsume[3] (1. Nagoya University, 2. JAMSTEC, 3. Kanagawa Prefectural Museum of Natural History)

9:15 AM - 9:30 AM JST | 12:15 AM - 12:30 AM UTC

[S3-11] Three-dimensional location analysis on acoustic emissions and faults in olivine under pressure-temperature conditions of subducting slabs

*Tomohiro OHUCHI[1], Masato Hoshino[2], Kentaro Uesugi[2], Satoshi Okumura[3], Yuji Higo[2], Noriyoshi Tsujino[2], Sho Kakizawa[2] (1. GRC, Ehime Univ., 2. JASRI, 3. Tohoku Univ Sci.)

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[S3-12] In-situ observation of grain growth and fluid movement using camphor as a rock analogue

*Junichi Fukuda[1] (1. Dept. Geos. Osaka Metrop. Univ.)

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[S3-13] Mantle carbonation through seawater penetration along the outer-rise faults

*Ikuo KATAYAMA[1], Keishi Okazaki[1], Atsushi Okamoto[2] (1. Hiroshima University, 2. Tohoku University)

Oral presentation | R4: Mineral sciences of the Earth surface

10:15 AM - 12:00 PM JST | 1:15 AM - 3:00 AM UTC | ES025 Higashiyama Campus

R4: Mineral sciences of the Earth surface

Chairperson:Hiroshi Sakuma(NIMS), Satoko Motai(Yamagata Univ.), Jun Kawano(Hokkaido University)

10:15 AM - 10:35 AM JST | 1:15 AM - 1:35 AM UTC

[R4-01] Understanding and application of spherical concretions: A new durable sealing material learnt from nature

「招待講演」

*Hidekazu Yoshida[1] (1. Nagoya University)

10:35 AM - 10:50 AM JST | 1:35 AM - 1:50 AM UTC

[R4-02] Color change process of Hiroshima granite due to weathering

*Tadashi YOKOYAMA[1], Yuka Inkyo, Masahiro Kaibori[1] (1. Hiroshima University)

10:50 AM - 11:05 AM JST | 1:50 AM - 2:05 AM UTC

[R4-03] Crystallographic preferred orientation and grain size of apatite in terrestrial mammalian bones

*Kyoko N. MATSUKAGE[1], Momoka Ide[2], Masaya Kurata[2], Yu Nishihara[3] (1. Teikyo Univ. of Sci. Natural and Environmental Sci., 2. Teikyo Univ. of Sci. Aminal Sci., 3. Ehime Univ.)

11:05 AM - 11:20 AM JST | 2:05 AM - 2:20 AM UTC

[R4-04] Microscopic distribution of sodium in biogenic aragonite

*Taiga Okumura[1], Michio Suzuki[2], Alberto Perez-Huerta[3], Eshita Samajpati[3], Toshihiro Kogure[1] (1. UTokyo Sci., 2. UTokyo Agri. Life Sci., 3. Univ. Alabama Geol. Sci.)

11:20 AM - 11:40 AM JST | 2:20 AM - 2:40 AM UTC

[R4-05] Structural and functional analyses of organic matrices regulating the formation of minerals in biomineralization.

「招待講演」

*Michio Suzuki[1] (1. UTokyo)

11:40 AM - 11:55 AM JST | 2:40 AM - 2:55 AM UTC

[R4-06] Aragonite formation from amorphous calcium carbonate (ACC) with addition of *n*-butylamine

*Hiroyuki KAGI[1], Kensuke Muraoka[1] (1. The University of Tokyo)

Poster presentation | T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[T1-P-01] Syenitic veining at the northern Eastern Ghats Belt, India: Formation mechanism, fluid-rock interaction and a review of its economic mineral potential

*Kaushik DAS[1,5], Proloy Ganguly[2], Aparupa Banerjee[3], Sankar Bose[4,5] (1. Hiroshima University, 2. Kazi Nazrul University, 3. Shahid Matangini Hazra Government General Degree College, 4. Presidency University, 5. HiPeR, Hiroshima University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[T1-P-02] Amphibole-bearing granitic rocks in the Ereendavaa block, NE Mongolia: Insights into multi-stage magmatic sources and crystallization conditions

*Munkhdelger Bold[1], Tatsuki Tsujimori[1], Yasuhito Osanai[2], Nobuhiko Nakano[2], Tatsuro Adachi[2], Otgonbayar Dandar[1], Fransiska Ayuni Catur Wahyuandari [2] (1. Tohoku Univ., 2. Kyushu Univ)

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

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

S2: Water Rock Interaction (Special Session)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-01] Scales of extensional-shear fracturing and magnitudes of seismicity induced by magma intrusions into lower crust: Scale comparisons of dike swarm in the high-grade metamorphic rocks and deep low-frequency earthquakes

「発表賞エントリー」

*Takumi Nara[1], Masaoki Uno[1], Tetsuo Kawakami[2], Fumiko Higashino[2], Tatsuro Adachi[3], Noriyoshi Tsuchiya[1,4] (1. TOHOKU Univ. Env., 2. Kyoto Univ. Sci, 3. Kyushu Univ. Soc., 4. Hachinohe Kosen)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-02] Carbonation of serpentinite and formation process of listvenite from Urayama River, Shikokuchuo City, Ehime Prefecture, Japan

「発表賞エントリー」

*Hikaru Takagaki[1], Yohei Shirose[1] (1. Ehime Univ. Sci.&Egn.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-03] Texture transition during serpentinization in Hodono, Ehime Prefecture

「発表賞エントリー」

*Hinano Wada[1], Enju Satomi[1] (1. Ehime Univ. S/E)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-04] Water-rock interaction recorded in episyenites from Hakatajima Island, Ehime Prefecture

「発表賞エントリー」

*Toko FUKUI[1], Kazuya SHIMOOKA[2], Toshiro TAKAHASHI[3], Satoshi SAITO[1] (1. Ehime Univ., 2. Kwansei Gakuin Univ., 3. Niigata Univ.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-05] Mechanisms of Reaction-Induced Fracturing in Serpentinite Carbonation; Insights from Hydrothermal Experiments and Geochemical Modeling

「発表賞エントリー」

*Taiki Taiki[1], Masaoki Uno[1], Atsushi Okamoto[1] (1. Tohoku University)

Poster presentation | R4: Mineral sciences of the Earth surface

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

R4: Mineral sciences of the Earth surface

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-01] Design and synthesis of aragonite particles as a reinforcement of plastic materials

*Hiroshi SAKUMA[1], Shigeru SUEHARA[1], Masumi KAMON[1], Kenji TAMURA[1] (1. NIMS)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-03] Experiments on the Inhibitory Effect of Polysaccharides on Cation Ordering of Dolomite During Dolomitization Reaction at 200°C: Preliminary Results

Hiromi KONISHI[1], *Yao Chen[1] (1. Niigata Univ. Sci.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-04] Formation Process of Carbonate Minerals in Non-aqueous Solvents: Consideration of the Effects of Different Hydration States of Cations

Naoki IWANE[1], *Jun KAWANO[1], Hiroyuki KAGI[2], Ayako SHINOZAKI[1], Takaya NAGAI[1] (1. Hokkaido Univ. Sci., 2. UTokyo Sci.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-05] Impact of evaporation on CO2 mineralization during enhanced rock weathering

*Naoki NISHIYAMA[1], Masao SORAI[1], Keisuke FUKUSHI[2], Yuto NISHIKI[1] (1. National Institute of Advanced Industrial Science and Technology (AIST), 2. Kanazawa University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-06] Framboidal pyrite in modern stromatolite from Fukiage-Jigoku, Onikobe Spring, Miyagi, Japan

「発表賞エントリー」

*Tatsuya Kamada[1], Hiroaki Ohfuji[1] (1. Tohoku Univ. Sci.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-07] Observations of nano-texture for amosite asbestos by using high-resolution STEM imaging

*Hayato Miura[1], Ichiro Ohnishi[1] (1. JEOL Ltd.)

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

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

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

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-01] Ezochiite and placer deposit of platinum group minerals in northwestern Hokkaido, Japan

*Daisuke HAMANE[1], Katsuyuki Saito (1. The University of Tokyo)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-02] Review for Mineralogical Science: Mineral Resources, Heritage Stone, and SDGs

*Yuhei Takahashi[1] (1. NUE)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-03] Formation process of olivine with remarkable parting and apparently oblique extinction in the lherzolite of Ochiai-Hokudo peridotite complex, Okayama Prefecture, Japan

*Terumi EJIMA[1], Takashima Chihiro[2], Arai Shoji[3] (1. Shinshu University, 2. DAIYA SEIKI Co., Ltd., 3. Kanazawa University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-04] The effect of Na ion on carbonation reaction of forsterite

*Hiroki Hasegawa[1], Atsushi Kyono[2], Satoru Okada[1], Kosuke Yamaguchi[1] (1. Univ of Tsukuba, Grad. sch. of Life and Environmental. Sci, 2. Univ of Tsukuba, Life and Environmental Science)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-05] Mineralogical characteristics of Pothole Reef and Pseudo Merensky Reef at the western limb of the Bushveld Complex, South Africa

「発表賞エントリー」

*Amu Umesato[1], Takuya Echigo[1], Yasushi Watanabe[1] (1. Akita Univ. Int.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-06] High-Ti biotite in the alkali volcanic rock from the Akiyoshi Belt and its significance

*Kosuke Kimura[1], Kaushik Das[2], Yasutaka Hayasaka[3] (1. Osaka Metro. Univ. Sci., 2. Hiroshima Univ., 3. Amakusa Mus. Goshoura Dinosaur Isl.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-07] Estimation of the origin of SDW in the Horoman peridotite complex by analysis of micro-inclusions in the olivine

「発表賞エントリー」

*Masaharu Aketa[1], Akira Miyake[1], Norikatsu Akizawa[2], Megumi Matsumoto[3], Yohei Igami[1], Itaru Mitsukawa[1] (1. Kyoto University, 2. University of Tokyo, 3. Tohoku University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-08] Fe-Ni-S-As minerals in the Imono peridotite body, Besshi area, Niihama city, Ehime prefecture.

「発表賞エントリー」

*Masato Kuniyoshi[1], Satomi Enju[1] (1. Ehime Univ.Sci and Eng.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-09] Fluorite mineralization associated with alkaline metasomatism in the Jinmu-Mihara deposit, Hiroshima, Japan.

「発表賞エントリー」

*Masahiro SUNADA[1], Takuya Echigo[1], Yasushi Watanabe[1] (1. Akita Univ. IRS.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-10] Petrological study of ultramafic rocks from the Kiyama area, eastern Kumamoto City

Narumichi Nishio[1], *Satoko ISHIMARU[2] (1. Kumamoto Univ. Sci., 2. Kumamoto Univ. FAST)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-11] FLUID INCLUSION STUDIES IN QUARTZ VEINS WITH TIN MINERALIZATION IN THE KIBARAN INTRUSIVE ROCKS IN KALEHE (SOUTH KIVU, DR CONGO)

「発表賞エントリー」

*MUSA Moise-Kam's SAIDI[1], MADDHUSOODHAN Satish Kumar[1] (1. Niigata Univ.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-12] Depleted peridotite and melt reaction as recorded by layered dunite-harzburgite in the Horoman peridotite, Hidaka Metamorphic Belt, Hokkaido, Japan.

「発表賞エントリー」

*Keisuke Kurihara[1], Tatsuhiko Kawamoto[1], Aya Hihara[1], Miki Tasaka[1], Hajime Taniuchi[2], Takeshi Kuritani[3], Akiko Matsumoto[3] (1. Shizuoka Univ., 2. AIST, 3. Hokkaido Univ.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-13] Research and development for the exploration of unknown cosmic ray events using Paleo-Detector

*Yuki Ido[1], Tatsuhiro Naka[2], Shota Futamura[3], Tohma Ori[4], Takenori Kato[5] (1. Nagoya Univ. Env., 2. Toho Univ. Sci, 3. Nagoya Univ. Sci., 4. N.I.T. Suzuka, 5. Nagoya Univ. ISEE)

Poster presentation | R8: Metamorphic rocks and tectonics

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

R8: Metamorphic rocks and tectonics

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-01] Mineralogical characterization of serpentinite varieties in Sangun-Renge Belt exposed at Sasaguri, Fukuoka Prefecture, and their geological implications

「発表賞エントリー」

*Swarnaa ANNADURAI MUNUSAMY[1], Jun-ichi ANDO[1,2], Yuki IWASAKI[3], Kaushik DAS[1,2], Dyuti Prakash SARKAR[4], Seiichiro UEHARA[5] (1. Hiroshima Univ., 2. HiPeR, Hiroshima, 3. NIPPON STEEL CORP., 4. JAMSTEC, 5. The Kyushu Univ. Museum)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-02] Metamorphic temperature structure of Sanbagawa Metamorphic Belt in the southern part of Shinshiro City, Aichi Prefecture, Japan

「発表賞エントリー」

*Akane Matsuzaki[1], Yui Kouketsu[1], Katsuyoshi Michibayashi[1] (1. Nagoya Univ. Env.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-03] Origin and pyrometamorphism of gneissose granitoid xenoliths from Mt. Daisen, Tottori Prefecture, SW Japan

「発表賞エントリー」

*Mizuki TAKAHASHI[1], Shunsuke Endo[1] (1. Shimane University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-04] Petrography of monazite in a metapelite in the eastern Nepal Himalaya and Development of Th-Pb dating method for monazite

「発表賞エントリー」

*Shumpei KUDO[1], Tetsuo Kawakami[1], Sota Niki[2], Toru Nakajima[3], Takafumi Hirata[4], Takeshi Imayama[5] (1. Kyoto Univ. Sci., 2. Nagoya Univ. ISEE., 3. JAEA, 4. UTokyo. Sci., 5. Okayama Univ. of Sci.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-05] Petrological description of ultramafic rocks in the low-grade metamorphic zone of the Sanbagawa belt: A case study of the Ina area, Nagano Prefecture, central Japan

「発表賞エントリー」

*Kaho Nobuhara[1], Hiroshi Mori[1], Takayoshi Nagaya[2] (1. Shinshu Univ. , 2. Tokyo Gakugei Univ.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-06] Detrital zircon U–Pb dating and Raman spectral analysis of carbonaceous material in the boundary area of the Sanbagawa–Chichibu belts, central Kii Peninsula

*Hiroshi MORI[1], Kojiro USUI[1,2], Tetsuya Tokiwa[1], Kazuhiro Ozawa[3] (1. Shinshu University, 2. Nippon Koei Co., Ltd., 3. Precision Forestry Measurement Ltd.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-07] New finding of wakefieldite from an amphibolite in the Horokanai area, Kamuikotan HP metamorphic belt, Hokkaido, Japan

*Taro Kato[1], Kosuke NAEMURA[1], Toru Takeshita[2] (1. Iwate University, 2. Pacific Consultants Co., Ltd.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-08] Thermal history and protolithic detritus provenance of a sillimanite–chrysoberyl-bearing gneiss from the Ashio mountains in the western part of Tochigi prefecture

*Ippei KITANO[1] (1. Hokkaido Univ. Mus.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-09] Petrological characterlization and geochronology of metamorphic rocks from the Northern Subzone of the Maizuru Terrane

*Sota Muroi[1], Kaushik Das[1], Kenta Kawaguchi[1], Yasutaka Hayasaka[2] (1. Hiroshima University, 2. Amakusa Museum of Goshoura Dinosaur Island)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-10] The fate of organic carbon during subduction: Raman micro-spectroscopy and C-isotope geochemistry of carbonaceous materials in Sambagawa pelitic schists, central Shikoku, Japan

*Hironobu Harada[1], Tatsuki Tsujimori[1], Akizumi Ishida[1], Takeshi Kakegawa[1], Tetsumaru Itaya[2] (1. Tohoku Univ., 2. jGnet)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-11] Fluid inclusions of ophicarbonates in the Apennine Mountains, Italy

Hiroyuki Kaneko[1], *Tatsuhiko KAWAMOTO[1], Francesca Meneghini[2], Yosuke Osawa[1] (1. Shizuoka University, 2. Università di Pisa | UNIPI · Department of Earth Sciences)

JAMS General Meeting, Award ceremony

2:00 PM - 3:15 PM JST | 5:00 AM - 6:15 AM UTC | ES Hall Higashiyama Campus

JAMS General Meeting, Award ceremony

2:00 PM - 3:15 PM JST | 5:00 AM - 6:15 AM UTC

[2Lecture-1-1400-1add] 定時総会・授賞式

Lectures of JAMS Awardees

3:30 PM - 5:00 PM JST | 6:30 AM - 8:00 AM UTC | ES Hall Higashiyama Campus

Lectures of JAMS Awardees

Oral presentation | T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

Fri. Sep 13, 2024 9:00 AM - 12:00 PM JST | Fri. Sep 13, 2024 12:00 AM - 3:00 AM UTC | ES Hall Higashiyama Campus

T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

Chairperson:Yasuhito Osanai, Masaaki Owada

9:00 AM - 9:25 AM JST | 12:00 AM - 12:25 AM UTC

[T1-01] Decarbonized Society and Essential Metal Resources

「招待講演」

*YOSHITAKA HOSOI[1] (1. JICA)

9:25 AM - 9:50 AM JST | 12:25 AM - 12:50 AM UTC

[T1-02] Japan's current approach to securing mineral resources

「招待講演」

*Kazuhiro YONEMURA[1] (1. JOGMEC)

9:50 AM - 10:15 AM JST | 12:50 AM - 1:15 AM UTC

[T1-03] Critical metal potentiality of Mongolia

「招待講演」

*Sereenen Jargalan[1], M. Arvinzun[2] (1. Mongolian University of Science and Technology, 2. Mongolian Society of Economic Geologists)

10:15 AM - 10:30 AM JST | 1:15 AM - 1:30 AM UTC

[2Lecture-101-06-4add] 休憩

10:30 AM - 10:55 AM JST | 1:30 AM - 1:55 AM UTC

[T1-04] Geology, sedimentation environment of the
Ovoot khural coal bearing depression, in South Mongolia

「招待講演」

*Magsarjav Ochirbat[2], Sereenen Jargalan[1] (1. Mongolian University of Science and Technology, 2. Mongolian Society of Economic Geologists)

10:55 AM - 11:20 AM JST | 1:55 AM - 2:20 AM UTC

[T1-05] Insights into the mineralogical characteristics of Li-enriched metasomatic albitite from the Iwagi islet, SW Japan

「招待講演」

*Mariko NAGASHIMA[1], Teruyoshi IMAOKA[1] (1. Yamaguchi Univ. Sci.)

11:20 AM - 11:45 AM JST | 2:20 AM - 2:45 AM UTC

[T1-06] Ion adsorption-type REE deposits: the source of HREE

「招待講演」

*Yasushi Watanabe[1] (1. Akita Univ. Int. Res. Sci.)

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[2Lecture-101-06-8add] 休憩

Decarbonized Society and Essential Metal Resources

*YOSHITAKA HOSOI[1]

1. JICA

Measures to curb the rise in global temperature include energy conservation, low-carbon energy (promotion of the use of wind power, solar power generation, geothermal power generation, etc.), and conversion of energy use (electrification, use of hydrogen, etc.).Here, when trying to reduce the carbon value of energy, it became clear that special metals were needed in unusually large quantities. For example, solar power generation requires gallium and cadmium as solar cells, in addition to copper and aluminum. Wind turbines use generators that use permanent magnets composed of rare earth minerals such as neodymium and dysprosium. Geothermal power generation requires titanium for heat-resistant wells, and chromium is also needed for other technologies. Storage batteries are also needed for electric vehicles and wind power generation, but they also require lithium and vanadium. The demand for electric vehicles is expanding rapidly in various countries, and the demand for storage batteries will expand proportionally.According to the World Bank's 2020 report, if we forecast the amount of production required for 2050 compared to the production volume in FY2018, the amount of graphite 494%, lithium 488%, cobalt 460%, indium 231%, vanadium 189%, etc. It has become necessary. This is not the only metal needed. The World Bank lists 17 mineral types. As for the reserves, production, and consumption of these metals, the author considered the priority countries. Many of these resources are found in developing countries.Here, we consider the challenges of securing critical mineral resources.In addition, there are concerns that many of these limited producer countries are politically unstable, environmental pollution associated with mine development is a problem, and social turmoil occurs frequently.JICA is committed to solving the problems of resource-rich developing countries.

Keywords: Decarbonization, Essential metals, Mining challenges

Japan's current approach to securing mineral resources

*Kazuhiro YONEMURA[1]

1. JOGMEC

The global green transformation (GX) is intensifying competition to secure Critical Minerals for batteries, semiconductors, and other applications. In particular, not only existing resource companies but also automakers and battery manufacturers around the world are accelerating their efforts to secure those material source to lithium, nickel, and graphite, which are used in electric vehicles. In some cases, there are concerns about economic security risks due to the ubiquity of supply source and midstream processes for these mineral resources.

Under these circumstances, efforts to diversify supply sources and midstream processes are being promoted worldwide, including financial support from governments and institutional design. There is also a growing movement to promote sustainable resource development by high level ESG standards.

In Japan, based on the "Storage Battery Industrial Strategy" and the "Policy for Initiatives to Ensure Stable Supplies of Critical Minerals" based on the Economic Security Promotion Act, Japanese government supports Japanese companies investment for mine development, technology development and smelting-processing, specifically, increasing the ratio of financial support and providing subsidies for development and other activities through JOGMEC. In addition to these measurement, it is also actively conducting resource diplomacy with resource-rich countries and responding to multiple-frameworks.

As for diversification of supply sources, while existing resources are being depleted, investment is concentrated on promising projects. As one solution, JOGEMC is focusing on ore minerals that have not been considered as resources (e.g., Awaruite) and areas where exploration has not progressed. Asia, which contains complex tectonics settings and remains un-exploration areas, has great potential of critical minerals.

Keywords: Critical Minerals, Securing Mineral Resources

Critical metal potentiality of Mongolia

*Sereenen Jargalan[1], M. Arvinzun[2]

1. Mongolian University of Science and Technology, 2. Mongolian Society of Economic Geologists

Critical metals such as copper, lithium, nickel, cobalt and rare earth elements are essential components in many of today’ s rapidly growing clean energy technologies –from wind turbines and electricity networks to electric vehicles. Lithium, nickel, cobalt, manganese and graphite are crucial to battery performance. rare earth elements are essential for permanent magnets used in wind turbines and EV motors.
Mongolia has wide potential on mineral resources in variety of types.
Regarding to critical metal tendency, there is no clear classification in Mongolia, partly identify as high technology minerals and some government official documents use as important minerals. Even though some small projects are carried out to identify how potential is critical metals including REE, Li, Ni, Co as well as graphite in recent years.
Therefore, we carried out geological reconnaissance study to make clear genetic type, regional distribution characteristics and ore mineral identification. As result we have quite good potentiality on REE mineralization, including carbonatite and alkaline metasomatite types. Lithium is not so studied in Mongolia, but recently, we have several discoveries of Li bearing pegmatites in the central-eastern part. Nickel and cobalt are almost not studied instead of small occurrences found during geological mapping at scale 1:200000 and 1:50000, so no clear potentiality is recognized. There are several deposits and occurrence in Mongolia which are closely relate with marbles metamorphic rocks and has possible potentiality. Copper is the most potential resource making in all, almost 1 billion tons of reserves and resources. Annual production is expected to more than double from 300,000 tons of copper concentrate per year to over 600,000 tons per year from 2028 to 2036 once the Oyu Tolgoi mine is fully operational in 2023.
This time we would like to make general introduction of how potential is in critical metal tendency in Mongolia.

Keywords: Metal potentiality, Mongolia

Oral presentation

T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

Chairperson:Yasuhito Osanai, Masaaki Owada

Fri. Sep 13, 2024 9:00 AM - 12:00 PM ES Hall (Higashiyama Campus)

10:15 AM - 10:30 AM

[2Lecture-101-06-4add]休憩

Geology, sedimentation environment of the Ovoot khural coal bearing depression, in South Mongolia

*Magsarjav Ochirbat[2], Sereenen Jargalan[1]

1. Mongolian University of Science and Technology, 2. Mongolian Society of Economic Geologists

Mongolia has abundant resources of coal, which are distributed mainly in the south and southeastern part, including some deposits in the north and west part of the country. In recent years, the exploration of coal deposits has been intensively carried out, but not much effort has been made to determine the origin, regional regularity of coal distribution as well as relationship between geological condition and coal quality.
The purpose of this study is to clarify geology and sedimentation environment of the Ovoot khural coal bearing depression in order to contribute to the reconstruction of the Mesozoic geologic and geodynamic setting of the Mongolia.
The study area is located at the 1000 km southwest of Ulaanbaatar and 50 km north of the Mongolia-China border, forming latitudinal trending depression which is 40 to 60 km in width and continues more than 200 km. There are five independent coal bearing parts with 16 coal deposits, which are: Bayantes part, contains Elstei, Khurshuut, Khuvd, Gashuu Tolgoi and Khuren tasv deposits; Ovoot Tolgoi part, contains Sunset and Sunrise deposits; Nariin sukhait part contains West Nariin sukhait, Central Nariin sukhait, East Nariin sukhait and Khuren shand deposits; Sumber part contains Central Sumber, Sumber and Biluut deposits and Jargalant part contains Jargalant and South Biluut deposits.
Result of geochemical study indicates that sediments deposited in the Ovoot khural depression is sourced by the weathering and transporting of intermediate and felsic composition magmatic rocks, mainly from dacite, andesite including minor amount of metamorphic, sedimentary and intrusive rocks.
Spider diagrams of trace element composition of sedimentary rocks of the Orgilokhbulag formation, show Nb-depletion and Pb, Mo enrichment, indicating possible origin of magmatic rocks formed under subduction environment and they are intermediate to felsic in composition. The major trace and rare earth element composition of the Orgilokh bulag formation sedimentary rocks, indicate that the source rocks of sediments might have been formed in the active continental margin tectonic setting.
According to provenance model, coal deposition is undertaking with good tissue preservation, in an alternating environment of oxygenic and deoxygenated swamps.
Based on the metamorphic degree, the temperature of peat compression, the amount of volatile, and the depth gradient of temperature, peat was buried and deposited at a depth of 3500-7000 meters. Low sulfur content, low ash content and low volatile content of coal at the various parts of the depression indicates thet the peat deposition is occurred under two stages.

Keywords: Ovoot khural coal, Mongolia

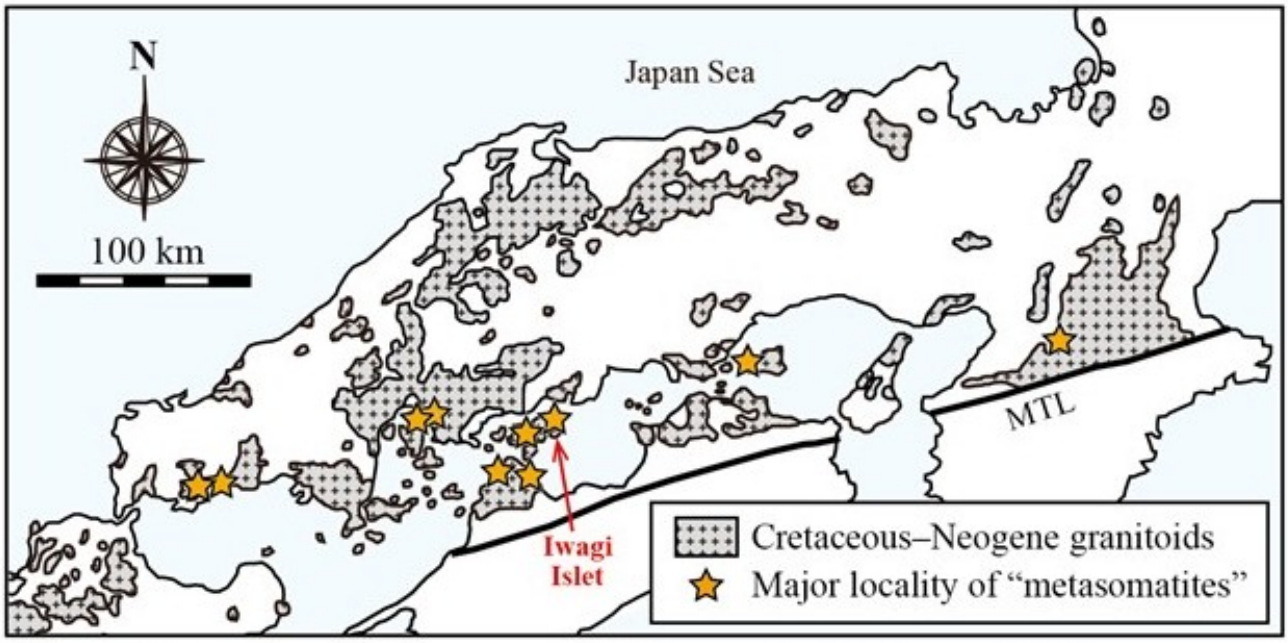
Insights into the mineralogical characteristics of Li-enriched metasomatic albitite from the Iwagi islet, SW Japan

*Mariko NAGASHIMA[1], Teruyoshi IMAOKA[1]

1. Yamaguchi Univ. Sci.

The study of metasomatic rocks is essential for comprehending the nature and origin of metasomatic agents. It might provide a clue for fluid circulation within the crust. In the Setouchi Province, metasomatic rocks are distributed along an approximately E–W trend, and these rocks are associated with Late Cretaceous granites. The Iwagi albitite is one such metasomatic rock. However, unlike other metasomatites in the area, its high lithium content (500 ppm) is unique. Detailed investigations of the mineralogical characteristics of Li-minerals have been conducted to better understand the formation and evolution of Iwagi albitites. The albitites exist as small masses, and the textures of the weakly metasomatized ones resemble those of the host adjacent granite. The transition from granite to albitite occurs gradually and can be understood through the mineral assemblages. The Iwagi albitite is known as the type locality of four Li-analog minerals: sugilite $KNa_2(Fe^{3+}, Mn^{3+}, Al)_2Li_3Si_{12}O_{30}$, katayamalite $KLi_3Ca_7Ti_2(SiO_3)_{12}(OH)_2$, murakamiite $LiCa_2Si_3O_8(OH)$, and ferro-ferri-holmquistite $Li_2(Fe^{2+}{}_3Fe^{3+}{}_2)Si_8O_{22}(OH)_2$. The former three minerals were found in the fully albitized rock, while the latter was found in the weakly albitized granite. The albitites display a variety of replacement textures due to Na–Li metasomatism, and they also exhibit noticeable strain-induced textures.
The δ^7Li values of murakamiite and Li-rich pectolite show a wide range from -9.1 to +0.4‰ (ave. -2.9‰) and should have resulted from hydrothermal fluid-rock interactions at 300–600 ˚C. The very low δ7Li values may have originated from intra-crystalline Li isotope diffusion or involvement of deep-seated, Li–Na-enriched subduction-zone fluids with low δ7Li values. This finding highlights the significance of fluid-rock interactions in the formation of metasomatic rocks. Deformation-induced fracturing of the rock may have enhanced fluid circulation, leading to the formation of the metasomatic rocks along the E–W trending lineament.

Keywords: Lithium, albitite, metasomatism



Distribution of metasomatites in Setouchi Province, SW Japan.
(after Murakami 1976)

Ion adsorption-type REE deposits: the source of HREE

*Yasushi Watanabe[1]

1. Akita Univ. Int. Res. Sci.

Ion adsorption rare earth deposits were confirmed in southern China including Jiangxi province in late 1970's. This unique deposit type forms by adsorption of rare earth ions on clay minerals represented by kaolinite and halloysite due to weathering of granitic rocks. Although the ore grades of this deposit type is extremely lower (<0.2 wt%) than the other rare earth deposits such as carbonatite, extraction of rare earths from the clay ores is easy and inexpensive. The development of this deposit type has been accelerating since 2000 as the source of heavy rare earths. This is due to the invention of neodymium magnet in 1983, followed by commercialization in 1985, and production of hybrid vehicle (Prius) in 1997. Because major rare earth deposits such as carbonatite and placer deposits are enriched in LREE but poor in HREE, the ion adsorption type deposits became the important HREE supply source. Although exploration of HREE prospects has been conducted worldwide and a few HREE enriched alkaline-rock related deposits were discovered, no deposit is better than the ion adsorption deposits in terms of production cost and easiness in processing. The ion adsorption type deposits are distributed not only in southern China but also in southeast Asia. This type of deposits also present in suthern Africa including Malawi and Madagascar and South America such as Brazil and Chile. Presently Myanmar has become the major country that produces ionic ores. For the formation of ion adsorption HREE deposits needs the following three conditions; 1) presence of HREE enriched host rocks, 2) formation of thick (>10 m) weathering crust, and 3) presence of REE minerals in the host rocks that easily dissolve during weathering.

Keywords: ion adsorption-type deposit, heavy rare earth elements, weathering, magnet

Oral presentation

T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

Chairperson:Yasuhito Osanai, Masaaki Owada

Fri. Sep 13, 2024 9:00 AM - 12:00 PM ES Hall (Higashiyama Campus)

11:45 AM - 12:00 PM

[2Lecture-101-06-8add]休憩

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

Fri. Sep 13, 2024 9:00 AM - 12:00 PM JST | Fri. Sep 13, 2024 12:00 AM - 3:00 AM UTC | ES024 Higashiyama Campus

S2: Water Rock Interaction (Special Session)

Chairperson:Noriyoshi Tsuchiya

9:00 AM - 9:05 AM JST | 12:00 AM - 12:05 AM UTC

[2Lecture-201-10-1add] コンビーナ挨拶

9:05 AM - 9:35 AM JST | 12:05 AM - 12:35 AM UTC

[S2-01] Slab-derived fluid infiltrating back-arc mantle

「招待講演」

*Junji YAMAMOTO[1] (1. Kyushu University)

9:35 AM - 9:50 AM JST | 12:35 AM - 12:50 AM UTC

[S2-02] Geochemical diversity and significance of orthopyroxene pseudomorphs in ultramafic rocks derived from mantle wedges

「発表賞エントリー」

*Takumi Wani[1], Yuji Ichiyama[1], Akihiro Tamura[2], Tomoaki Morishita[2] (1. Chiba University, 2. Kanazawa University)

9:50 AM - 10:05 AM JST | 12:50 AM - 1:05 AM UTC

[S2-03] Petrogenesis and significance of ophicarbonate in the Kanasaki serpentinite body (Kanto Mountains, Central Japan)

*Ryosuke OYANAGI[1,2], Hikaru Sawada[3,2], Qing Chang[2], Madhusoodhan Satish-Kumar[4] (1. Kokushikan Univ., 2. JAMSTEC, 3. Toyama Univ., 4. Niigata Univ.)

10:05 AM - 10:20 AM JST | 1:05 AM - 1:20 AM UTC

[S2-04] CO_2 mineralization in andesitic rocks revealed by hydrothermal experiments and thermal analyses

*Otgonbayar DANDAR[1], Atsushi Okamoto [1], Masaoki Uno[1], Miku Takeya[2] (1. Tohoku University, 2. INPEX)

10:20 AM - 10:30 AM JST | 1:20 AM - 1:30 AM UTC

[2Lecture-201-10-6add] 休憩

10:30 AM - 10:45 AM JST | 1:30 AM - 1:45 AM UTC

[S2-05] Massive and foliated serpentinites from the Udonohana ultramafic body, Western Ehime Prefecture, Japan.

「発表賞エントリー」

*Yui Joguchi[1], Satomi Enju[1] (1. Ehime Univ. Sci. &Egn.)

10:45 AM - 11:00 AM JST | 1:45 AM - 2:00 AM UTC

[S2-06] "Element transport and magnetite decomposition during alteration of the gabbroic vein in serpentinite body from the Bayankhongor ophiolite, Mongolia"

「発表賞エントリー」

*Nomin Tumurkhuu[1], Otgonbayar Dandar[1], Masaoki Uno[1], Manzshir Bayarbold[1], Atsushi Okamoto[1] (1. Tohoku University)

11:00 AM - 11:15 AM JST | 2:00 AM - 2:15 AM UTC

[S2-07] Dissolution reprecipitation - re-equilibration process of feldspar in heat source granite and supercritical geothermal reservoir using borehole samples from Kakkonda granite

「発表賞エントリー」

*Masayoshi Hoshida[1], Masaoki Uno[1], Satoshi Matsuno[1], Astin Nurdiana[1], Noriyoshi Tsuchiya[2,1] (1. Tohoku University, 2. National Institute of Technology, Hachinohe College)

11:15 AM - 11:30 AM JST | 2:15 AM - 2:30 AM UTC

[S2-08] Formation mechanism of "cleavable olivine"

*Jun-ichi ANDO[1,2], Naotaka Tomioka[3,2], Hirokazu Maekawa[4] (1. Hiroshima Univ., 2. Hiroshima Univ., HiPeR, 3. JAMSTEC, 4. Osaka Metropolitan Univ.)

11:30 AM - 11:45 AM JST | 2:30 AM - 2:45 AM UTC

[S2-09] Experimental study to elucidate sulfide chimney development process and power generation characteristics in submarine hydrothermal systems

「発表賞エントリー」

*Kentaro Toda[1], Atsushi Okamoto[1], Dandar Otgonbayar[1], Misaki Takahashi[1], Yoshinori Sato[1] (1. Tohoku Univ. Environmental Sci)

11:45 AM - 12:00 PM JST | 2:45 AM - 3:00 AM UTC

[S2-10] Carbonation of Mantle Peridotite: An Approach From Fluid Inclusion Analysis and Hydrothermal Experiments

*Tatsuhiko KAWAMOTO[1] (1. Shizuoka University)

Oral presentation

S2: Water Rock Interaction (Special Session)

Chairperson:Noriyoshi Tsuchiya

Fri. Sep 13, 2024 9:00 AM - 12:00 PM ES024 (Higashiyama Campus)

9:00 AM - 9:05 AM

[2Lecture-201-10-1add]コンビーナ挨拶

Slab-derived fluid infiltrating back-arc mantle

*Junji YAMAMOTO[1]

1. Kyushu University

Keywords: slab, mantle transition zone, nitrogen isotope ratio, xenolith, fluid inclusion

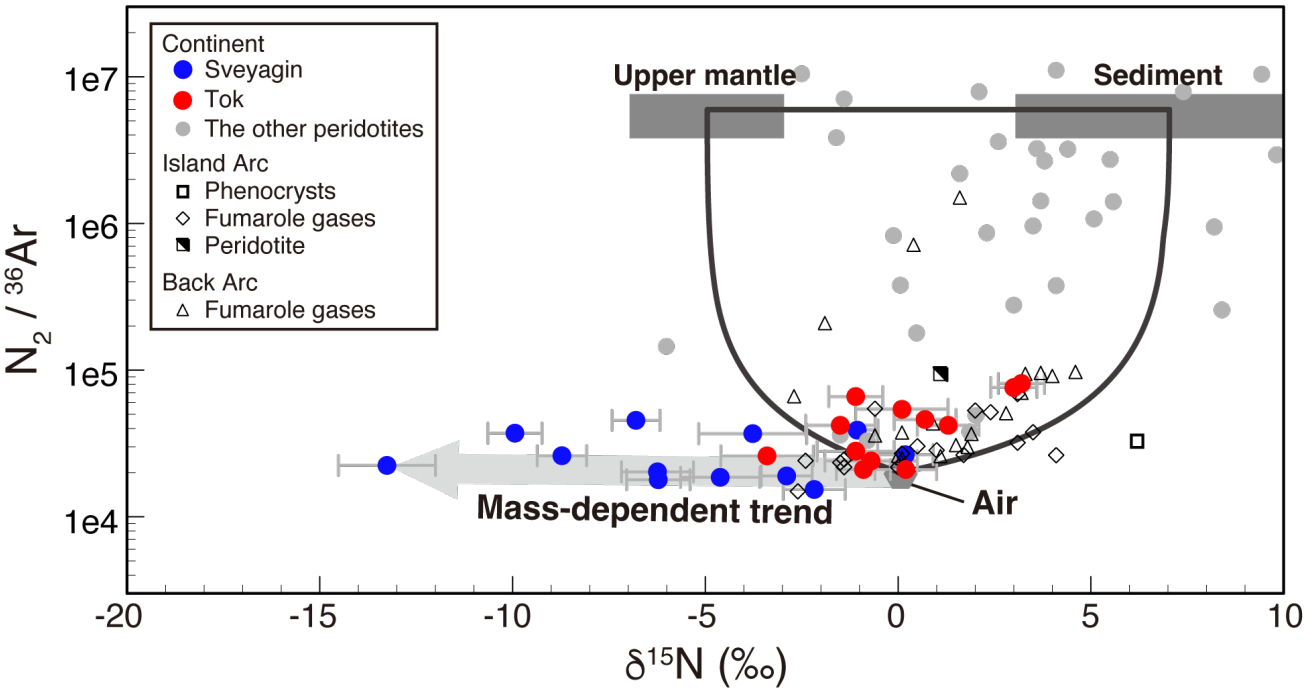


図1. $N_2/^{36}Ar$ vs. $\delta^{15}N$ of Far Eastern Russian xenoliths with data referred from earlier studies (see Yamamoto et al. (2020) EPSL).

Geochemical diversity and significance of orthopyroxene pseudomorphs in ultramafic rocks derived from mantle wedges

*Takumi Wani[1], Yuji Ichiyama[1], Akihiro Tamura[2], Tomoaki Morishita[2]

1. Chiba University, 2. Kanazawa University

Keywords: mantle wedge, mantle metasomatism, slab fluid, orthopyroxene pseudomorph

Petrogenesis and significance of ophicarbonate in the Kanasaki serpentinite body (Kanto Mountains, Central Japan)

*Ryosuke OYANAGI[1,2], Hikaru Sawada[3,2], Qing Chang[2], Madhusoodhan Satish-Kumar[4]

1. Kokushikan Univ., 2. JAMSTEC, 3. Toyama Univ., 4. Niigata Univ.

Keywords: Serpentine, Ophicarbonate, Carbon cycle

CO_2 mineralization in andesitic rocks revealed by hydrothermal experiments and thermal analyses

*Otgonbayar DANDAR[1], Atsushi Okamoto [1], Masaoki Uno[1], Miku Takeya[2]

1. Tohoku University, 2. INPEX

Mineral carbonation enables long-term stable CO_2 storage. Among rocks, basalts and ultramafic rocks (high Mg and Ca contents) are known to have high potential to store CO_2. Although, andesitic rocks (composition is wide; microstructures are diverse) are widely distributed in Japan (in a subduction zone), their suitability for mineral carbonation and CO_2 storage is not well understood. In this study, we report preliminary results of hydrothermal reaction experiments (exps) using andesitic agglomerate rocks from the Nagaoka area, Niigata Prefecture and thermal analyses of the products.The andesite agglomerate consists mainly of volcanic glass, plagioclase, clinopyroxene, with small amounts of orthopyroxene, hornblende, and iron oxides. Two types (a batch-type vessel and a stirred apparatus) of exps have been conducted with the powder samples (150-250 μm). In the batch exp (filling ratio = 43% and remained space is CO_2 gas), powder sample is placed at two locations: the top (supercritical CO_2 saturated in water) and bottom (reacted with a CO_2 dissolved solution) of the reaction vessel. The batch exps were conducted at 75 ℃, 18 MPa (80 days), 150 ℃, 20 MPa (20 days), and 200 ℃, 25 MPa (20, 40, and 60 days). The solid phase after exp is observed by EPMA, TG, and TPD-MS, and the solutions are analyzed for element contents by ICP-OES. To accelerate the reaction, a stirred reaction apparatus was used for the exp at 200 ℃, 20MPa, and 10 days.In the batch exps at 75 ℃ and 150 ℃ (Ca and Mg+Fe contents = 10-80 mg/kgH_2O), dissolution of volcanic glass is observed only with small dissolution of plagioclase and other minerals. Significant carbonate precipitation was observed in a 60-day batch exp at 200 ℃ (Fe- and Ca-rich magnesite) and a 10-day stirred exp (calcite and dolomite). The precipitation proceeded not only at the bottom (CO_2 dissolved solution), but also at the top (supercritical CO_2), suggesting the reaction accelerated by water vapor. The experimental solution (carbonate precipitated, the pH increased to >7 and the concentrations of Mg and Ca <20 mg/kH_2O), suggests the pH in the reaction vessel increased and reached to condition of carbonate precipitation.Based on the above exps, the andesitic rocks in the Nagaoka area are considered to have sufficient potential for mineral carbonation and CO_2 storage.

Keywords: Mineral carbonation , CO2 storage, Andesite, Hydrothermal reaction experiment, the Nagaoka area, Niigata Prefecture

Oral presentation

S2: Water Rock Interaction (Special Session)

Chairperson:Noriyoshi Tsuchiya

Fri. Sep 13, 2024 9:00 AM - 12:00 PM ES024 (Higashiyama Campus)

10:20 AM - 10:30 AM

[2Lecture-201-10-6add]休憩

Massive and foliated serpentinites from the Udonohana ultramafic body, Western Ehime Prefecture, Japan.

*Yui Joguchi[1], Satomi Enju[1]

1. Ehime Univ. Sci. &Egn.

Keywords: serpentinite, ultramafic rocks, cumulate, Mikame ultramafic body

"Element transport and magnetite decomposition during alteration of the gabbroic vein in serpentinite body from the Bayankhongor ophiolite, Mongolia"

*Nomin Tumurkhuu[1], Otgonbayar Dandar[1], Masaoki Uno[1], Manzshir Bayarbold[1], Atsushi Okamoto[1]

1. Tohoku University

Hydration of mantle rocks is important for elucidating the dynamics of global water circulation, elemental transport, and geological processes. The crust-mantle interface constitutes a significant geological boundary where element transport occurs. However, research on the multi-stage hydration of mantle rocks within this zone, particularly in the oceanic lithosphere (mid-ocean ridge), is still lacking. Therefore, to understand element transport during the hydration of the crustal vein in the mantle at the crust-mantle transition zone, we investigate the mantle-crust section preserved in the Bayankhongor ophiolite (BO; mid-ocean ridge origin) Mongolia.The outcrop of the crust-mantle section (~30 m in diameter) in the BO is characterized by a brownish gabbroic body with a massive and sheared mantle body fully serpentinized. Mantle rock samples mainly consist of lizardite in two forms: mesh core (Mg# = 0.95-0.98) with fine magnetite (Mgt) and vein (Mg# = 0.94-0.98) with vein Mgt (<30 μm width), along with spinel (Mg# = 0.42-0.52 & Cr# = 0.46-0.48), and chlorite (Chl; Mg# = 0.87-0.96). The absence of brucite in the serpentinites suggests infiltration of Si-rich fluids. Green veins (80-95 cm in width; it mainly consists of clinopyroxene (Cpx; Mg# = 0.92) replaced by a mixture of Chl-serpentine (Srp) and cut by serpentine and epidote (Ep) veins), along with white veins (~15 cm in width; ~40 cm long; it is mostly consisted of Ep and Cpx with a minor amount of Chl) cut through the mantle rocks. Additionally, black veins (~2 cm in width; it is composed of Chl patches (Mg# = 0.83-0.93) and Chl-Srp patches with clear cleavages and fine Ti-rich minerals) intersect the serpentinite. The reaction zone (~3 mm) between host serpentinite and black vein shows that Mgt disappeared and Mgt is replaced by Al-rich (1.1-6.9 wt%) Srp. Mass balance on black vein (assuming protoliths: Cpx for Chl-Srp and plagioclase for Chl patch shows gain of Fe and Mg, and loss of Si, Al, and Ca whereas that on the reaction zone shows loss of Fe and gain of Si, and Al. This implies that Mg-rich fluid and chl formation cause Mgt disappearance and mobility of Fe, Si, and Al. Reaction zone and mass balance result imply that local mobility of Si, Al, Fe, Mg, and Ca could occur at the crust-mantle section in the oceanic lithosphere during multi-stage hydration.

Keywords: Element transport, Serpentine, Gabbroic vein

Element transport and magnetite decomposition during alteration of gabbroic vein in serpentinite body from the Bayankhongor ophiolite, Mongolia.

Nomin TUMURKHUU, Otgonbayar DANDAR, Masaoki UNO, Manzshir BAYARBOLD, Atsushi OKAMOTO

Graduate School of Environmental Studies, Tohoku University

Hydration of mantle rocks is important for elucidating the dynamics of global water circulation, elemental transport, and geological processes. The crust-mantle interface constitutes a significant geological boundary where element transport occurs. However, research on the multi-stage hydration of mantle rocks within this zone, particularly in the oceanic lithosphere (mid-ocean ridge), is still lacking. Therefore, to understand element transport during the hydration of the crustal vein in the mantle at the crust-mantle transition zone, we investigate the mantle-crust section preserved in the Bayankhongor ophiolite (BO; mid-ocean ridge origin) Mongolia.

The outcrop of the crust-mantle section (~30 m in diameter) in the BO is characterized by a brownish gabbroic body with a massive and sheared mantle body fully serpentinized. Mantle rock samples mainly consist of lizardite in two forms: mesh core (Mg# = 0.95-0.98) with fine magnetite (Mgt) and vein (Mg# = 0.94-0.98) with vein Mgt (<30 μm width), along with spinel (Mg# = 0.42-0.52 & Cr# = 0.46-0.48), and chlorite (Chl; Mg# = 0.87-0.96). The absence of brucite in the serpentinites suggests infiltration of Si-rich fluids. Green veins (80-95 cm in width; it mainly consists of clinopyroxene (Cpx; Mg# = 0.92) replaced by a mixture of Chl-serpentine (Srp) and cut by serpentine and epidote (Ep) veins), along with white veins (~15 cm in width; ~40 cm long; it is mostly consisted of Ep and Cpx with a minor amount of Chl) cut through the mantle rocks. Additionally, black veins (~2 cm in width; it is composed of Chl patches (Mg# = 0.83-0.93) and Chl-Srp patches with clear cleavages and fine Ti-rich minerals) intersect the serpentinite.

The reaction zone (~3 mm) between host serpentinite and black vein shows that Mgt disappeared and Mgt is replaced by Al-rich (1.1-6.9 wt%) Srp. Mass balance on black vein (assuming protoliths: Cpx for Chl-Srp and plagioclase for Chl patch shows gain of Fe and Mg, and loss of Si, Al, and Ca whereas that on the reaction zone shows loss of Fe and gain of Si, and Al. This implies that Mg-rich fluid and chl formation cause Mgt disappearance and mobility of Fe, Si, and Al. Reaction zone and mass balance result imply that local mobility of Si, Al, Fe, Mg, and Ca could occur at the crust-mantle section in the oceanic lithosphere during multi-stage hydration.

Dissolution reprecipitation - re-equilibration process of feldspar in heat source granite and supercritical geothermal reservoir using borehole samples from Kakkonda granite

*Masayoshi Hoshida[1], Masaoki Uno[1], Satoshi Matsuno[1], Astin Nurdiana[1], Noriyoshi Tsuchiya[2,1]

1. Tohoku University, 2. National Institute of Technology, Hachinohe College

Keywords: Feldspar, Feldspar thermometer, Supercritical geothermal reservoir, Dissolution reprecipitation, Re-equilibration

Formation mechanism of "cleavable olivine"

*Jun-ichi ANDO[1,2], Naotaka Tomioka[3,2], Hirokazu Maekawa[4]

1. Hiroshima Univ., 2. Hiroshima Univ., HiPeR, 3. JAMSTEC, 4. Osaka Metropolitan Univ.

Keywords: cleavable olivine, Subgrain boundary, Pipe diffusion

Experimental study to elucidate sulfide chimney development process and power generation characteristics in submarine hydrothermal systems

*Kentaro Toda[1], Atsushi Okamoto[1], Dandar Otgonbayar[1], Misaki Takahashi[1], Yoshinori Sato[1]

1. Tohoku Univ. Environmental Sci

Keywords: Hydrothermal Chimney

Carbonation of Mantle Peridotite: An Approach From Fluid Inclusion Analysis and Hydrothermal Experiments

*Tatsuhiko KAWAMOTO[1]

1. Shizuoka University

Carbonate rocks in serpentinites are called ophicarbonate. Two types of ophicarbonate are observed as carbonate veins in serpentinite and serpentinite breccias surrounded by carbonate matrix. At Shizuoka University, Japan, we have described and reported saline fluid inclusions in carbonate minerals in ophicarbonate at the localities as follows: (1) carbonate veins in serpentinites of the Oman ophiolite, formed at a fast spreading ridge; (2) carbonate veins and carbonate matrix in serpentinites in the Western Alps ophiolite, formed at a slow spreading ridge; (3) calcite in serpentinite mud volcanoes in the Izu Mariana Trench; and (4) carbonate veins in mantle-wedge serpentinite in the Sambagawa Belt, Chichibu, Japan. The results show that the studied fluid inclusions have salinity similar to that of seawater or slightly higher than seawater, except for the fresh water fluid inclusions found in the later veins of the Oman ophiolite serpentinite in (1), where fluid inclusions with salinity similar to seawater are present in veins formed below the seafloor before. This means that ophicarbonates formed by metamorphism beneath the seafloor seen in (1) and (2) involve saline fluids similar to seawater, and such saline fluids are also brought into the mantle wedge, where lithospheres sink seen in (3) and (4).

Hydrothermal experiments are also conducted to provide constraints on the carbonization of the Earth’s mantle. In addition to the hydrothermal experiments, we calculate phase diagrams by use of thermodynamic calculation such as Perple_X. If we will experimentally determine the equilibrium mineral assemblage in iron-bearing system, we can understand the effect of iron on the temperature and pressure conditions by comparing the calculated phase equilibrium in the CaO-MgO-SiO_2-H_2O-CO_2 system. The comparison between natural ophicarbonate and the calculated phase diagram also enables us to know the CO_2 /(H_2O+CO_2) molar ratio of the fluids in the carbonation. It will be also possible to constraint on the temperature and pressure conditions from the isochore of fluid inclusions. Combination of natural observation, experiments and calculation allows us to understand the conditions of mantle carbonation more precisely.

Keywords: fluid inclusions, serpentinite, seawater, carbon dioxide, mantle

Oral presentation | S3: Rheology and Material Transfer in Mantle and Crust (Special Session)

Fri. Sep 13, 2024 9:00 AM - 10:00 AM JST | Fri. Sep 13, 2024 12:00 AM - 1:00 AM UTC | ES025 Higashiyama Campus

S3: Rheology and Material Transfer in Mantle and Crust (Special Session)

Chairperson:Miki Tasaka(Shizuoka University)

9:00 AM - 9:15 AM JST | 12:00 AM - 12:15 AM UTC

[S3-10] Rheological evolution of olivine during formation of the mantle lithosphere

*Katsuyoshi MICHIBAYASHI[1,2], Takeo Okuwaki[1], Itsuki Natsume[3] (1. Nagoya University, 2. JAMSTEC, 3. Kanagawa Prefectural Museum of Natural History)

9:15 AM - 9:30 AM JST | 12:15 AM - 12:30 AM UTC

[S3-11] Three-dimensional location analysis on acoustic emissions and faults in olivine under pressure-temperature conditions of subducting slabs

*Tomohiro OHUCHI[1], Masato Hoshino[2], Kentaro Uesugi[2], Satoshi Okumura[3], Yuji Higo[2], Noriyoshi Tsujino[2], Sho Kakizawa[2] (1. GRC, Ehime Univ., 2. JASRI, 3. Tohoku Univ Sci.)

9:30 AM - 9:45 AM JST | 12:30 AM - 12:45 AM UTC

[S3-12] In-situ observation of grain growth and fluid movement using camphor as a rock analogue

*Junichi Fukuda[1] (1. Dept. Geos. Osaka Metrop. Univ.)

9:45 AM - 10:00 AM JST | 12:45 AM - 1:00 AM UTC

[S3-13] Mantle carbonation through seawater penetration along the outer-rise faults

*Ikuo KATAYAMA[1], Keishi Okazaki[1], Atsushi Okamoto[2] (1. Hiroshima University, 2. Tohoku University)

Rheological evolution of olivine during formation of the mantle lithosphere

*Katsuyoshi MICHIBAYASHI[1,2], Takeo Okuwaki[1], Itsuki Natsume[3]

1. Nagoya University, 2. JAMSTEC, 3. Kanagawa Prefectural Museum of Natural History

Keywords: Olivine, Mantle

Three-dimensional location analysis on acoustic emissions and faults in olivine under pressure-temperature conditions of subducting slabs

*Tomohiro OHUCHI[1], Masato Hoshino[2], Kentaro Uesugi[2], Satoshi Okumura[3], Yuji Higo[2], Noriyoshi Tsujino[2], Sho Kakizawa[2]

1. GRC, Ehime Univ., 2. JASRI, 3. Tohoku Univ Sci.

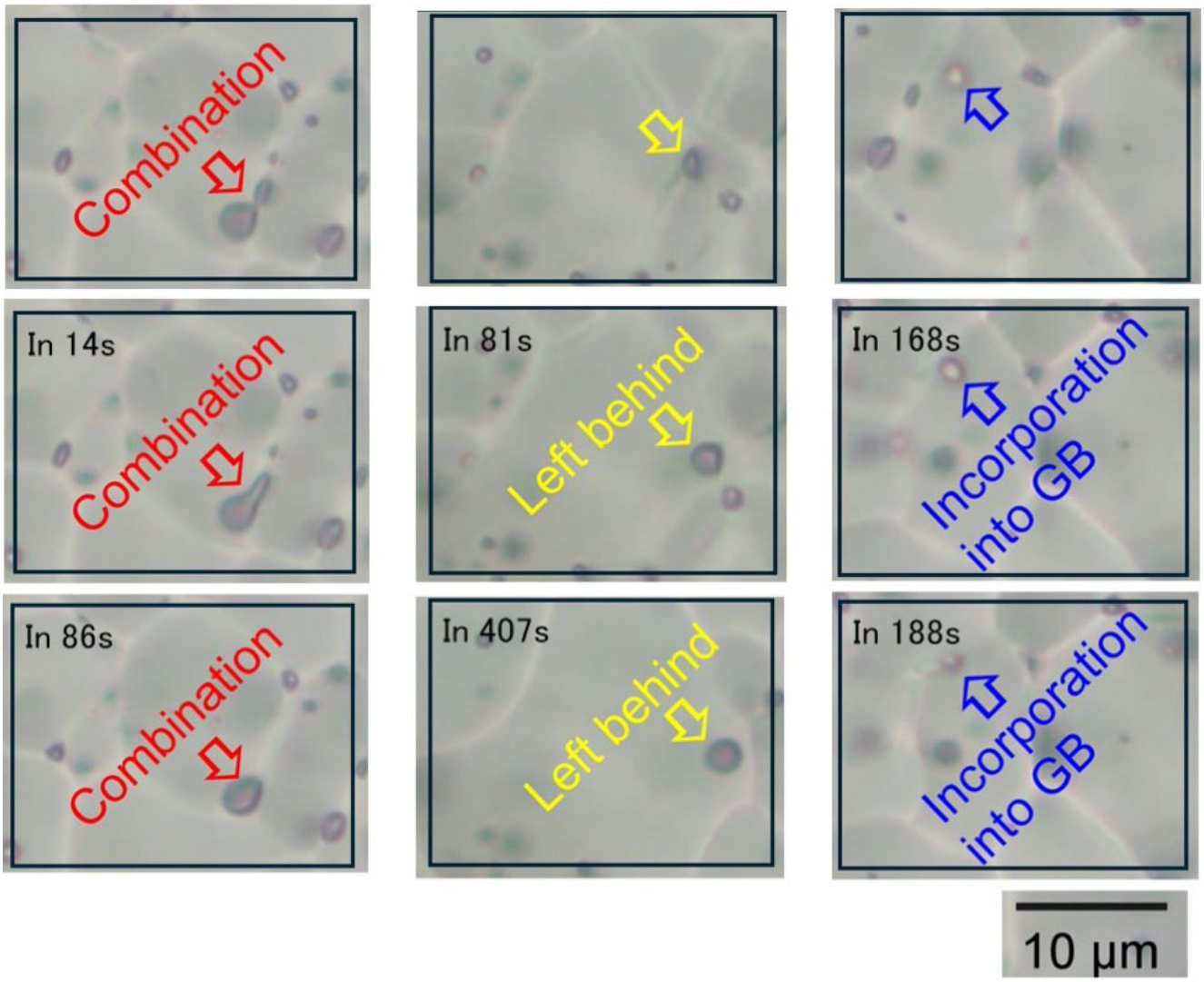
Keywords: Olivine, Acoustic emission, Fault, Intermediate earthquake

In-situ observation of grain growth and fluid movement using camphor as a rock analogue

*Junichi Fukuda[1]

1. Dept. Geos. Osaka Metrop. Univ.

Keywords: Rock analogue, Camphor, Grain growth, Fluid



Mantle carbonation through seawater penetration along the outer-rise faults

*Ikuo KATAYAMA[1], Keishi Okazaki[1], Atsushi Okamoto[2]

1. Hiroshima University, 2. Tohoku University

Keywords: Carbon cycle, Carbonation, Mantle

Oral presentation | R4: Mineral sciences of the Earth surface

Fri. Sep 13, 2024 10:15 AM - 12:00 PM JST | Fri. Sep 13, 2024 1:15 AM - 3:00 AM UTC | ES025 Higashiyama Campus

R4: Mineral sciences of the Earth surface

Chairperson:Hiroshi Sakuma(NIMS), Satoko Motai(Yamagata Univ.), Jun Kawano(Hokkaido University)

10:15 AM - 10:35 AM JST | 1:15 AM - 1:35 AM UTC

[R4-01] Understanding and application of spherical concretions: A new durable sealing material learnt from nature

「招待講演」

*Hidekazu Yoshida[1] (1. Nagoya University)

10:35 AM - 10:50 AM JST | 1:35 AM - 1:50 AM UTC

[R4-02] Color change process of Hiroshima granite due to weathering

*Tadashi YOKOYAMA[1], Yuka Inkyo, Masahiro Kaibori[1] (1. Hiroshima University)

10:50 AM - 11:05 AM JST | 1:50 AM - 2:05 AM UTC

[R4-03] Crystallographic preferred orientation and grain size of apatite in terrestrial mammalian bones

*Kyoko N. MATSUKAGE[1], Momoka Ide[2], Masaya Kurata[2], Yu Nishihara[3] (1. Teikyo Univ. of Sci. Natural and Environmental Sci., 2. Teikyo Univ. of Sci. Aminal Sci., 3. Ehime Univ.)

11:05 AM - 11:20 AM JST | 2:05 AM - 2:20 AM UTC

[R4-04] Microscopic distribution of sodium in biogenic aragonite

*Taiga Okumura[1], Michio Suzuki[2], Alberto Perez-Huerta[3], Eshita Samajpati[3], Toshihiro Kogure[1] (1. UTokyo Sci., 2. UTokyo Agri. Life Sci., 3. Univ. Alabama Geol. Sci.)

11:20 AM - 11:40 AM JST | 2:20 AM - 2:40 AM UTC

[R4-05] Structural and functional analyses of organic matrices regulating the formation of minerals in biomineralization.

「招待講演」

*Michio Suzuki[1] (1. UTokyo)

11:40 AM - 11:55 AM JST | 2:40 AM - 2:55 AM UTC

[R4-06] Aragonite formation from amorphous calcium carbonate (ACC) with addition of *n*-butylamine

*Hiroyuki KAGI[1], Kensuke Muraoka[1] (1. The University of Tokyo)

11:55 AM - 12:00 PM JST | 2:55 AM - 3:00 AM UTC

調整

Understanding and application of spherical concretions: A new durable sealing material learnt from nature

*Hidekazu Yoshida[1]

1. Nagoya University

Here, we introduce a more durable sealing method for concretion-forming resin developed by learning from natural calcite, CaCO3 spherical concretion formation. The method was tested by sealing flow paths next to a tunnel in an underground research laboratory at 350 m depth, in Hokkaido, Japan. The flow paths were initially sealed rapidly, then resealed after disturbance by repeated earthquakes just below the underground research laboratory at depths of 2–7 km and maximum magnitude Mw 5.4. The treated rock mass rapidly recovered its very low natural permeability, demonstrating robust self-sealing and healing.

Keywords: Spherical concretion, Calciumu carbonate, Durable sealing material

Color change process of Hiroshima granite due to weathering

*Tadashi YOKOYAMA[1], Yuka Inkyo, Masahiro Kaibori[1]

1. Hiroshima University

The characteristics and mechanisms of color change associated with weathering of Hiroshima granite were investigated, using a core drilled to a depth of 20 m. Color (L* a* b* values) were measured at approximately every 2-10 cm at each depth using a spectrophotometer. The color is: brighter for larger L* values, more reddish for larger a* values (for a* > 0), and more yellowish for larger b* values (for b* > 0). For core color, whitish unweathered areas at depths greater than 12 m have smaller a* and b* values and larger L* values. From about 12 m to 4 m depth, both a* and b* values increase and L* values decrease closer to the surface, although there is some variation depending on the location. The color at each depth was compared with that of a reference material made from four typical iron-bearing secondary minerals (goethite (yellow), ferrihydrite (dark brown), lepidocrocite (light brown), and hematite (dark red)), where each mineral mixed with SiO2 powder in various proportions from 0-100%. In the early stage of weathering, a dark brown band close to the color of ferrihydrite is often seen around the fractures. For more weathered areas, the entire rock matrix is often yellowish, the color close to that of goethite. In general, ferrihydrite is known to transform to more stable goethite and hematite with time. From the color measurement results of the drilled cores, it is inferred that ferrihydrite was first formed in the early stage of weathering, and then changed from ferrihydrite to goethite with the progress of weathering. Secondary iron minerals were dissolved and quantified by the selective iron dissolution method at several locations with different degrees of weathering. The amount of secondary iron minerals (all assumed to be goethite) at each location was estimated by comparing the color of the core with that of the reference material and plotted against the values obtained by the selective iron dissolution method, showing a generally proportional relationship. Although the results may change after correction for the effect of ferrihydrite, the results indicate that it may be possible to roughly estimate the amount of secondary iron minerals from a quick and easy core color measurement alone.

Keywords: Granite, Weathering, Color

Crystallographic preferred orientation and grain size of apatite in terrestrial mammalian bones

*Kyoko N. MATSUKAGE[1], Momoka Ide[2], Masaya Kurata[2], Yu Nishihara[3]

1. Teikyo Univ. of Sci. Natural and Environmental Sci., 2. Teikyo Univ. of Sci. Aminal Sci., 3. Ehime Univ.

Keywords: Apatite, terrestrial mammal, Bone, Pregerred orientation, Grain size

Microscopic distribution of sodium in biogenic aragonite

*Taiga Okumura[1], Michio Suzuki[2], Alberto Perez-Huerta[3], Eshita Samajpati[3], Toshihiro Kogure[1]

1. UTokyo Sci., 2. UTokyo Agri. Life Sci., 3. Univ. Alabama Geol. Sci.

Keywords: Aragonite, Sodium, Biomineralization, STEM-EDS, Atom probe tomography

Structural and functional analyses of organic matrices regulating the formation of minerals in biomineralization.

*Michio Suzuki[1]

1. UTokyo

Keywords: biomineralization, organic matrices, calcium carbonate, Pinctada fucata

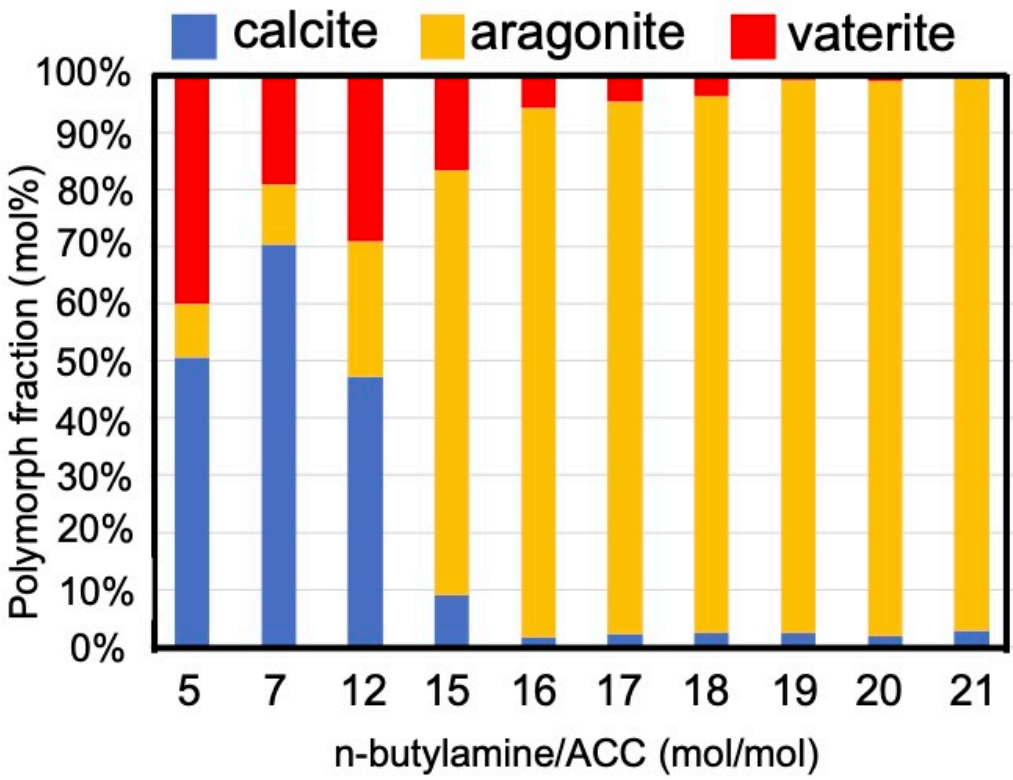
Aragonite formation from amorphous calcium carbonate (ACC) with addition of *n*-butylamine

*Hiroyuki KAGI[1], Kensuke Muraoka[1]

1. The University of Tokyo

Direct conversion from amorphous calcium carbonate (ACC) to aragonite has been extremely difficult compared to the other two polymorphs, calcite and vaterite. In the present study, aragonite formation with a high polymorph fraction (>97%) was obtained from ACC immersed in n-butylamine under 90% RH (relative humidity) at 30˚C for two hours. It is noteworthy that the aragonite with high purity was obtained without the addition of Mg^{2+} ion, which is well known to promote aragonite formation.To understand the effects of hydrophobic and basic properties of n-butylamine, hexane, NH_3 aq., and hexane + NH_3aq. were mixed with ACC and left for two weeks. Aragonite was formed only from the mixture of hexane and NH_3 aq. This result indicates that both hydrophobic and basic properties are required for crystallization from ACC into aragonite.

Keywords: amorphous calcium carbonate, aragonite, polymorph control



Poster presentation | T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

Fri. Sep 13, 2024 12:30 PM - 2:00 PM JST | Fri. Sep 13, 2024 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

T1: Comprehensive understanding of the crustal evolution and resource exploration in Asia (Symposium)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[T1-P-01] Syenitic veining at the northern Eastern Ghats Belt, India: Formation mechanism, fluid-rock interaction and a review of its economic mineral potential

*Kaushik DAS[1,5], Proloy Ganguly[2], Aparupa Banerjee[3], Sankar Bose[4,5] (1. Hiroshima University, 2. Kazi Nazrul University, 3. Shahid Matangini Hazra Government General Degree College, 4. Presidency University, 5. HiPeR, Hiroshima University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[T1-P-02] Amphibole-bearing granitic rocks in the Ereendavaa block, NE Mongolia: Insights into multi-stage magmatic sources and crystallization conditions

*Munkhdelger Bold[1], Tatsuki Tsujimori[1], Yasuhito Osanai[2], Nobuhiko Nakano[2], Tatsuro Adachi[2], Otgonbayar Dandar[1], Fransiska Ayuni Catur Wahyuandari [2] (1. Tohoku Univ., 2. Kyushu Univ)

Syenitic veining at the northern Eastern Ghats Belt, India: Formation mechanism, fluid-rock interaction and a review of its economic mineral potential

*Kaushik DAS[1,5], Proloy Ganguly[2], Aparupa Banerjee[3], Sankar Bose[4,5]

1. Hiroshima University, 2. Kazi Nazrul University, 3. Shahid Matangini Hazra Government General Degree College, 4. Presidency University, 5. HiPeR, Hiroshima University

Extensive development of meter-to-micrometer scale felsic bands and veins at the contact between the calc-silicate granulite (clinopyroxene-plagioclase-scapolite-wollastonite-calcite-grandite garnet-titanite-apatite-quartz), charnockite (plagioclase-K-feldspar-orthopyroxene-ilmenite-quartz± garnet), and mafic granulite (clinopyroxene-orthopyroxene-plagioclase±garnet-hornblende±quartz) is observed at a 50-60 km wide area near the northern boundary (south of Mahanadi shear zone) of the Eastern Ghats Province of the Eastern Ghats Belt, India. The calc-silicate and mafic granulites witnessed HT to UHT metamorphism at ca. 1000 Ma, and two pulses of charnockite magmatism between ca. 970 Ma and 950 Ma. Clinopyroxene-bearing syenitic (clinopyroxene-K-feldspar-titanite-REE-phases-minor quartz) bands and veins occur in these rocks sometimes at the rock interface and even as a vein network inside one of the preexisting rocks. Inside the veins close to their wall clinopyroxene (+titanite) formed at the expense of orthopyroxene (+ilmenite). Anorthitic patches and myrmekite intergrowth replaced the albitic plagioclase of the wall zone of charnockite. All these reactions suggest selective mobility of at least Ca and Si in the vein with a definite gradient of these from the interior to the wall. Primary and secondary fluid inclusions in the vein mineralogy are rich in CO_2. Compositional variation in apatite from the host rock to the vein also shows scavenging of REE and new profuse formation of REE-rich megacrystic allanite, titanite, apatite, and zircon inside the vein. The contact rocks of charnockite show reactions of monazite to allanite, apatite, and zircon.
It seems that veins were formed by carbo-fracturing followed by metasomatism post-dating the charnockite magmatism. The nature of the fluid was possibly slightly saline, but carbonic. From our own data and that in the existing literature, we also review the economic potential of these veins.

Keywords: Carbo-fracturing, Syenite veining, Trace element mobility, Metasomatism

Amphibole-bearing granitic rocks in the Ereendavaa block, NE Mongolia: Insights into multi-stage magmatic sources and crystallization conditions

*Munkhdelger Bold[1], Tatsuki Tsujimori[1], Yasuhito Osanai[2], Nobuhiko Nakano[2], Tatsuro Adachi[2], Otgonbayar Dandar[1], Fransiska Ayuni Catur Wahyuandari [2]

1. Tohoku Univ., 2. Kyushu Univ

The Ereendavaa block (EDB) is located along the southern part of the Mongol-Okhotsk Belt within the eastern Central Asian Orogenic Belt. The EDB has experienced multi-stage magmatism through tectonic cycles, including northward subduction of the Paleo-Asian Ocean during the early Paleozoic and southward subduction of the Mongol-Okhotsk Ocean during the early Mesozoic. However, melt evolution and magma crystallization conditions during magmatic pulses at 540, 470, and 220 Ma are poorly constrained. This study aims to elucidate magmatic crystallization conditions through mineral chemistry (EPMA) analysis of amphibole-bearing granitic rocks from these periods. The granitic rocks in the EDB typically comprise quartz, feldspar, amphibole, and mica, with accessory minerals like opaque. Compositional data for feldspar and hydrous mafic minerals (amphibole and biotite) reveal the following compositions: (1)**~540 Ma granodiorite**: orthoclase, oligoclase, pargasite, and Mg-rich biotite; (2)**~470 Ma granite**: orthoclase, oligoclase, ferro-pargasite, and Fe-rich biotite; (3)**~220 Ma granodiorite**: orthoclase, andesine-oligoclase, edenite, and Mg-rich biotite. The mineral chemistry indicates a sub-alkaline nature for the 540 and 220 Ma granodiorites, while the 470 Ma granite is alkaline. Temperature estimates, based on Ti-in-Ca amphibole geothermometer, range from 957–869˚C (540 Ma) and 918–858˚C (470 Ma), to 825–782˚C (220 Ma). Based on Al-in-Ca amphibole geobarometer, pressure estimates suggest these rocks formed at ~8–6 kbar, ~9–7 kbar, and ~4–3 kbar, respectively. Average oxygen fugacity values are -14.11 (470 Ma granite), -11.82 (540 Ma granodiorite), and -13.04 (220 Ma granodiorite). In summary, the parental magmas for the 540 Ma and 220 Ma granodiorites evolved from orogenic, calc-alkaline to sub-alkaline magmas, emplaced at middle (~26 km) and upper (~12.5 km) crustal levels. They crystallized at high (up to 957˚C) and lower temperatures (up to 825˚C) under oxidizing conditions. The 470 Ma granitoid likely evolved from more alkaline magmas, emplaced at deep crustal levels (~29 km) approaching the lower crust, and crystallized at high temperatures (up to 918˚C) under more reducing conditions than the 540 Ma and 220 Ma granodiorites.

Keywords: CAOB, geothermobarometer, EPMA

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

Fri. Sep 13, 2024 12:30 PM - 2:00 PM JST | Fri. Sep 13, 2024 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

S2: Water Rock Interaction (Special Session)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-01] Scales of extensional-shear fracturing and magnitudes of seismicity induced by magma intrusions into lower crust: Scale comparisons of dike swarm in the high-grade metamorphic rocks and deep low-frequency earthquakes

「発表賞エントリー」

*Takumi Nara[1], Masaoki Uno[1], Tetsuo Kawakami[2], Fumiko Higashino[2], Tatsuro Adachi[3], Noriyoshi Tsuchiya[1,4] (1. TOHOKU Univ. Env., 2. Kyoto Univ. Sci, 3. Kyushu Univ. Soc., 4. Hachinohe Kosen)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-02] Carbonation of serpentinite and formation process of listvenite from Urayama River, Shikokuchuo City, Ehime Prefecture, Japan

「発表賞エントリー」

*Hikaru Takagaki[1], Yohei Shirose[1] (1. Ehime Univ. Sci.&Egn.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-03] Texture transition during serpentinization in Hodono, Ehime Prefecture

「発表賞エントリー」

*Hinano Wada[1], Enju Satomi[1] (1. Ehime Univ. S/E)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-04] Water-rock interaction recorded in episyenites from Hakatajima Island, Ehime Prefecture

「発表賞エントリー」

*Toko FUKUI[1], Kazuya SHIMOOKA[2], Toshiro TAKAHASHI[3], Satoshi SAITO[1] (1. Ehime Univ., 2. Kwansei Gakuin Univ., 3. Niigata Univ.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[S2-P-05] Mechanisms of Reaction-Induced Fracturing in Serpentinite Carbonation; Insights from Hydrothermal Experiments and Geochemical Modeling

「発表賞エントリー」

*Taiki Taiki[1], Masaoki Uno[1], Atsushi Okamoto[1] (1. Tohoku University)

Scales of extensional-shear fracturing and magnitudes of seismicity induced by magma intrusions into lower crust: Scale comparisons of dike swarm in the high-grade metamorphic rocks and deep low-frequency earthquakes

*Takumi Nara[1], Masaoki Uno[1], Tetsuo Kawakami[2], Fumiko Higashino[2], Tatsuro Adachi[3], Noriyoshi Tsuchiya[1,4]

1. TOHOKU Univ. Env., 2. Kyoto Univ. Sci, 3. Kyushu Univ. Soc., 4. Hachinohe Kosen

Keywords: volcanic earthquakes, magma intrusion, Antarctica

Carbonation of serpentinite and formation process of listvenite from Urayama River, Shikokuchuo City, Ehime Prefecture, Japan

*Hikaru Takagaki[1], Yohei Shirose[1]

1. Ehime Univ. Sci.&Egn.

Keywords: listvenite, antigorite, carbonation, serpentinite, Urayama River

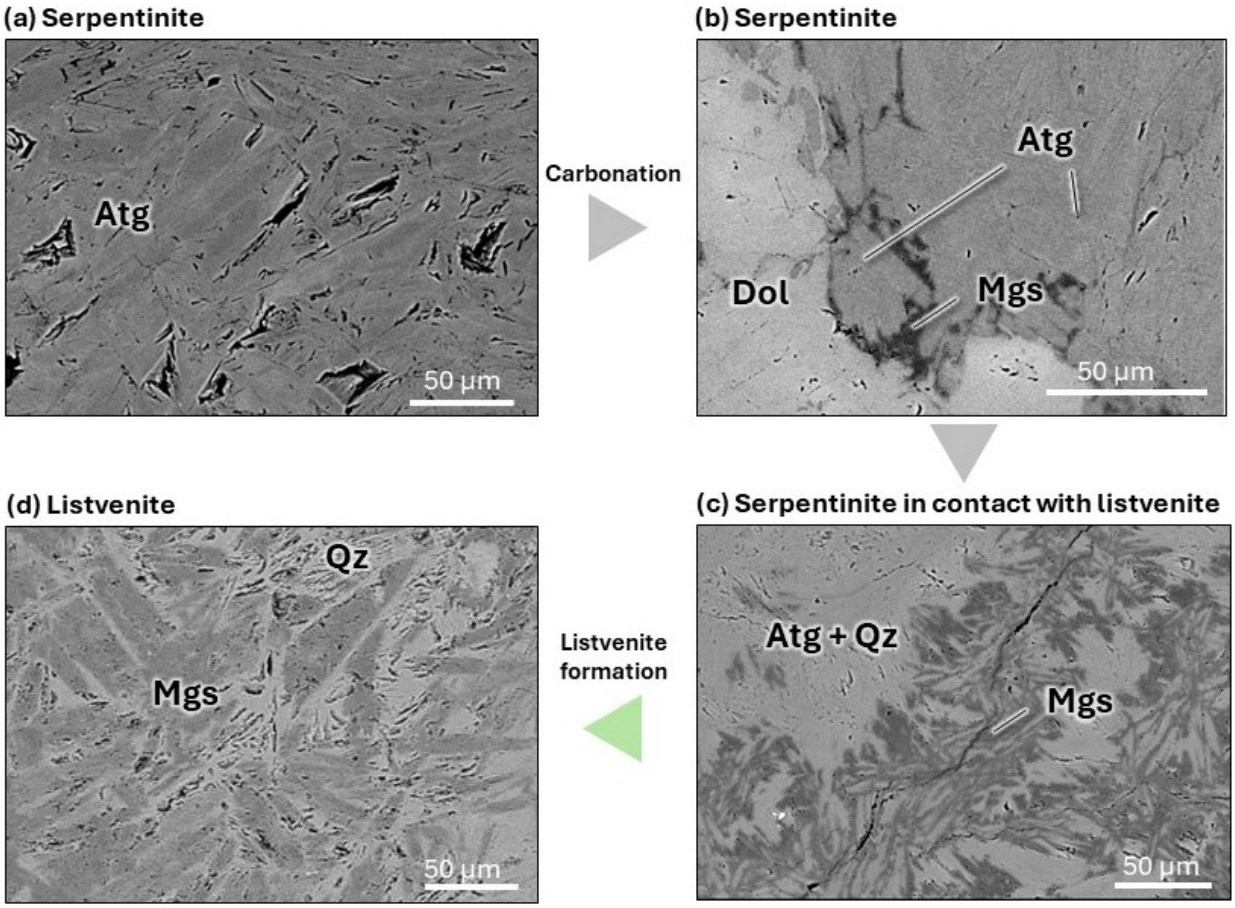


Figure. Carbonation and listvenite formation from serpentinite.
BSE images of (a) serpentinite, (b) carbonated serpentinite,
(c) carbonated serpentinite in contact with listvenite, (d) listvenite.
Atg : antigorite, Qz : quartz, Mgs : magnesite, Dol : dolomite.

Texture transition during serpentinization in Hodono, Ehime Prefecture

*Hinano Wada[1], Enju Satomi[1]

1. Ehime Univ. S/E

Keywords: peridotite, serpentinite, antigorite, Higashi-akaishi peridotite body

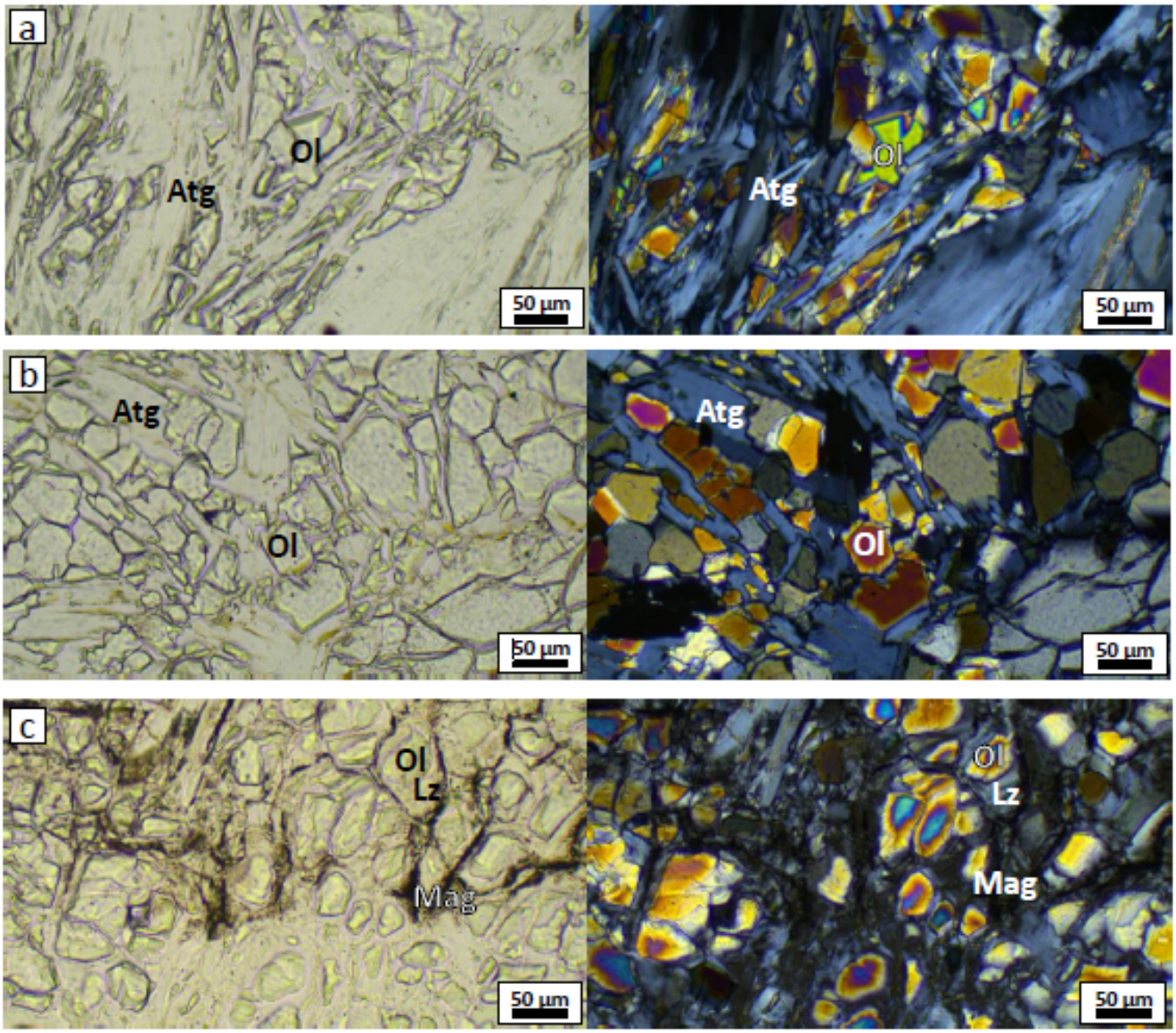


図1 ：試料中に含まれる蛇紋石とかんらん石の共存組織 (左 オープンニコル, 右 クロスニコル), (a)直線的な輪郭を持つくさび状-板状のかんらん石と短冊状アンチゴライト, (b)曲線的な輪郭を持つ粒状のかんらん石と短冊状アンチゴライト, (c)メッシュ組織のコアとして存在するかんらん石とリザーダイトリム
Ol：かんらん石, Atg：アンチゴライト, Lz：リザーダイト, Mag：磁鉄鉱

Water-rock interaction recorded in episyenites from Hakatajima Island, Ehime Prefecture

*Toko FUKUI[1], Kazuya SHIMOOKA[2], Toshiro TAKAHASHI[3], Satoshi SAITO[1]

1. Ehime Univ., 2. Kwansei Gakuin Univ., 3. Niigata Univ.

Keywords: Episyenite, metasomatism, Hakatajima Island

Mechanisms of Reaction-Induced Fracturing in Serpentinite Carbonation; Insights from Hydrothermal Experiments and Geochemical Modeling

*Taiki Taiki[1], Masaoki Uno[1], Atsushi Okamoto[1]

1. Tohoku University

Keywords: Carbonation, Carbon Mineralization, Serpentinite, Reaction-induced fracturing

Poster presentation | R4: Mineral sciences of the Earth surface

Fri. Sep 13, 2024 12:30 PM - 2:00 PM JST | Fri. Sep 13, 2024 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

R4: Mineral sciences of the Earth surface

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-01] Design and synthesis of aragonite particles as a reinforcement of plastic materials

*Hiroshi SAKUMA[1], Shigeru SUEHARA[1], Masumi KAMON[1], Kenji TAMURA[1] (1. NIMS)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-03] Experiments on the Inhibitory Effect of Polysaccharides on Cation Ordering of Dolomite During Dolomitization Reaction at 200°C: Preliminary Results

Hiromi KONISHI[1], *Yao Chen[1] (1. Niigata Univ. Sci.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-04] Formation Process of Carbonate Minerals in Non-aqueous Solvents: Consideration of the Effects of Different Hydration States of Cations

Naoki IWANE[1], *Jun KAWANO[1], Hiroyuki KAGI[2], Ayako SHINOZAKI[1], Takaya NAGAI[1] (1. Hokkaido Univ. Sci., 2. UTokyo Sci.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-05] Impact of evaporation on CO2 mineralization during enhanced rock weathering

*Naoki NISHIYAMA[1], Masao SORAI[1], Keisuke FUKUSHI[2], Yuto NISHIKI[1] (1. National Institute of Advanced Industrial Science and Technology (AIST), 2. Kanazawa University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-06] Framboidal pyrite in modern stromatolite from Fukiage-Jigoku, Onikobe Spring, Miyagi, Japan

「発表賞エントリー」

*Tatsuya Kamada[1], Hiroaki Ohfuji[1] (1. Tohoku Univ. Sci.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R4-P-07] Observations of nano-texture for amosite asbestos by using high-resolution STEM imaging

*Hayato Miura[1], Ichiro Ohnishi[1] (1. JEOL Ltd.)

Design and synthesis of aragonite particles as a reinforcement of plastic materials

*Hiroshi SAKUMA[1], Shigeru SUEHARA[1], Masumi KAMON[1], Kenji TAMURA[1]

1. NIMS

Keywords: Calcium carbonate, Elastic modulus, Aspect ratio, Carbon dioxide

Experiments on the Inhibitory Effect of Polysaccharides on Cation Ordering of Dolomite During Dolomitization Reaction at 200˚C: Preliminary Results

Hiromi KONISHI[1], *Yao Chen[1]

1. Niigata Univ. Sci.

Dolomite is a mineral that consists of calcium-magnesium carbonate, with the chemical formula CaMg(CO3)2. The "dolomite problem" pertains to the challenge of understanding the significant variability in dolomite production over geological time periods and the difficulty of replicating dolomite formation under lab conditions, even though it has been found in surface environments in the past (e.g., Warren 2000). Recent research has shown that polysaccharides such as carboxymethyl cellulose (CMC), agar, and biomass can promote the formation of disordered dolomite at room temperature (e.g., Zhang et al., 2015; 2021). However, Wei and Konishi (submitted) discovered that CMC and agar inhibit the dolomitization reaction at 200˚C, although the impact on cation ordering was not clear.

In our study, we are examining the impact of CMC on cation ordering during the dolomitization reaction at 200˚C. The experiment involved heating two sets of solutions for varying durations. Both sets had a fixed concentration of Mg and Ca cations at 0.5M and a carbonate ion concentration of 0.1M. One set included 0.2g/L CMC, while the other set did not for comparison. The pH of the solutions was adjusted to 8 before heating. We measured the change in the ratio of 015 peak intensity to 110 peak intensity with different heating durations, which serves as an ordering index indicating the Ca and Mg ordering state in the dolomite structure. In 13 durations of the experiment, 6 showed significantly lower ordering index values with CMC, 6 had similar values, and 1 was higher without CMC. Overall, the trend indicated that the presence of CMC resulted in a lower ordering index in dolomite, suggesting an inhibitory effect on cation ordering.

Keywords: dolomite, Polysaccharides, dolomitization, Inhibitory Effect

Formation Process of Carbonate Minerals in Non-aqueous Solvents: Consideration of the Effects of Different Hydration States of Cations

Naoki IWANE[1], *Jun KAWANO[1], Hiroyuki KAGI[2], Ayako SHINOZAKI[1], Takaya NAGAI[1]

1. Hokkaido Univ. Sci., 2. UTokyo Sci.

Keywords: calcium carbonate, hydration, polymorph, amorphous

Impact of evaporation on CO2 mineralization during enhanced rock weathering

*Naoki NISHIYAMA[1], Masao SORAI[1], Keisuke FUKUSHI[2], Yuto NISHIKI[1]

1. National Institute of Advanced Industrial Science and Technology (AIST), 2. Kanazawa University

Keywords: Enhanced rock weathering, CO2 mineralization, Evaporation, Mafic rock, Dissolution

Framboidal pyrite in modern stromatolite from Fukiage-Jigoku, Onikobe Spring, Miyagi, Japan

*Tatsuya Kamada[1], Hiroaki Ohfuji[1]

1. Tohoku Univ. Sci.

Keywords: Framboidal pyrite, stromatolite

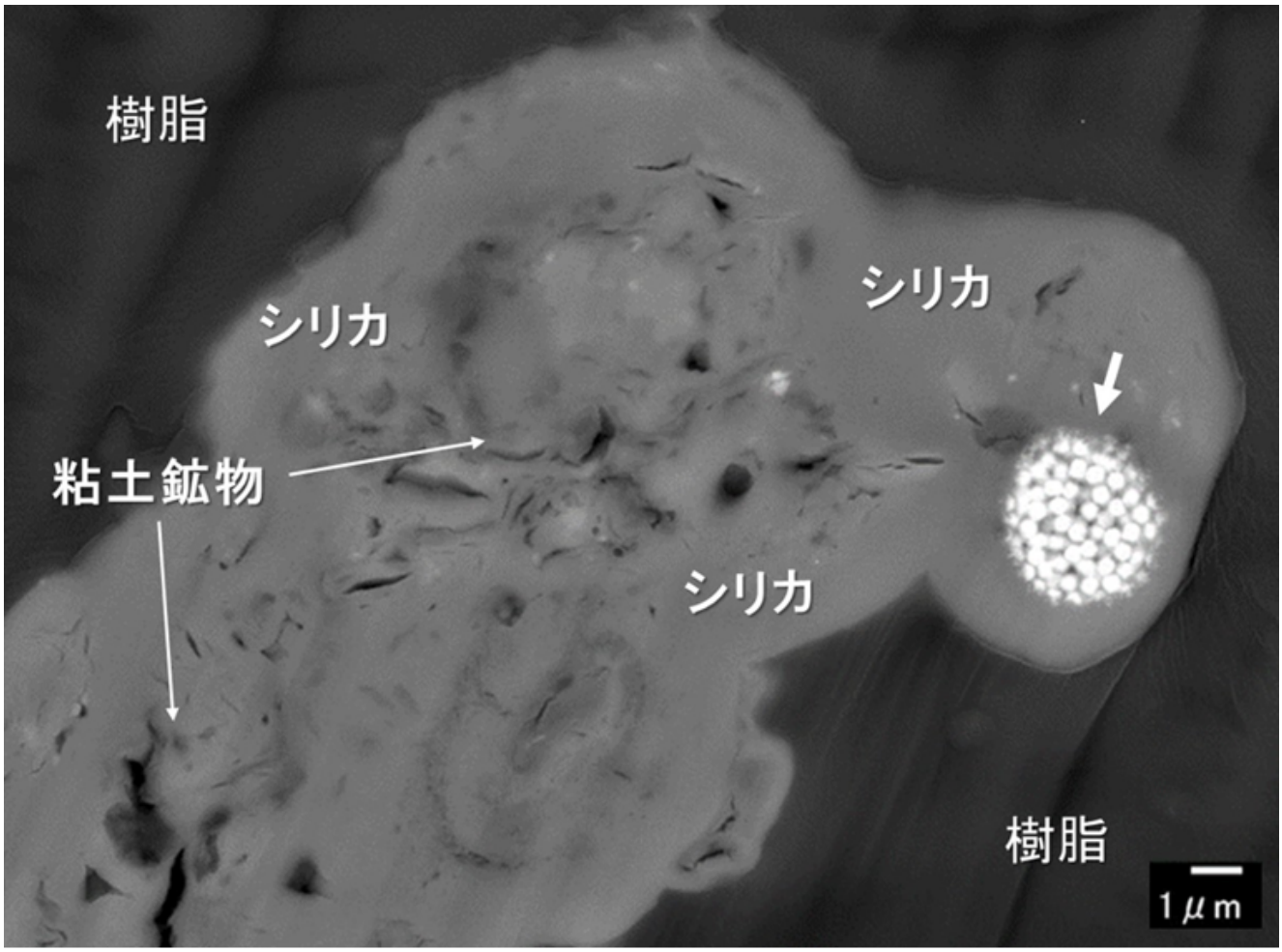


Figure. 1 Framboidal pyrite enclosed in amorphous silica (opal) in a modern stromatolite from Fukiage-onsen as indicated by the arrow

Observations of nano-texture for amosite asbestos by using high-resolution STEM imaging

*Hayato Miura[1], Ichiro Ohnishi[1]

1. JEOL Ltd.

Keywords: Asbestos, TEM, STEM

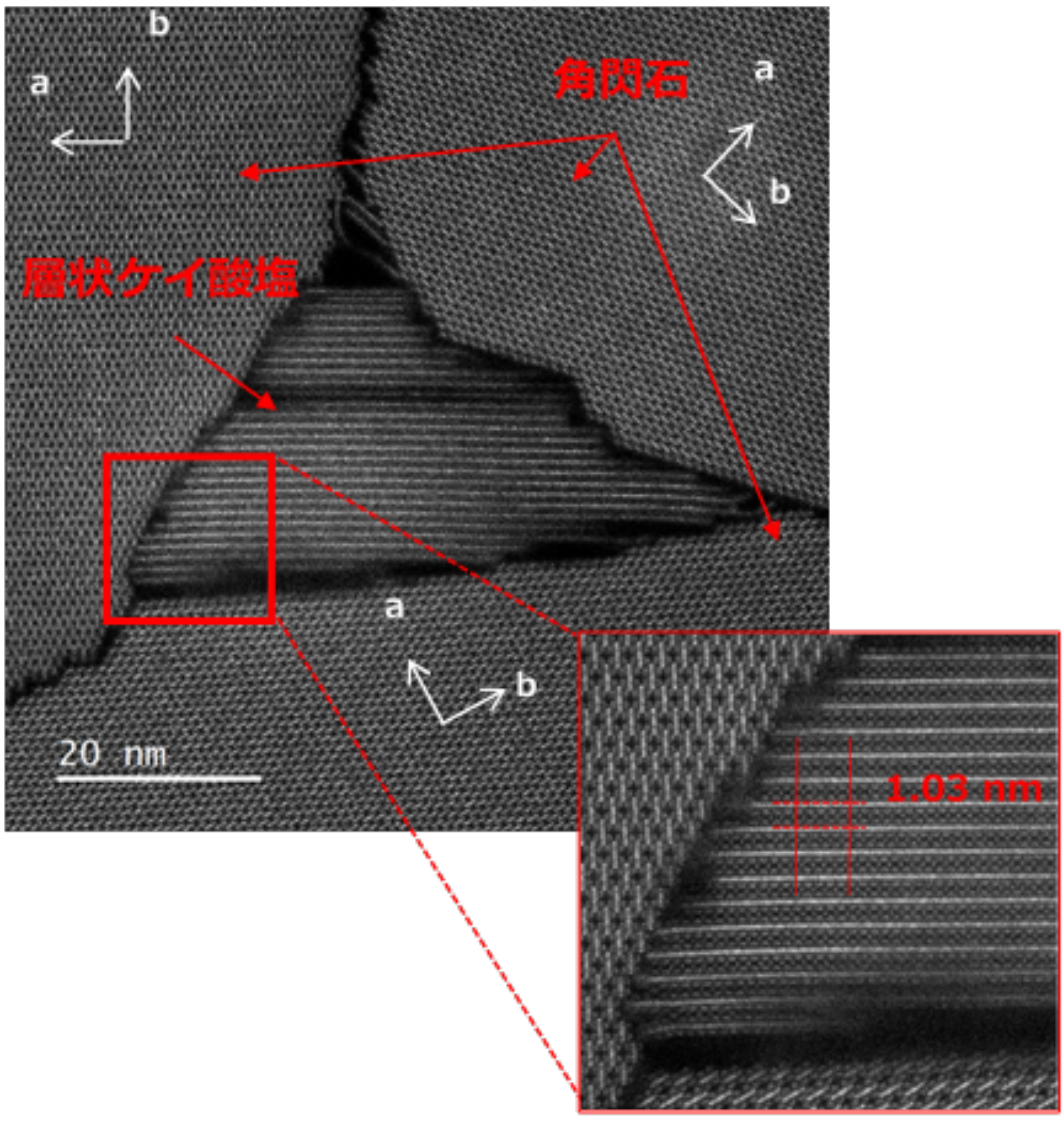


図 1 アモサイト石綿中に存在する層状ケイ酸塩の高分解能 ADF-STEM 像

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

Fri. Sep 13, 2024 12:30 PM - 2:00 PM JST | Fri. Sep 13, 2024 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

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

岩石学，鉱物学，鉱床学，地球化学などの分野をはじめとして，地球・惑星物質科学全般にわたる岩石及び鉱物に関する研究発表を広く募集する。地球構成物質についての多様な研究成果の発表の場となることを期待する。

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-01] Ezochiite and placer deposit of platinum group minerals in northwestern Hokkaido, Japan

*Daisuke HAMANE[1], Katsuyuki Saito (1. The University of Tokyo)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-02] Review for Mineralogical Science: Mineral Resources, Heritage Stone, and SDGs

*Yuhei Takahashi[1] (1. NUE)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-03] Formation process of olivine with remarkable parting and apparently oblique extinction in the lherzolite of Ochiai-Hokudo peridotite complex, Okayama Prefecture, Japan

*Terumi EJIMA[1], Takashima Chihiro[2], Arai Shoji[3] (1. Shinshu University, 2. DAIYA SEIKI Co., Ltd., 3. Kanazawa University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-04] The effect of Na ion on carbonation reaction of forsterite

*Hiroki Hasegawa[1], Atsushi Kyono[2], Satoru Okada[1], Kosuke Yamaguchi[1] (1. Univ of Tsukuba, Grad. sch. of Life and Environmental. Sci, 2. Univ of Tsukuba, Life and Environmental Science)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-05] Mineralogical characteristics of Pothole Reef and Pseudo Merensky Reef at the western limb of the Bushveld Complex, South Africa

「発表賞エントリー」

*Amu Umesato[1], Takuya Echigo[1], Yasushi Watanabe[1] (1. Akita Univ. Int.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-06] High-Ti biotite in the alkali volcanic rock from the Akiyoshi Belt and its significance

*Kosuke Kimura[1], Kaushik Das[2], Yasutaka Hayasaka[3] (1. Osaka Metro. Univ. Sci., 2. Hiroshima Univ., 3. Amakusa Mus. Goshoura Dinosaur Isl.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-07] Estimation of the origin of SDW in the Horoman peridotite complex by analysis of micro-inclusions in the olivine

「発表賞エントリー」

*Masaharu Aketa[1], Akira Miyake[1], Norikatsu Akizawa[2], Megumi Matsumoto[3], Yohei Igami[1], Itaru Mitsukawa[1] (1. Kyoto University, 2. University of Tokyo, 3. Tohoku University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-08] Fe-Ni-S-As minerals in the Imono peridotite body, Besshi area, Niihama city, Ehime prefecture.

「発表賞エントリー」

*Masato Kuniyoshi[1], Satomi Enju[1] (1. Ehime Univ.Sci and Eng.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-09] Fluorite mineralization associated with alkaline metasomatism in the Jinmu-Mihara deposit, Hiroshima, Japan.

「発表賞エントリー」

*Masahiro SUNADA[1], Takuya Echigo[1], Yasushi Watanabe[1] (1. Akita Univ. IRS.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-10] Petrological study of ultramafic rocks from the Kiyama area, eastern Kumamoto City

Narumichi Nishio[1], *Satoko ISHIMARU[2] (1. Kumamoto Univ. Sci., 2. Kumamoto Univ. FAST)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-11] FLUID INCLUSION STUDIES IN QUARTZ VEINS WITH TIN MINERALIZATION IN THE KIBARAN INTRUSIVE ROCKS IN KALEHE (SOUTH KIVU, DR CONGO)

「発表賞エントリー」

*MUSA Moise-Kam's SAIDI[1], MADDHUSOODHAN Satish Kumar[1] (1. Niigata Univ.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-12] Depleted peridotite and melt reaction as recorded by layered dunite-harzburgite in the Horoman peridotite, Hidaka Metamorphic Belt, Hokkaido, Japan.

「発表賞エントリー」

*Keisuke Kurihara[1], Tatsuhiko Kawamoto[1], Aya Hihara[1], Miki Tasaka[1], Hajime Taniuchi[2], Takeshi Kuritani[3], Akiko Matsumoto[3] (1. Shizuoka Univ., 2. AIST, 3. Hokkaido Univ.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R7-P-13] Research and development for the exploration of unknown cosmic ray events using Paleo-Detector

*Yuki Ido[1], Tatsuhiro Naka[2], Shota Futamura[3], Tohma Ori[4], Takenori Kato[5] (1. Nagoya Univ. Env., 2. Toho Univ. Sci, 3. Nagoya Univ. Sci., 4. N.I.T. Suzuka, 5. Nagoya Univ. ISEE)

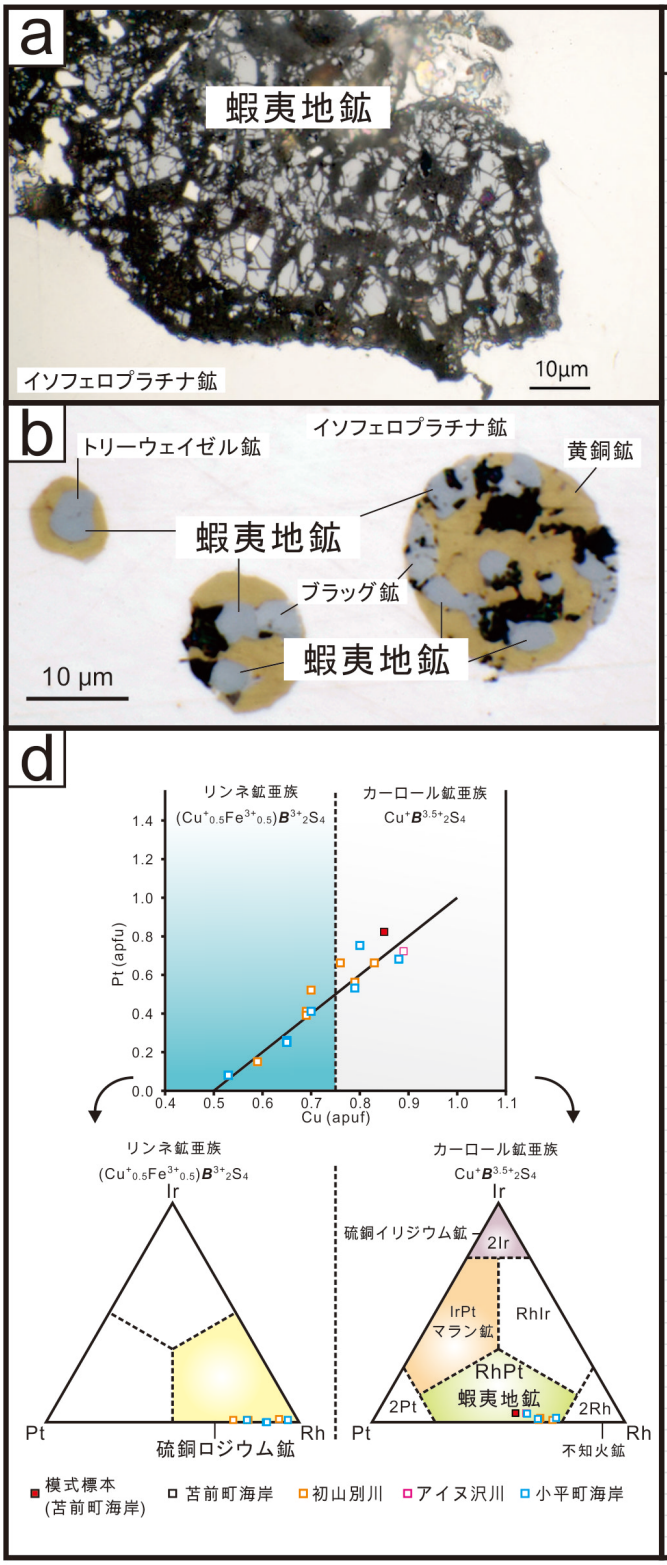
Ezochiite and placer deposit of platinum group minerals in northwestern Hokkaido, Japan

*Daisuke HAMANE[1], Katsuyuki Saito

1. The University of Tokyo

Placer deposits of platinum-group minerals (PGM) were once distributed along the central axis of Hokkaido, but due to overhunting during the war, it has become difficult to collect. On the other hand, the several PGM placer deposits have been discovered in northwestern Hokkaido. In this study, we report on the PGM placer deposits in northwestern Hokkaido and the new thiospinel group mineral eezochiite (IMA2022-101) discovered there. Most of placers consist of rutheniridosmine, osmium, iridium, and osmium, while small amount of isoferroplatinum is included. Isoferroplatinum-based grains contain a variety of inclusions, including ezochiite, which is included as a spherical aggregate with other sulfide minerals, suggesting that ezochiite crystallized from melt trapped by isoferroplatinum. The empirical formula of ezochiite is $(Cu^{+}_{0.85}Fe^{3+}_{0.15})(Rh^{3+}_{1.09}Pt^{4+}_{0.78}Ir^{3+}_{0.08}Pt^{2+}_{0.05})S_{4.00}$, ideally $Cu^{+}(Rh^{3+}Pt^{4+})S_4$. The unit cell parameter is a = 9.8559(14) Å on Fd-3m space group. Ezochiite was confirmed in ophiolites, Ural-Alaskan intrusions, and orthomagmatic deposits, suggesting that ezochiite is a common mineral in PGM deposit.

Keywords: Platinum-group minerals (PGM), Placer PGM, Ezochiite



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	鉱物名	理想化学式	産地	主な産状
1	Arsenopalladinite	Pd_8As_3	A, OC, TC	包有物
2	Bowieite	Rh_2S_3	TC	包有物
3	Braggite	$PdPt_3S_4$	TC, OC	包有物
4	Chengdeite	Ir_3Fe	S, A, N, U	粒子の外縁
5	Cherepanovite	RhAs	M, S, A, TC, OC, N, U	包有物
6	Cooperite	PtS	S, TC, OC	包有物
7	Cuprorhodsite	$(Cu^{+}_{0.5}Fe^{3+}_{0.5})Rh^{3+}_2S_4$	S, TC, OC	包有物
8	Driekopite	PtBi	TC, OC, U	包有物
9	Erlichmanite	OsS_2	S, A, TC, OC	粒子の外縁
10	Ezochiite	$Cu^{+}(Rh^{3+}Pt^{4+})S_4$	S, A, TC, OC	包有物
11	Ferronickelplatinum	Pt_2FeNi	M, S, A, TC, OC, O, U	粒子の外縁
12	Fleetite	$Cu_2RhIrSb_2$	A	包有物
13	Garutiite	(Ni,Fe,Ir)	S, A, TC	粒子の外縁
14	Genkinite	Pt_4Sb_3	OC	包有物
15	Geversite	$PtSb_2$	U	包有物
16	Hexaferrium	(Fe,Os,Ru,Ir)	S	包有物
17	Hollingworthite	RhAsS	S, A, TC, OC, U	粒子の外縁、包有物
18	Hongshiite	PtCu	M, S, A, TC, OC, K, N, U	離溶組織
19	Irarsite	IrAsS	M, S, A, TC, K, O, N, U	粒子の外縁、包有物
20	Iridarsenite	$IrAs_2$	S, A, U	包有物
21	Iridium	Ir	M, S, A, TC, OC, K, O, N, U	粒子、離溶組織
22	Isoferroplatinum	Pt_3Fe	M, S, A, TC, OC, K, O, N, U	粒子、離溶組織
23	Isomertieite	$Pd_{11}Sb_2As_2$	TC, OC, U	包有物
24	Kashinite	Ir_2S_3	OC	包有物
25	Keithconnite	$Pd_{20}Te_7$	OC, U	包有物
26	Kingstonite	Rh_3S_4	OC	包有物
27	Kitagohaite	Pt_7Cu	TC	離溶組織
28	Kuvaevite	$Ir_9Ni_{10}S_{16}$	OC	包有物
29	Laurite	RuS_2	M, S, A, TC, OC, K, O, N, U	粒子の外縁、包有物
30	Malanite	$Cu^{+}(Ir^{3+}Pt^{4+})S_4$	OC	包有物
31	Maslovite	PtBiTe	OC	包有物
32	Mertieite	$Pd_8Sb_{2.5}As_{0.5}$	TC, OC	包有物
33	Miassite	$Rh_{17}S_{15}$	S, OC, U	包有物
34	Miessiite	$Pd_{11}Te_2Se_2$	OC	包有物
35	Minakawaite	RhSb	TC, N, U	外縁の包有物
36	Moncheite	$Pt(Te,Bi)_2$	TC, OC	包有物
37	Orthocuproplatinum	Pt_3Cu	M, N, U	包有物
38	Osmium	Os	M, S, A, TC, OC, K, O, N, U	粒子、離溶組織
39	Palladinite	PdO	OC	包有物
40	Palladium	Pd	OC	粒子
41	Palladoarsenide (Palladodymite)	Pd_2As	A, TC, OC, U	包有物
42	Platinum	Pt	M, S, A, TC, OC, K	粒子、外縁の包有物
43	Polkanovite	$Rh_{12}As_7$	S, A, TC, OC, N, U	包有物
44	Pseudomertieite	$Pd_{11}(Sb,As)_4$	A, TC, OC, U	包有物
45	Rhodarsenide	Rh_2As	M, S, A, TC, OC, K, N, U	包有物
46	Rustenburgite	Pt_3Sn	OC	包有物
47	Ruthenarsenite	(Ru,Ni)As	TC, U	包有物
48	Ruthenirodsmine	(Ir,Os,Ru)	M, S, A, TC, OC, K, O, N, U	粒子、離溶組織
49	Ruthenium	Ru	M, S, A, TC, OC, K, O, N, U	粒子、離溶組織
50	Skaergaardite	PdCu	TC, OC	包有物
51	Sobolevskite	PdBi	OC	包有物
52	Sperrylite	$PtAs_2$	M, S, A, TC, OC, K, N, U	外縁の包有物
53	Stibiopalladinite	Pd_5Sb_2	TC, OC, O, U	包有物
54	Stillwaterite	Pd_8As_3	TC, OC	包有物
55	Stumpflite	PtSb	U	外縁の包有物
56	Tamuraite	$Ir_9Fe_{10}S_{16}$	OC	包有物
57	Telluropalladinite	Pd_9Te_4	TC, OC	包有物
58	Tetraferroplatinum	PtFe	TC, OC, N, U	粒子の外縁
59	Tolovkite	IrSbS	S, A, N, U	粒子の外縁、包有物
60	Tomamaeite	Cu_3Pt	M, S, A, TC, OC, N, U	外縁の包有物
61	Tömroosite	$Pd_{11}As_2Te_2$	TC, OC	包有物
62	Torryweiserite	$Rh_9Ni_{10}S_{16}$	OC	包有物
63	Tulameenite	Pt_2CuFe	M, S, A, TC, OC, K, O, N, U	粒子の外縁
64	Vasilite	$(Pd,Cu)_{16}(S,Te)_7$	S, TC, OC, U	包有物
65	Vincentite	$PdAs_3$	OC, U	包有物
66	Vysotskite	(Pd,Ni)S	OC	包有物
67	Zaccariniite	RhNiAs	M, S, A, TC, OC, K, N, U	外縁の包有物
68	Zvyagintsevite	Pd_3Pb	TC, OC	包有物

図1. 模式標本の蝦夷地鉱（苫前町海岸）（a）、初山別川試料の蝦夷地鉱（b）、これまでに確認された白金族鉱物と主な産状（c）、北海道産試料の硫銅ロジウム鉱ー蝦夷地鉱の組成分布と鉱物分類（d）。産地：茂初山別川（M）、初山別川（S）、アイヌ沢川（A）、苫前町海岸（TC）、小平町海岸（OC）、上記念別沢川（K）、小平藥川（O）、沼田ポン川（N）、雨竜川（U）

Review for Mineralogical Science: Mineral Resources, Heritage Stone, and SDGs

*Yuhei Takahashi[1]

1. NUE

Keywords: Mineral Resources, Heritage Stone

Formation process of olivine with remarkable parting and apparently oblique extinction in the lherzolite of Ochiai-Hokudo peridotite complex, Okayama Prefecture, Japan

*Terumi EJIMA[1], Takashima Chihiro[2], Arai Shoji[3]

1. Shinshu University, 2. DAIYA SEIKI Co., Ltd., 3. Kanazawa University

Keywords: Ochiai-Hokudo, peridotite complex, olivine

The effect of Na ion on carbonation reaction of forsterite

*Hiroki Hasegawa[1], Atsushi Kyono[2], Satoru Okada[1], Kosuke Yamaguchi[1]

1. Univ of Tsukuba, Grad. sch. of Life and Environmental. Sci, 2. Univ of Tsukuba, Life and Environmental Science

Keywords: Forsterite, Magnesite, Carbonation, Geological Carbon Storage

Mineralogical characteristics of Pothole Reef and Pseudo Merensky Reef at the western limb of the Bushveld Complex, South Africa

*Amu Umesato[1], Takuya Echigo[1], Yasushi Watanabe[1]

1. Akita Univ. Int.

Keywords: Bushveld Complex, Platinum Group Elements, Merensky Reef, Monosulfide Solid Solution, Intermediate Solid Solution

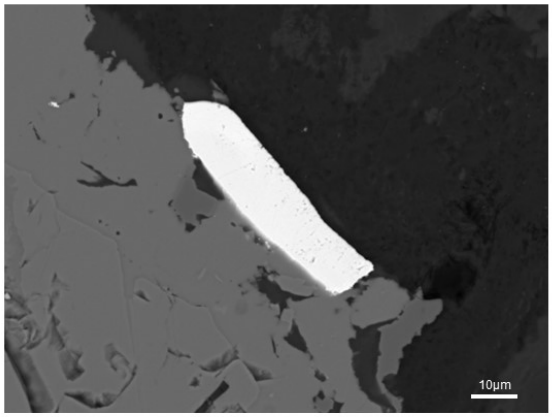

Fig. 1. Moncheite (white) formed on the rim of Nickel sulfide minerals (gray) in Pothole Reef. BSE image.

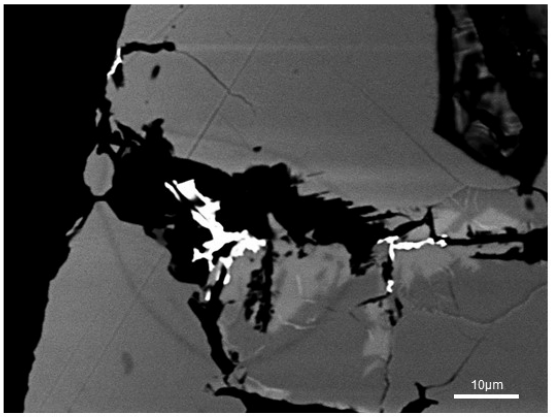

Fig. 2. Zvyagintsevite (white) formed on the rim of pentlandite (gray), in Pseudo Merensky Reef. BSE image.

High-Ti biotite in the alkali volcanic rock from the Akiyoshi Belt and its significance

*Kosuke Kimura[1], Kaushik Das[2], Yasutaka Hayasaka[3]

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Keywords: Akiyoshi Belt, Greenstone, Zircon U-Pb age, High titanium biotite

Estimation of the origin of SDW in the Horoman peridotite complex by analysis of micro-inclusions in the olivine

*Masaharu Aketa[1], Akira Miyake[1], Norikatsu Akizawa[2], Megumi Matsumoto[3], Yohei Igami[1], Itaru Mitsukawa[1]

1. Kyoto University, 2. University of Tokyo, 3. Tohoku University

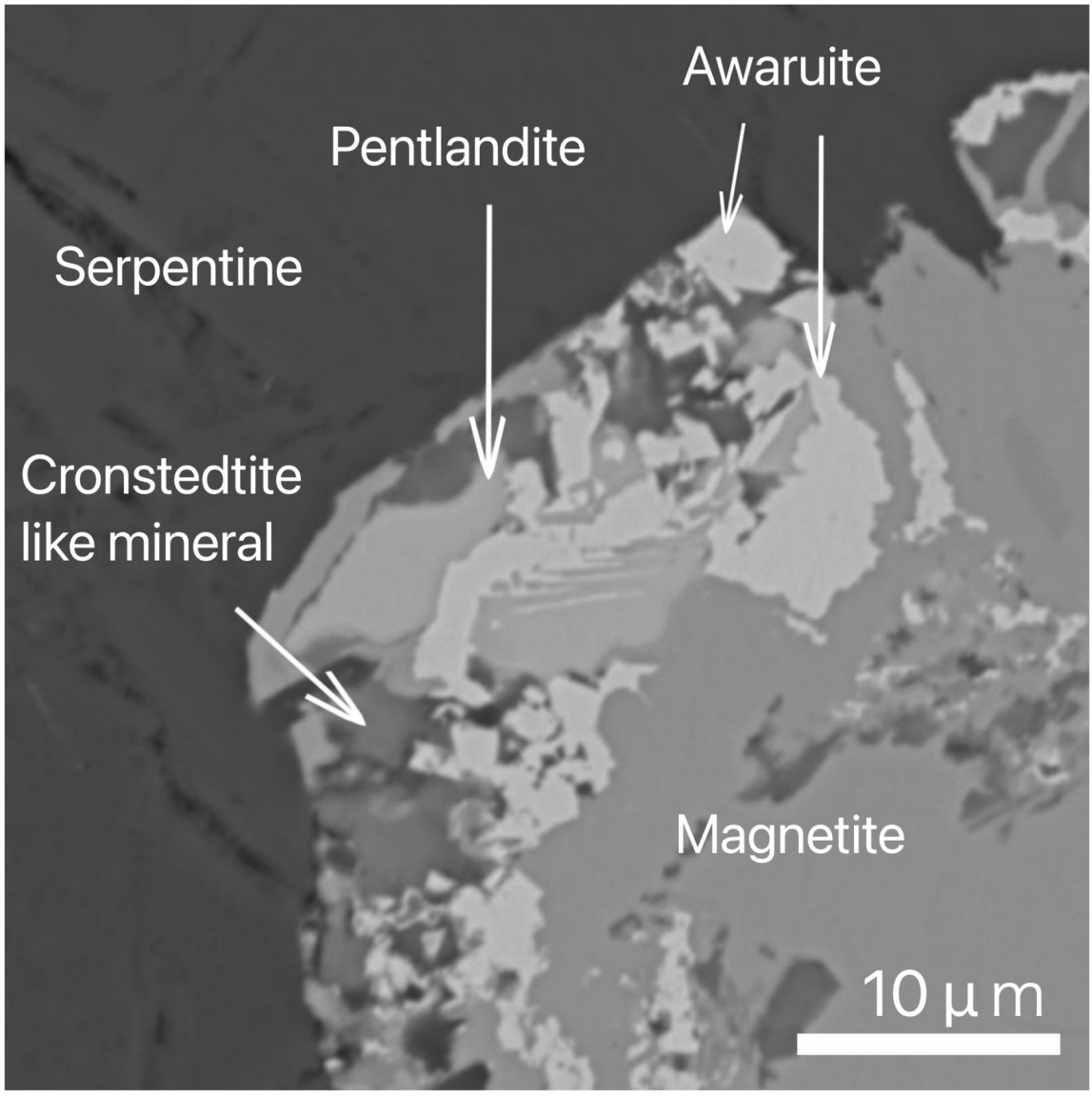
Keywords: Horoman peridotites, olivine, inclusion, Electron Microscope, XnCT

Fe-Ni-S-As minerals in the Imono peridotite body, Besshi area, Niihama city, Ehime prefecture.

*Masato Kuniyoshi[1], Satomi Enju[1]

1. Ehime Univ.Sci and Eng.

Keywords: Fe-Ni-S-As mineral, Serpentinite, Peridotite, Imono peridotite body



図：蛇紋岩中の磁鉄鉱，ペントランド鉱，アワルワ鉱，
クロンステッドタイト様鉱物の共生組織

Fluorite mineralization associated with alkaline metasomatism in the Jinmu-Mihara deposit, Hiroshima, Japan.

*Masahiro SUNADA[1], Takuya Echigo[1], Yasushi Watanabe[1]

1. Akita Univ. IRS.

Keywords: Fluorite, Alkali (Na-K) metasomatism, Jinmu-Mihara deposit

Petrological study of ultramafic rocks from the Kiyama area, eastern Kumamoto City

Narumichi Nishio[1], *Satoko ISHIMARU[2]

1. Kumamoto Univ. Sci., 2. Kumamoto Univ. FAST

Keywords: Serpentinite, Dunite, Chromian spinel, Kiyama metamorphic rock

FLUID INCLUSION STUDIES IN QUARTZ VEINS WITH TIN MINERALIZATION IN THE KIBARAN INTRUSIVE ROCKS IN KALEHE (SOUTH KIVU, DR CONGO)

*MUSA Moise-Kam's SAIDI[1], MADDHUSOODHAN Satish Kumar[1]

1. Niigata Univ.

The Mesoproterozoic Kibaran granitoid formations host numerous mineral resources which are highly demanded in new technology industries, mineral such as Sn-W, Nb, Ta and Au. This mobile belt is formed by collision of the Western Congo with the Eastern Tanzanian, Bangwelu and Zimbabwe cratons, producing four generations of granite. These ore deposits are hosted in granite pegmatite (Nb, Ta) and Sn-W in quartz veins.

Fluid inclusions were studied in quartz vein samples in order to unravel the evolution of the mineralizing fluid controlling the ore deposits in Kalehe(DR Congo). In the study area the field and petrographic studies indicate that major rocks constitute of a variety of metapelites including sericite schists, micas schists, quartzites and igneous rocks such as granites, greisens and pegmatites. The quartz veins crosscutting the metapelite show a NE-SW trending, whereas the pegmatitic vein trend in a NW-SE direction crosscutting the Kibaran metasediments.
Fluid inclusions are abundant in quartz veins and metallic mineralized quartz veins. Primary, secondary and pseudo secondary inclusion are observed, in which the biphase inclusions are most common.The mineralizing fluids of the quartz-vein in the sericite schist have a heterogeneous nature at the time of trapping. The temperature of homogenization(Th) and salinities of the fluid inclusions were determined; some were having high Th with high salinity, others were with high Th but with low salinity, whereas another group have low Th with moderate salinity. The biphase Inclusions homogenization temperature range is 17.7- 303˚C and the salinity range is 0.88-16.24˚Wt%. The temperature of first ice melting(Tmice)values obtained so far from fluid inclusion microthermometry indicate various fluid compositions mainly CO2, CO2 + H2O rich, CO2+H20+/-CH4. These phases were confirmed by Raman spectroscopy and consistent with Tmice as well as the freezing point depression indicating the presence of salt (NaCl or other salts).

The mineralizing fluids trapped as fluid inclusions in the metallic quartz veins crosscutting shale formations can also be categorized as primary, secondary and pseudo secondary, these fluids were multiphase fluid inclusion (solid, liquid and vapor). Detailed studies on these inclusions are being carried out and will be presented.

Keywords: Fluid inclusion, microthermotry, Kibaran mobile belt, Tin, Raman spectroscopy

Depleted peridotite and melt reaction as recorded by layered dunite-harzburgite in the Horoman peridotite, Hidaka Metamorphic Belt, Hokkaido, Japan.

*Keisuke Kurihara[1], Tatsuhiko Kawamoto[1], Aya Hihara[1], Miki Tasaka[1], Hajime Taniuchi[2], Takeshi Kuritani[3], Akiko Matsumoto[3]

1. Shizuoka Univ., 2. AIST, 3. Hokkaido Univ.

Keywords: peridotite, Horoman, banded dunite-harzburgite, melt-rock reaction, chemical composition

Research and development for the exploration of unknown cosmic ray events using Paleo-Detector

*Yuki Ido[1], Tatsuhiro Naka[2], Shota Futamura[3], Tohma Ori[4], Takenori Kato[5]

1. Nagoya Univ. Env., 2. Toho Univ. Sci, 3. Nagoya Univ. Sci., 4. N.I.T. Suzuka, 5. Nagoya Univ. ISEE

Keywords: Muscovite, Olivine, Particle physics

Poster presentation | R8: Metamorphic rocks and tectonics

Fri. Sep 13, 2024 12:30 PM - 2:00 PM JST | Fri. Sep 13, 2024 3:30 AM - 5:00 AM UTC | Entrance Hall Higashiyama Campus

R8: Metamorphic rocks and tectonics

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-01] Mineralogical characterization of serpentinite varieties in Sangun-Renge Belt exposed at Sasaguri, Fukuoka Prefecture, and their geological implications

「発表賞エントリー」

*Swarnaa ANNADURAI MUNUSAMY[1], Jun-ichi ANDO[1,2], Yuki IWASAKI[3], Kaushik DAS[1,2], Dyuti Prakash SARKAR[4], Seiichiro UEHARA[5] (1. Hiroshima Univ., 2. HiPeR, Hiroshima, 3. NIPPON STEEL CORP., 4. JAMSTEC, 5. The Kyushu Univ. Museum)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-02] Metamorphic temperature structure of Sanbagawa Metamorphic Belt in the southern part of Shinshiro City, Aichi Prefecture, Japan

「発表賞エントリー」

*Akane Matsuzaki[1], Yui Kouketsu[1], Katsuyoshi Michibayashi[1] (1. Nagoya Univ. Env.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-03] Origin and pyrometamorphism of gneissose granitoid xenoliths from Mt. Daisen, Tottori Prefecture, SW Japan

「発表賞エントリー」

*Mizuki TAKAHASHI[1], Shunsuke Endo[1] (1. Shimane University)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-04] Petrography of monazite in a metapelite in the eastern Nepal Himalaya and Development of Th-Pb dating method for monazite

「発表賞エントリー」

*Shumpei KUDO[1], Tetsuo Kawakami[1], Sota Niki[2], Toru Nakajima[3], Takafumi Hirata[4], Takeshi Imayama[5] (1. Kyoto Univ. Sci., 2. Nagoya Univ. ISEE., 3. JAEA, 4. UTokyo. Sci., 5. Okayama Univ. of Sci.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-05] Petrological description of ultramafic rocks in the low-grade metamorphic zone of the Sanbagawa belt: A case study of the Ina area, Nagano Prefecture, central Japan

「発表賞エントリー」

*Kaho Nobuhara[1], Hiroshi Mori[1], Takayoshi Nagaya[2] (1. Shinshu Univ. , 2. Tokyo Gakugei Univ.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-06] Detrital zircon U–Pb dating and Raman spectral analysis of carbonaceous material in the boundary area of the Sanbagawa–Chichibu belts, central Kii Peninsula

*Hiroshi MORI[1], Kojiro USUI[1,2], Tetsuya Tokiwa[1], Kazuhiro Ozawa[3] (1. Shinshu University, 2. Nippon Koei Co., Ltd., 3. Precision Forestry Measurement Ltd.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-07] New finding of wakefieldite from an amphibolite in the Horokanai area, Kamuikotan HP metamorphic belt, Hokkaido, Japan

*Taro Kato[1], Kosuke NAEMURA[1], Toru Takeshita[2] (1. Iwate University, 2. Pacific Consultants Co., Ltd.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-08] Thermal history and protolithic detritus provenance of a sillimanite–chrysoberyl-bearing gneiss from the Ashio mountains in the western part of Tochigi prefecture

*Ippei KITANO[1] (1. Hokkaido Univ. Mus.)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-09] Petrological characterlization and geochronology of metamorphic rocks from the Northern Subzone of the Maizuru Terrane

*Sota Muroi[1], Kaushik Das[1], Kenta Kawaguchi[1], Yasutaka Hayasaka[2] (1. Hiroshima University, 2. Amakusa Museum of Goshoura Dinosaur Island)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-10] The fate of organic carbon during subduction: Raman micro-spectroscopy and C-isotope geochemistry of carbonaceous materials in Sambagawa pelitic schists, central Shikoku, Japan

*Hironobu Harada[1], Tatsuki Tsujimori[1], Akizumi Ishida[1], Takeshi Kakegawa[1], Tetsumaru Itaya[2] (1. Tohoku Univ., 2. jGnet)

12:30 PM - 2:00 PM JST | 3:30 AM - 5:00 AM UTC

[R8-P-11] Fluid inclusions of ophicarbonates in the Apennine Mountains, Italy

Hiroyuki Kaneko[1], *Tatsuhiko KAWAMOTO[1], Francesca Meneghini[2], Yosuke Osawa[1] (1. Shizuoka University, 2. Università di Pisa | UNIPI · Department of Earth Sciences)

Mineralogical characterization of serpentinite varieties in Sangun-Renge Belt exposed at Sasaguri, Fukuoka Prefecture, and their geological implications

*Swarnaa ANNADURAI MUNUSAMY[1], Jun-ichi ANDO[1,2], Yuki IWASAKI[3], Kaushik DAS[1,2], Dyuti Prakash SARKAR[4], Seiichiro UEHARA[5]

1. Hiroshima Univ., 2. HiPeR, Hiroshima, 3. NIPPON STEEL CORP., 4. JAMSTEC, 5. The Kyushu Univ. Museum

Serpentinite (serp) of Sangun-Renge Belt are widely exposed around the Narubuchi dam in Sasaguri area, Fukuoka Prefecture. The purpose of this study is to investigate the mineralogical characteristics of different types of serp in this region in order to understand the tectonic and metamorphic history of the Sangun-Renge Belt serp. Optical microscopy reveals the petrographic characteristics, EPMA is used to measure the composition of Cr-spinel, and Raman spectroscopy is utilized to distinguish serpentine polymorphs. The serp in the Sasaguri area primarily consists of serpentine group minerals, with minor amounts of magnetite, calcite, chlorite, talc, and Cr-spinel. Three types are identified on the basis of their dominant serpentine polymorph. Type 1: Lizardite serp, showing the hourglass textures with chrysotile veins. Type 2: Lizardite-Chrysotile serp, dominated by a mesh texture where the core and rim minerals are lizardite and chrysotile, and lizardite, respectively. And the antigorite (atg) veins are observed. Type 3: Atg serp, exposed to the north and south of the study area. Their microstructures are different. The serp in the north is composed of atg a few mm in grain size, showing undulose extinction and dynamic recrystallization, but no CPO. The serp in the south is composed of atg less than 200 μm in size, with atg veins. At the north, the mylonitized zones can be identified where the atg grain size is less than 100 μm, with (001) and [010] oriented parallel to foliation and lineation, respectively. The chemical composition of the Cr-spinel in the north serp indicates a forearc peridotite origin. The ferritchromite rim in the Cr-spinel suggests that the peridotite is re-equilibrated at greenschist to amphibolite temperatures (400-700˚C). A magnetite overgrowth around the ferritchromite rim indicates the serpentinization after ferritchromitization, which occurs at 250-400˚C. Based on the above results, the geological implications of the identified serpentine polymorphs and associated mineral assemblages for understanding the tectonic and metamorphic history of the Sangun-Renge Belt serp will be discussed in our presentation.

Keywords: Serpentinization, Antigorite, Serpentine polymorphs, Cr-spinel

Metamorphic temperature structure of Sanbagawa Metamorphic Belt in the southern part of Shinshiro City, Aichi Prefecture, Japan

*Akane Matsuzaki[1], Yui Kouketsu[1], Katsuyoshi Michibayashi[1]

1. Nagoya Univ. Env.

Keywords: Quartz, Raman carbonaceous material geothermometer, Sanbagawa Metamorphic Belt

Origin and pyrometamorphism of gneissose granitoid xenoliths from Mt. Daisen, Tottori Prefecture, SW Japan

*Mizuki TAKAHASHI[1], Shunsuke Endo[1]

1. Shimane University

Keywords: Mt. Daisen, xenolith, pyrometamorphism

Petrography of monazite in a metapelite in the eastern Nepal Himalaya and Development of Th-Pb dating method for monazite

*Shumpei KUDO[1], Tetsuo Kawakami[1], Sota Niki[2], Toru Nakajima[3], Takafumi Hirata[4], Takeshi Imayama[5]

1. Kyoto Univ. Sci., 2. Nagoya Univ. ISEE., 3. JAEA, 4. UTokyo. Sci., 5. Okayama Univ. of Sci.

Keywords: Monazite, Th-Pb dating method, Higher Himalayan Crystallines

Petrological description of ultramafic rocks in the low-grade metamorphic zone of the Sanbagawa belt: A case study of the Ina area, Nagano Prefecture, central Japan

*Kaho Nobuhara[1], Hiroshi Mori[1], Takayoshi Nagaya[2]

1. Shinshu Univ. , 2. Tokyo Gakugei Univ.

Keywords: Sanbagawa (Sambagawa) belt, ultramafic rock, chlorite zone, Ina area

Detrital zircon U–Pb dating and Raman spectral analysis of carbonaceous material in the boundary area of the Sanbagawa–Chichibu belts, central Kii Peninsula

*Hiroshi MORI[1], Kojiro USUI[1,2], Tetsuya Tokiwa[1], Kazuhiro Ozawa[3]

1. Shinshu University, 2. Nippon Koei Co., Ltd., 3. Precision Forestry Measurement Ltd.

Keywords: Sanbagawa Belt, Chichibu Belt, detrital zircon U–Pb dating, Raman spectral analysis, carbonaceous material

New finding of wakefieldite from an amphibolite in the Horokanai area, Kamuikotan HP metamorphic belt, Hokkaido, Japan

*Taro Kato[1], Kosuke NAEMURA[1], Toru Takeshita[2]

1. Iwate University, 2. Pacific Consultants Co., Ltd.

Kamuikotan amphibolite exposed at the Horokanai area experienced transformation from amphibolite to blueschist facies metamorphism. Similar occurrences are found throughout the world, and it is generally regarded as a result of an isobaric cooling (counterclockwise) pathway. In other words, amphibolite is thought to have remained at depth and experienced cooling. To address this issue, we studied an epidote amphibolite exposed at the Horokanai hill. The rock displays a foliation consisting of hornblende/actinolite, epidote, plagioclase, rutile, white mica (Si=3.3-3.5 apfu, O=11) ±chlorite, and these primary minerals are more or less replaced by secondary blueschist facies minerals along pull apart fractures and rims of primary minerals. The latter consists of glaucophane, chlorite, titanite, epidote, pumpellyite, and white mica (Si=3.5-3.8 apfu, O=11). Yttrium vanadate (wakefieldite) grains occur along pull apart fractures of epidote and hornblende, and the remaining fractures were filled by phengite rich white mica. This suggests wakefieldite was formed before or during blueschist facies metamorphism. According to previous studies, wakefieldite could be stable under ultraoxidation conditions at shallow depths. Following this idea, it is unlikely that the Kamuikotan amphibolite was transformed into blueschist by isobaric cooling at depth, but rather once exhumed to shallow depth and sunk back to the depth.

Keywords: Kamuikotan metamorphic belt, yttrium vanadate, wakefieldite-(Y), P-T-t path

Thermal history and protolithic detritus provenance of a sillimanite–chrysoberyl-bearing gneiss from the Ashio mountains in the western part of Tochigi prefecture

*Ippei KITANO[1]

1. Hokkaido Univ. Mus.

Keywords: sillimanite–chrysoberyl-bearing gneiss, andalusite-bearing granite, thermal history, detritus provenance, Ashio mountains

Petrological characterlization and geochronology of metamorphic rocks from the Northern Subzone of the Maizuru Terrane

*Sota Muroi[1], Kaushik Das[1], Kenta Kawaguchi[1], Yasutaka Hayasaka[2]

1. Hiroshima University, 2. Amakusa Museum of Goshoura Dinosaur Island

Keywords: Maizuru Terrane, Northern Subzone, Komori-Kuwagai metamorphic rocks, P-T estimates, CHIME age of monazite

The fate of organic carbon during subduction: Raman micro-spectroscopy and C-isotope geochemistry of carbonaceous materials in Sambagawa pelitic schists, central Shikoku, Japan

*Hironobu Harada[1], Tatsuki Tsujimori[1], Akizumi Ishida[1], Takeshi Kakegawa[1], Tetsumaru Itaya[2]

1. Tohoku Univ., 2. jGnet

Keywords: carbonaceous materials, carbon isotope, Raman micro-spectroscopy, Sambagawa Belt, pelitic schist

Fluid inclusions of ophicarbonates in the Apennine Mountains, Italy

Hiroyuki Kaneko[1], *Tatsuhiko KAWAMOTO[1], Francesca Meneghini[2], Yosuke Osawa[1]

1. Shizuoka University, 2. Università di Pisa | UNIPI ·Department of Earth Sciences

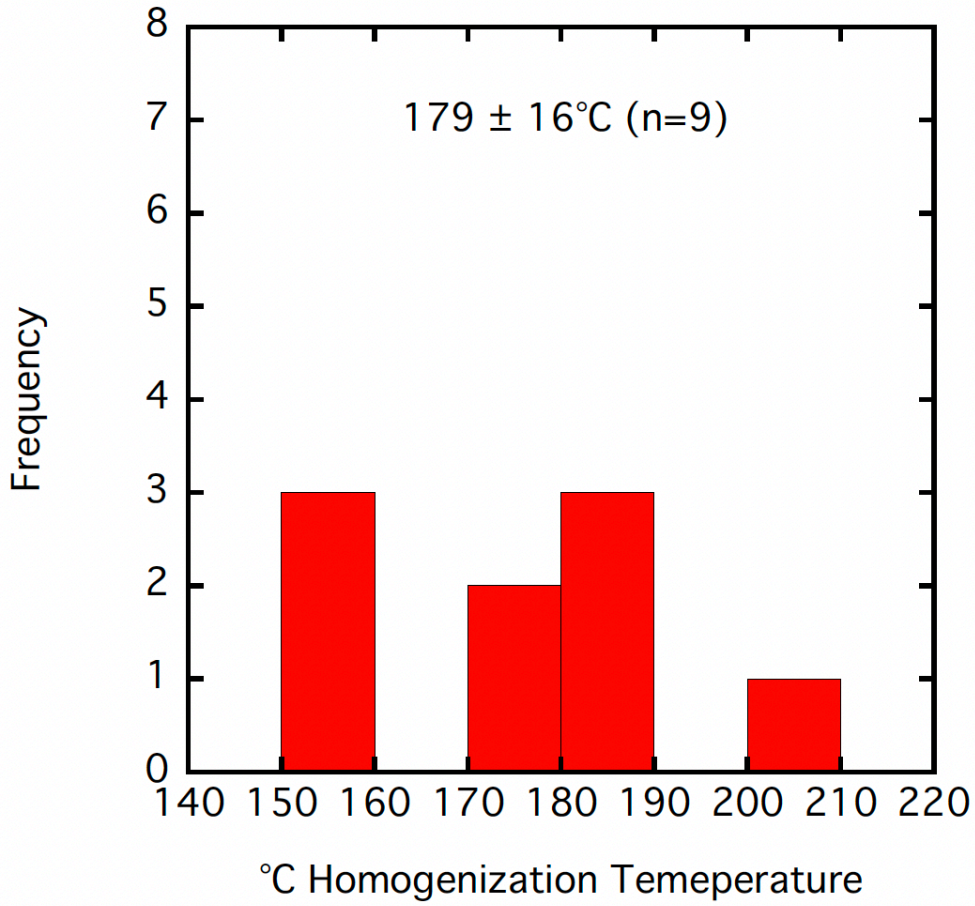
The Bracco ophicarbonate from the Apennines, Italy, is studied for petrography and microthermometry of fluid inclusions in the calcite. The studied serpentinite body is a part of an ophiolite that has undergone relatively low grade metamorphism, considered to be pumpellyite facies, and retains hydrothermal metamorphic vein textures and seafloor depositional textures that may record interactions with Jurassic seawater and mantle peridotite/ serpentinite (Cannao et al., 2020, in Chemical Geology).

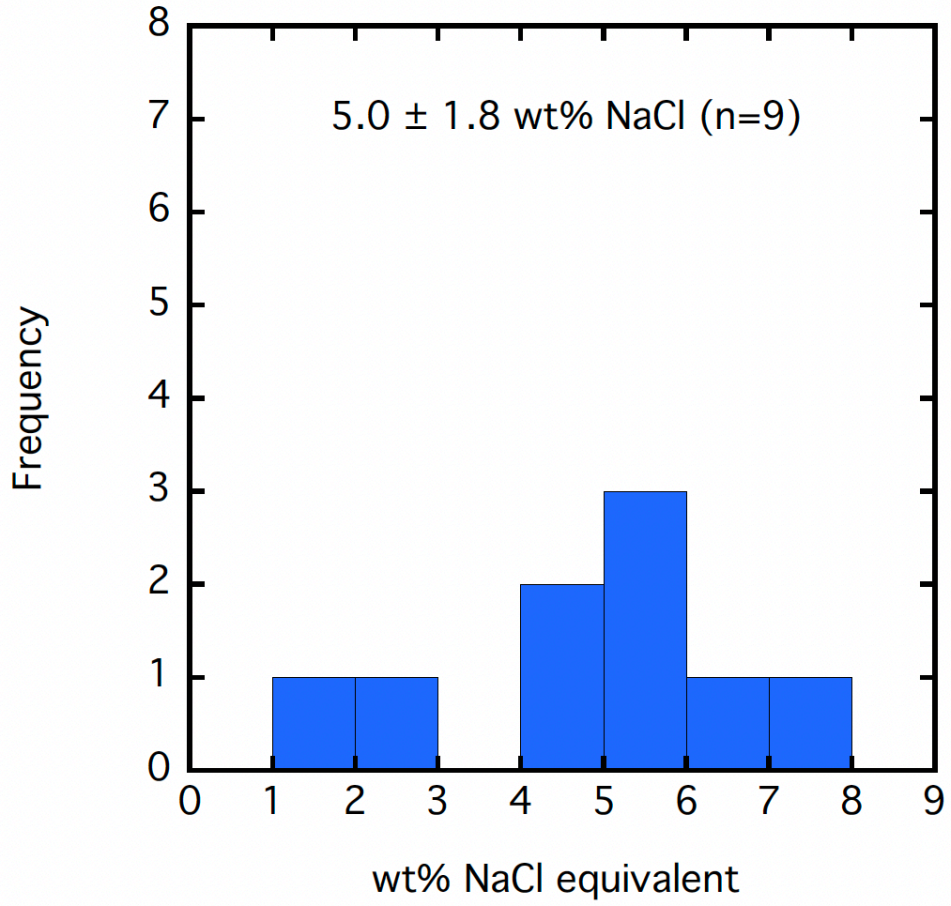
Raman spectroscopy and micro-XRF analysis indicate that the rocks are mainly composed of antigorite, lizardite, and calcite. We performed microthermometry of saline fluid inclusions in relatively large crystals of calcite veins. Other fine-grained calcite crystals also exist, but microthermometry of their fluid inclusions has been difficult up to now. We also have sedimentary ophicarbonate (Cannao et al., 2020) in the same outcrop, and we would like to obtain data on these fluid inclusions in the future.

Microthermometry results show that the salinity estimated from freezing point depression is 5.0±1.8 NaCl wt% (n=9) and the homogenization temperature between gas and liquid phases is 179±16˚C (n=9). The salinity varies from 1 to 8 NaCl wt% within a thin section, and even within a crystal there are 3 NaCl wt% variations, indicating that saline fluids with such degrees of variation existed during the carbonation of the serpentinite.

We would like to discuss the carbonation process of serpentinite at the seafloor by comparing the salinity and homogenization temperature of fluid inclusions in calcite in ophiolites from low grade metamorphic regions in the Western Alps reported by Inukai et al. (2023, Mineralogical Society Abstracts) and other previous studies.

Keywords: fluid inclusions, serpentinite, seawater, carbon dioxide, ophicarbonate


179 ± 16°C (n=9)
Frequency
0
1
2
3
4
5
6
7
8
140 150 160 170 180 190 200 210 220
°C Homogenization Temeperature


5.0 ± 1.8 wt% NaCl (n=9)
Frequency
0
1
2
3
4
5
6
7
8
0 1 2 3 4 5 6 7 8 9
wt% NaCl equivalent

JAMS General Meeting, Award ceremony

Fri. Sep 13, 2024 2:00 PM - 3:15 PM JST | Fri. Sep 13, 2024 5:00 AM - 6:15 AM UTC | ES Hall Higashiyama Campus

JAMS General Meeting, Award ceremony

2:00 PM - 3:15 PM JST | 5:00 AM - 6:15 AM UTC

[2Lecture-1-1400-1add] 定時総会・授賞式

JAMS General Meeting, Award ceremony

JAMS General Meeting, Award ceremony

Fri. Sep 13, 2024 2:00 PM - 3:15 PM ES Hall (Higashiyama Campus)

2:00 PM - 3:15 PM

[2Lecture-1-1400-1add]定時総会・授賞式

Lectures of JAMS Awardees

Fri. Sep 13, 2024 3:30 PM - 5:00 PM JST | Fri. Sep 13, 2024 6:30 AM - 8:00 AM UTC | ES Hall Higashiyama Campus

Lectures of JAMS Awardees

3:30 PM - 5:00 PM JST | 6:30 AM - 8:00 AM UTC

受賞者講演