Thu. Sep 12, 2024

Oral presentation | S1: Dynamics of igneous processes (Special Session)

10:00 AM - 12:00 PM JST | 1:00 AM - 3:00 AM UTC | ES Hall Higashiyama Campus

S1: Dynamics of igneous processes (Special Session)

Chairperson:Shumpei Yoshimura(Hokkaido University), Yuuki Hagiwara(Japan Agency for Marine-Earth Science and Technology), Morihisa Hamada(JAMSTEC)

10:00 AM - 10:20 AM JST | 1:00 AM - 1:20 AM UTC

[S1-01] Tungsten (VI) speciation in subduction-zone aqueous fluids and its significance for W stable isotope fractionation during slab dehydration

「招待講演」

*Naoko TAKAHASHI[1], Michihiko Nakamura[2], Shigeru Yamashita[3], Hiroyuki Kagi[1] (1. UTokyo Sci., 2. Tohoku Univ. Sci., 3. Okayama Univ. IPM)

10:20 AM - 10:40 AM JST | 1:20 AM - 1:40 AM UTC

[S1-02] Reconstruction of mantle structures using mantle xenoliths from Nushan, SE-edge of Sino-Korean craton: How far does the subduction fluid reach?

「招待講演」

*Yuto SATO[1], Eiichi Takahashi[2] (1. JAMSTEC Kochi, 2. GIG)

10:40 AM - 10:55 AM JST | 1:40 AM - 1:55 AM UTC

[S1-03] Elucidating Deep processes leading to maar eruptions using mantle xenoliths in the West Eifel volcanic field

「発表賞エントリー」

*Masanari Arao[1], Michihiko Nakamura[1], Mayumi Mujin[1], Naoki Araya[1], Sando Sawa[1], Takayuki Nakatani[2], Mari Sumita[3], Hans-Ulrich Schmincke[3] (1. Tohoku Univ.Sci., 2. AIST, 3. GEOMAR)

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

[S1-04] Water contents and pressures of melts in unerupted felsic magma constrained by SEM-EDS analysis of homogenized melt inclusions in zircon

「発表賞エントリー」

*Taichi Kawashima[1], Kazuya Shimooka[2], Toko Fukui[1], Satoshi Saito[1] (1. Ehime Univ., 2. Kwansei Gakuin Univ.)

11:10 AM - 11:25 AM JST | 2:10 AM - 2:25 AM UTC

[S1-05] Permeability and pore microstructures on the diktytaxitic texture of Ogurayama lava dome, Towada volcano

*Natsuko Sekiya[1], Michihiko Nakamura[2], Ryosuke Sakurai[3], Mayumi Mujin[2], Naoki Araya[2], Shingo Takeuchi[4], Yukiko Suwa[5] (1. Tohoku Univ. Sci., 2. Grad. Sch. of Sci., Tohoku Univ., 3. Univ. Tokyo, 4. CRIEPI, 5. CERES)

11:25 AM - 11:40 AM JST | 2:25 AM - 2:40 AM UTC

[S1-06] MD simulation of silicate melt and glass under tension deformation

*Ryota Mamizuka[1], Satoshi Okumura[1], Hiroshi Sakuma[2] (1. Tohoku Univ. Sci., 2. NIMS)

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

[S1-07] The magma plumbing system of Izu-Oshima Volcano: Constraints from the H_2O-saturated plagioclase liquidus

*Hidemi ISHIBASHI[1] (1. Shizuoka University)

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

10:00 AM - 12:00 PM JST | 1:00 AM - 3:00 AM UTC | ES024 Higashiyama Campus

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

Chairperson:Masanori Kurosawa, Hiroshi Kitawaki

10:00 AM - 10:20 AM JST | 1:00 AM - 1:20 AM UTC

[R1-01] Determination of analytical conditions in quantitative electron probe microanalysis of ultra-trace elements: probe current and sampling time

「招待講演」

*Takenori KATO[1] (1. ISEE, Nagoya University)

10:20 AM - 10:35 AM JST | 1:20 AM - 1:35 AM UTC

[R1-02] Mössbauer Spectra and Intensity Tensors of Quadrupole Doublets for Fe^{3+} and Fe^{2+} of Bridgmanite

*Keiji SHINODA[1], Yasuhiro Kobayashi[2], Takuo Okuchi[2] (1. Osaka Met. Univ. Sci, 2. KURNS)

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

[R1-03] Clay mineral characterization by Optical Photothermal Induced Resonance (O-PTIR)

「発表賞エントリー」

*Taro Kido[1], Yohey Suzuki[1] (1. The University of Tokyo)

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

[R1-04] Characterization and Identification of Synthetic Colored Diamonds for Jewelry Use

*Hiroshi KITAWAKI[1], Kentaro Emori[1], Mio Hisanaga[1], Masahiro Yamamoto[1] (1. Central Gem Laboratory)

11:05 AM - 11:15 AM JST | 2:05 AM - 2:15 AM UTC

[1Lecture-201-07-5add] 休憩

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

[R1-05] Blue Sapphire from Australia and its origin

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

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

[R1-06] Emerald origin characteristics and problems in origin determination

*Zhenghao Zhao[1], Hiroshi Kitawaki[1], Kentaro Emori[1] (1. Central Gem Laboratory)

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

[R1-07] Gem zircon and sapphire age dating and application of origin determination; A study from New England sapphire fields, New South Wales, Australia

*Ahmadjan ABDURIYIM[1] (1. Tokyo Gem Science LLC)

Oral presentation | R3: High-pressure science and deep Earth's material

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

R3: High-pressure science and deep Earth's material

Chairperson:Takeshi Sakai(Ehime University), Ryosuke Sinmyo(Meiji University), Takayuki Ishii(Okayama University), Takaaki Kawazoe(Hiroshima University)

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[R3-01] Pressure-induced polyamorphic transition in $CaAl_2O_4$ glass revealed by elastic wave velocity and X-ray diffraction measurements and molecular dynamics simulations

「招待講演」

*Itaru Ohira[1], Yoshio Kono[2,3], Steeve Gréaux[3], James W E Drewitt[4], Sandro Jahn[5], Fumiya Noritake[6], Koji Ohara[7,8], Satoshi Hiroi[7,8], Nozomi M Kondo[9], Rostislav Hrubiak[10], Yuji Higo[8], Noriyoshi Tsujino[8], Sho Kakizawa[8], Kiyofumi Nitta[8], Oki Sekizawa[8] (1. Gakushuin Univ. Sci., 2. Kwansei Gakuin Univ. Sci., 3. Ehime Univ. GRC, 4. U. Bristol Phys., 5. U. Cologne IGM, 6. U. Yamanashi Interdisciplinary Research, 7. Shimane Univ. Materials for Energy, 8. JASRI, 9. Okayama Univ. IPM, 10. ANL HPCAT)

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

[R3-02] Structural analysis of CO_2-bearing sodium silicate melts using molecular dynamics simulations and synchrotron radiation X-ray diffraction experiments

「発表賞エントリー」

*Shino HAYAFUNE[1], Yohei Onodera[2], Shinji Kohara[2], Haruki Ichikawa[3], Tatsuya Sakamaki[1], Kenichi Funakoshi[4], Akio Suzuki[1] (1. Tohoku Univ. Graduate School of Science., 2. NIMS, 3. Tohoku Univ. School of Science., 4. CROSS)

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

[R3-03] Possible presence of poirierite, a high-pressure phase of $(Mg,Fe)_2SiO_4$, in the deep Earth's mantle

*Naotaka TOMIOKA[1], Takuo Okuchi[2], Narangoo Purevjav[3], Masaaki Miyahara[4] (1. KOCHI, JAMSTEC, 2. KRUNS, Kyoto Univ., 3. Seoul National Univ., 4. Earth Planet Sci., Hiroshima Univ.)

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

[R3-04] Temperature dependence of water content in wadsleyite and ringwoodite

*Toru INOUE[1,2], Yuji HAMADA[2], Hanae KAYA[2], Yusuke EGI[1], Daichi MAEDA[1], Kazutaka YAMAGUCHI[1], Konosuke YAMADA[1], Takaaki KAWAZOE[1,2] (1. Hiroshima Univ. Adv. Sci. Eng., 2. Hiroshima Univ. Sci.)

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

[R3-05] Temperature dependence of the $Fe^{3+}/\Sigma Fe$ ratio in wadsleyite by electron energy loss spectroscopy (EELS)

「発表賞エントリー」

*Kazutaka YAMAGUCHI[1], Takaaki Kawazoe[1], Toru Inoue[1], Naotaka Tomioka[2] (1. Hiroshima University, 2. JAMSTEC, Kochi institute)

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

[R3-06] Advantage on the analysis of cation site occupancies by neutron diffraction and some examples of application for high-pressure minerals

*Takuo OKUCHI[1] (1. Kyoto Univ.)

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

[R3-07] In situ lattice volume observation of davemaoite in the $CaSiO_3$-H_2O system up to uppermost lower mantle conditions

*Goru Takaichi[1], Takayuki Ishii[2], Yu Nishihara[1], Kyoko Matsukage[3], Yuji Higo[4], Noiyoshi Tsujino[4], Sho Kakizawa[4] (1. GRC, Ehime Univ., 2. IPM, Okayama Univ., 3. Teikyo University of Science, 4. JASRI)

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

[R3-08] Elasticity Measurements of Hydrous SiO_2 post-stishovite and its implication to the seismic anomalies in the lower mantle

「発表賞エントリー」

*Yuichiro MORI[1,2], Motohiko MURAKAMI[2], Takashi YOSHINO[3], Hiroyuki KAGI[1] (1. UTokyo. Sci., 2. ETHZ. D-ERDW., 3. Okayama Univ. IPM)

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

2:00 PM - 5:30 PM JST | 5:00 AM - 8:30 AM UTC | ES Hall Higashiyama Campus

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

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

2:00 PM - 2:25 PM JST | 5:00 AM - 5:25 AM UTC

[R7-01] The Frontier of Ilmenite Geochronology Using the Uranium-Lead Decay System

「招待講演」

*Kengo Ito[1], Sota Niki[2], Tsuyoshi Iizuka[3], Takafumi Hirata[1] (1. The Univ. of Tokyo. GcRC, 2. Nagoya Univ. ISEE, 3. The Univ. of Tokyo. Sci. EPS)

2:25 PM - 2:40 PM JST | 5:25 AM - 5:40 AM UTC

[R7-02] Distribution of rhenium in hydrothermal deposits in Japan, based on LA-ICP-MS analysis

「発表賞エントリー」

*Mitsuki Ogasawara[1], Junichiro Ohta[1,2], Kazutaka Yasukawa[1], Kentaro Nakamura[2,1], Yasuhiro Kato[1,2] (1. Univ. Tokyo. Eng, 2. CIT. ORCeNG)

2:40 PM - 2:55 PM JST | 5:40 AM - 5:55 AM UTC

[R7-03] Occurrences of the PGE bearing (Fe,Ni,Co)AsS solid solution in the Bushveld Complex, South Africa

「発表賞エントリー」

*Sakuya Kubota[1], Takuya Echigo[1], Yasushi Watanabe[1] (1. Akita Univ. Irs.)

2:55 PM - 3:10 PM JST | 5:55 AM - 6:10 AM UTC

[R7-04] Shiranuiite and placer deposit of platinum group minerals, Haraigawa, Misato machi, Kumamoto Prefecture, Japan

*Daisuke HAMANE[1], Takahiro Tanaka, Tadashi Shinmachi (1. The University of Tokyo)

3:10 PM - 3:25 PM JST | 6:10 AM - 6:25 AM UTC

[R7-05] Geochmical and Sr-Nd isotopic characteristics of the Aitutaki peridotite xenoliths from the Cook islands

*Masako YOSHIKAWA[1], Norikatsu Akizawa[2] (1. Hiroshima Univ., 2. Tokyo Univ. AORI)

3:25 PM - 3:40 PM JST | 6:25 AM - 6:40 AM UTC

[R7-06] Hydration of the mantle and magma genesis in the Izu–Bonin-Mariana fore-arc

*Rion Yamaoka[1], Norikatsu Akizawa[1], Yuji Ichiyama[2], ToTomoaki Morishita[3], Akihiro Tamura[3], Hiroyuki Yamashita[4], Yumiko Harigane[5], Yasuhiko Ohara[6,7,8] (1. University of Tokyo, 2. Chiba Univ., 3. Kanazawa Univ., 4. Kanagawa Prefectural Museum of Natural History, 5. AIST, 6. Japan Coast Guard,Hydrographic and Oceanographic Department, 7. JAMSTEC, 8. Nagoya Univ.)

3:40 PM - 3:50 PM JST | 6:40 AM - 6:50 AM UTC

[1Lecture-108-19-7add] 休憩

3:50 PM - 4:15 PM JST | 6:50 AM - 7:15 AM UTC

[R7-07] Fault-rock mineralogy and weakening mechanisms at deep- to shallow-crustal depths of Main Himalayan Thrust, NW India

「招待講演」

*Dyuti Prakash SARKAR[1], Takehiro Hirose[1], Jun-ichi Ando[2], Kaushik Das[2], Gautam Ghosh[3] (1. Japan Agency for Marine-Earth Science and Technology (JAMSTEC), 2. Hiroshima University, 3. Presidency University)

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

[R7-08] On the Relationship between Phosphorus Concentration and Microstructure in Goethite in Australian Iron Ore

*Takashi MIKOUCHI[1], Reiko Murao[2], Toru Takayama[2] (1. Univ. Museum, Univ. of Tokyo, 2. Nippon Steel)

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[R7-09] Mineral zoning and formation temperatures around the Myokenzan lithium pegmatites

「発表賞エントリー」

*Takumi Ishizaki[1], Takuya Echigo[1], Yasushi Watanabe[1] (1. Akita Univ.)

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[R7-10] Copper as a Coloring Factor of Pale Blue Sepiolite in amygdales in Higashimatsuura basalt from Kabeshima, Saga Prefecture, SW Japan

「発表賞エントリー」

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

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[R7-11] Quantification of Mineral Modal and Zoning Ratios by Powder X-ray Diffraction: Advancing Towards Big Data Era

「発表賞エントリー」

*Satoshi MATSUNO[1], Shuhou Maitani[2], Kenta Yoshida[3], Nobuo Hirano[1], Ryosuke Sinmyo[2], Keiichi Osaka[4], Shin-ichi Yamasaki[1], Masaoki Uno[1], Atsushi Okamoto[1] (1. Tohoku University, 2. Meiji University, 3. JAMSTEC, 4. Japan Synchrotron Radiation Research Institute)

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[R7-12] Searching for Dark Matter Using Geological Samples: Techniques and Preliminary Results

*Natsue ABE[1,2], Shigenobu Hirose[1], Qing CHANG[1], Takeshi Hanyu[1], Noriko Hasebe[2], Yasushi Hoshino[3], Takashi Kamiyama[4], Yoji Kawamura[1], Kohta Murase[5], Tatsuhiro Naka[6], Kenji Oguni[1], Katsuhiko Suzuki[1], Seiko Yamazaki[7] (1. JAMSTEC, 2. Kanazawa University, 3. Kanagawa University, 4. Hokkaido University, 5. Penn State University, 6. Toho University, 7. AIST)

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

2:00 PM - 3:15 PM JST | 5:00 AM - 6:15 AM UTC | ES024 Higashiyama Campus

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

Chairperson:Koichi Momma, Yohei Shirose

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

[R1-08] Ultra nano inclusion in blue sapphire from Diego, Madagascar

*Akira MIYAKE[1], Seika Oto[1], Yohei Igami[1], Kentaro Emori[2] (1. Kyoto University, 2. CGL)

2:15 PM - 2:30 PM JST | 5:15 AM - 5:30 AM UTC

[R1-09] Reexamination of the symmetry of itoigawaite

*Chigako KIYOHARA, Yohei Igami[1], Akira Miyake[1], Norimasa Shimobayashi[1] (1. Kyoto Univ. Sci.)

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[R1-10] Zeolite and altered boninite from Miyanohama, Ogasawara, Japan

*Yuki INOUE[1], Mana Yasui[2], Jun-ichiro Ishibashi[3], Hagiya Hiroshi[4], Kazuhiko Shimada[1], Athushi Yamazaki[2] (1. Kyushu Univ. Sci., 2. Waseda Univ. , 3. Kobe Univ., 4. Tokyo City Univ.)

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

[R1-11] Willemseite from the Hamayokawa mine, Nagano Prefecture, Japan

*Satoshi Matsubara[1], Koichi Momma[1], Norio Yanagisawa[2], Yoko Kusaba[1], Akiko Tokumoto[1], Ritsuro Miyawaki[1] (1. National Museum of Nature and Science, 2. Geological Survey of Japan, AIST)

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

[R1-12] On the Fe^{2+}-analogue of zemannite from Kawazu mine, Shizuoka Prefecture, Japan

*Koichi MOMMA[1], Owen Missen[2], Stuart Mills[3], Ritsuro Miyawaki[1], Satoshi Matsubara[1], Eiji Ohtani[4], Seiji Kamada[5], Shin Ozawa[4] (1. National Museum of Nature and Science, 2. University of Tasmania, 3. The Arkenstone, 4. Tohoku Univ., 5. AD Science Inc.)

Oral presentation | R3: High-pressure science and deep Earth's material

2:00 PM - 3:15 PM JST | 5:00 AM - 6:15 AM UTC | ES025 Higashiyama Campus

R3: High-pressure science and deep Earth's material

Chairperson:Takeshi Sakai(Ehime University), Ryosuke Sinmyo(Meiji University), Takayuki Ishii(Okayama University), Takaaki Kawazoe(Hiroshima University)

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

[R3-09] Electrical conductivity of the lower mantle materials under high pressure with implication for valence and spin states of iron

「招待講演」

*Izumi MASHINO[1] (1. Okayama Univ.)

2:15 PM - 2:30 PM JST | 5:15 AM - 5:30 AM UTC

[R3-10] GHz-DAC ultrasonics to measure elastic anomaly with the spin transition of ferrous ion in ferropericlase

*Akira Yoneda[1], Izumi Mashino[2], Ryosuke Matsui[1], Ryoma Ishida[1], Tadashi Kondo[1] (1. Osaka Univ. Sci, 2. Okayama Univ. IPM)

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[R3-11] Reaction between water and iron in the early magma ocean and the present core-mantle boundary

*Yongjae Lee[1] (1. Yonsei University)

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

[R3-12] Sound velocity of B2-FeNiSi alloy at high pressure and high temperature and constitution of the Earth's inner core

*Eiji OHTANI[1], Daijo IKUTA[2], Hiroshi FUKUI[3,4], Tatsuya SAKAMAKI[1], Daisuke Ishikawa[3,4], Alfred Q. R. BARON[3,4] (1. Tohoku University, 2. Institute for Planetary Materials, Okayama University, 3. JASRI, 4. RIKEN)

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

[R3-13] On the phase boundary between FeS IV and V

*Satoru URAKAWA[1] (1. Okayama University)

Oral presentation | R8: Metamorphic rocks and tectonics

3:30 PM - 6:00 PM JST | 6:30 AM - 9:00 AM UTC | ES024 Higashiyama Campus

R8: Metamorphic rocks and tectonics

Chairperson:Yui Kouketsu(Nagoya University), Shunsuke Endo

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

[R8-01] Toward the establishment of "EBSD method for the detection of quartz with phase transition to coesite": Incorporation of the Gongen area, Sanbagawa metamorphic belt, Shikoku, SW-Japan

「発表賞エントリー」

*Momoko Minowa[1], Takayoshi Nagaya[1], Taisuke Ito[2], Simon Wallis[2] (1. Tokyo Gakugei University, 2. The University of Tokyo)

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

[R8-02] Pressure-Temperature-Time Conditions of The Basement Rocks in The Banggai-Sula Microcontinent, Indonesia

「発表賞エントリー」

*Fransiska Ayuni Catur Wahyuandari[1], Nobuhiko Nakano[1], Tatsuro Adachi[1], Nugroho Imam Setiawan[2] (1. Kyushu Univ., 2. Gadjah Mada Univ.)

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

[R8-03] Amphibolites from the Mineoka belt revisited

*Yuji ICHIYAMA[1], Shun Takamizawa[1], Hisatoshi Ito[2], Akihiro Tamura[3], Tomoaki Morishita[3] (1. Chiba University, 2. Central Research Institute of ElectricPower Industry, 3. Kanazawa University)

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

[R8-04] Compositional heterogeneity of garnet in garnet-biotite felsic granulite, Czech Republic

*Daisuke NAKAMURA[1], Yuuka FUJIMURA[1], Yuuki KODERA[1] (1. Okayama University)

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[R8-05] Formation and alteration of a zoned calcsilicate vein from the contact aureole of Kasuga area, central Japan: insights from chemical ages of U-Th oxides

*Shunsuke ENDO[1] (1. Shimane University)

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[R8-06] Observations of geological structures and microstructures associated with strain release at a continental plate boundary fault

「発表賞エントリー」

*Haruki Yoshiasa[1], Jun-ichi Ando[1,2], Kaushik Das[1,2], Dyuti Prakash Sarkar[3] (1. Hiroshima University, 2. HiPeR, 3. JAMSTEC)

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[R8-07] Comparison and verification study of new sample forms for use in Raman carbonaceous material geothermometer

「発表賞エントリー」

*Shunsuke Ogino[1], Yui Kouketsu[1], Satoshi Takahashi[1] (1. Nagoya Univ. Env.)

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[R8-08] Pressure and temperature conditions for the occurrence of index minerals in pelitic schists in the Sanbagawa belt, Kanto Mountains, Japan, inferred from Raman carbonaceous material geothermometry

*Yui KOUKETSU[1], Ichiko Shimizu[2] (1. Nagoya Univ. Env., 2. Kyoto Univ. Sci.)

5:30 PM - 5:45 PM JST | 8:30 AM - 8:45 AM UTC

[R8-09] Microstructural and petrological characteristics of the Ryoke mylonite occurred along the Median Tectonic Line in the Shinshiro area, Aichi Prefecture

*Miharu Niwa[1,2], Katsuyoshi Michibayashi[1,3], Kenichiro Tani[4], Takuma Nishimura[5] (1. Nagoya Univ. Env., 2. TMNH, 3. JAMSTEC, 4. NMNS, 5. HMNH)

5:45 PM - 6:00 PM JST | 8:45 AM - 9:00 AM UTC

[R8-10] Re-proposal of the metamorphic zone division in the Horokanai area of the Kamuikotan Belt based on the mineral paragenesis and phengite K-Ar Age.

*Takao HIRAJIMA[1], Kousuke Naemura[2], Kenta Yoshida[3] (1. Kyoto University, 2. Iwate University, 3. JAMSTEC)

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

3:30 PM - 6:00 PM JST | 6:30 AM - 9:00 AM UTC | ES025 Higashiyama Campus

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

Chairperson:Ikuo Katayama(Hiroshima University), Katsuyoshi Michibayashi(Nagoya University)

3:30 PM - 3:50 PM JST | 6:30 AM - 6:50 AM UTC

[S3-01] High-speed time-resolved in-situ stress-strain measurements under high pressure and high temperature using synchrotron radiation X-rays

「招待講演」

*Noriyosi TSUJINO[1] (1. JASRI)

3:50 PM - 4:05 PM JST | 6:50 AM - 7:05 AM UTC

[S3-02] Deformation-induced crystallographic-preferred orientation of ε-FeOOH

*Yu NISHIHARA[1], Yui MORI[1], Wentian WU[1], Noriyoshi TSUJINO[2] (1. GRC, Ehime Univ., 2. JASRI)

4:05 PM - 4:20 PM JST | 7:05 AM - 7:20 AM UTC

[S3-03] Strength of metastable olivine and the rheology of subducting cold slab at mantle transition zone

「発表賞エントリー」

*Rikuto HONDA[1], Tomoaki Kubo[1], Noriyoshi Tsujino[2], Yuji Higo[2], Sho Kakizawa[2], Yuki Shibazaki[3], Yu Nishihara[4] (1. Kyushu University, 2. JASRI, 3. KEK, 4. Ehime Univ. GRC)

4:20 PM - 4:40 PM JST | 7:20 AM - 7:40 AM UTC

[S3-04] High-resolution measurement of ice anelasticity over a broad frequency range with a new cryogenic forced oscillation apparatus

「招待講演」

*Hatsuki Yamauchi[1], Christine McCarthy[1], Benjamin Holtzman[1], David Goldsby[2], Travis Hager[2] (1. Columbia Univ. LDEO, 2. U. Penn)

4:40 PM - 4:55 PM JST | 7:40 AM - 7:55 AM UTC

[S3-05] Relationship between creep and grain growth in rock with bicontinuous structure

「発表賞エントリー」

*Shenghao Jiang[1], Takehiko Hiraga[1] (1. The University of Tokyo)

4:55 PM - 5:10 PM JST | 7:55 AM - 8:10 AM UTC

[S3-06] Microstructures of plagioclase in gabbroic ultramylonites and quadruple point analysis

*Itsuki Natsume[1], Katsuyoshi Michibayashi[2,3], Yohei Igami[4] (1. Kanagawa Prefectural Museum of Natural History, 2. Nagoya Univ., 3. JAMSTEC, 4. Kyoto Univ.)

5:10 PM - 5:25 PM JST | 8:10 AM - 8:25 AM UTC

[S3-07] Reconstruction of the uppermost mantle continuous structure of the Oman ophiolite

*Takeo Okuwaki[1], Natsume Itsuki[2], Katsuyoshi Michibayashi[1] (1. Nagoya Univ. Env, 2. Kanagawa Pref. Mus. Nat. Hist.)

5:25 PM - 5:40 PM JST | 8:25 AM - 8:40 AM UTC

[S3-08] Deformation and melt-rock interaction in the Horoman peridotite: Petrological and structual study of the MHL suite and BDH suite rocks

「発表賞エントリー」

*Aya Hihara[1], Miki Tasaka[1], Keisuke Kurihara[1], Hajime Taniuchi[2], Tastuhiko Kawamoto[1] (1. Shizuoka Univ., 2. AIST)

5:40 PM - 5:55 PM JST | 8:40 AM - 8:55 AM UTC

[S3-09] Multicomponent measurements of seismic velocity and electrical resistivity using foliated serpentinite and peridotite

「発表賞エントリー」

*Tomohiro Ito[1], Ikuo Katayama[1], Katsuyoshi Michibayashi[2], Kazuki Matsuyama[2] (1. Hiroshima University, 2. Nagoya University)

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)

Sat. Sep 14, 2024

Oral presentation | R6: Plutonic rocks, volcanic rocks and subduction factory

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

R6: Plutonic rocks, volcanic rocks and subduction factory

Chairperson:Tatsuhiko Kawamoto(Shizuoka University), Takashi Yuguchi, Atsushi Kamei

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

[R6-01] Compositional evolution of slab-derived fluids during ascent and origin of subduction-zone primary magmas: Implications from trace-element partition between hydrous melts and Cl-free or Cl-rich aqueous fluids

*Hajime TANIUCHI[1], Tatsuhiko KAWAMOTO[2], Takayuki NAKATANI[1], Osamu ISHIZUKA[1], Toshihiro SUZUKI[1], Akihiko Tomiya[1] (1. GSJ, AIST, 2. Shizuoka Univ.)

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

[R6-02] New crust and mantle physical properties research from the development of rock synthesis methods

「招待講演」

*Sanae Koizumi[1] (1. The University of Tokyo)

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

[R6-03] The use of contact metamorphism to identify plutons associated with major contemporaneous eruption and estimate magma flux

*Simon R WALLIS[1], Ken Yamaoka[2], Akira Miyake[3], Catherine Annen[4] (1. The University of Tokyo, 2. AIST, 3. Aichi University of Education, 4. Institute of Geophysics, Czech Academy of Sciences)

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

[R6-04] Petrography and geochronology of the Kuki granite, Kitakami Mountains, northeastern Japan: Shallow crustal intrusion and emplacement processes of granitic magma

*Satoshi SUZUKI[1], Takashi YUGUCHI[2], Keito ISHIGURO[1], Kyoka ENDO[1], Asuka KATO[1], Kosuke YOKOYAMA[1], Yasuhiro OGITA[3], Tatsunori YOKOYAMA[3], Shuhei SAKATA[4], Takeshi OHNO[5], Eiji SASAO[3] (1. Yamagata University, 2. Kumamoto University, 3. Japan Atomic Energy Agency, 4. University of Tokyo, 5. Gakushuin University)

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[R6-05] Zircon U-Pb dating of granitoids in the Hobenzan area, western Yamaguchi Prefecture, southwest Japan

*Yukiyasu TSUTSUMI[1], Kenichiro TANI[1] (1. National Museum of Nature and Science)

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

[R6-06] Estimation of temperature and pressure conditions of granitoids in the eastern part of Shimane Prefecture, San'in Belt.

*Kai Nakahashi[1], Satoshi SAITO[1] (1. Ehime University Graduate School of Science and Engineering, Earth Science Division)

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

[R6-07] Primary magma of Cretaceous Northern Kyushu batholith: New approach from Cumulus rocks

*Keisuke ESHIMA[1], Masaaki OWADA[1], Atsushi KAMEI[2] (1. Yamaguchi Univ. Sci. , 2. Shimane Univ.)

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

[R6-08] Origin of the Cretaceous ignimbrite flare-up in SW Japan

*Ken Yamaoka[1], Tokiyuki Morohoshi[2], Daisuke Sato[1], Kazuto Mikuni[1] (1. AIST, 2. Univ. Tokyo. Sci.)

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

[3Lecture-101-11-9add] 休憩

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

[R6-09] The genesis of garnet in the Quaternary rhyolite of Hime-shima volcanic group, EEast Kyushu, Southwest Japan Arc.

*Takehiro HIRAYAMA[1,2], Tomoyuki SHIBATA[2], Masako YOSHIKAWA[2] (1. Tokyo University, 2. Hiroshima University)

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

[R6-10] K–Ar ages and geochemical compositions of Early Pleistocene andesites from southern Kyushu, Japan

*Raiki YAMADA[1], Masakazu Niwa[1], Koji Umeda[2], Koshi Yagi[3], Taisei Fujiwara[3], Ikuo Okada[3], Fukuka Kida[1] (1. Japan Atomic Energy Agency, 2. Hirosaki University, 3. Hiruzen Institute for Geology and Geochronology)

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

[R6-11] Thermal history of pluton formation from Sr diffusion in plagioclase: implications for magma flux estimation and identification of plutons associated with major eruptions

「発表賞エントリー」

*Tokiyuki Morohoshi[1], Simon Richard Wallis[1] (1. The University of Tokyo)

Oral presentation | R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

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

R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

Chairperson:Fumiya Noritake, Mariko Nagashima, Makoto Tokuda

9:00 AM - 9:20 AM JST | 12:00 AM - 12:20 AM UTC

[R2-01] Changes of physical and structural properties of hydrous minerals induced by dehydration of coordinated water molecules

「招待講演」

*Ryo YAMANE[1] (1. Tohoku University)

9:20 AM - 9:35 AM JST | 12:20 AM - 12:35 AM UTC

[R2-02] Phase change of priceite $Ca_2B_5O_7(OH)_5 \cdot H_2O$ during thermal decomposition

*Atsushi KYONO[1], Kosuke Yamaguchi[1], Satoru Okada[1], Hiroki Hasegawa[1] (1. Life & Environmental Sciences, University of Tsukuba)

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

[R2-03] The incorporation mechanisms of water in aluminous orthoenstatite clarified via comprehensive NMR measurements and first-principles calculations

*Xianyu XUE[1], Masami Kanzaki[1], Rongzhang Yin[2] (1. Okayama University, 2. Peking University)

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

[R2-04] Evaluation of the influence of polishing condition on hydrogen diffusion in fluorapatite and estimation of the diffusion mechanism

「発表賞エントリー」

*Chikashi Yoshimoto[1], Isao Sakaguchi[2], Shoichi Itoh[1] (1. Kyoto University, 2. NIMS)

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

[R2-05] Evaporation kinetics of forsterite in low-pressure H_2-H_2O atmosphere

「発表賞エントリー」

*Shiori Inada[1], Shogo Tachibana[1] (1. The University of Tokyo)

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

[3Lecture-201-11-6add] 休憩

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

[R2-06] Origine of framboidal goethite in sandstone in the Saiki Subgroup of the Lower Shimanto Group

*Hiroaki OHFUJI[1], Seira Konishi[1], Hiroshi Yamamoto[2] (1. Tohoku Univ. Sci, 2. Kagoshima Univ. Sci)

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

[R2-07] Precursor phenomenon of ultrananolite crystallization: liquid immiscibility in the volcanic glass

*Mayumi Mujin[1], Keiko Matsumoto[2], Akira Miyake[3], Yohei Igami[3], Michihiko Nakamura[1], Akihiko Yokoo[3], Mitsuhiro Yoshimoto[4] (1. Tohoku University, 2. National Institute of Advanced Industrial Science and Technology (AIST), 3. Kyoto University, 4. Mount Fuji Research Institute, Yamanashi Prefectural Government)

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

[R2-08] Calorimetric constraint of cation disordering enthalpy in $MgAl_2O_4$ spinel

*Hiroshi KOJITANI[1], Ryuji Matsuki[1], Yuta Nishimura[1], Itaru Ohira[1] (1. Gakushuin University)

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

[R2-09] Solid solubilities of Na^+ and K^+ in perovskite type $SrTiO_3$

Ryogo KITAI[2], *Takaya NAGAI[1], Jun KAWANO[1], Ayako Shinozaki[1] (1. Hokkaido Univ. Faculty SCi., 2. Hokkaido Univ. School SCi.)

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

[R2-10] Study on the consistency of Li conductivity measurements of (Li,La)TiO_3 with perovskite structure and Li migration during SIMS measurements

*Isao SAKAGUCHI[1], Tsuyoshi Onishi[1] (1. National Institute for Materials Science)

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

[R2-11] Structure transition mechanism under high pressure of Fe-Ti-0 system phases

*Takamitsu YAMANAKA[1,2], Takanori Hattori[3], Ho-kwang Mao[1] (1. Center for High Pressure Science and Technology Advanced Research, 2. Graduate School of Science Osaka University, 3. J-PARC)

Oral presentation | R5: Extraterrestrial materials

9:00 AM - 12:00 PM JST | 12:00 AM - 3:00 AM UTC | ES025 Higashiyama Campus

R5: Extraterrestrial materials

Chairperson:Megumi Matsumoto, Daiki Yamamoto, Yusuke Seto, Toru Matsumoto(Kyoto University)

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

[R5-01] Revealing Chemical Compositional Variety of Amorphous Silicate Dust around AGB Stars by Condensation Experiment and Spectroscopic Analysis

「発表賞エントリー」

*Hanako Enomoto[1], Aki Takigawa[1], Hiroki Chihara[2], Chiyoe Koike[2] (1. UTokyo, 2. Osaka Sangyo univ.)

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

[R5-02] Formation process of circumstellar dust studied from presolar oxides in carbonaceous chondrite DOM 08006.

「発表賞エントリー」

*Hiroyuki Hashizume[1], Aki Takigawa[1] (1. UTokyo EPSS)

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

[R5-03] Progress of irreversible chemical reactions on dust moving in a protoplanetary disk

*Lily Ishizaki[1], Shogo Tachibana[1] (1. UT EPS)

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

[R5-04] Experimental study of the effect of evaporation during temperature rise on type B CAI formation

「発表賞エントリー」

*Yasuaki Tsuruoka[1], Shogo Tachibana[1] (1. UTokyo Sci.)

10:00 AM - 10:20 AM JST | 1:00 AM - 1:20 AM UTC

[R5-05] Chondrule formation by collisions of planetesimals containing volatiles

「招待講演」

*Sin-iti Sirono[1] (1. Navoya Univ.)

10:20 AM - 10:35 AM JST | 1:20 AM - 1:35 AM UTC

[3Lecture-301-10-6add] 休憩

10:35 AM - 10:55 AM JST | 1:35 AM - 1:55 AM UTC

[R5-06] Constraining the true timescale of chondrule formation through chondrule mineral chemistry

「招待講演」

*Kohei Fukuda[1], Noriko T Kita[2], Makoto Kimura[3] (1. Osaka Univ. Sci., 2. UW-Madison, 3. NIPR)

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

[R5-07] Reproduction Experiments of Radial Pyroxene Chondrules Using a Gas-jet Levitation System under Reducing Conditions

「発表賞エントリー」

*Kana Watanabe[1], Tomoki Nakamura[1], Tomoyo Morita[1] (1. Tohoku Univ. Sci.)

11:10 AM - 11:25 AM JST | 2:10 AM - 2:25 AM UTC

[R5-08] Stratigraphy of poikilitic shergottite parent body(ies) as deduced from their textural and mineral compositional diversities

「発表賞エントリー」

*Sojiro Yamazaki[1], Akira Yamaguchi[2], Takashi Mikouchi[3] (1. Fac. Sci., Univ. Tokyo, 2. Natl. Inst. Polar Res., 3. Univ. Museum, Univ. Tokyo)

11:25 AM - 11:40 AM JST | 2:25 AM - 2:40 AM UTC

[R5-09] High pressure phase transition of Ti-Cr-rich spinel in Asuka 12325 Martian meteorite

*Atsushi TAKENOUCHI[1], Yohei Igami[2], Takashi Mikouchi[3], Akira Miyake[2], Akira Yamaguchi[4] (1. The Kyoto Univ. Museum, 2. Kyoto Univ. Sci., 3. The Univ. Museum, The Univ. of Tokyo, 4. NIPR)

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

[R5-10] Estimation of thermal history using silica minerals in mesosiderites

*Haruka OONO[1], Atsushi Takenouchi[2], Takashi Mikouchi[3], Akira Yamaguchi[4], Naoji Sugiura[5], Akira Miyake[1] (1. Kyoto Univ., 2. Museum of Kyoto Univ., 3. Museum of Univ. Tokyo, 4. NiPR, 5. Chiba Int. Tech.)

Oral presentation | R6: Plutonic rocks, volcanic rocks and subduction factory

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

R6: Plutonic rocks, volcanic rocks and subduction factory

Chairperson:Takashi Hoshide(Akita University)

2:00 PM - 2:20 PM JST | 5:00 AM - 5:20 AM UTC

[R6-12] Zirconium minerals in ultramafic rocks

「招待講演」

*Hikaru Sawada[1,2], Ryosuke Oyanagi[3,2] (1. University of Toyama, 2. JAMSTEC, 3. Kokushikan University)

2:20 PM - 2:35 PM JST | 5:20 AM - 5:35 AM UTC

[R6-13] Estimation of physical conditions during granitic magma crystallization process using melt inclusions in zircon

*Yuka TANIWAKI[1], Satoshi SAITO[2] (1. Ciatec.,Co LTD, 2. Ehime Univ.)

2:35 PM - 2:50 PM JST | 5:35 AM - 5:50 AM UTC

[R6-14] Estimation of TiO_2 activity for accurate determination of quartz crystallization temperature

*Yasuhiro OGITA[1], Takenori Kato[2], Takashi Yuguchi[3] (1. Yamagata Univ., 2. Nagoya Univ., 3. Kumamoto Univ.)

Oral presentation | R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

2:00 PM - 3:30 PM JST | 5:00 AM - 6:30 AM UTC | ES024 Higashiyama Campus

R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

Chairperson:Kazuki 小松 Komatsu

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

[R2-12] Structural stabilization of pyrite-type compounds and chemical bonds of anions.

「招待講演」

*Akira YOSHIASA[1], Makoto Tokuda[1], Ginga Kitahara[1], Akihiko Nakatsuka[2], Kazumasa Sugiyama[3] (1. Kumamoto University, 2. Yomaguchi University, 3. Tohoku University)

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[R2-13] Formation of Fundamental Building Blocks Composed of Calcium Borate Minerals

「発表賞エントリー」

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

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

[R2-14] Crystal structures of kimuraite-(Y) and lokkaite-(Y)

*Ritsuro Miyawaki[1], Koichi Momma[1] (1. National Museum of Nature and Science)

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

[R2-15] Thermal Vibration of Oxygen atoms in Keatite Crystal

*Fumiya NORITAKE[1] (1. University of Yamanashi)

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

[R2-16] Development of a simulation method for electron back-scattered diffraction based on dynamical theory and its application to mineralogy

*Yusuke SETO[1], Masahiro Ohtsuka[2] (1. Osaka Metropolitan Univ. Sci., 2. Nagoya Univ. Sci. IMaSS.)

Oral presentation | R5: Extraterrestrial materials

2:00 PM - 3:30 PM JST | 5:00 AM - 6:30 AM UTC | ES025 Higashiyama Campus

R5: Extraterrestrial materials

Chairperson:Megumi Matsumoto, Daiki Yamamoto, Yusuke Seto, Toru Matsumoto(Kyoto University)

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

[R5-11] Mineralogy of micrometeoroids captured in silica aerogel aboard the ISS by the Dandelion Project

*Takaaki NOGUCHI[1], Akira MIYAKE[1], Hikaru Yabuta[2], Yoko Kebukawa[3], Daiki Suga[4], Makoto Tabata[5], Kyoko Okudaira[6], Akihiko Yamagishi[7], Hajime Yano[8] (1. Kyoto University, 2. Hiroshima University, 3. Tokyo Institute of Technology, 4. JASRI, 5. Chiba University, 6. University of Aizu, 7. Tokyo University of Pharmacy and Life Sciences, 8. JAXA)

2:15 PM - 2:30 PM JST | 5:15 AM - 5:30 AM UTC

[R5-12] STEM analysis of sodium-rich grains recovered from asteroid Ryugu

*Toru MATSUMOTO[1], Takaaki Noguchi[1], Toru Araki[2], Hayato Yuzawa[2], Akira Miyake[1] (1. Kyoto University, 2. UVSOR)

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[R5-13] Important occurrence of amorphous hydrated Na-bearing Mg phosphate in Asteroid Ryugu samples and CI chondrites

*Takashi MIKOUCHI[1], Hideto Yoshida[2], Satoru Hayashi[2], Minami Masuda[2], Hiroyuki Kagi[2], Kazumasa Sugiyama[3], Tomoki Nakamura[4], Michael Zolensky[5] (1. Univ. Museum, Univ. of Tokyo, 2. Fac. of Sci., Univ. of Tokyo, 3. Inst. Mat. Res., Tohoku Univ., 4. Fac. of Sci., Tohoku Univ., 5. NASA-JSC)

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

[R5-14] On the relationship between lithological classification and degree of aqueous alteration in Asteroid Ryugu samples

*Minami Masuda[1], Takashi Mikouchi[2], Hideto Yoshida[1], Tomoki Nakamura[3], Michael Zolensky[4] (1. Univ. Tokyo, Sci., 2. Univ. Tokyo, Univ. Museum, 3. Tohoku Univ., Sci., 4. NASA-JSC)

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

[R5-15] Highly primitive clasts with GEMS-like grains in Ryugu C0002 sample

*Megumi MATSUMOTO[1], Akira Tsuchiyama[2,3], Masahiro Yasutake[4], Tomoki Nakamura[1] (1. Tohoku Univ., 2. Ritsumeikan Univ., 3. GIG, 4. JASRI/SPring-8)

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

[R5-16] Aqueous alteration experiments using GEMS simulant particles

*Akira TSUCHIYAMA[1,2], Satomi Enju[3], Haiyang Xian[1], Mingqi Sun[1], Ding Xing[1], Yuanyuan Wang[4], Zhaolu He[1], Jing Du[1], Shan Li[1], Jiaxin Xi[1], Xiaoju Lin[1], Jian Di[1], Yuto Imura[5] (1. Guangzhou Inst. Geochem., 2. Ritsumeikan Univ., 3. Ehime Univ. Sci, 4. Tokyo Univ. Sci., 5. Kyoto Univ. Sci.)

Oral presentation | S1: Dynamics of igneous processes (Special Session)

Thu. Sep 12, 2024 10:00 AM - 12:00 PM JST | Thu. Sep 12, 2024 1:00 AM - 3:00 AM UTC | ES Hall Higashiyama Campus

S1: Dynamics of igneous processes (Special Session)

Chairperson:Shumpei Yoshimura(Hokkaido University), Yuuki Hagiwara(Japan Agency for Marine-Earth Science and Technology), Morihisa Hamada(JAMSTEC)

10:00 AM - 10:20 AM JST | 1:00 AM - 1:20 AM UTC

[S1-01] Tungsten (VI) speciation in subduction-zone aqueous fluids and its significance for W stable isotope fractionation during slab dehydration

「招待講演」

*Naoko TAKAHASHI[1], Michihiko Nakamura[2], Shigeru Yamashita[3], Hiroyuki Kagi[1] (1. UTokyo Sci., 2. Tohoku Univ. Sci., 3. Okayama Univ. IPM)

10:20 AM - 10:40 AM JST | 1:20 AM - 1:40 AM UTC

[S1-02] Reconstruction of mantle structures using mantle xenoliths from Nushan, SE-edge of Sino-Korean craton: How far does the subduction fluid reach?

「招待講演」

*Yuto SATO[1], Eiichi Takahashi[2] (1. JAMSTEC Kochi, 2. GIG)

10:40 AM - 10:55 AM JST | 1:40 AM - 1:55 AM UTC

[S1-03] Elucidating Deep processes leading to maar eruptions using mantle xenoliths in the West Eifel volcanic field

「発表賞エントリー」

*Masanari Arao[1], Michihiko Nakamura[1], Mayumi Mujin[1], Naoki Araya[1], Sando Sawa[1], Takayuki Nakatani[2], Mari Sumita[3], Hans-Ulrich Schmincke[3] (1. Tohoku Univ.Sci., 2. AIST, 3. GEOMAR)

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

[S1-04] Water contents and pressures of melts in unerupted felsic magma constrained by SEM-EDS analysis of homogenized melt inclusions in zircon

「発表賞エントリー」

*Taichi Kawashima[1], Kazuya Shimooka[2], Toko Fukui[1], Satoshi Saito[1] (1. Ehime Univ., 2. Kwansei Gakuin Univ.)

11:10 AM - 11:25 AM JST | 2:10 AM - 2:25 AM UTC

[S1-05] Permeability and pore microstructures on the diktytaxitic texture of Ogurayama lava dome, Towada volcano

*Natsuko Sekiya[1], Michihiko Nakamura[2], Ryosuke Sakurai[3], Mayumi Mujin[2], Naoki Araya[2], Shingo Takeuchi[4], Yukiko Suwa[5] (1. Tohoku Univ. Sci., 2. Grad. Sch. of Sci., Tohoku Univ., 3. Univ. Tokyo, 4. CRIEPI, 5. CERES)

11:25 AM - 11:40 AM JST | 2:25 AM - 2:40 AM UTC

[S1-06] MD simulation of silicate melt and glass under tension deformation

*Ryota Mamizuka[1], Satoshi Okumura[1], Hiroshi Sakuma[2] (1. Tohoku Univ. Sci., 2. NIMS)

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

[S1-07] The magma plumbing system of Izu-Oshima Volcano: Constraints from the H_2O-saturated plagioclase liquidus

*Hidemi ISHIBASHI[1] (1. Shizuoka University)

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

調整

Tungsten (VI) speciation in subduction-zone aqueous fluids and its significance for W stable isotope fractionation during slab dehydration

*Naoko TAKAHASHI[1], Michihiko Nakamura[2], Shigeru Yamashita[3], Hiroyuki Kagi[1]

1. UTokyo Sci., 2. Tohoku Univ. Sci., 3. Okayama Univ. IPM

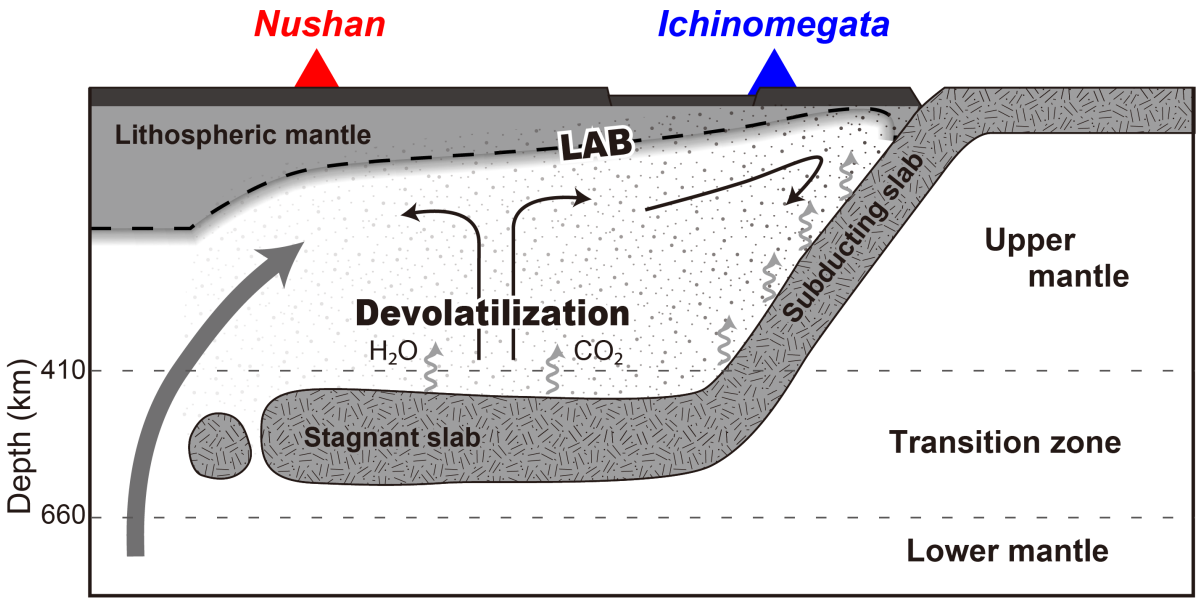
Keywords: Diamond anvil cell, In-situ Raman spectroscopy, Tungsten (VI) speciation, Subduction zone

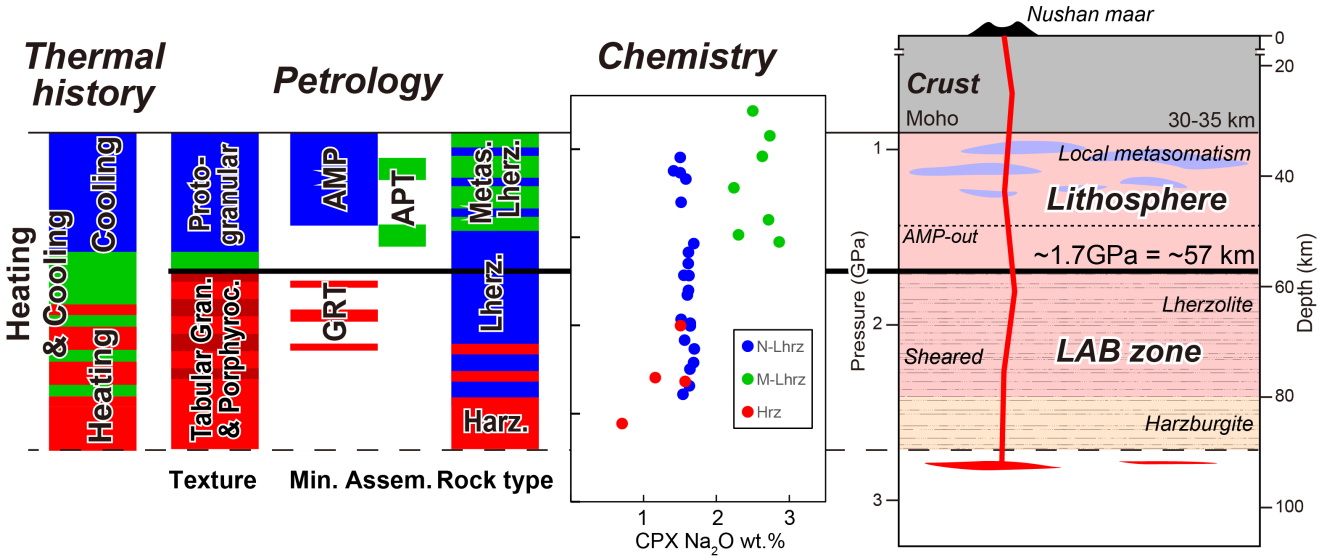
Reconstruction of mantle structures using mantle xenoliths from Nushan, SE-edge of Sino-Korean craton: How far does the subduction fluid reach?

*Yuto SATO[1], Eiichi Takahashi[2]

1. JAMSTEC Kochi, 2. GIG

Keywords: Mantle xenolith, Big mantle wedge, NAMs, Mantle petrology, FTIR





Elucidating Deep processes leading to maar eruptions using mantle xenoliths in the West Eifel volcanic field

*Masanari Arao[1], Michihiko Nakamura[1], Mayumi Mujin[1], Naoki Araya[1], Sando Sawa[1], Takayuki Nakatani[2], Mari Sumita[3], Hans-Ulrich Schmincke[3]

1. Tohoku Univ.Sci., 2. AIST, 3. GEOMAR

Keywords: West Eifel volcanic field, Mantle xenolith, Fluid inclusion, Microcrack, Hydraulic fracturing

Water contents and pressures of melts in unerupted felsic magma constrained by SEM-EDS analysis of homogenized melt inclusions in zircon

*Taichi Kawashima[1], Kazuya Shimooka[2], Toko Fukui[1], Satoshi Saito[1]

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

Granitic rocks (sensu lato) represent unerupted felsic magmas crystallized in the crust. In this study, we estimate water contents of melts and crystallization pressures of zircons in granitoid magma using melt inclusions in zircon, a ubiquitous accessory mineral in granitoids. Homogenization experiments of polymineralic inclusions hosted in zircon have been conducted for a granitoid sample from the Cretaceous Gamano granodiorite in Yashiro–jima Island, southwest Japan, using a piston-cylinder high-pressure–high-temperature apparatus. SEM-EDS analysis reveals that the homogenized melt inclusions have high water contents (6.4–11.3 wt%) and high SiO2 contents (76–78 wt% anhydrous basis) implying that they represent fractionated interstitial hydrous melts trapped in growing zircon crystals. A recently proposed machine learning-based melt–phase assemblage geobarometer yields pressures ranging from 563 to 266 MPa interpreted as crystallization pressures of the zircons. The results of this study suggest high water activity of the interstitial melts within the Gamano granodiorite magma at the time of zircon crystallization. The melt inclusions in zircons record a wide range of pressures, from intrusion of the magma into the deeper crustal levels (~563–500 MPa) to final solidification at shallower levels (~266 MPa).

Keywords: Unerupted felsic magma, Water contents, Crystallization pressures, Melt inclusion in zircon

Permeability and pore microstructures on the diktytaxitic texture of Ogurayama lava dome, Towada volcano

*Natsuko Sekiya[1], Michihiko Nakamura[2], Ryosuke Sakurai[3], Mayumi Mujin[2], Naoki Araya[2], Shingo Takeuchi[4], Yukiko Suwa[5]

1. Tohoku Univ. Sci., 2. Grad. Sch. of Sci., Tohoku Univ., 3. Univ. Tokyo, 4. CRIEPI, 5. CERES

Keywords: permeability, porosity, evaporation-condensation, degassing, Gas pycnometer

MD simulation of silicate melt and glass under tension deformation

*Ryota Mamizuka[1], Satoshi Okumura[1], Hiroshi Sakuma[2]

1. Tohoku Univ. Sci., 2. NIMS

Keywords: silicate melt, MD simulation, tensional deformation, ring structure

The magma plumbing system of Izu-Oshima Volcano: Constraints from the H_2O-saturated plagioclase liquidus

*Hidemi ISHIBASHI[1]

1. Shizuoka University

Keywords: Izu-Oshima volcano, Magma plumbing system, plagioclase, liquidus, pre-eruptive condition

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

Thu. Sep 12, 2024 10:00 AM - 12:00 PM JST | Thu. Sep 12, 2024 1:00 AM - 3:00 AM UTC | ES024 Higashiyama Campus

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

Chairperson:Masanori Kurosawa, Hiroshi Kitawaki

10:00 AM - 10:20 AM JST | 1:00 AM - 1:20 AM UTC

[R1-01] Determination of analytical conditions in quantitative electron probe microanalysis of ultra-trace elements: probe current and sampling time

「招待講演」

*Takenori KATO[1] (1. ISEE, Nagoya University)

10:20 AM - 10:35 AM JST | 1:20 AM - 1:35 AM UTC

[R1-02] Mössbauer Spectra and Intensity Tensors of Quadrupole Doublets for Fe^{3+} and Fe^{2+} of Bridgmanite

*Keiji SHINODA[1], Yasuhiro Kobayashi[2], Takuo Okuchi[2] (1. Osaka Met. Univ. Sci, 2. KURNS)

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

[R1-03] Clay mineral characterization by Optical Photothermal Induced Resonance (O-PTIR)

「発表賞エントリー」

*Taro Kido[1], Yohey Suzuki[1] (1. The University of Tokyo)

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

[R1-04] Characterization and Identification of Synthetic Colored Diamonds for Jewelry Use

*Hiroshi KITAWAKI[1], Kentaro Emori[1], Mio Hisanaga[1], Masahiro Yamamoto[1] (1. Central Gem Laboratory)

11:05 AM - 11:15 AM JST | 2:05 AM - 2:15 AM UTC

[1Lecture-201-07-5add] 休憩

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

[R1-05] Blue Sapphire from Australia and its origin

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

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

[R1-06] Emerald origin characteristics and problems in origin determination

*Zhenghao Zhao[1], Hiroshi Kitawaki[1], Kentaro Emori[1] (1. Central Gem Laboratory)

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

[R1-07] Gem zircon and sapphire age dating and application of origin determination; A study from New England sapphire fields, New South Wales, Australia

*Ahmadjan ABDURIYIM[1] (1. Tokyo Gem Science LLC)

Determination of analytical conditions in quantitative electron probe microanalysis of ultra-trace elements: probe current and sampling time

*Takenori KATO[1]

1. ISEE, Nagoya University

Keywords: electron probe microanalysis (EPMA), trace elements, quantitative analysis, analytical conditions

Mössbauer Spectra and Intensity Tensors of Quadrupole Doublets for Fe^{3+} and Fe^{2+} of Bridgmanite

*Keiji SHINODA[1], Yasuhiro Kobayashi[2], Takuo Okuchi[2]

1. Osaka Met. Univ. Sci, 2. KURNS

Keywords: Bridgmanite, Mössbauer spectroscopy, Intensity tensor

Clay mineral characterization by Optical Photothermal Induced Resonance (O-PTIR)

*Taro Kido[1], Yohey Suzuki[1]

1. The University of Tokyo

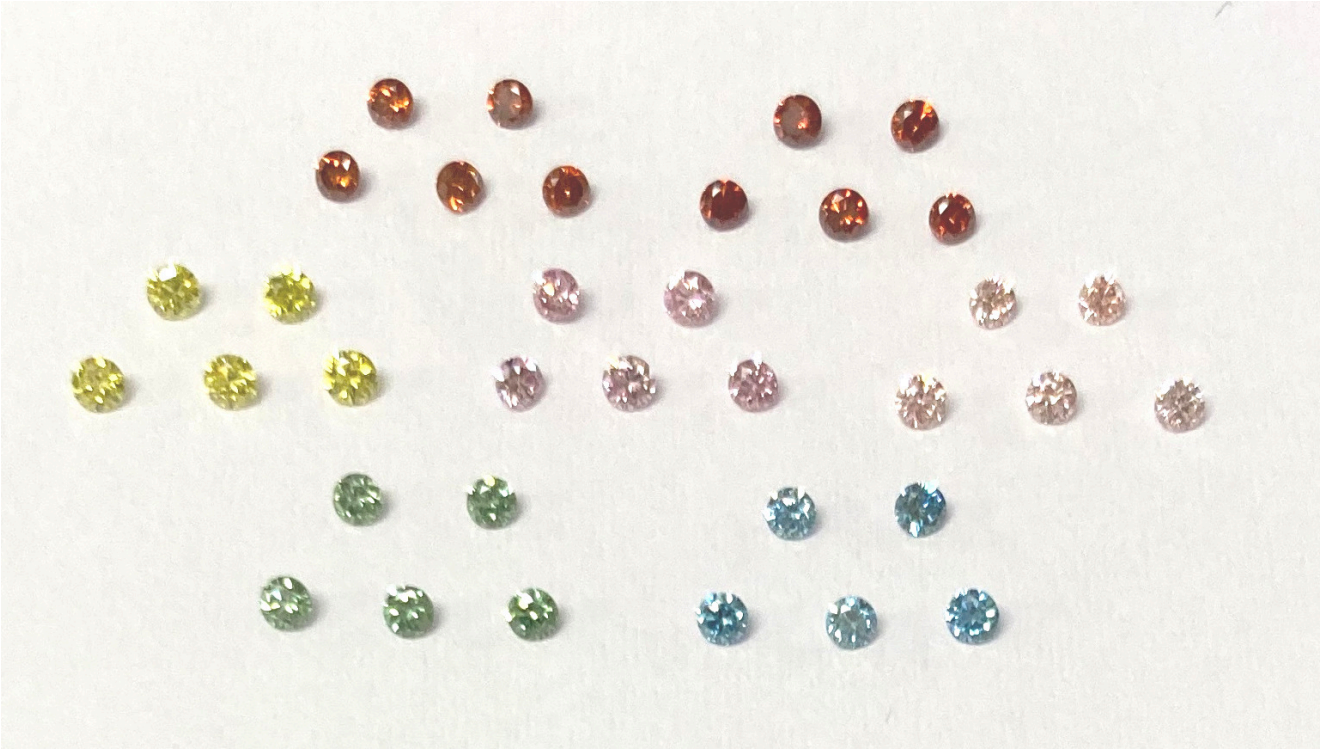
Keywords: smectite, IR spectroscopy, Raman spectroscopy, X-ray diffraction, SEM-EDS

Characterization and Identification of Synthetic Colored Diamonds for Jewelry Use

*Hiroshi KITAWAKI[1], Kentaro Emori[1], Mio Hisanaga[1], Masahiro Yamamoto[1]

1. Central Gem Laboratory

Keywords: melee size, synthetic diamond, fancy color diamond, CVD, HPHT



Oral presentation

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

Chairperson:Masanori Kurosawa, Hiroshi Kitawaki

Thu. Sep 12, 2024 10:00 AM - 12:00 PM ES024 (Higashiyama Campus)

11:05 AM - 11:15 AM

[1Lecture-201-07-5add]休憩

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Blue Sapphire from Australia and its origin

*Kentaro Emori[1], Hiroshi Kitawaki[1]

1. Central Gem Laboratory

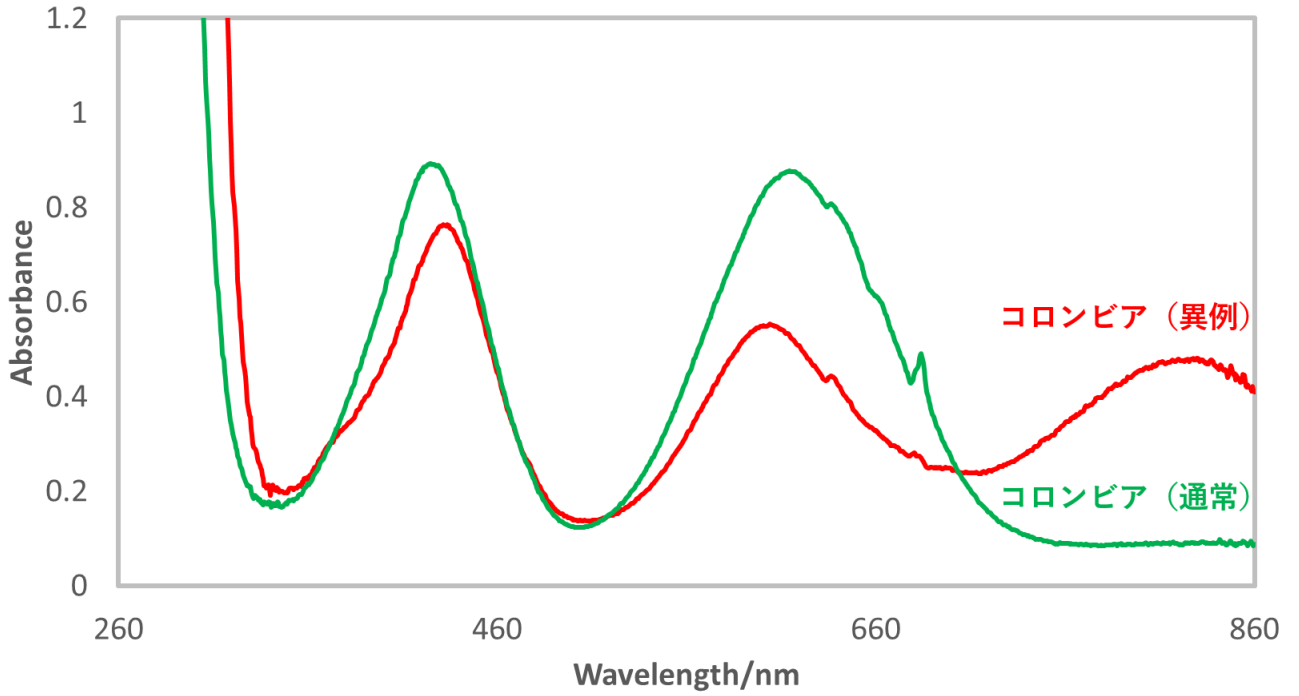
Keywords: LA-ICP-MS, corundum, origin determination, Australia

Emerald origin characteristics and problems in origin determination

*Zhenghao Zhao[1], Hiroshi Kitawaki[1], Kentaro Emori[1]

1. Central Gem Laboratory

Keywords: Emerald, Origin determination, FTIR Spectrum, UV-Vis-NIR Spectrum, LA-ICP-MS



Gem zircon and sapphire age dating and application of origin determination; A study from New England sapphire fields, New South Wales, Australia

*Ahmadjan ABDURIYIM[1]

1. Tokyo Gem Science LLC

Keywords: zircon, sapphire, U-Pb age dating, geographic origin, LA-ICP-MS

Oral presentation | R3: High-pressure science and deep Earth's material

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

R3: High-pressure science and deep Earth's material

Chairperson:Takeshi Sakai(Ehime University), Ryosuke Sinmyo(Meiji University), Takayuki Ishii(Okayama University), Takaaki Kawazoe(Hiroshima University)

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[R3-01] Pressure-induced polyamorphic transition in $CaAl_2O_4$ glass revealed by elastic wave velocity and X-ray diffraction measurements and molecular dynamics simulations

「招待講演」

*Itaru Ohira[1], Yoshio Kono[2,3], Steeve Gréaux[3], James W E Drewitt[4], Sandro Jahn[5], Fumiya Noritake[6], Koji Ohara[7,8], Satoshi Hiroi[7,8], Nozomi M Kondo[9], Rostislav Hrubiak[10], Yuji Higo[8], Noriyoshi Tsujino[8], Sho Kakizawa[8], Kiyofumi Nitta[8], Oki Sekizawa[8] (1. Gakushuin Univ. Sci., 2. Kwansei Gakuin Univ. Sci., 3. Ehime Univ. GRC, 4. U. Bristol Phys., 5. U. Cologne IGM, 6. U. Yamanashi Interdisciplinary Research, 7. Shimane Univ. Materials for Energy, 8. JASRI, 9. Okayama Univ. IPM, 10. ANL HPCAT)

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

[R3-02] Structural analysis of CO_2-bearing sodium silicate melts using molecular dynamics simulations and synchrotron radiation X-ray diffraction experiments

「発表賞エントリー」

*Shino HAYAFUNE[1], Yohei Onodera[2], Shinji Kohara[2], Haruki Ichikawa[3], Tatsuya Sakamaki[1], Kenichi Funakoshi[4], Akio Suzuki[1] (1. Tohoku Univ. Graduate School of Science., 2. NIMS, 3. Tohoku Univ. School of Science., 4. CROSS)

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

[R3-03] Possible presence of poirierite, a high-pressure phase of $(Mg,Fe)_2SiO_4$, in the deep Earth's mantle

*Naotaka TOMIOKA[1], Takuo Okuchi[2], Narangoo Purevjav[3], Masaaki Miyahara[4] (1. KOCHI, JAMSTEC, 2. KRUNS, Kyoto Univ., 3. Seoul National Univ., 4. Earth Planet Sci., Hiroshima Univ.)

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

[R3-04] Temperature dependence of water content in wadsleyite and ringwoodite

*Toru INOUE[1,2], Yuji HAMADA[2], Hanae KAYA[2], Yusuke EGI[1], Daichi MAEDA[1], Kazutaka YAMAGUCHI[1], Konosuke YAMADA[1], Takaaki KAWAZOE[1,2] (1. Hiroshima Univ. Adv. Sci. Eng., 2. Hiroshima Univ. Sci.)

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

[R3-05] Temperature dependence of the $Fe^{3+}/\Sigma Fe$ ratio in wadsleyite by electron energy loss spectroscopy (EELS)

「発表賞エントリー」

*Kazutaka YAMAGUCHI[1], Takaaki Kawazoe[1], Toru Inoue[1], Naotaka Tomioka[2] (1. Hiroshima University, 2. JAMSTEC, Kochi institute)

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

[R3-06] Advantage on the analysis of cation site occupancies by neutron diffraction and some examples of application for high-pressure minerals

*Takuo OKUCHI[1] (1. Kyoto Univ.)

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

[R3-07] In situ lattice volume observation of davemaoite in the $CaSiO_3$-H_2O system up to uppermost lower mantle conditions

*Goru Takaichi[1], Takayuki Ishii[2], Yu Nishihara[1], Kyoko Matsukage[3], Yuji Higo[4], Noiyoshi Tsujino[4], Sho Kakizawa[4] (1. GRC, Ehime Univ., 2. IPM, Okayama Univ., 3. Teikyo University of Science, 4. JASRI)

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

[R3-08] Elasticity Measurements of Hydrous SiO_2 post-stishovite and its implication to the seismic anomalies in the lower mantle

「発表賞エントリー」

*Yuichiro MORI[1,2], Motohiko MURAKAMI[2], Takashi YOSHINO[3], Hiroyuki KAGI[1] (1. UTokyo. Sci., 2. ETHZ. D-ERDW., 3. Okayama Univ. IPM)

Pressure-induced polyamorphic transition in $CaAl_2O_4$ glass revealed by elastic wave velocity and X-ray diffraction measurements and molecular dynamics simulations

*Itaru Ohira[1], Yoshio Kono[2,3], Steeve Gréaux[3], James W E Drewitt[4], Sandro Jahn[5], Fumiya Noritake[6], Koji Ohara[7,8], Satoshi Hiroi[7,8], Nozomi M Kondo[9], Rostislav Hrubiak[10], Yuji Higo[8], Noriyoshi Tsujino[8], Sho Kakizawa[8], Kiyofumi Nitta[8], Oki Sekizawa[8]

1. Gakushuin Univ. Sci., 2. Kwansei Gakuin Univ. Sci., 3. Ehime Univ. GRC, 4. U. Bristol Phys., 5. U. Cologne IGM, 6. U. Yamanashi Interdisciplinary Research, 7. Shimane Univ. Materials for Energy, 8. JASRI, 9. Okayama Univ. IPM, 10. ANL HPCAT

In recent years, there has been increasing emphasis on the fabrication and characterization of non-conventional network glass formers such as $CaO–Al_2O_3$, $BaO–Al_2O_3$, and $BaO–TiO_2$ in material science [e.g., 1]. Although these systems are different from those of magmas traditionally studied in geoscience field, recent experiments have confirmed the formation of network-modifiers- and Al-rich partial melts at the conditions of the transition zone and the lower mantle [2,3]. Therefore, the high-pressure studies of non-conventional network glass formers, as well as typical network-forming oxide glasses such as SiO_2 glass, are also important in understanding the pressure-induced changes of structure and physical properties of the magmas in the deep earth.
In this study, we conducted elastic wave velocity and XRD measurements and molecular dynamics (MD) simulations on $CaAl_2O_4$ glass. Ultrasonic velocity measurements up to 24 GPa at BL04B1 at SPring-8 reveal abrupt and irreversible increases in the v_P and v_S at ~8–10 GPa. Total structure factor and pair distribution functions measured by synchrotron XRD at 16-BM-B at APS and BL37XU at SPring-8 show a rapid change in the intermediate range structure, which is likely attributed to a rearrangement of Ca ions over this narrow pressure condition. Structure models obtained from MD simulations reveal that this intermediate range structure is explained by a transition of Ca–O void radius distribution from a bimodal distribution with peaks at ~2.1 Åand ~2.4 Åto a single distribution centered at ~2.1 Å. The abrupt structural changes involving the rapid increase in elastic wave velocity in $CaAl_2O_4$ glass are markedly different to the continuous transformations reported in SiO_2 glass. The polyamorphic transition observed in this study may be one of the key mechanisms in the densification and the changes in seismic wave velocity of the magma just above the 410 km discontinuity.

References
[1] A. Masuno, J. Phys. Soc. Jpn. **91**, 091003 (2022).
[2] G. K. Pradhan *et al.*, Earth Planet. Sci. Lett., **431**, 247 (2015).
[3] A. Nakajima *et al.* Sci. Rep. **9**, 7420 (2019).

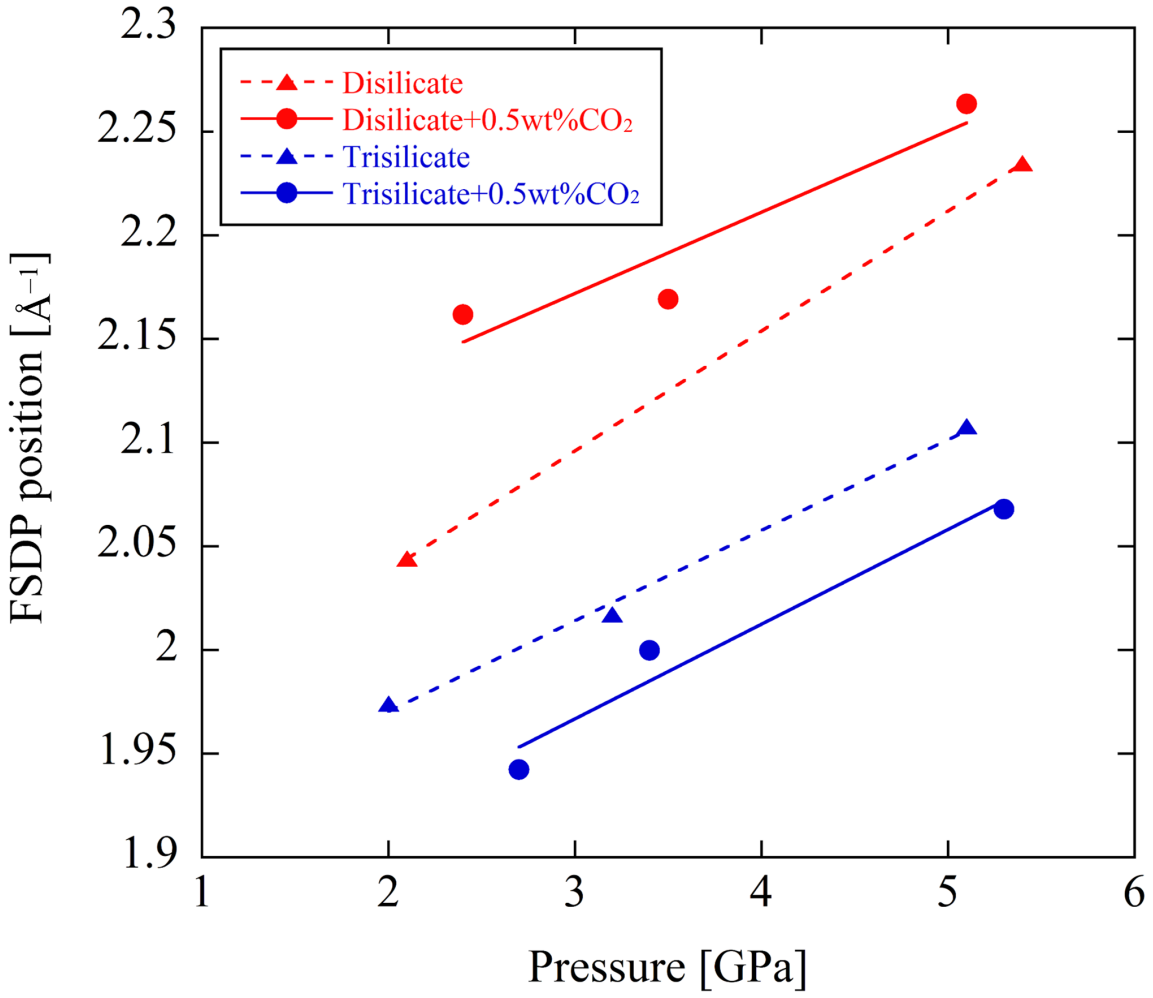
Keywords: oxide glass, polyamorphism, elastic wave velocity, synchrtron X-ray diffraction, molecular dynamics simulations

Structural analysis of CO_2-bearing sodium silicate melts using molecular dynamics simulations and synchrotron radiation X-ray diffraction experiments

*Shino HAYAFUNE[1], Yohei Onodera[2], Shinji Kohara[2], Haruki Ichikawa[3], Tatsuya Sakamaki[1], Kenichi Funakoshi[4], Akio Suzuki[1]

1. Tohoku Univ. Graduate School of Science., 2. NIMS, 3. Tohoku Univ. School of Science., 4. CROSS

Keywords: Sodium Silicate melt, Amorphous Structure Analysis, CO2



Possible presence of poirierite, a high-pressure phase of $(Mg,Fe)_2SiO_4$, in the deep Earth's mantle

*Naotaka TOMIOKA[1], Takuo Okuchi[2], Narangoo Purevjav[3], Masaaki Miyahara[4]

1. KOCHI, JAMSTEC, 2. KRUNS, Kyoto Univ., 3. Seoul National Univ., 4. Earth Planet Sci., Hiroshima Univ.

Keywords: olivine, poirierite, high-pressure phase transformation, transmission electron microscope

Temperature dependence of water content in wadsleyite and ringwoodite

*Toru INOUE[1,2], Yuji HAMADA[2], Hanae KAYA[2], Yusuke EGI[1], Daichi MAEDA[1], Kazutaka YAMAGUCHI[1], Konosuke YAMADA[1], Takaaki KAWAZOE[1,2]

1. Hiroshima Univ. Adv. Sci. Eng., 2. Hiroshima Univ. Sci.

Many researchers agree that the main constituent minerals of the mantle transition zone (MTZ: corresponding to 410-660 km depth) are wadsleyite (Wd) and ringwoodite (Rw), which are high-pressure polymorph of olivine. Although these phases are nominally anhydrous minerals (NAM), it has been shown that water can be present in the crystal structure at several wt% levels (e.g. Inoue et al., 1995; Kohlstedt et al., 1996) and that the MTZ can act as a water reservoir in the Earth interiors. In this context, Pearson et al. (2014) found ~1.4 wt% hydrous Rw in diamond inclusions, indicating that the MTZ is at least locally hydrous. Since the water content of minerals has a great influence on their physical properties, it is important to clarify the temperature dependence of water content in Wd and Rw in order to discuss the dynamics of the Earth's deep interior. Although previous studies have already shown the temperature dependence (Ohtani et al., 2001; Litasov and Ohtani, 2003), the results are inconsistent, and it is difficult to conclude that the temperature dependence has been clearly determined. Therefore, this experimental study was conducted to reexamine the temperature dependence of water content in Wd and Rw.

Keywords: wadsleyite, ringwoodite, maximum water solubility, mantle transition zone

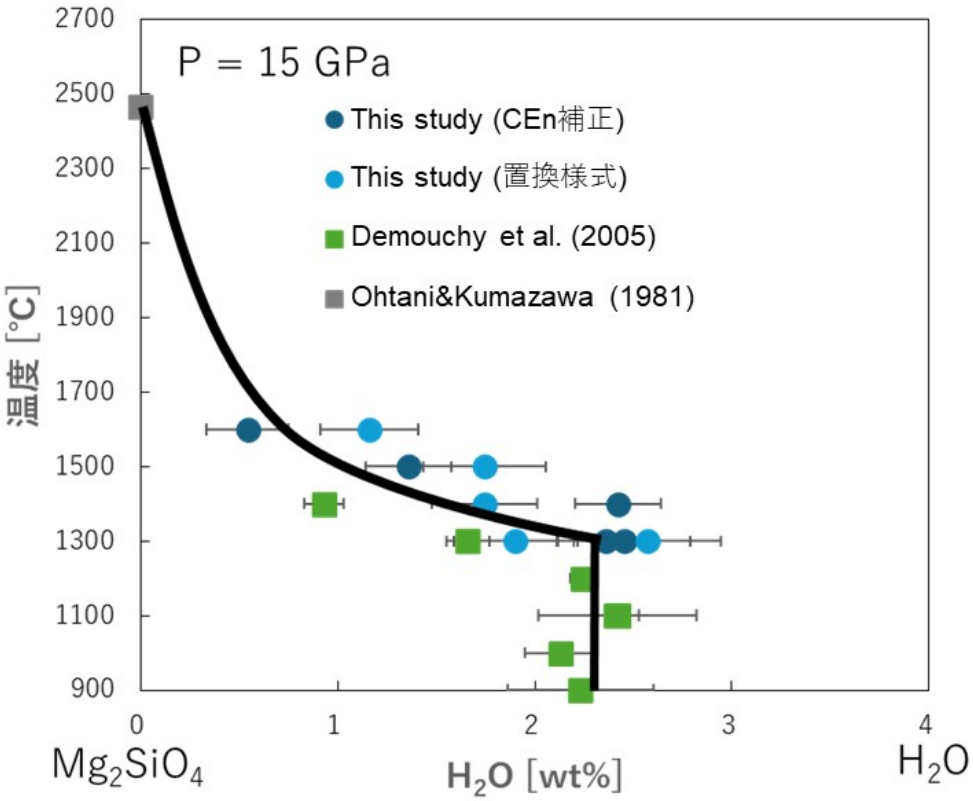


図1. Mg_2SiO_4 wadsleyite の最大含水量の温度依存性

Temperature dependence of the $Fe^{3+}/\Sigma Fe$ ratio in wadsleyite by electron energy loss spectroscopy (EELS)

*Kazutaka YAMAGUCHI[1], Takaaki Kawazoe[1], Toru Inoue[1], Naotaka Tomioka[2]

1. Hiroshima University, 2. JAMSTEC, Kochi institute

Keywords: Wadsleyite, Ferric iron, Oxygen fugacity, Electron energy loss spectroscopy

Advantage on the analysis of cation site occupancies by neutron diffraction and some examples of application for high-pressure minerals

*Takuo OKUCHI[1]

1. Kyoto Univ.

Keywords: Neutron diffracton

In situ lattice volume observation of davemaoite in the $CaSiO_3$-H_2O system up to uppermost lower mantle conditions

*Goru Takaichi[1], Takayuki Ishii[2], Yu Nishihara[1], Kyoko Matsukage[3], Yuji Higo[4], Noiyoshi Tsujino[4], Sho Kakizawa[4]

1. GRC, Ehime Univ., 2. IPM, Okayama Univ., 3. Teikyo University of Science, 4. JASRI

Keywords: Water transport, Nominally anhydrous minerals, Davemaoite, Mantle transition zone, Lower mantle

Elasticity Measurements of Hydrous SiO_2 post-stishovite and its implication to the seismic anomalies in the lower mantle

*Yuichiro MORI[1,2], Motohiko MURAKAMI[2], Takashi YOSHINO[3], Hiroyuki KAGI[1]

1. UTokyo. Sci., 2. ETHZ. D-ERDW., 3. Okayama Univ. IPM

Keywords: High-pressure experiments, Lower mantle, Water, Sound velocity measurements

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

Thu. Sep 12, 2024 2:00 PM - 5:30 PM JST | Thu. Sep 12, 2024 5:00 AM - 8:30 AM UTC | ES Hall Higashiyama Campus

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

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

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。

2:00 PM - 2:25 PM JST | 5:00 AM - 5:25 AM UTC

[R7-01] The Frontier of Ilmenite Geochronology Using the Uranium-Lead Decay System

「招待講演」

*Kengo Ito[1], Sota Niki[2], Tsuyoshi Iizuka[3], Takafumi Hirata[1] (1. The Univ. of Tokyo. GcRC, 2. Nagoya Univ. ISEE, 3. The Univ. of Tokyo. Sci. EPS)

2:25 PM - 2:40 PM JST | 5:25 AM - 5:40 AM UTC

[R7-02] Distribution of rhenium in hydrothermal deposits in Japan, based on LA-ICP-MS analysis

「発表賞エントリー」

*Mitsuki Ogasawara[1], Junichiro Ohta[1,2], Kazutaka Yasukawa[1], Kentaro Nakamura[2,1], Yasuhiro Kato[1,2] (1. Univ. Tokyo. Eng, 2. CIT. ORCeNG)

2:40 PM - 2:55 PM JST | 5:40 AM - 5:55 AM UTC

[R7-03] Occurrences of the PGE bearing (Fe,Ni,Co)AsS solid solution in the Bushveld Complex, South Africa

「発表賞エントリー」

*Sakuya Kubota[1], Takuya Echigo[1], Yasushi Watanabe[1] (1. Akita Univ. Irs.)

2:55 PM - 3:10 PM JST | 5:55 AM - 6:10 AM UTC

[R7-04] Shiranuiite and placer deposit of platinum group minerals, Haraigawa, Misato machi, Kumamoto Prefecture, Japan

*Daisuke HAMANE[1], Takahiro Tanaka, Tadashi Shinmachi (1. The University of Tokyo)

3:10 PM - 3:25 PM JST | 6:10 AM - 6:25 AM UTC

[R7-05] Geochmical and Sr-Nd isotopic characteristics of the Aitutaki peridotite xenoliths from the Cook islands

*Masako YOSHIKAWA[1], Norikatsu Akizawa[2] (1. Hiroshima Univ., 2. Tokyo Univ. AORI)

3:25 PM - 3:40 PM JST | 6:25 AM - 6:40 AM UTC

[R7-06] Hydration of the mantle and magma genesis in the Izu–Bonin-Mariana fore-arc

*Rion Yamaoka[1], Norikatsu Akizawa[1], Yuji Ichiyama[2], ToTomoaki Morishita[3], Akihiro Tamura[3], Hiroyuki Yamashita[4], Yumiko Harigane[5], Yasuhiko Ohara[6,7,8] (1. University of Tokyo, 2. Chiba Univ., 3. Kanazawa Univ., 4. Kanagawa Prefectural Museum of Natural History, 5. AIST, 6. Japan Coast Guard,Hydrographic and Oceanographic Department, 7. JAMSTEC, 8. Nagoya Univ.)

3:40 PM - 3:50 PM JST | 6:40 AM - 6:50 AM UTC

[1Lecture-108-19-7add] 休憩

3:50 PM - 4:15 PM JST | 6:50 AM - 7:15 AM UTC

[R7-07] Fault-rock mineralogy and weakening mechanisms at deep- to shallow-crustal depths of Main Himalayan Thrust, NW India

「招待講演」

*Dyuti Prakash SARKAR[1], Takehiro Hirose[1], Jun-ichi Ando[2], Kaushik Das[2], Gautam Ghosh[3] (1. Japan Agency for Marine-Earth Science and Technology (JAMSTEC), 2. Hiroshima University, 3. Presidency University)

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

[R7-08] On the Relationship between Phosphorus Concentration and Microstructure in Goethite in Australian Iron Ore

*Takashi MIKOUCHI[1], Reiko Murao[2], Toru Takayama[2] (1. Univ. Museum, Univ. of Tokyo, 2. Nippon Steel)

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[R7-09] Mineral zoning and formation temperatures around the Myokenzan lithium pegmatites

「発表賞エントリー」

*Takumi Ishizaki[1], Takuya Echigo[1], Yasushi Watanabe[1] (1. Akita Univ.)

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[R7-10] Copper as a Coloring Factor of Pale Blue Sepiolite in amygdales in Higashimatsuura basalt from Kabeshima, Saga Prefecture, SW Japan

「発表賞エントリー」

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

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[R7-11] Quantification of Mineral Modal and Zoning Ratios by Powder X-ray Diffraction: Advancing Towards Big Data Era

「発表賞エントリー」

*Satoshi MATSUNO[1], Shuhou Maitani[2], Kenta Yoshida[3], Nobuo Hirano[1], Ryosuke Sinmyo[2], Keiichi Osaka[4], Shin-ichi Yamasaki[1], Masaoki Uno[1], Atsushi Okamoto[1] (1. Tohoku University, 2. Meiji University, 3. JAMSTEC, 4. Japan Synchrotron Radiation Research Institute)

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[R7-12] Searching for Dark Matter Using Geological Samples: Techniques and Preliminary Results

*Natsue ABE[1,2], Shigenobu Hirose[1], Qing CHANG[1], Takeshi Hanyu[1], Noriko Hasebe[2], Yasushi Hoshino[3], Takashi Kamiyama[4], Yoji Kawamura[1], Kohta Murase[5], Tatsuhiro Naka[6], Kenji Oguni[1], Katsuhiko Suzuki[1], Seiko Yamazaki[7] (1. JAMSTEC, 2. Kanazawa University, 3. Kanagawa University, 4. Hokkaido University, 5. Penn State University, 6. Toho University, 7. AIST)

The Frontier of Ilmenite Geochronology Using the Uranium-Lead Decay System

*Kengo Ito[1], Sota Niki[2], Tsuyoshi Iizuka[3], Takafumi Hirata[1]

1. The Univ. of Tokyo. GcRC, 2. Nagoya Univ. ISEE, 3. The Univ. of Tokyo. Sci. EPS

Keywords: Ilmenite, Geochronology, U-Pb dating, LA-ICP-MS

Distribution of rhenium in hydrothermal deposits in Japan, based on LA-ICP-MS analysis

*Mitsuki Ogasawara[1], Junichiro Ohta[1,2], Kazutaka Yasukawa[1], Kentaro Nakamura[2,1], Yasuhiro Kato[1,2]

1. Univ. Tokyo. Eng, 2. CIT. ORCeNG

Keywords: Hydrothermal deposit, LA-ICP-MS, Re mapping, Re-Os radiometric dating

Occurrences of the PGE bearing (Fe,Ni,Co)AsS solid solution in the Bushveld Complex, South Africa

*Sakuya Kubota[1], Takuya Echigo[1], Yasushi Watanabe[1]

1. Akita Univ. Irs.

Keywords: PGE mineralization, Bushveld Complex, Assimilation

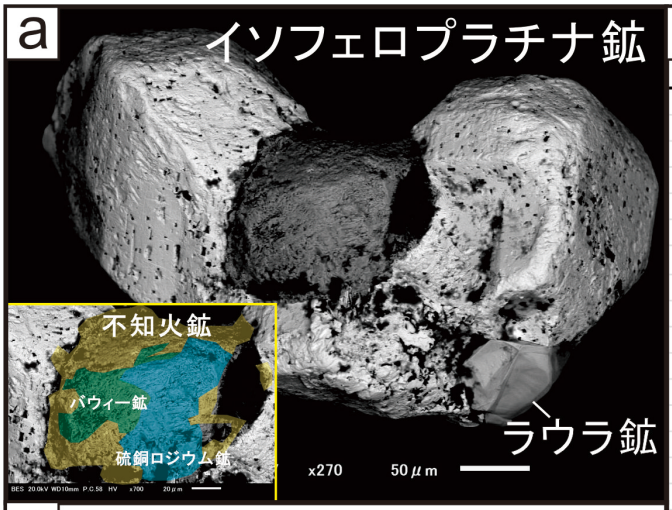
Shiranuiite and placer deposit of platinum group minerals, Haraigawa, Misato machi, Kumamoto Prefecture, Japan

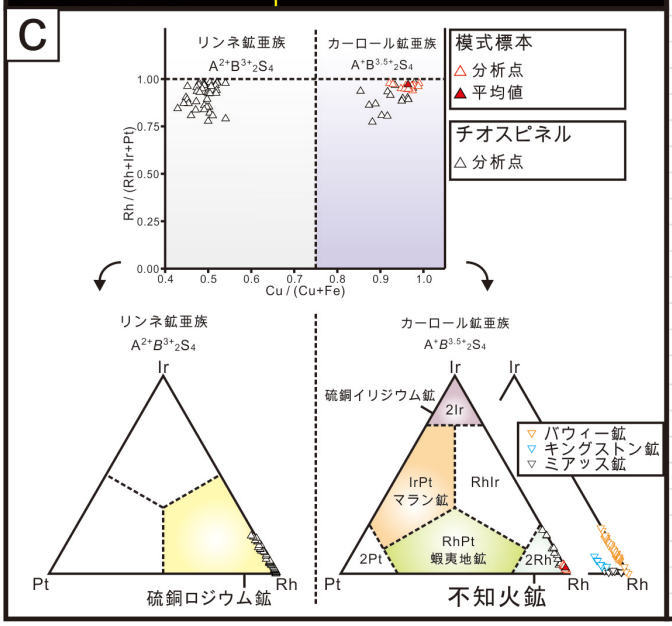
*Daisuke HAMANE[1], Takahiro Tanaka, Tadashi Shinmachi

1. The University of Tokyo

We have discovered a placer deposit of platinum-group minerals (PGM) in the clinopyroxene mass, Haraigawa, Misato machi, Kumamoto Prefecture. Two new minerals, minakawaite and michitoshiite-(Cu), were discovered in this deposit, and an unknown mineral of the thiospinel group was also found. It is named shiranuiite and was approved as a new mineral (IMA2023-072a). Most placer grains are isoferroplatinum: Pt_3Fe, and some grains have been altered at the outer edge (several to several hundred μm) to tulameenite: Pt_2CuFe or tetraferroplatinum: PtFe, showing the influence of post-magmatic alteration. Bowieite: Rh_2S_3, the second most abundant inclusions, rarely appear on the surface of grains, while it is altered to often cuprorhodsite: $(Cu^{+}_{0.5}Fe^{3+}_{0.5})Rh^{3+}_{2}S_4$ and rarely shiranuiite: $Cu^{+}(Rh^{3+}Rh^{4+})S_4$. The empirical formula of shiranuiite is $(Cu^{+}_{0.95}Fe^{3+}_{0.04}Ni_{0.01})(Rh^{3+}_{1.19}Rh^{4+}_{0.77}Ir^{4+}_{0.06})S_{3.99}$, and the unit cell parameter is a = 9.757 Å on Fd-3m space group.

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





b

No.	鉱物名	理想化学式	産状
1	Andrieslombaardite	RhSbS	コブ
2	Bowieite	Rh_2S_3	包有物（多）、コブ（稀）
3	Braggite	$PdPt_3S_4$	粒子の外縁
4	Chengdeite	Ir_3Fe	自然イリジウムの外縁
5	Cherepanovite	RhAs	コブ
6	Cooperite	PtS	粒子の外縁
7	Cuprorhodsite	$(Cu^{+}_{0.5}Fe^{3+}_{0.5})Rh^{3+}_{2}S_4$	コブ
8	Erlichmanite	OsS_2	包有物、コブ
9	Ferrotorryweiserite	$Rh_5Fe_{10}S_{16}$	コブ
10	Genkinite	Pt_4Sb_3	包有物
11	Geversite	$PtSb_2$	包有物
12	Hexaferrium	(Fe,Os,Ru,Ir)	包有物
13	Hollingworthite	RhAsS	外縁の包有物
14	Irarsite	IrAsS	外縁の包有物
15	Iridium	Ir	自然オスミウム粒子に付属
16	Isoferroplatinum	Pt_3Fe	粒子
17	Keithconnite	$Pd_{20}Te_7$	包有物
18	Kingstonite	Rh_3S_4	包有物
19	Kuvaevite	$Ir_5Ni_{10}S_{16}$	包有物
20	Laurite	RuS_2	包有物、コブ
21	Miassite	$Rh_{17}S_{15}$	包有物
22	Michitoshiite-(Cu)	$Rh(Cu_{1-x}Ge_x)$ $0<x\leq0.5$	コブの外縁
23	Minakawaite	RhSb	コブの外縁
24	Moncheite	$Pt(Te,Bi)_2$	包有物
25	Naldrettite	Pd_2Sb	包有物
26	Osmium	Os	包有物（多）、粒子（稀）
27	Palladinite	PdO	包有物
28	Platinum	Pt	粒子の外縁
29	Rustenburgite	Pt_3Sn	コブ
30	Shiranuiite	$Cu^{+}(Rh^{3+}Rh^{4+})S_4$	コブ
31	Sperrylite	$PtAs_2$	粒子の外縁
32	Stibiopalladinite	Pd_5Sb_2	包有物
33	Tamuraite	$Ir_5Fe_{10}S_{16}$	コブ
34	Telluropalladinite	Pd_9Te_4	包有物
35	Tetraferroplatinum	PtFe	粒子の外縁
36	Tolovkite	IrSbS	外縁の包有物
37	Tomamaeite	Cu_3Pt	外縁の包有物
38	Torryweiserite	$Rh_5Ni_{10}S_{16}$	包有物
39	Tulameenite	Pt_2CuFe	粒子の外縁

図1. 砂白金粒子の表面に露出したバウィー鉱と不知火鉱（硫銅ロジウム鉱）の分布（a）、産出鉱物の一覧（b）、不知火鉱（硫銅ロジウム鉱）とRh-S鉱物（バウィー鉱、キングストン鉱、ミアス鉱）の組成分布（c）。

Geochmical and Sr-Nd isotopic characteristics of the Aitutaki peridotite xenoliths from the Cook islands

*Masako YOSHIKAWA[1], Norikatsu Akizawa[2]

1. Hiroshima Univ., 2. Tokyo Univ. AORI

Keywords: Aitutaki island, mantle peridotite xenolith, Sr-Nd isotopic ratios

Hydration of the mantle and magma genesis in the Izu–Bonin-Mariana fore-arc

*Rion Yamaoka[1], Norikatsu Akizawa[1], Yuji Ichiyama[2], ToTomoaki Morishita[3], Akihiro Tamura[3], Hiroyuki Yamashita[4], Yumiko Harigane[5], Yasuhiko Ohara[6,7,8]

1. University of Tokyo, 2. Chiba Univ., 3. Kanazawa Univ., 4. Kanagawa Prefectural Museum of Natural History, 5. AIST, 6. Japan Coast Guard,Hydrographic and Oceanographic Department, 7. JAMSTEC, 8. Nagoya Univ.

Keywords: Subduction zone, Hydration, Fore-arc magma genesis, Peridotite, Amphibole

Oral presentation

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

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

Thu. Sep 12, 2024 2:00 PM - 5:30 PM ES Hall (Higashiyama Campus)

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。

3:40 PM - 3:50 PM

[1Lecture-108-19-7add]休憩

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Fault-rock mineralogy and weakening mechanisms at deep- to shallow-crustal depths of Main Himalayan Thrust, NW India

*Dyuti Prakash SARKAR[1], Takehiro Hirose[1], Jun-ichi Ando[2], Kaushik Das[2], Gautam Ghosh[3]

1. Japan Agency for Marine-Earth Science and Technology (JAMSTEC), 2. Hiroshima University, 3. Presidency University

Fault rock mineralogy and deformation microstructures of crustal-scale faults provide insights into the stress accommodation mechanisms in terms of fault weakening and possibilities of earthquake nucleation. The Main Himalayan Thrust is considered to be the crustal-scale collisional boundary along which the Indian plate subducts beneath the Asian plate. The near-surface exposure of the present active boundary of the subduction is considered the Main Frontal Thrust, while the Main Central Thrust at the northernmost boundary represents the older post-collisional paleo-thrust boundaries between Indian and Asian plates. Here we present a comparative study of our findings on the fault rocks from the Nahan Thrust and North Almora Thrust belonging to the Main Frontal Thrust and the Main Central Thrust respectively. The deformation zone from North Almora Thrust represents the deep crustal part of the Main Himalayan Thrust exhibiting granite mylonite-ultramylonite zone. Quartz microstructures indicate deformation temperatures of 450–550 ℃ with evidence of grain-size sensitive creep as the dominant weakening mechanism. Additionally, two-feldspar thermometry has been used to estimate temperatures from sheared myrmekitic feldspar in the mylonites and ultramylonites. Crystallographic preferred orientations of quartz and mica indicate a shift in partitioning of strain from quartz to mica with an increase in mica content. In comparison, the fault zone from the Nahan Thrust shows the dominance of brittle deformation structures consisting of highly brecciated sandstone and a wide gouge zone. Microstructures of the gouge zone indicate distributed deformation and progressive stress localization leading to fracture development, cataclasis, and frictional sliding. Especially the ultra-fine bands of the principle slip zone exhibit a possible fingerprint of frictional heating during the seismic slips. The frictional properties of the fault rocks estimated from the rotary-shear velocity step experiments also indicate a velocity weakening to strengthening behavior based on phyllosilicate content. Our results on fault rocks from deep- to shallow-crustal depth indicate that phyllosilicate content play a pivotal role in frictional behavior and weakening mechanisms along the subduction boundary.

Keywords: Main Himalayan Thrust, Main Central Thrust, Main Frontal Thrust, rock friction, phyllosilicates

On the Relationship between Phosphorus Concentration and Microstructure in Goethite in Australian Iron Ore

*Takashi MIKOUCHI[1], Reiko Murao[2], Toru Takayama[2]

1. Univ. Museum, Univ. of Tokyo, 2. Nippon Steel

Keywords: Iron Ore, Goethite, Phosphorous, Microstructure

Mineral zoning and formation temperatures around the Myokenzan lithium pegmatites

*Takumi Ishizaki[1], Takuya Echigo[1], Yasushi Watanabe[1]

1. Akita Univ.

Keywords: Pegmatite, Crystallization fractionation, Garnet-biotite geothermometer, Mineral zoning

Copper as a Coloring Factor of Pale Blue Sepiolite in amygdales in Higashimatsuura basalt from Kabeshima, Saga Prefecture, SW Japan

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

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

Keywords: Kabeshima Island, sepiolite, copper, Higashimatsuura Basalt

Quantification of Mineral Modal and Zoning Ratios by Powder X-ray Diffraction: Advancing Towards Big Data Era

*Satoshi MATSUNO[1], Shuhou Maitani[2], Kenta Yoshida[3], Nobuo Hirano[1], Ryosuke Sinmyo[2], Keiichi Osaka[4], Shin-ichi Yamasaki[1], Masaoki Uno[1], Atsushi Okamoto[1]

1. Tohoku University, 2. Meiji University, 3. JAMSTEC, 4. Japan Synchrotron Radiation Research Institute

Keywords: Powder X-ray Diffraction, Rietveld Refinement, Mineral Modal, Mineral Zoning, Quantification

Searching for Dark Matter Using Geological Samples: Techniques and Preliminary Results

*Natsue ABE[1,2], Shigenobu Hirose[1], Qing CHANG[1], Takeshi Hanyu[1], Noriko Hasebe[2], Yasushi Hoshino[3], Takashi Kamiyama[4], Yoji Kawamura[1], Kohta Murase[5], Tatsuhiro Naka[6], Kenji Oguni[1], Katsuhiko Suzuki[1], Seiko Yamazaki[7]

1. JAMSTEC, 2. Kanazawa University, 3. Kanagawa University, 4. Hokkaido University, 5. Penn State University, 6. Toho University, 7. AIST

The traces of cosmic rays from inside and outside the Earth recorded in geological samples can be effectively used for geological and astrophysical research. For instance, studies using Antarctic ice cores have estimated the number and age of supernova explosions and observed geoneutrinos from Earth's interior. Research utilizing seabed samples to measure cosmic ray intensity is also expected to provide insights into various events over long geological periods. Only about 5% of the matter in the universe can be directly observed, including such cosmic rays. In contrast, approximately 70% is dark energy, and the remaining 25% or more is dark matter. To search for such unknown matter or energy, large detectors using xenon are typically employed for dark matter detection. However, their scalability could be improved, making it challenging to improve detection limits. Considering this situation, we are exploring methods other than large detectors. For example, natural minerals like mica have been around for geological time scales, providing plenty of exposure even in small samples. These minerals can retain nuclear recoil tracks—evidence of dark matter interactions—for periods longer than the Earth's age. When etched, these tracks appear as observable pits. In 1995, Snowden-Ifft and colleagues studied natural Muscovite that was 500 million years old and covered an area of just 0.08 square millimeters. We propose using natural minerals (such as olivine and mica) that have long formation periods and are collected from deep within the ocean floor or continents with minimal surrounding radioactive substances. We are developing the necessary observational techniques to identify traces of dark matter as "Paleo-detectors" in these samples. Although there is still a long way to go before making an actual observation, this presentation will share our current efforts and discuss more efficient observation methods.

Keywords: Paleo-detectors, Dark Matter, Geoneutrino, Cosmic rays

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

Thu. Sep 12, 2024 2:00 PM - 3:15 PM JST | Thu. Sep 12, 2024 5:00 AM - 6:15 AM UTC | ES024 Higashiyama Campus

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

Chairperson:Koichi Momma, Yohei Shirose

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

[R1-08] Ultra nano inclusion in blue sapphire from Diego, Madagascar

*Akira MIYAKE[1], Seika Oto[1], Yohei Igami[1], Kentaro Emori[2] (1. Kyoto University, 2. CGL)

2:15 PM - 2:30 PM JST | 5:15 AM - 5:30 AM UTC

[R1-09] Reexamination of the symmetry of itoigawaite

*Chigako KIYOHARA, Yohei Igami[1], Akira Miyake[1], Norimasa Shimobayashi[1] (1. Kyoto Univ. Sci.)

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[R1-10] Zeolite and altered boninite from Miyanohama, Ogasawara, Japan

*Yuki INOUE[1], Mana Yasui[2], Jun-ichiro Ishibashi[3], Hagiya Hiroshi[4], Kazuhiko Shimada[1], Athushi Yamazaki[2] (1. Kyushu Univ. Sci., 2. Waseda Univ. , 3. Kobe Univ., 4. Tokyo City Univ.)

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

[R1-11] Willemseite from the Hamayokawa mine, Nagano Prefecture, Japan

*Satoshi Matsubara[1], Koichi Momma[1], Norio Yanagisawa[2], Yoko Kusaba[1], Akiko Tokumoto[1], Ritsuro Miyawaki[1] (1. National Museum of Nature and Science, 2. Geological Survey of Japan, AIST)

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

[R1-12] On the Fe^{2+}-analogue of zemannite from Kawazu mine, Shizuoka Prefecture, Japan

*Koichi MOMMA[1], Owen Missen[2], Stuart Mills[3], Ritsuro Miyawaki[1], Satoshi Matsubara[1], Eiji Ohtani[4], Seiji Kamada[5], Shin Ozawa[4] (1. National Museum of Nature and Science, 2. University of Tasmania, 3. The Arkenstone, 4. Tohoku Univ., 5. AD Science Inc.)

Ultra nano inclusion in blue sapphire from Diego, Madagascar

*Akira MIYAKE[1], Seika Oto[1], Yohei Igami[1], Kentaro Emori[2]

1. Kyoto University, 2. CGL

Ultra-nano inclusions in Be-containing natural blue sapphires (corundum) from Diego, Madagascar were observed and analysed by transmission electron microscope (TEM) and 3D atomprobe (3DAP). TEM results show that ultra-nano inclusion has 10 nm length and 2 nm width, and the nano-inclusion is identified by Wolframite structure (P2/c). 3DAP results show the inclusion consists of Ti, Nb, Ta, Fe, Sn.

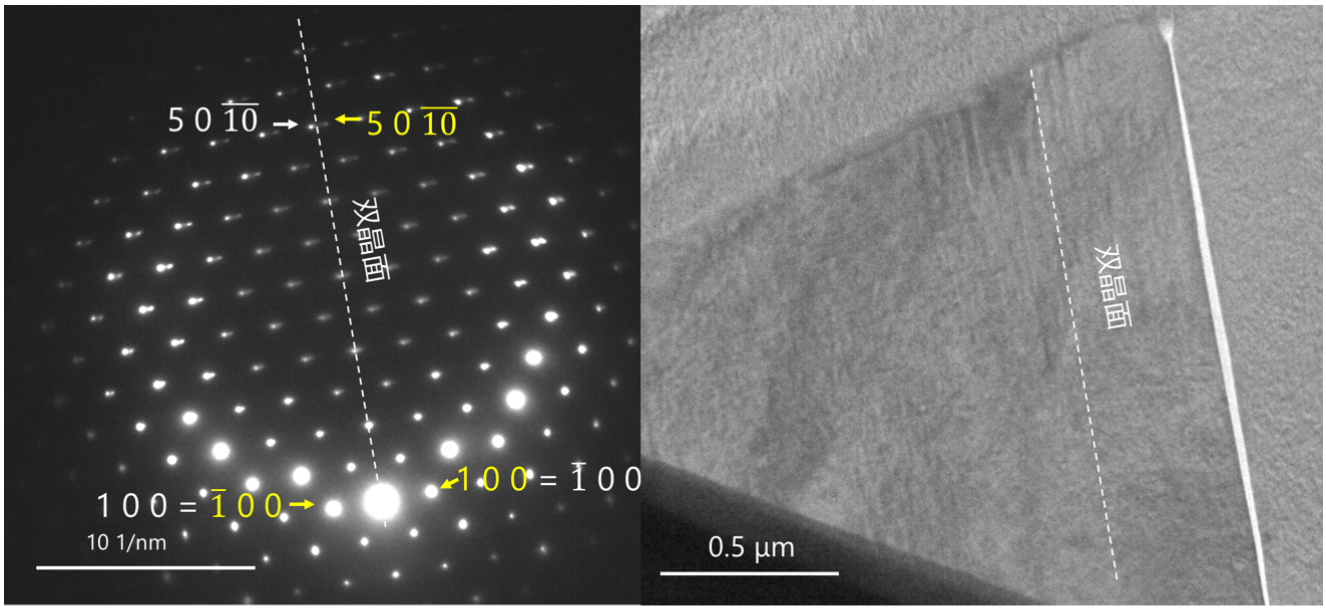
Keywords: Ultra-nano inclusion, corundum)

Reexamination of the symmetry of itoigawaite

*Chigako KIYOHARA, Yohei Igami[1], Akira Miyake[1], Norimasa Shimobayashi[1]

1. Kyoto Univ. Sci.

Keywords: Itoigawaite, symmetry



図：糸魚川石中の細かい筋状組織のTEM明視野像とその部分から得られた電子回折図形。
端の方のスポットは2つに分裂しており、そのため結晶格子の軸角が 90° からわずかにずれていると考えられる。

Zeolite and altered boninite from Miyanohama, Ogasawara, Japan

*Yuki INOUE[1], Mana Yasui[2], Jun-ichiro Ishibashi[3], Hagiya Hiroshi[4], Kazuhiko Shimada[1], Athushi Yamazaki[2]

1. Kyushu Univ. Sci., 2. Waseda Univ. , 3. Kobe Univ., 4. Tokyo City Univ.

Keywords: zeolite, Boninite, phillipsite

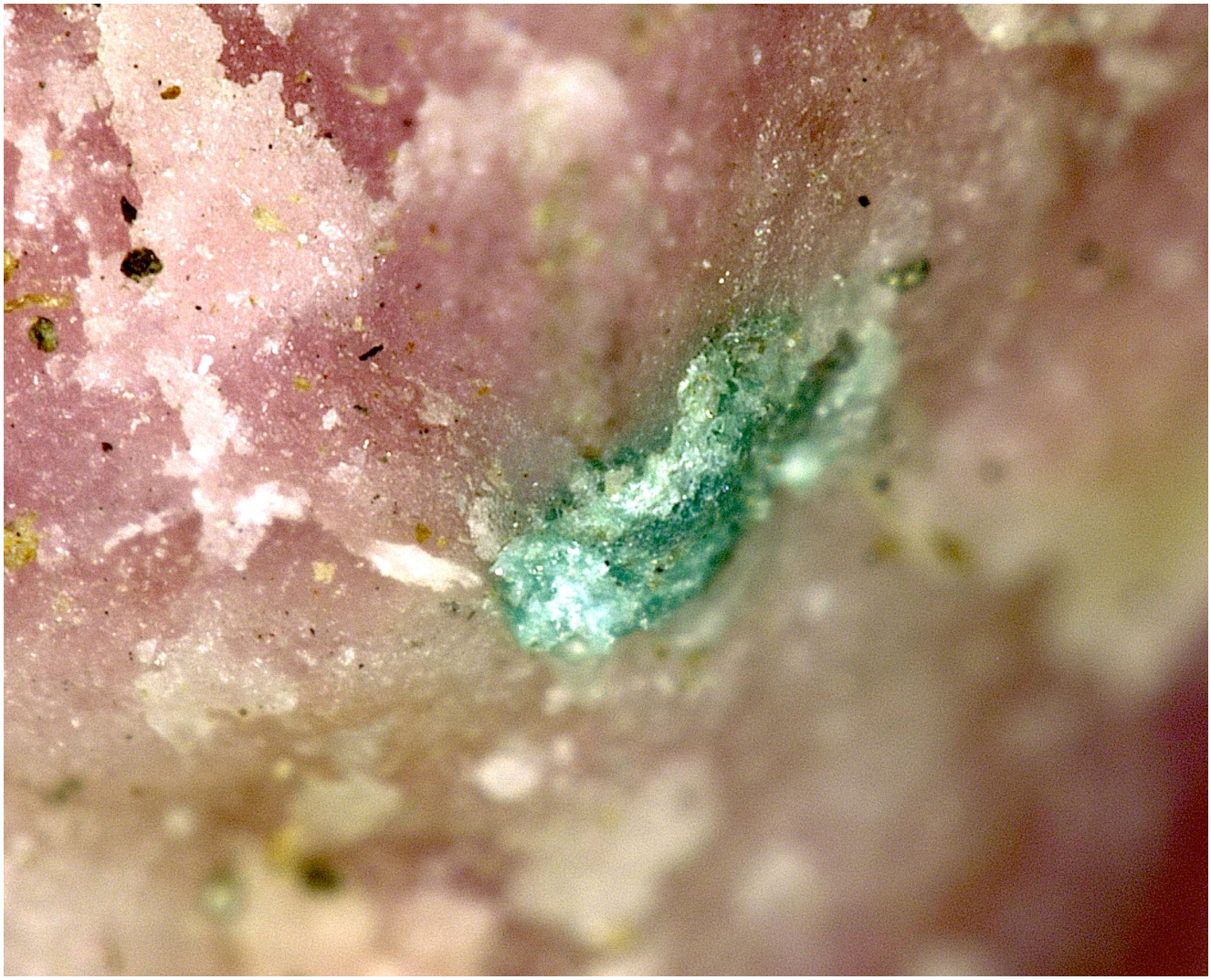
Willemseite from the Hamayokawa mine, Nagano Prefecture, Japan

*Satoshi Matsubara[1], Koichi Momma[1], Norio Yanagisawa[2], Yoko Kusaba[1], Akiko Tokumoto[1], Ritsuro Miyawaki[1]

1. National Museum of Nature and Science, 2. Geological Survey of Japan, AIST

Rare mineral, suzukiite, was reported from the metamorphosed manganese ore deposit of the Hamayokawa mine (Hirowatari & Yoshie, 1978). Althogh some specimens from the Hamayokokawa mine, Nagano Prefecture, Japan donated by amature mineralogists in the National Museum of Nature and Science and the Geological Survey of Japan are registered as suzukiite, but recent our analyses reveal they are not suzukiite but willemseite [$(Ni_3Si_4O_{10}(OH)_2$] which is first found in Japan.

Keywords: suzukiite, willemseite, Hamayokokawa mine



On the Fe^{2+}-analogue of zemannite from Kawazu mine, Shizuoka Prefecture, Japan

*Koichi MOMMA[1], Owen Missen[2], Stuart Mills[3], Ritsuro Miyawaki[1], Satoshi Matsubara[1], Eiji Ohtani[4], Seiji Kamada[5], Shin Ozawa[4]

1. National Museum of Nature and Science, 2. University of Tasmania, 3. The Arkenstone, 4. Tohoku Univ., 5. AD Science Inc.

The Kawazu Mine in Shimoda City, Shizuoka Prefecture, has been known as type locality of two new minerals, kawazulite (Bi_2Te_2Se) and kinichilite. In the original description of kinichilite, its chemical composition was reported as $(Fe^{2+}_{1.13}Mg_{0.47}Zn_{0.43}Mn^{2+}_{0.17})_{\Sigma 2.20}(Te_{2.97}Se_{0.03})_{\Sigma 3.00}O_{9.00}(H_{1.38}Na_{0.22})_{\Sigma 1.60}$ ・$3.2H_2O$, and as Fe analogue of zemannite at that time. Later, however, crystal chemical study of zemannite revealed that its ideal formula is $Mg_{0.5}[ZnFe^{3+}(TeO_3)_3]$・$4.5H_2O$, *i.e.*, iron is not 2+ but 3+ and both Zn^{2+} and Fe^{3+} are essential. If the originally reported chemical composition of kinichilite is recalculated based on this find, it remains in the compositional range of zemannite. However, R. Miletich (1995), in his study of zemannite group minerals, also examined the "kinichilite" from the Kawazu mine and found that manganese was predominant as a divalent ion in most of the analyzed point. He considered it as kinichilite and redefined its ideal formula as $Mg_{0.5}[MnFe^{3+}(TeO_3)_3]$・$4.5H_2O$. Here, we report Fe analogue of zemannite, in which divalent iron exceeds zinc, manganese and other divalent ions. One of the collections of the National Museum of Nature and Science (NSM-M41022) was used in this study. Chemical analysis was performed using a scanning electron microscope (JEOL JSM-6610) equipped with an energy dispersive X-ray spectroscopic detector (EDS). Water content was estimated by the difference from 100% of the EDS analysis. Single crystal X-ray diffraction (SXRD) experiments were performed using a Rigaku Synergy Custom equipped with a rotating anode and a multilayer X-ray focusing mirror (VariMax).

The empirical formula obtained from the average of four analytical points is $Mg_{0.40}(Fe^{2+}_{0.54}Zn_{0.33}Cu_{0.18}Mn_{0.05})_{\Sigma 1.10}Fe^{3+}_{1.00}(Te_{2.92}P_{0.06}O_9)$ ・$4.12H_2O$. The SXRD experiment gave the space group $P6_3$ (or $P6_3/m$) with lattice parameters a = 9.37765(11), c = 7.58379(9), V = 577.570(15). The refinement converged with reliability index $R1$ = 1.56% and it was confirmed to be isostructural with zemannite. Distribution of the channel cations and bond lengths of the framework M sites indicate symmetry lowering from $P6_3/m$ to $P6_3$.

Keywords: zemannite, kinichilite, Kawazu mine

Oral presentation | R3: High-pressure science and deep Earth's material

Thu. Sep 12, 2024 2:00 PM - 3:15 PM JST | Thu. Sep 12, 2024 5:00 AM - 6:15 AM UTC | ES025 Higashiyama Campus

R3: High-pressure science and deep Earth's material

Chairperson:Takeshi Sakai(Ehime University), Ryosuke Sinmyo(Meiji University), Takayuki Ishii(Okayama University), Takaaki Kawazoe(Hiroshima University)

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

[R3-09] Electrical conductivity of the lower mantle materials under high pressure with implication for valence and spin states of iron

「招待講演」

*Izumi MASHINO[1] (1. Okayama Univ.)

2:15 PM - 2:30 PM JST | 5:15 AM - 5:30 AM UTC

[R3-10] GHz-DAC ultrasonics to measure elastic anomaly with the spin transition of ferrous ion in ferropericlase

*Akira Yoneda[1], Izumi Mashino[2], Ryosuke Matsui[1], Ryoma Ishida[1], Tadashi Kondo[1] (1. Osaka Univ. Sci, 2. Okayama Univ. IPM)

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[R3-11] Reaction between water and iron in the early magma ocean and the present core-mantle boundary

*Yongjae Lee[1] (1. Yonsei University)

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

[R3-12] Sound velocity of B2-FeNiSi alloy at high pressure and high temperature and constitution of the Earth's inner core

*Eiji OHTANI[1], Daijo IKUTA[2], Hiroshi FUKUI[3,4], Tatsuya SAKAMAKI[1], Daisuke Ishikawa[3,4], Alfred Q. R. BARON[3,4] (1. Tohoku University, 2. Institute for Planetary Materials, Okayama University, 3. JASRI, 4. RIKEN)

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

[R3-13] On the phase boundary between FeS IV and V

*Satoru URAKAWA[1] (1. Okayama University)

Electrical conductivity of the lower mantle materials under high pressure with implication for valence and spin states of iron

*Izumi MASHINO[1]

1. Okayama Univ.

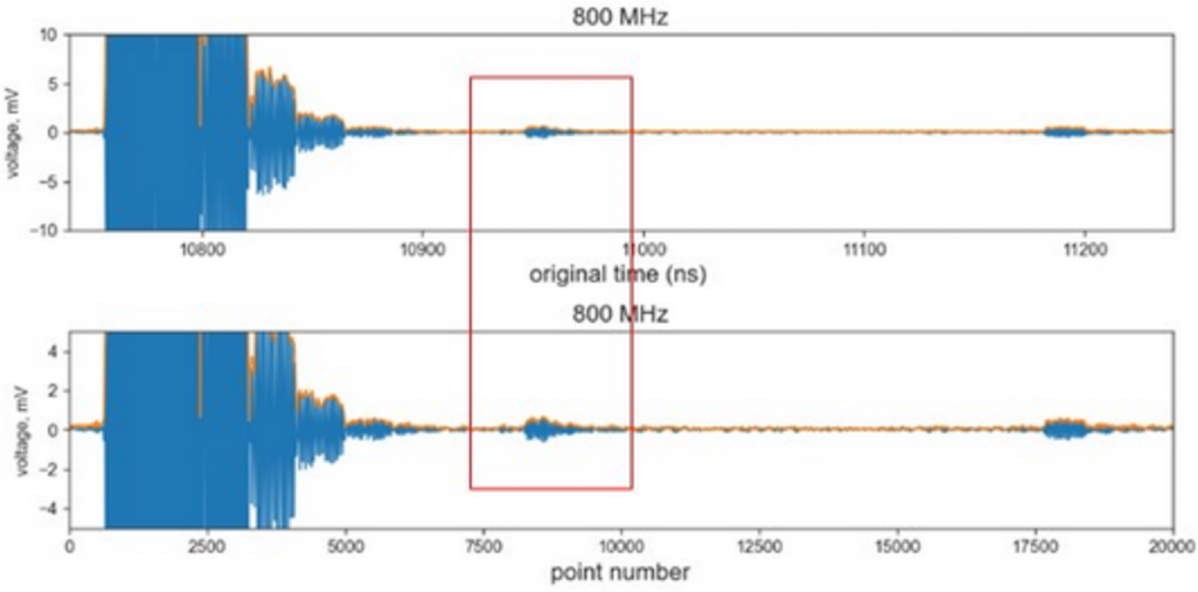
Keywords: Spin transition, The lower mantle, Electrical conductivity

GHz-DAC ultrasonics to measure elastic anomaly with the spin transition of ferrous ion in ferropericlase

*Akira Yoneda[1], Izumi Mashino[2], Ryosuke Matsui[1], Ryoma Ishida[1], Tadashi Kondo[1]

1. Osaka Univ. Sci, 2. Okayama Univ. IPM

Keywords: GHz-DAC ultrasonics, Spin transition, feropericlase



Reaction between water and iron in the early magma ocean and the present core-mantle boundary

*Yongjae Lee[1]

1. Yonsei University

Recent interest in hydrogen as a clean geological resource has been escalating, leading to active research on the formation and exploration of natural hydrogen worldwide. Paradoxically, however, hydrogen is the most abundant element in the universe and is also widely distributed in the Earth, as contained in mineral structures from the crust to the core. Hydrogen in minerals can exist in the form of molecular water (H2O), hydroxyl group (OH), or monatomic hydrogen (H), and is, therefore, directly related to the global transport and distribution of water. From this perspective, it is notable that the hydrogen budget increases innards to the mantle transition zone, lower mantle, and core, compared to the amount in the hydrosphere on the Earth’ s surface. In this presentation, I will introduce the reactions between water and iron based on two recent experimental results to simulate the conditions of the early magma ocean [1] and the present core-mantle boundary [2], which could be linked to the initial distribution of hydrogen and its enrichment in the topmost outer core.

[1] J. Choi, R.J. Husband, H. Hwang, T. Kim, Y. Bang, S. Yun, J. Lee, H. Sim, S. Kim, D. Nam, B. Chae, H.-P. Liermann, Y. Lee*, Oxidation of iron by giant impact and its implication on the formation of reduced atmosphere in the early Earth, Science Advances, Vol.9, eadi6096, 2023
[2] T. Kim, J.G. O’ Rourke, J. Lee, S. Chariton, V. Prakapenka, R.J. Husband, N. Giordano, H.-P. Liermann, S.-H. Shim*, Y. Lee*, “A hydrogen-enriched layer in the topmost outer core sourced from deeply subducted water”, Nature Geoscience, Vol.16, 1208-1214, 2023

Keywords: Hydrogen, Magma ocean, Core-mantle boundary

Sound velocity of B2-FeNiSi alloy at high pressure and high temperature and constitution of the Earth’s inner core

*Eiji OHTANI[1], Daijo IKUTA[2], Hiroshi FUKUI[3,4], Tatsuya SAKAMAKI[1], Daisuke Ishikawa[3,4], Alfred Q. R. BARON[3,4]

1. Tohoku University, 2. Institute for Planetary Materials, Okayama University, 3. JASRI, 4. RIKEN

Elastic properties of an ordered derivative of the body-cantered cubic (B2) structure of Fe-7wt% Ni-15wt% Si ($Fe_{0.67}Ni_{0.06}Si_{0.27}$) alloy have been investigated by combining high-resolution inelastic X-ray scattering and powder X-ray diffraction in diamond anvil cells up to 130 GPa and 2300 K. The density (ρ)-compressional wave velocity (V_P) relation of this phase shows a weak or almost negligible temperature dependence, similar to that observed for the body-centered cubic phase of pure iron (Shibazaki et al, 2016) and the B20 phase of iron-silicon alloys (Whitaker et al., 2009). The ρ, V_P and shear wave velocity (V_S) were extrapolated to the inner core conditions and compared with the PREM (preliminary reference Earth model) inner core (Dziewonski and Anderson, 1981). The phase relation of the Fe-Ni-Si system revealed that B2-Fe-7wt% Ni-15wt% Si alloy coexists with hexagonal close-packed (hcp) Fe-Ni alloys with negligible amount of silicon (Ikuta et al., 2021). The V_P and V_S of the two-phase mixture of B2 and hcp phases under the inner core conditions show slightly higher V_P and V_S compared to the PREM inner core. The two-phase mixture with the addition of a small amount of sulfur could potentially explain the properties of the PREM inner core.

Keywords: Sound velocity, B2-FeNiSi alloy, High pressure and high temperature, Inner core

On the phase boundary between FeS IV and V

*Satoru URAKAWA[1]

1. Okayama University

Keywords: iron sulfide, second order phase transition, thermal expansivity, high pressure, X-ray diffraction

Oral presentation | R8: Metamorphic rocks and tectonics

Thu. Sep 12, 2024 3:30 PM - 6:00 PM JST | Thu. Sep 12, 2024 6:30 AM - 9:00 AM UTC | ES024 Higashiyama Campus

R8: Metamorphic rocks and tectonics

Chairperson:Yui Kouketsu(Nagoya University), Shunsuke Endo

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

[R8-01] Toward the establishment of "EBSD method for the detection of quartz with phase transition to coesite": Incorporation of the Gongen area, Sanbagawa metamorphic belt, Shikoku, SW-Japan

「発表賞エントリー」

*Momoko Minowa[1], Takayoshi Nagaya[1], Taisuke Ito[2], Simon Wallis[2] (1. Tokyo Gakugei University, 2. The University of Tokyo)

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

[R8-02] Pressure-Temperature-Time Conditions of The Basement Rocks in The Banggai-Sula Microcontinent, Indonesia

「発表賞エントリー」

*Fransiska Ayuni Catur Wahyuandari[1], Nobuhiko Nakano[1], Tatsuro Adachi[1], Nugroho Imam Setiawan[2] (1. Kyushu Univ., 2. Gadjah Mada Univ.)

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

[R8-03] Amphibolites from the Mineoka belt revisited

*Yuji ICHIYAMA[1], Shun Takamizawa[1], Hisatoshi Ito[2], Akihiro Tamura[3], Tomoaki Morishita[3] (1. Chiba University, 2. Central Research Institute of ElectricPower Industry, 3. Kanazawa University)

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

[R8-04] Compositional heterogeneity of garnet in garnet-biotite felsic granulite, Czech Republic

*Daisuke NAKAMURA[1], Yuuka FUJIMURA[1], Yuuki KODERA[1] (1. Okayama University)

4:30 PM - 4:45 PM JST | 7:30 AM - 7:45 AM UTC

[R8-05] Formation and alteration of a zoned calcsilicate vein from the contact aureole of Kasuga area, central Japan: insights from chemical ages of U-Th oxides

*Shunsuke ENDO[1] (1. Shimane University)

4:45 PM - 5:00 PM JST | 7:45 AM - 8:00 AM UTC

[R8-06] Observations of geological structures and microstructures associated with strain release at a continental plate boundary fault

「発表賞エントリー」

*Haruki Yoshiasa[1], Jun-ichi Ando[1,2], Kaushik Das[1,2], Dyuti Prakash Sarkar[3] (1. Hiroshima University, 2. HiPeR, 3. JAMSTEC)

5:00 PM - 5:15 PM JST | 8:00 AM - 8:15 AM UTC

[R8-07] Comparison and verification study of new sample forms for use in Raman carbonaceous material geothermometer

「発表賞エントリー」

*Shunsuke Ogino[1], Yui Kouketsu[1], Satoshi Takahashi[1] (1. Nagoya Univ. Env.)

5:15 PM - 5:30 PM JST | 8:15 AM - 8:30 AM UTC

[R8-08] Pressure and temperature conditions for the occurrence of index minerals in pelitic schists in the Sanbagawa belt, Kanto Mountains, Japan, inferred from Raman carbonaceous material geothermometry

*Yui KOUKETSU[1], Ichiko Shimizu[2] (1. Nagoya Univ. Env., 2. Kyoto Univ. Sci.)

5:30 PM - 5:45 PM JST | 8:30 AM - 8:45 AM UTC

[R8-09] Microstructural and petrological characteristics of the Ryoke mylonite occurred along the Median Tectonic Line in the Shinshiro area, Aichi Prefecture

*Miharu Niwa[1,2], Katsuyoshi Michibayashi[1,3], Kenichiro Tani[4], Takuma Nishimura[5] (1. Nagoya Univ. Env., 2. TMNH, 3. JAMSTEC, 4. NMNS, 5. HMNH)

5:45 PM - 6:00 PM JST | 8:45 AM - 9:00 AM UTC

[R8-10] Re-proposal of the metamorphic zone division in the Horokanai area of the Kamuikotan Belt based on the mineral paragenesis and phengite K-Ar Age.

*Takao HIRAJIMA[1], Kousuke Naemura[2], Kenta Yoshida[3] (1. Kyoto University, 2. Iwate University, 3. JAMSTEC)

Toward the establishment of "EBSD method for the detection of quartz with phase transition to coesite": Incorporation of the Gongen area, Sanbagawa metamorphic belt, Shikoku, SW-Japan

*Momoko Minowa[1], Takayoshi Nagaya[1], Taisuke Ito[2], Simon Wallis[2]

1. Tokyo Gakugei University, 2. The University of Tokyo

Keywords: Sanbagawa metamorphic belt, Gongen area, coesite–quartz phase transition, EBSD (Electron Back Scatter Diffraction), anisotropy

Pressure-Temperature-Time Conditions of The Basement Rocks in The Banggai-Sula Microcontinent, Indonesia

*Fransiska Ayuni Catur Wahyuandari[1], Nobuhiko Nakano[1], Tatsuro Adachi[1], Nugroho Imam Setiawan[2]

1. Kyushu Univ., 2. Gadjah Mada Univ.

The Banggai-Sula microcontinent in the eastern Indonesia region is known to be derived from the Northwest Australia continental margin (Sula Spur). The basement rocks of Banggai-Sula microcontinents are often associated with the high-temperature/low-pressure metamorphic rocks of Kemum Basement High of the Bird’ s Head region in Papua which intruded by granitoids of Devonian–Carboniferous and Permian–Triassic age. This study reports the petrological and geochemical characteristics, and monazite EPMA ages of these basement rocks to understand its origin and the relation with tectonic events along the northeastern margin of Gondwana in the Paleozoic. Metamorphic rocks collected from Banggai and Peleng Islands imply differences in metamorphic conditions between Banggai Island in the east (garnet-andalusite-muscovite schist) and the western part of Peleng Island (garnet-staurolite-biotite-muscovite schist). The preservation of garnet growth zoning during prograde metamorphism is indicated by decreasing Mn from the core towards the rim of the garnet grains obtained from metamorphic rocks in this region. The monazite EPMA ages were determined from biotite granite in Banggai Island and staurolite-bearing pelitic schist in Peleng Island. The biotite granite from Banggai Island gives a weighted mean age of 271 ±8 and 263 ±14 Ma from the core and rim of monazite. The staurolite-bearing pelitic schist from Peleng Island yields a weighted mean age of 434 ±3 and 449 ±12 Ma from the core and mantle, and 403 ±8 Ma from the rim of monazite. This Silurian-Devonian metamorphic age has not been reported before from the Banggai-Sula microcontinent and Eastern Indonesia region. The differences in metamorphic grade and timing with the Kemum Basement High suggest that an earlier tectonic event influenced the metamorphism in the Banggai-Sula microcontinent. Such early Paleozoic igneous activity and metamorphism happened along the northern margin of East Gondwana related to the subduction of the Proto-Tethys Oceanic crust. Silurian–Devonian metamorphism in the Banggai-Sula microcontinent might represent the eastern continuation of this tectonic event. In the presentation, we will also discuss the pressure-temperature conditions of these basement rocks.

Keywords: Banggai-Sula microcontinent, Paleozoic basement, monazite EPMA ages

Amphibolites from the Mineoka belt revisited

*Yuji ICHIYAMA[1], Shun Takamizawa[1], Hisatoshi Ito[2], Akihiro Tamura[3], Tomoaki Morishita[3]

1. Chiba University, 2. Central Research Institute of ElectricPower Industry, 3. Kanazawa University

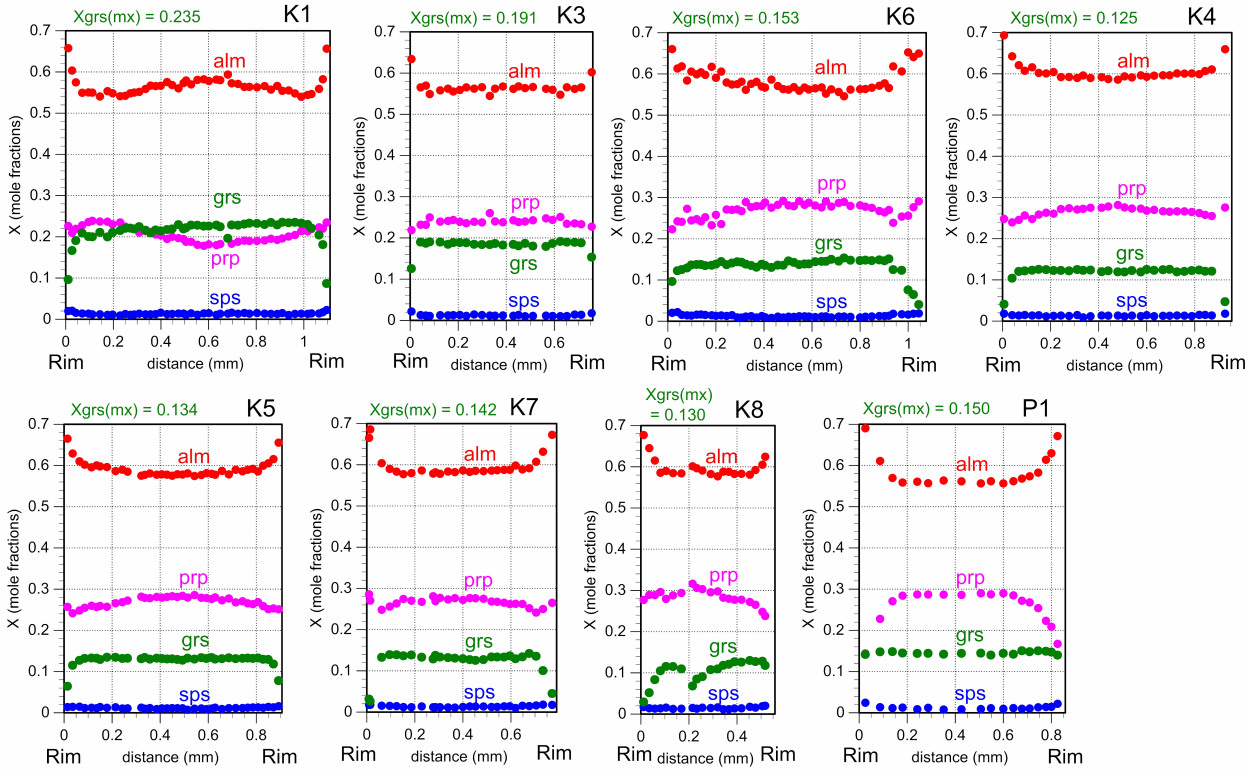
Keywords: Mineoka belt, Amphibolites, Metamorphic sole

Compositional heterogeneity of garnet in garnet-biotite felsic granulite, Czech Republic

*Daisuke NAKAMURA[1], Yuuka FUJIMURA[1], Yuuki KODERA[1]

1. Okayama University

Keywords: Garnet



Formation and alteration of a zoned calcsilicate vein from the contact aureole of Kasuga area, central Japan: insights from chemical ages of U-Th oxides

*Shunsuke ENDO[1]

1. Shimane University

Keywords: Vein

Observations of geological structures and microstructures associated with strain release at a continental plate boundary fault

*Haruki Yoshiasa[1], Jun-ichi Ando[1,2], Kaushik Das[1,2], Dyuti Prakash Sarkar[3]

1. Hiroshima University, 2. HiPeR, 3. JAMSTEC

Keywords: Bedding plane slip, MBT, Microstructure, Frictional heat, Dynamic recrystallization

Comparison and verification study of new sample forms for use in Raman carbonaceous material geothermometer

*Shunsuke Ogino[1], Yui Kouketsu[1], Satoshi Takahashi[1]

1. Nagoya Univ. Env.

Keywords: Carbonaceous material, Raman spectroscopy, Raman CM geothermometer, Mudstone, Pelitic schist

Pressure and temperature conditions for the occurrence of index minerals in pelitic schists in the Sanbagawa belt, Kanto Mountains, Japan, inferred from Raman carbonaceous material geothermometry

*Yui KOUKETSU[1], Ichiko Shimizu[2]

1. Nagoya Univ. Env., 2. Kyoto Univ. Sci.

The Sanbagawa belt in the Kanto Mountains has long been studied as a type locality for the Sanbagawa metamorphic belt, but the occurrence of index minerals and the graphitization degree (GD) show a complicated distribution, and the boundaries of isograd vary among researchers. In this study, we applied Raman carbonaceous material (CM) geothermometry to pelitic and siliceous schists collected in the Ayukawa-Sanbagawa area to estimate their temperature structures, and conducted pseudosection modelling to analyze the stability field of index minerals, such as garnet, biotite, and oligoclase. The application of Raman CM geothermometer to the Ayukawa-Sanbagawa area resulted in temperatures ranging from 360˚C to 520˚C: Chlorite zone is about 400-440˚C, Garnet zone is about 360-470˚C, and Biotite zone is about 470-520˚C, respectively. A pseudosection diagram of the pelitic schist of the Biotite zone (AM41P, Miyashita 1997), which shows the average bulk rock composition of the Kanto Sanbagawa belt, shows that garnet, biotite, and oligoclase occur with increasing temperature. The stability field of garnet strongly affected by the bulk rock composition of MnO, as shown in previous studies, which explains the overlap of the temperature ranges of the Chlorite and Garnet zones. Compared with the temperature data, the biotite zone in the Kanto Mountains was formed at about 0.8 GPa, and may have experienced lower pressure conditions than the Shikoku. Oligoclase ($X_{An} > 0.1$) appears at about +20-30˚C after the appearance of biotite under low pressure conditions up to about 0.9 GPa, but the stability field tends to shift to the higher temperature side under high pressure conditions above 0.9 GPa. This result is consistent with the hypothesis that there is a pressure difference between the Kanto Mountains, where the oligoclase appears homogenously in the biotite zone, and the Shikoku, where the Albite-biotite zone and the Oligocase-biotite zone are clearly separated.

Keywords: Raman carbonaceous material geothermometry, Pseudosection modelling, Garnet, Biotite, Oligoclase

Microstructural and petrological characteristics of the Ryoke mylonite occurred along the Median Tectonic Line in the Shinshiro area, Aichi Prefecture

*Miharu Niwa[1,2], Katsuyoshi Michibayashi[1,3], Kenichiro Tani[4], Takuma Nishimura[5]

1. Nagoya Univ. Env., 2. TMNH, 3. JAMSTEC, 4. NMNS, 5. HMNH

The Median Tectonic Line (MTL) in Shinshiro City, Higashimikawa area, Aichi Prefecture, has a complex geology, with the Ryoke metamorphic rocks and plutonic rocks in the inner zone, the Sambagawa metamorphic rocks in the outer zone, and the Shidara Group that overlie the basement rocks. Although the fault rocks are exposed in this area along the MTL as like in Nagano, Shizuoka and Mie Prefecture, detail structural and petrological reports are rare compared to other areas. The fault rocks in this area are mostly cataclasite, and mylonite has been found near in the Horai-cho, Shinshiro City, we found continuous outcrops of mylonite in the Sakurabuchi Park, Shinshiro City, furter southwest from Hoai-cho. In this study, we observed microstructure with polarized light microscope, measured quartz crystal orientation with SEM-EBSD system, analyzed geochronological, in order to estimate deformation temperature, shear sense, and original rocks. Mylonite in this area is greenish-white in outcrop, and is characterized plagioclase porphyroclasts with white spots, as like Kashio mylonite. There are tonalitic rocks, composing of main constituently minerals, quartz, plagioclase, and biotite, with minor amount of K-feldspar, allanite, and zircon. The microstructure consists of a typical porphyroclastic texture composing of coarse-grained plagioclase and an asymmetric texture with plagioclase and fine quartz strain shadows. The quartz c-axis fabric shows a pattern of Y-maxima, which is formed at relatively intermediate temperature during deformation. In combination with the plagioclase-quartz porphyroclasts structure, which shows deformation during the progressive retrogression period, it is inferred that the quartz was formed by plastic shear deformation during the peak temperature from 350-450℃. Furthermore, the shear sense of the mylonite along the MTL, which is common in Nagano Prefecture, shows sinistral shear sense, whereas the shear sense of the mylonite in this area shows dextral shear sense.Based on these results, we discuss the regional structural characteristics of the Mikawa area in comparison with other areas.

Keywords: Mylonite, Median Tectonic Line, Ryoke belt, Fault rock

Re-proposal of the metamorphic zone division in the Horokanai area of the Kamuikotan Belt based on the mineral paragenesis and phengite K-Ar Age.

*Takao HIRAJIMA[1], Kousuke Naemura[2], Kenta Yoshida[3]

1. Kyoto University, 2. Iwate University, 3. JAMSTEC

According to the K-Ar age of phengite (Phn) and the deformation style of the rock, Sakakibara et al. (2007) proposed a zone division in the Horokanai area of the Kamuikotan belt, such as Horokanai unit (HKU) characterized by the occurrence of blueschist (BS) with Phn K-Ar ages of 135-120 Ma, and Biei unit (BIU) by the missing of BS and Phn K-Ar ages of 115-100 Ma. However, we confirmed the occurrence of BS from Mt. Shirakke through Jyari River to Mt. Numaushi, where Sakakibara et al. (2007) classified as BIU, in addition, the Phn K-Ar dating in the area has not been reported.To clarify these inconsistencies, we performed Phn K-Ar dating collected from the Jyari River and Mt. Numashi and their surrounding area. The results are as follows:HKU: EP256: Etanbetsu Pass, 115.1Ma, KD12/KD13: Numaushi River East, 123.3/106.6Ma, 126.9/101.8Ma.BIU: KHK121: Mt. NUmaushi,120.2Ma, KHK331/KHK333: Jyari-River, 109.2Ma/105.6Ma. Since Phns in the studied BS are generally fine-grained, the particle size of the dated fraction was adjusted to 0.2-2 micron and coarse-grained (50-120 micron) Phn fractions in KD12/KD13 were also dated. The coarse-grained fraction of KD12/KD13 showed 123.3/126.9 Ma, and their fine-grained fractions were 106.6/101.8 Ma, and the difference reached 12-25 Ma. The phenomenon of younger fine-grained fractions has also been confirmed in a few reports (Kurosegawa, Sato et al., 2014; Kanto Mountains, Lu et al., 2022), and there are various theories as to why. In order to eliminate the influence of particle size, the fine-grained fraction age is considered, i.e., 115.1~106.6 Ma for HKU and 120.2~105.6 for BIU. Phn K-Ar ages (107-102 Ma) reported from BS missing area of BIU also overlap with abovementioned BS ages (120-101Ma). Therefore, the blueschist occurrence region, which Sakakibara et al. (2007) regarded as the Biei unit, has lost the reason to distinguish it from the Horokanai unit in terms of mineral combination and metamorphic age.

Keywords: Phengite K-Ar age, Triple Point bluecshit, Horokanai area, Kamuikotan Belt

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

Thu. Sep 12, 2024 3:30 PM - 6:00 PM JST | Thu. Sep 12, 2024 6:30 AM - 9:00 AM UTC | ES025 Higashiyama Campus

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

Chairperson:Ikuo Katayama(Hiroshima University), Katsuyoshi Michibayashi(Nagoya University)

3:30 PM - 3:50 PM JST | 6:30 AM - 6:50 AM UTC

[S3-01] High-speed time-resolved in-situ stress-strain measurements under high pressure and high temperature using synchrotron radiation X-rays

「招待講演」

*Noriyosi TSUJINO[1] (1. JASRI)

3:50 PM - 4:05 PM JST | 6:50 AM - 7:05 AM UTC

[S3-02] Deformation-induced crystallographic-preferred orientation of ε-FeOOH

*Yu NISHIHARA[1], Yui MORI[1], Wentian WU[1], Noriyoshi TSUJINO[2] (1. GRC, Ehime Univ., 2. JASRI)

4:05 PM - 4:20 PM JST | 7:05 AM - 7:20 AM UTC

[S3-03] Strength of metastable olivine and the rheology of subducting cold slab at mantle transition zone

「発表賞エントリー」

*Rikuto HONDA[1], Tomoaki Kubo[1], Noriyoshi Tsujino[2], Yuji Higo[2], Sho Kakizawa[2], Yuki Shibazaki[3], Yu Nishihara[4] (1. Kyushu University, 2. JASRI, 3. KEK, 4. Ehime Univ. GRC)

4:20 PM - 4:40 PM JST | 7:20 AM - 7:40 AM UTC

[S3-04] High-resolution measurement of ice anelasticity over a broad frequency range with a new cryogenic forced oscillation apparatus

「招待講演」

*Hatsuki Yamauchi[1], Christine McCarthy[1], Benjamin Holtzman[1], David Goldsby[2], Travis Hager[2] (1. Columbia Univ. LDEO, 2. U. Penn)

4:40 PM - 4:55 PM JST | 7:40 AM - 7:55 AM UTC

[S3-05] Relationship between creep and grain growth in rock with bicontinuous structure

「発表賞エントリー」

*Shenghao Jiang[1], Takehiko Hiraga[1] (1. The University of Tokyo)

4:55 PM - 5:10 PM JST | 7:55 AM - 8:10 AM UTC

[S3-06] Microstructures of plagioclase in gabbroic ultramylonites and quadruple point analysis

*Itsuki Natsume[1], Katsuyoshi Michibayashi[2,3], Yohei Igami[4] (1. Kanagawa Prefectural Museum of Natural History, 2. Nagoya Univ., 3. JAMSTEC, 4. Kyoto Univ.)

5:10 PM - 5:25 PM JST | 8:10 AM - 8:25 AM UTC

[S3-07] Reconstruction of the uppermost mantle continuous structure of the Oman ophiolite

*Takeo Okuwaki[1], Natsume Itsuki[2], Katsuyoshi Michibayashi[1] (1. Nagoya Univ. Env, 2. Kanagawa Pref. Mus. Nat. Hist.)

5:25 PM - 5:40 PM JST | 8:25 AM - 8:40 AM UTC

[S3-08] Deformation and melt-rock interaction in the Horoman peridotite: Petrological and structual study of the MHL suite and BDH suite rocks

「発表賞エントリー」

*Aya Hihara[1], Miki Tasaka[1], Keisuke Kurihara[1], Hajime Taniuchi[2], Tastuhiko Kawamoto[1] (1. Shizuoka Univ., 2. AIST)

5:40 PM - 5:55 PM JST | 8:40 AM - 8:55 AM UTC

[S3-09] Multicomponent measurements of seismic velocity and electrical resistivity using foliated serpentinite and peridotite

「発表賞エントリー」

*Tomohiro Ito[1], Ikuo Katayama[1], Katsuyoshi Michibayashi[2], Kazuki Matsuyama[2] (1. Hiroshima University, 2. Nagoya University)

5:55 PM - 6:00 PM JST | 8:55 AM - 9:00 AM UTC

調整

High-speed time-resolved in-situ stress-strain measurements under high pressure and high temperature using synchrotron radiation X-rays

*Noriyosi TSUJINO[1]

1. JASRI

Keywords: High pressure, High-speed time-resolution, In-situ measurement, Rheology

Deformation-induced crystallographic-preferred orientation of ε -FeOOH

*Yu NISHIHARA[1], Yui MORI[1], Wentian WU[1], Noriyoshi TSUJINO[2]

1. GRC, Ehime Univ., 2. JASRI

Keywords: Crystallographic-preferred orientation, Seismic anisotropy, ε -FeOOH

Strength of metastable olivine and the rheology of subducting cold slab at mantle transition zone

*Rikuto HONDA[1], Tomoaki Kubo[1], Noriyoshi Tsujino[2], Yuji Higo[2], Sho Kakizawa[2], Yuki Shibazaki[3], Yu Nishihara[4]

1. Kyushu University, 2. JASRI, 3. KEK, 4. Ehime Univ. GRC

Keywords: metastable olivine, Peierls mechanism, deep slab, high-pressure deformation experiments, deep-focus earthquake

High-resolution measurement of ice anelasticity over a broad frequency range with a new cryogenic forced oscillation apparatus

*Hatsuki Yamauchi[1], Christine McCarthy[1], Benjamin Holtzman[1], David Goldsby[2], Travis Hager[2]

1. Columbia Univ. LDEO, 2. U. Penn

Keywords: ice, anelasticity, attenuation

Relationship between creep and grain growth in rock with bicontinuous structure

*Shenghao Jiang[1], Takehiko Hiraga[1]

1. The University of Tokyo

Keywords: Forsterite, Diopside

Microstructures of plagioclase in gabbroic ultramylonites and quadruple point analysis

*Itsuki Natsume[1], Katsuyoshi Michibayashi[2,3], Yohei Igami[4]

1. Kanagawa Prefectural Museum of Natural History, 2. Nagoya Univ., 3. JAMSTEC, 4. Kyoto Univ.

Keywords: Quadruple points, Microstructure, Plagioclase, Ultramylonite

Reconstruction of the uppermost mantle continuous structure of the Oman ophiolite

*Takeo Okuwaki[1], Natsume Itsuki[2], Katsuyoshi Michibayashi[1]

1. Nagoya Univ. Env, 2. Kanagawa Pref. Mus. Nat. Hist.

Keywords: mantle flow, Oman ophiolite, peridotite, foliation, Crystallographic Preferred Orientation (CPO)

Deformation and melt-rock interaction in the Horoman peridotite: Petrological and structual study of the MHL suite and BDH suite rocks

*Aya Hihara[1], Miki Tasaka[1], Keisuke Kurihara[1], Hajime Taniuchi[2], Tastuhiko Kawamoto[1]

1. Shizuoka Univ., 2. AIST

Keywords: mantle, peridotite, deformation, crystallographic preferred orientation, EBSD

Multicomponent measurements of seismic velocity and electrical resistivity using foliated serpentinite and peridotite

*Tomohiro Ito[1], Ikuo Katayama[1], Katsuyoshi Michibayashi[2], Kazuki Matsuyama[2]

1. Hiroshima University, 2. Nagoya University

Water is involved in various phenomena at subduction zones. When a subducting plate releases water into the mantle wedge, the water reacts with the mantle to form serpentinite. Seismic low velocity and high electrical resistivity in the mantle have been interpreted as mantle hydration; however, these geophysical data can be highly anisotropic. In this study, we performed multicomponent measurments of seismic velocity and electrical resistivity of the foliated serpentinite and peridotite to discuss the fluid movement and mantle hydration at subduction zones.The rocks used in this study are serpentinite and peridotite with the x-axis is parallel to the lineation and the z-axis is normal to the foliation. An intravessel deformation and fluid flow apparatus was used to measure seismic velocity and electrical resistivity at the confining pressures ranging from 5 MPa to 200 MPa. The fluid used was a 0.5 mol/L NaCl solution, and the fluid pressure was controlled at 1 MPa. These measurements represent the physical properties of the rocks, including microcracks. We also measured the crystal orientation using EBSD to evaluate the anisotropy of the minerals. Serpentinite and peridotite show higher P-wave velocity in the x- and y-axes than in the z-axis, although the P-wave velocity of serpentinite is nearly the same in the x- and y-axes. These results are most likely due to crack alignments subparallel to the foliation and crystal preferred orientation. The electrical resistivity of serpentinite tends to be about an order of magnitude lower in the x-axis than in the z-axis, while the electrical resistivity of peridotite is almost the same in the z- and x-axes. From the multicomponent seismic velocities, we calculated the elastic constant tensor and produced pole figures of seismic velocity (Mainprice, 2014). We will discuss these data in more detail with application to seismic tomography and electrical resistivity data at subduction zones.

Keywords: Ultramafic rocks, Seismic velocity, Electrical resistivity, Anisotropy

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

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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

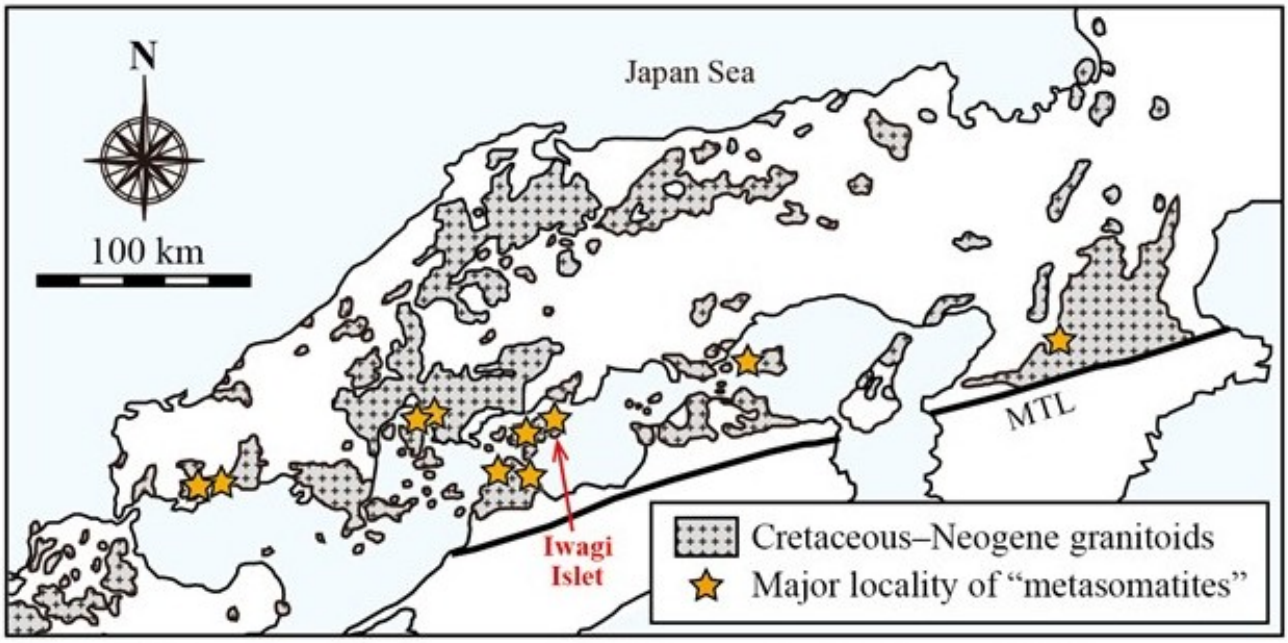
Insights into the mineralogical characteristics of Li-enriched metasomatic albitite from the Iwagi islet, SW Japan

*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

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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

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Slab-derived fluid infiltrating back-arc mantle

*Junji YAMAMOTO[1]

1. Kyushu University

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

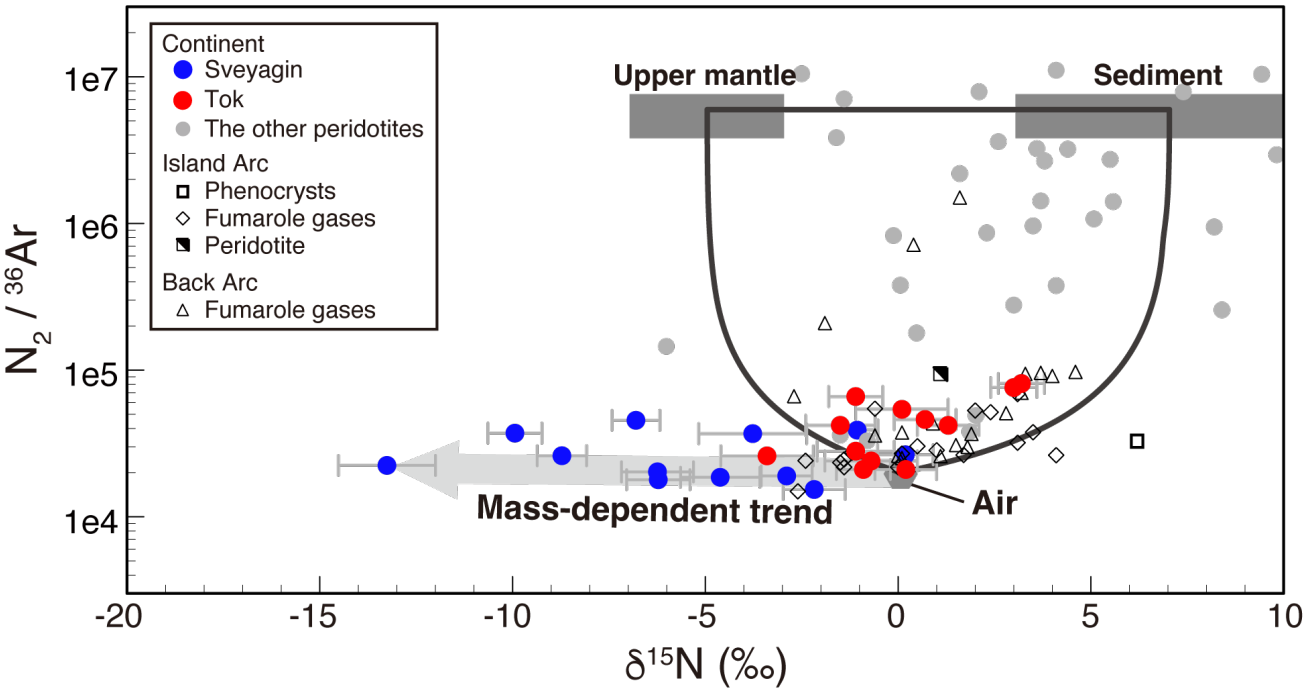


図1. $N_2/^{36}Ar$ vs. $\delta^{15}N$ of Far Eastern Russian xenoliths with data referred from earlier studies (see Yamamoto et al. (2020) EPSL).

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

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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.

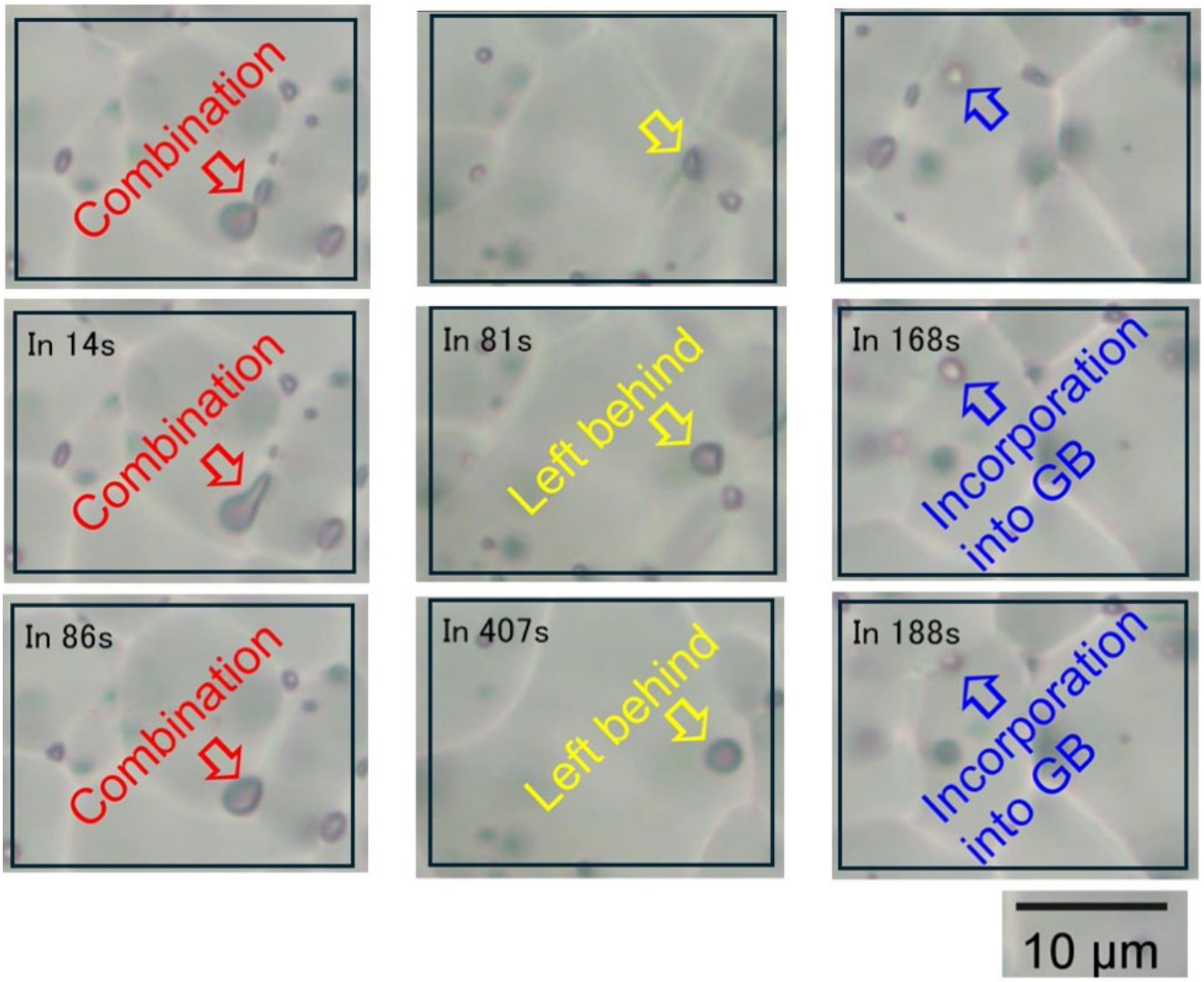
Keywords: Olivine, Acoustic emission, Fault, Intermediate earthquake

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

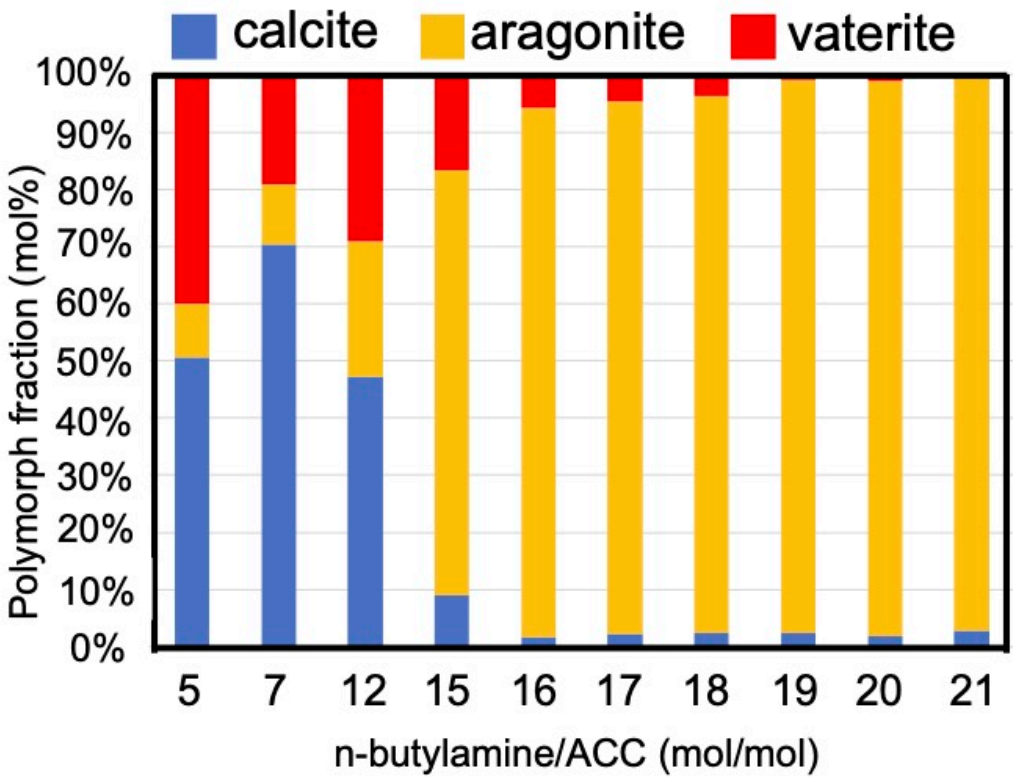
Aragonite formation from amorphous calcium carbonate (ACC) with addition of *n*-butylamine

*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



Oral presentation | R6: Plutonic rocks, volcanic rocks and subduction factory

Sat. Sep 14, 2024 9:00 AM - 12:00 PM JST | Sat. Sep 14, 2024 12:00 AM - 3:00 AM UTC | ES Hall Higashiyama Campus

R6: Plutonic rocks, volcanic rocks and subduction factory

Chairperson:Tatsuhiko Kawamoto(Shizuoka University), Takashi Yuguchi, Atsushi Kamei

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

[R6-01] Compositional evolution of slab-derived fluids during ascent and origin of subduction-zone primary magmas: Implications from trace-element partition between hydrous melts and Cl-free or Cl-rich aqueous fluids

*Hajime TANIUCHI[1], Tatsuhiko KAWAMOTO[2], Takayuki NAKATANI[1], Osamu ISHIZUKA[1], Toshihiro SUZUKI[1], Akihiko Tomiya[1] (1. GSJ, AIST, 2. Shizuoka Univ.)

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

[R6-02] New crust and mantle physical properties research from the development of rock synthesis methods

「招待講演」

*Sanae Koizumi[1] (1. The University of Tokyo)

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

[R6-03] The use of contact metamorphism to identify plutons associated with major contemporaneous eruption and estimate magma flux

*Simon R WALLIS[1], Ken Yamaoka[2], Akira Miyake[3], Catherine Annen[4] (1. The University of Tokyo, 2. AIST, 3. Aichi University of Education, 4. Institute of Geophysics, Czech Academy of Sciences)

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

[R6-04] Petrography and geochronology of the Kuki granite, Kitakami Mountains, northeastern Japan: Shallow crustal intrusion and emplacement processes of granitic magma

*Satoshi SUZUKI[1], Takashi YUGUCHI[2], Keito ISHIGURO[1], Kyoka ENDO[1], Asuka KATO[1], Kosuke YOKOYAMA[1], Yasuhiro OGITA[3], Tatsunori YOKOYAMA[3], Shuhei SAKATA[4], Takeshi OHNO[5], Eiji SASAO[3] (1. Yamagata University, 2. Kumamoto University, 3. Japan Atomic Energy Agency, 4. University of Tokyo, 5. Gakushuin University)

10:00 AM - 10:15 AM JST | 1:00 AM - 1:15 AM UTC

[R6-05] Zircon U-Pb dating of granitoids in the Hobenzan area, western Yamaguchi Prefecture, southwest Japan

*Yukiyasu TSUTSUMI[1], Kenichiro TANI[1] (1. National Museum of Nature and Science)

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

[R6-06] Estimation of temperature and pressure conditions of granitoids in the eastern part of Shimane Prefecture, San'in Belt.

*Kai Nakahashi[1], Satoshi SAITO[1] (1. Ehime University Graduate School of Science and Engineering, Earth Science Division)

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

[R6-07] Primary magma of Cretaceous Northern Kyushu batholith: New approach from Cumulus rocks

*Keisuke ESHIMA[1], Masaaki OWADA[1], Atsushi KAMEI[2] (1. Yamaguchi Univ. Sci. , 2. Shimane Univ.)

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

[R6-08] Origin of the Cretaceous ignimbrite flare-up in SW Japan

*Ken Yamaoka[1], Tokiyuki Morohoshi[2], Daisuke Sato[1], Kazuto Mikuni[1] (1. AIST, 2. Univ. Tokyo. Sci.)

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

[3Lecture-101-11-9add] 休憩

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

[R6-09] The genesis of garnet in the Quaternary rhyolite of Hime-shima volcanic group, EEast Kyushu, Southwest Japan Arc.

*Takehiro HIRAYAMA[1,2], Tomoyuki SHIBATA[2], Masako YOSHIKAWA[2] (1. Tokyo University, 2. Hiroshima University)

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

[R6-10] K–Ar ages and geochemical compositions of Early Pleistocene andesites from southern Kyushu, Japan

*Raiki YAMADA[1], Masakazu Niwa[1], Koji Umeda[2], Koshi Yagi[3], Taisei Fujiwara[3], Ikuo Okada[3], Fukuka Kida[1] (1. Japan Atomic Energy Agency, 2. Hirosaki University, 3. Hiruzen Institute for Geology and Geochronology)

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

[R6-11] Thermal history of pluton formation from Sr diffusion in plagioclase: implications for magma flux estimation and identification of plutons associated with major eruptions

「発表賞エントリー」

*Tokiyuki Morohoshi[1], Simon Richard Wallis[1] (1. The University of Tokyo)

Compositional evolution of slab-derived fluids during ascent and origin of subduction-zone primary magmas: Implications from trace-element partition between hydrous melts and Cl-free or Cl-rich aqueous fluids

*Hajime TANIUCHI[1], Tatsuhiko KAWAMOTO[2], Takayuki NAKATANI[1], Osamu ISHIZUKA[1], Toshihiro SUZUKI[1], Akihiko Tomiya[1]

1. GSJ, AIST, 2. Shizuoka Univ.

Keywords: Primary magma, Slab-derived fluid, Partition coefficient, High-pressure and high-temperature experiment

New crust and mantle physical properties research from the development of rock synthesis methods

*Sanae Koizumi[1]

1. The University of Tokyo

Keywords: Olivine, Mantle, Crust, Sample synthesis

The use of contact metamorphism to identify plutons associated with major contemporaneous eruption and estimate magma flux

*Simon R WALLIS[1], Ken Yamaoka[2], Akira Miyake[3], Catherine Annen[4]

1. The University of Tokyo, 2. AIST, 3. Aichi University of Education, 4. Institute of Geophysics, Czech Academy of Sciences

Magmatic flux is an important factor controlling the heat and material transport in the continental crust; it is also thought to be a major control on the potential for any mamga to erupt, and duration of eruption and time scale between major events. Plutons are a clear record of magma input into the earth’ s crust and volume estimates combined with geochronological studies have been used to estimate past magma flux rates. However, areas suitable for such studies are limited and this approach cannot asses possible loss of magma through associated volcanic eruption. Contact metamorphic aureoles developed around plutons record the thermal effects of magma input into the crust and their study provides a potential way to use the geological record to estimate ancient magma flux rates even if material has been lost from the system by eruption.

A compilation of aureoles surrounding silicic plutons around the world shows that there is a wide variation in normalized thicknesses. Comparison with thermal modelling shows some aureoles are compatible with rapid input of the entire volume of magma recorded in the pluton whereas other aureoles are very narrow and imply slow rates of magma input. There are also numerous examples of aureoles broader than can be explained easily by either instantaneous intrusion models or incremental growth of plutons. Such broad aureoles may be explained by 1) unusually high crustal temperatures just before intrusion and 2) the contribution of magma that has subsequently been lost from the pluton system due to eruption.

The Shinshiro tonalite and the Busetsu granite are two plutons formed in the same Hongusan area and have similar zircon U–Pb ages. Although the Busetsu granite has a larger volume, it is associated with a much narrower aureole than the Shinshiro tonalite. Because the intrusions formed at the same time in the same area, the difference in aureole widths cannot be explained by contrasting background crustal temperatures. Thermal modeling shows that only eruptive loss of magma can adequately account for the characteristics of the Shinshiro tonalite aureole. Combining petrological studies of metamorphic aureoles with thermal modeling can identify plutons that developed in association with major volcanic eruptions and constrain ancient magma flux.

Keywords: Magma flux, Pluton, Contact metamorphism

Petrography and geochronology of the Kuki granite, Kitakami Mountains, northeastern Japan: Shallow crustal intrusion and emplacement processes of granitic magma

*Satoshi SUZUKI[1], Takashi YUGUCHI[2], Keito ISHIGURO[1], Kyoka ENDO[1], Asuka KATO[1], Kosuke YOKOYAMA[1], Yasuhiro OGITA[3], Tatsunori YOKOYAMA[3], Shuhei SAKATA[4], Takeshi OHNO[5], Eiji SASAO[3]

1. Yamagata University, 2. Kumamoto University, 3. Japan Atomic Energy Agency, 4. University of Tokyo, 5. Gakushuin University

Keywords: Flare-up, Non-adakitic magma, Fractional crystallization, P-T history, t-T history

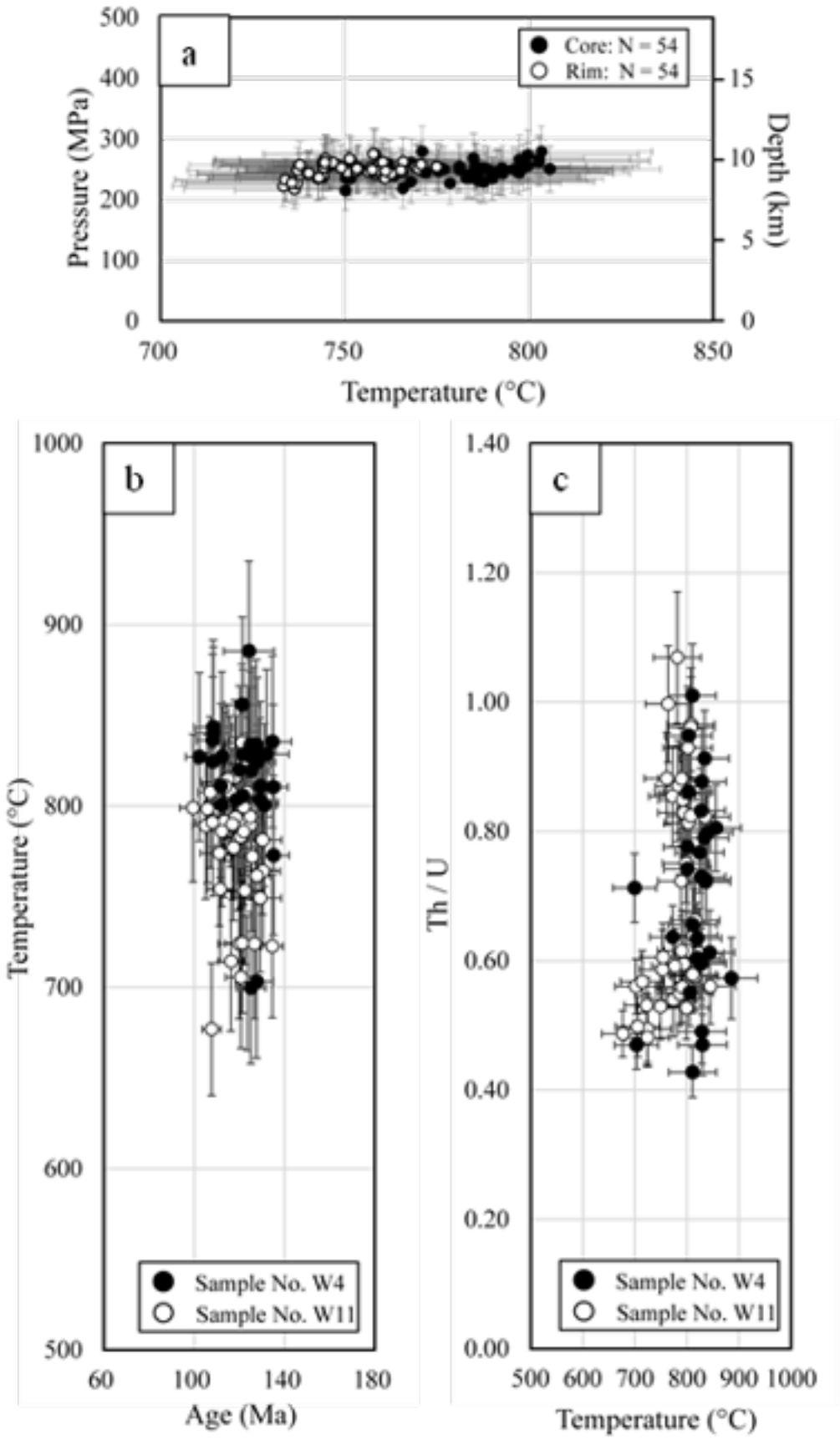


図 1 久喜花崗岩体のホルンブレンドから導出した温度と圧力（深度）の関係（a）．ジルコン U-Pb 年代・Ti 濃度・Th/U 比の同時測定による *t-T* 履歴（b）と Th/U 比と温度の関係（c）．

Zircon U-Pb dating of granitoids in the Hobenzan area, western Yamaguchi Prefecture, southwest Japan

*Yukiyasu TSUTSUMI[1], Kenichiro TANI[1]

1. National Museum of Nature and Science

Zircons U-Pb ages were obtained from granitoids in the Hobenzan area, western Yamaguchi Prefecture, southwest Japan. Granitoid bodies in the area consist of granodiorite and granite. The 5 granodioritic samples indicate 95.4 ±0.7 Ma, 96.3 ±1.0 Ma, 96.3 ±0.8 Ma, 96.2 ±0.6 Ma and 97.1 ±0.7 Ma whereas the 2 granitic samples indicate 93.9 ±0.7 Ma and 90.2 ±0.8 Ma. Errors are 95% confidence intervals. These ages are equivalent of the granitoids in northern Kyushu, but there is no report for granitoid which age is more than 95 Ma from eastern Chugoku District. Additional research is necessary to verify the chronological continuation of granitoids in SW Japan.

Keywords: SW Japan, San-yo Province, Cretaceous, granitoid, zircon U-Pb age

Estimation of temperature and pressure conditions of granitoids in the eastern part of Shimane Prefecture, San'in Belt.

*Kai Nakahashi[1], Satoshi SAITO[1]

1. Ehime University Graduate School of Science and Engineering, Earth Science Division

Keywords: granitoids, Amphibole only geothermobarometer, San-in granitoids

Primary magma of Cretaceous Northern Kyushu batholith: New approach from Cumulus rocks

*Keisuke ESHIMA[1], Masaaki OWADA[1], Atsushi KAMEI[2]

1. Yamaguchi Univ. Sci. , 2. Shimane Univ.

The Jurassic to Cretaceous igneous rocks associated with the subduction of the Izanagi Plate are widely developed in the Northeast Asian continental margin and have been intensively studied for their igneous activity and tectonics (Kim et al., 2016, *Lithos*262, 88–106; Yu et al. et al., 2021, *Int. Geol. Rev.*, 1881920). It is clear that the igneous rocks in the Japanese Islands, as well as the continental side (Northeastern Chin and Korean Peninsula), are related to the subduction (200–50 Ma) of the Izanagi Plate into Eurasia (Seton et al., 2015, *Geophys. Res. Lett.* 42, 1732–1740), and approximately 30% of Japan archipelago is occupied by plutons, typically granitoid. In addition, large-scale granitic complexes with an area of more than 100 km^2, known as batholiths, are exposed throughout the Japanese island and compose the major part of this island arc crust. Furthermore, about 80% of the granitoids exposed in Japan are concentrated in the geochnological age range 50–130 Ma (mainly Cretaceous to Paleogene). These continental-scale periodic large-scale igneous events are called Magmatic flare-ups and are very important for the mechanism of generation of large amounts of silicic magma and the evolution of crustal growth processes (Ducea, 2001, *GSA Today,* 11, 4–10). In this presentation, we discuss a comprehensive study of the Cretaceous Northern Kyushu Batholith, including magma generation mechanisms, especially the formation process and generation mechanisms of source magmas of the granitoids that form the batholith-scaled pluton. In addition, the source magmas will be examined using the Cumulus rocks from the Kita-Taku mafic complex associated with the Cretaceous Northern Kyushu batholith. We believe that the use of the cumulus minerals from the primary magma and the tracing of the characteristics of the primary magma is the best approach in the Northern Kyushu batholith, where there are very few exposures of coeval volcanic rocks (i.e., it is difficult to determine the melt composition from volcanic rocks).

Keywords: Cretaceous Northern Kyushu Batholith, Kita-taku mafic complex, Cumulate, Primary magma, Sanukitic HMA

Origin of the Cretaceous ignimbrite flare-up in SW Japan

*Ken Yamaoka[1], Tokiyuki Morohoshi[2], Daisuke Sato[1], Kazuto Mikuni[1]

1. AIST, 2. Univ. Tokyo. Sci.

Keywords: Cretaceous, flare-up, isotope ratio, magma, southwest Japan

Oral presentation

R6: Plutonic rocks, volcanic rocks and subduction factory

Chairperson:Tatsuhiko Kawamoto(Shizuoka University), Takashi Yuguchi, Atsushi Kamei

Sat. Sep 14, 2024 9:00 AM - 12:00 PM ES Hall (Higashiyama Campus)

11:00 AM - 11:15 AM

[3Lecture-101-11-9add]休憩

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The genesis of garnet in the Quaternary rhyolite of Hime-shima volcanic group, EEast Kyushu, Southwest Japan Arc.

*Takehiro HIRAYAMA[1,2], Tomoyuki SHIBATA[2], Masako YOSHIKAWA[2]

1. Tokyo University, 2. Hiroshima University

Keywords: Garnet, Rhyolite, Xenocryst, Hime-shima volcanic group

K–Ar ages and geochemical compositions of Early Pleistocene andesites from southern Kyushu, Japan

*Raiki YAMADA[1], Masakazu Niwa[1], Koji Umeda[2], Koshi Yagi[3], Taisei Fujiwara[3], Ikuo Okada[3], Fukuka Kida[1]

1. Japan Atomic Energy Agency, 2. Hirosaki University, 3. Hiruzen Institute for Geology and Geochronology

Keywords: Kyushu, Early Pleistocene, Volcanic front, Andesite

Thermal history of pluton formation from Sr diffusion in plagioclase: implications for magma flux estimation and identification of plutons associated with major eruptions

*Tokiyuki Morohoshi[1], Simon Richard Wallis[1]

1. The University of Tokyo

Keywords: pluton formation, chemical diffusion, magma flux, Ryoke plutonic rocks

Oral presentation | R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

Sat. Sep 14, 2024 9:00 AM - 12:00 PM JST | Sat. Sep 14, 2024 12:00 AM - 3:00 AM UTC | ES024 Higashiyama Campus

R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

Chairperson:Fumiya Noritake, Mariko Nagashima, Makoto Tokuda

9:00 AM - 9:20 AM JST | 12:00 AM - 12:20 AM UTC

[R2-01] Changes of physical and structural properties of hydrous minerals induced by dehydration of coordinated water molecules

「招待講演」

*Ryo YAMANE[1] (1. Tohoku University)

9:20 AM - 9:35 AM JST | 12:20 AM - 12:35 AM UTC

[R2-02] Phase change of priceite $Ca_2B_5O_7(OH)_5 \cdot H_2O$ during thermal decomposition

*Atsushi KYONO[1], Kosuke Yamaguchi[1], Satoru Okada[1], Hiroki Hasegawa[1] (1. Life & Environmental Sciences, University of Tsukuba)

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

[R2-03] The incorporation mechanisms of water in aluminous orthoenstatite clarified via comprehensive NMR measurements and first-principles calculations

*Xianyu XUE[1], Masami Kanzaki[1], Rongzhang Yin[2] (1. Okayama University, 2. Peking University)

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

[R2-04] Evaluation of the influence of polishing condition on hydrogen diffusion in fluorapatite and estimation of the diffusion mechanism

「発表賞エントリー」

*Chikashi Yoshimoto[1], Isao Sakaguchi[2], Shoichi Itoh[1] (1. Kyoto University, 2. NIMS)

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

[R2-05] Evaporation kinetics of forsterite in low-pressure H_2-H_2O atmosphere

「発表賞エントリー」

*Shiori Inada[1], Shogo Tachibana[1] (1. The University of Tokyo)

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

[3Lecture-201-11-6add] 休憩

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

[R2-06] Origine of framboidal goethite in sandstone in the Saiki Subgroup of the Lower Shimanto Group

*Hiroaki OHFUJI[1], Seira Konishi[1], Hiroshi Yamamoto[2] (1. Tohoku Univ. Sci, 2. Kagoshima Univ. Sci)

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

[R2-07] Precursor phenomenon of ultrananolite crystallization: liquid immiscibility in the volcanic glass

*Mayumi Mujin[1], Keiko Matsumoto[2], Akira Miyake[3], Yohei Igami[3], Michihiko Nakamura[1], Akihiko Yokoo[3], Mitsuhiro Yoshimoto[4] (1. Tohoku University, 2. National Institute of Advanced Industrial Science and Technology (AIST), 3. Kyoto University, 4. Mount Fuji Research Institute, Yamanashi Prefectural Government)

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

[R2-08] Calorimetric constraint of cation disordering enthalpy in $MgAl_2O_4$ spinel

*Hiroshi KOJITANI[1], Ryuji Matsuki[1], Yuta Nishimura[1], Itaru Ohira[1] (1. Gakushuin University)

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

[R2-09] Solid solubilities of Na^+ and K^+ in perovskite type $SrTiO_3$

Ryogo KITAI[2], *Takaya NAGAI[1], Jun KAWANO[1], Ayako Shinozaki[1] (1. Hokkaido Univ. Faculty SCi., 2. Hokkaido Univ. School SCi.)

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

[R2-10] Study on the consistency of Li conductivity measurements of $(Li,La)TiO_3$ with perovskite structure and Li migration during SIMS measurements

*Isao SAKAGUCHI[1], Tsuyoshi Onishi[1] (1. National Institute for Materials Science)

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

[R2-11] Structure transition mechanism under high pressure of Fe-Ti-0 system phases

*Takamitsu YAMANAKA[1,2], Takanori Hattori[3], Ho-kwang Mao[1] (1. Center for High Pressure Science and Technology Advanced Research, 2. Graduate School of Science Osaka University, 3. J-PARC)

Changes of physical and structural properties of hydrous minerals induced by dehydration of coordinated water molecules

*Ryo YAMANE[1]

1. Tohoku University

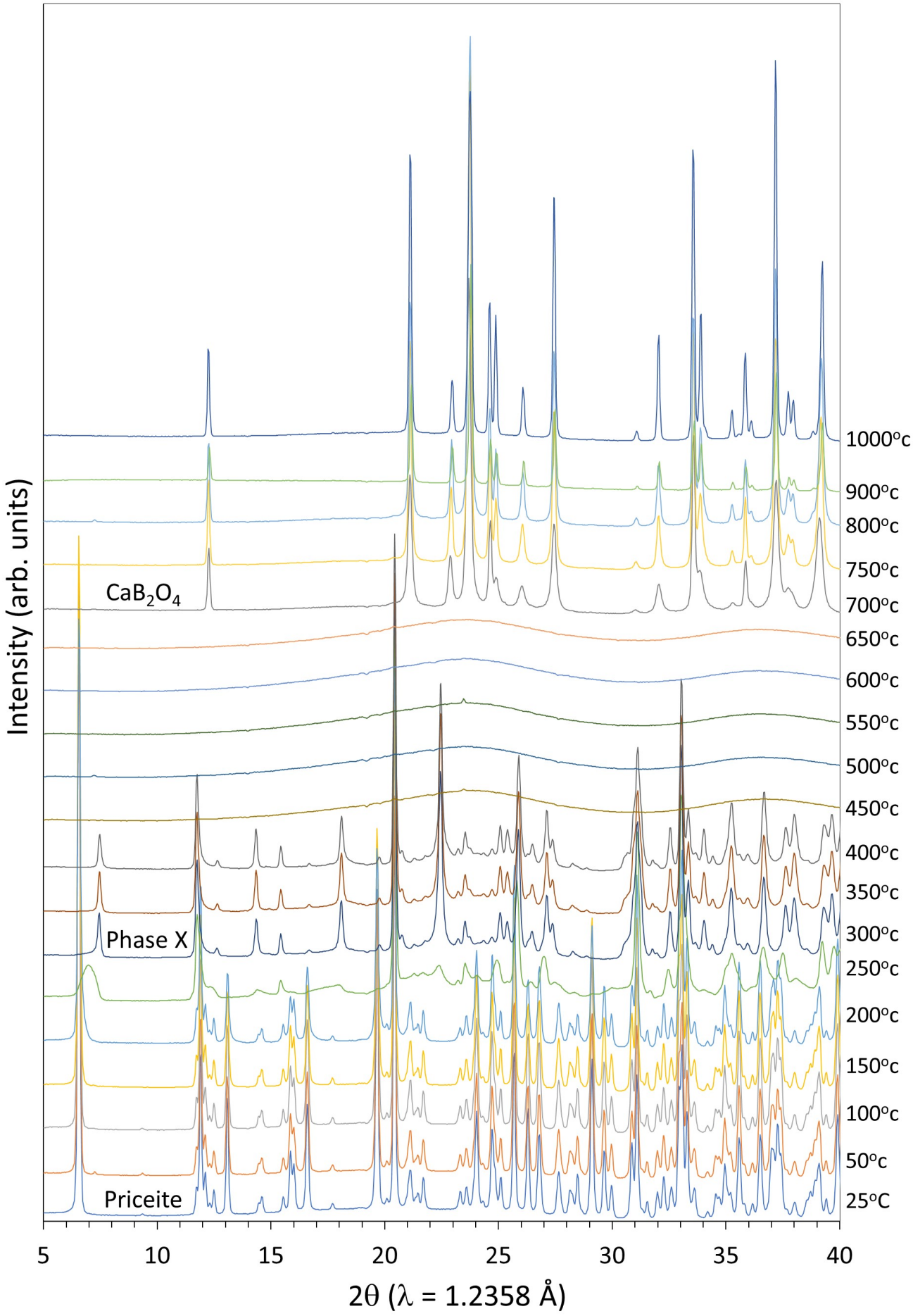
Keywords: hydrous mineral, dehydration, vivianite, coordinated water molecule

Phase change of priceite $Ca_2B_5O_7(OH)_5 \cdot H_2O$ during thermal decomposition

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

1. Life & Environmental Sciences, University of Tsukuba

Keywords: Priceite, Borate mineral, Thermal decomposition, Synchrotron X-ray Diffraction


Intensity (arb. units)
1000°c
900°c
800°c
750°c
700°c
650°c
600°c
550°c
500°c
450°c
400°c
350°c
300°c
250°c
200°c
150°c
100°c
50°c
25°C
CaB2O4
Phase X
Priceite
5
10
15
20
25
30
35
40
2θ (λ = 1.2358 Å)

The incorporation mechanisms of water in aluminous orthoenstatite clarified via comprehensive NMR measurements and first-principles calculations

*Xianyu XUE[1], Masami Kanzaki[1], Rongzhang Yin[2]

1. Okayama University, 2. Peking University

Aluminum is an important minor element in natural orthopyroxene, which has been shown to significantly enhance its water incorporation capacity. However, the incorporation mechanisms remain speculative. We performed a comprehensive one- and two-dimensional ^{1}H, ^{29}Si and ^{27}Al NMR measurements on hydrous aluminous orthoenstatite (OEn) samples containing 4 to 8 wt% Al_2O_3 synthesized at 1.5 GPa and 900˚C, and first-principles calculations on the energy, and NMR and polarized infrared spectra for anhydrous and hydrous aluminous OEn models to clarify the issue. The combined ^{1}H MAS and static NMR, ^{1}H double-quantum and triple-quantum MAS NMR, and ^{27}Al-^{1}H CP MAS NMR and HETCOR results, along with first-principles calculation results, unambiguously revealed that a large part of the incorporated water are present as proton pairs in Mg vacancies adjacent to Al, with one proton of each pair exhibiting significantly weaker hydrogen bonding, and accordingly smaller ^{1}H chemical shifts and higher OH stretching frequencies, than those in Al-free OEn, as a result of interaction with Al (see Figure). Proton pairs in Mg vacancies remote from Al are minor or absent. Coupled substitutions of Al + H for 1Si and 2Mg (both with weak hydrogen bonding) were also detected, but are less abundant than hitherto considered. Thus, the enhancement of water solubility by Al is achieved dominantly through the modification of the hydrogen bonding of protons in Mg vacancies. Such a mechanism may also be important in other nominally anhydrous mantle minerals. The obtained polarized IR spectral characteristics from our first-principles calculations also allow us to decipher the incorporation mechanisms of water in synthetic OEn of lower Al concentrations and natural orthopyroxenes of diverse origins from the polarized infrared data reported thus far.

Keywords: orthopyroxene, water, aluminum, NMR, first-principles calculation

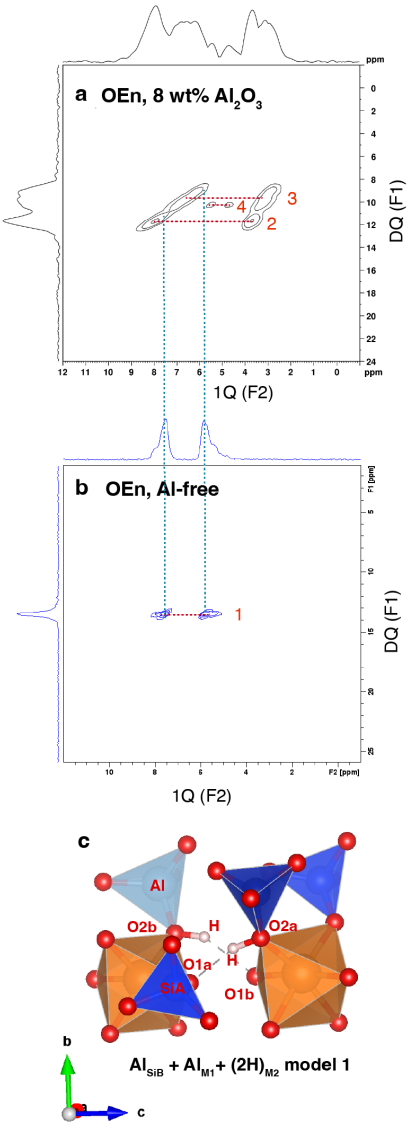


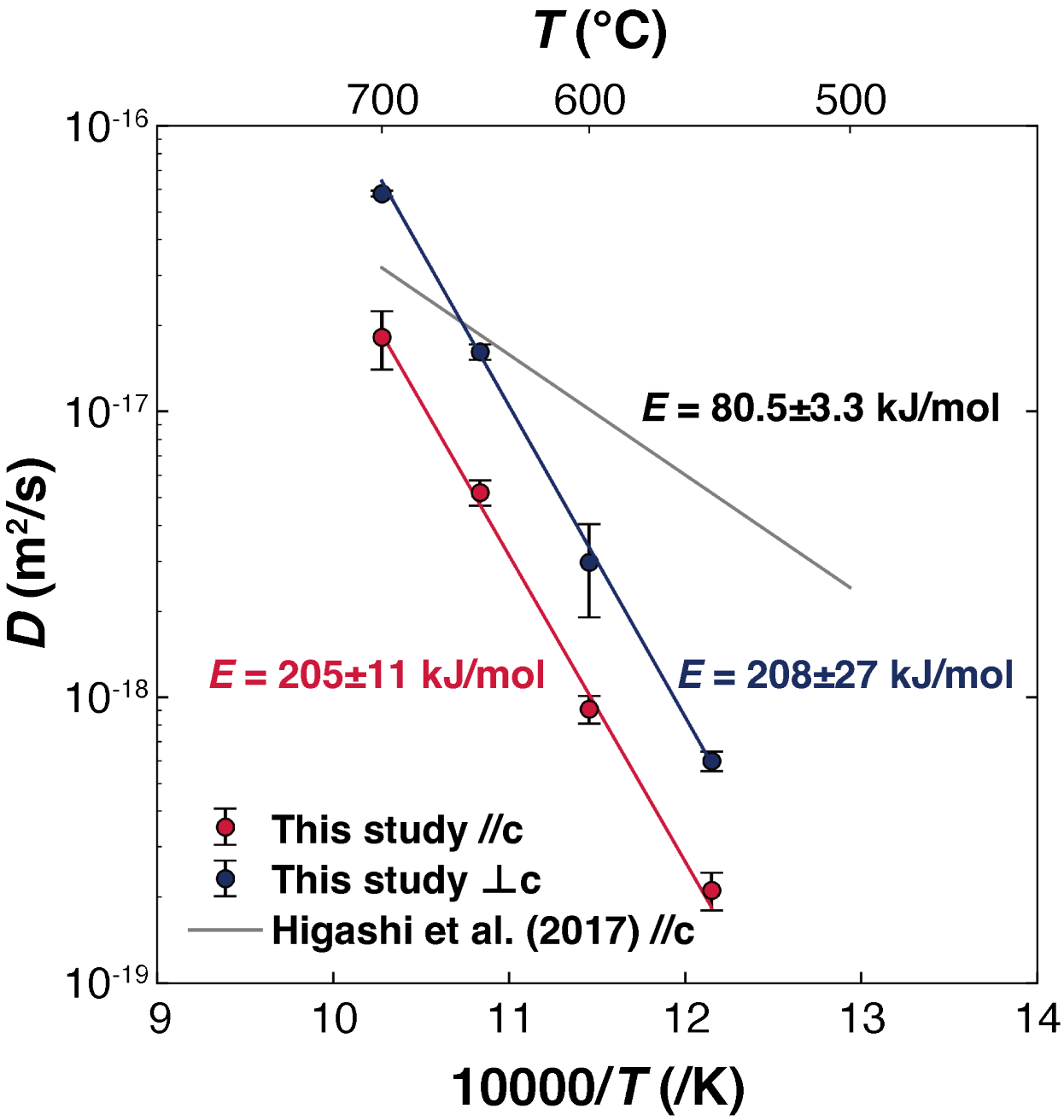
Figure. ^{1}H double-quantum (DQ)-single quantum (1Q) correlation MAS NMR spectrum for hydrous aluminous OEn with 8 wt% Al_2O_3 synthesized at 1.5 GPa and 900˚C (a), compared with that for a hydrous $MgSiO_3$ OEn synthesized at 7 GPa and 1200˚C (b). The horizontal dashed lines connect the observed proton pairs (labelled pair 1 to 4). Vertical lines are guides for the proton pair 1. Also shown in (c) is an example of energetically favorable 2H in an M2 vacancy ($(2H)_{M2}$) model for aluminous OEn from first-principles calculation. The Al^{IV}-O2b-H···O1b linkage yields smaller ^{1}H chemical shift and higher OH stretching frequency than $(2H)_{M2}$ defects in Al-free OEn.

Evaluation of the influence of polishing condition on hydrogen diffusion in fluorapatite and estimation of the diffusion mechanism

*Chikashi Yoshimoto[1], Isao Sakaguchi[2], Shoichi Itoh[1]

1. Kyoto University, 2. NIMS

Keywords: apatite, hydrogen, diffusion, Secondary Ion Mass Spectrometry



Evaporation kinetics of forsterite in low-pressure H_2-H_2O atmosphere

*Shiori Inada[1], Shogo Tachibana[1]

1. The University of Tokyo

Keywords: forsterite, evaporation, kinetics

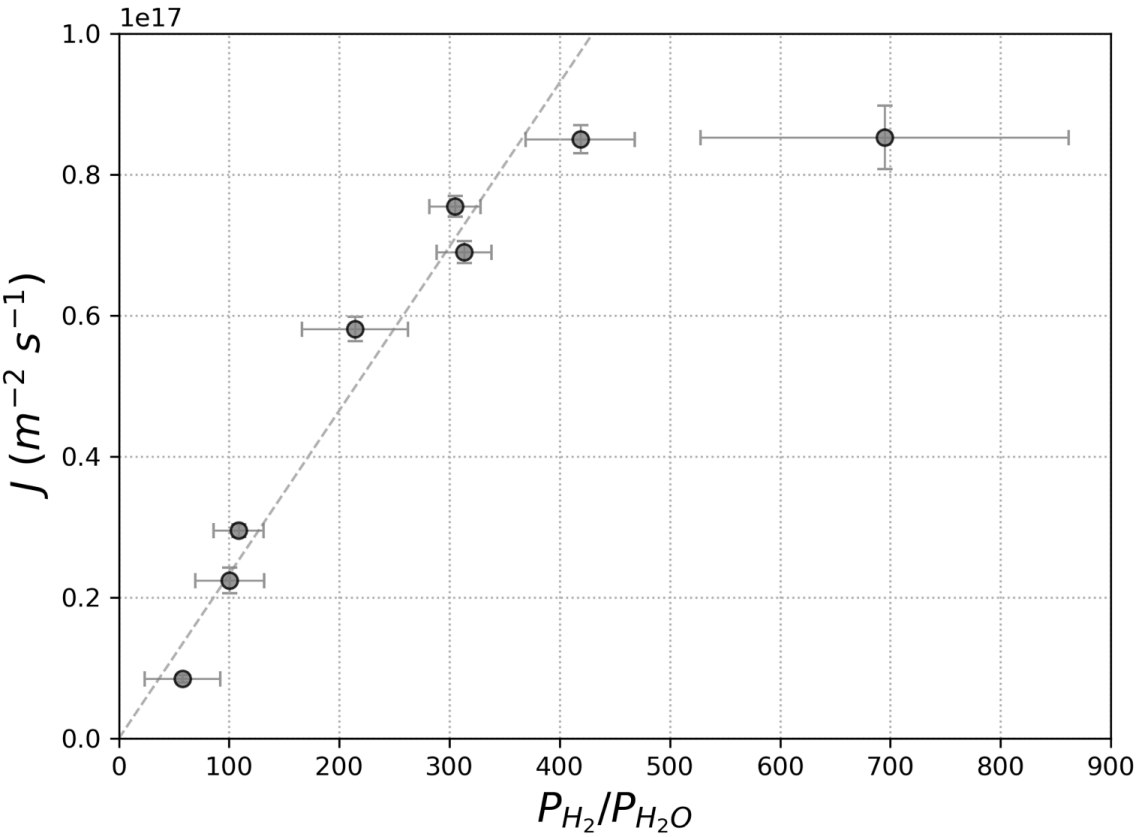


Fig. 1. 単位面積あたりの蒸発速度 J (m^{-2} s^{-1}) と雰囲気ガス組成 P_{H2}/P_{H2O} の関係（全圧 1 Pa, 温度 1400 K）.

Oral presentation

R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

Chairperson:Fumiya Noritake, Mariko Nagashima, Makoto Tokuda
Sat. Sep 14, 2024 9:00 AM - 12:00 PM ES024 (Higashiyama Campus)

10:20 AM - 10:30 AM

[3Lecture-201-11-6add]休憩

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Origine of framboidal goethite in sandstone in the Saiki Subgroup of the Lower Shimanto Group

*Hiroaki OHFUJI[1], Seira Konishi[1], Hiroshi Yamamoto[2]

1. Tohoku Univ. Sci, 2. Kagoshima Univ. Sci

The raspberry-like framboidal aggregate is a unique crystallization texture that can be frequently seen in microscopic pyrite in sedimentary rocks and modern sediments. In this study, we conducted micro- and nano-scale analyses using SEM and TEM on iron oxide framboids, which were recently found by Egami et al. (2021) in sandstones of the Saiki Subgroup of the Lower Shimanto Group distributed in western Kagoshima, Japan, to understand their origin. The results show that framboidal aggregate are distributed locally in the sandstone and often form clusters and/or infilled textures. Framboids are mostly surrounded by clay minerals produced by hydrothermal alteration, but no sulfur-containing minerals such as pyrite and sulfate minerals were observed. TEM observation on thin foils prepared by FIB showed that microcrystals that constitute framboids are not single crystals, but are filled by assemblages of nano-sized crystals with a concentric layer pattern, which consists of several alternating layers of goethite nanocrystals and a mixture of clay minerals and amorphous silica. The goethite nanocrystals grew inward from the microcrystal outline, indicating that they were formed by alternation (replacement) of pyrite microcrystals. These observations suggest goethite framboids are pseudomorphs after pyrite framboids, which formed in the interstitial spaces in the formation during diagenesis.

Keywords: Framboida goethite, Framboidal pyrite, Clay mineral, Alteration

Precursor phenomenon of ultrananolite crystallization: liquid immiscibility in the volcanic glass

*Mayumi Mujin[1], Keiko Matsumoto[2], Akira Miyake[3], Yohei Igami[3], Michihiko Nakamura[1], Akihiko Yokoo[3], Mitsuhiro Yoshimoto[4]

1. Tohoku University, 2. National Institute of Advanced Industrial Science and Technology (AIST), 3. Kyoto University, 4. Mount Fuji Research Institute, Yamanashi Prefectural Government

Keywords: liquid immiscibility, ultrananolite, nanocrystal, volcanic glass

Calorimetric constraint of cation disordering enthalpy in $MgAl_2O_4$ spinel

*Hiroshi KOJITANI[1], Ryuji Matsuki[1], Yuta Nishimura[1], Itaru Ohira[1]

1. Gakushuin University

Keywords: spinel, cation disorder, calorimetry, enthalpy of disordering, thermodynamics

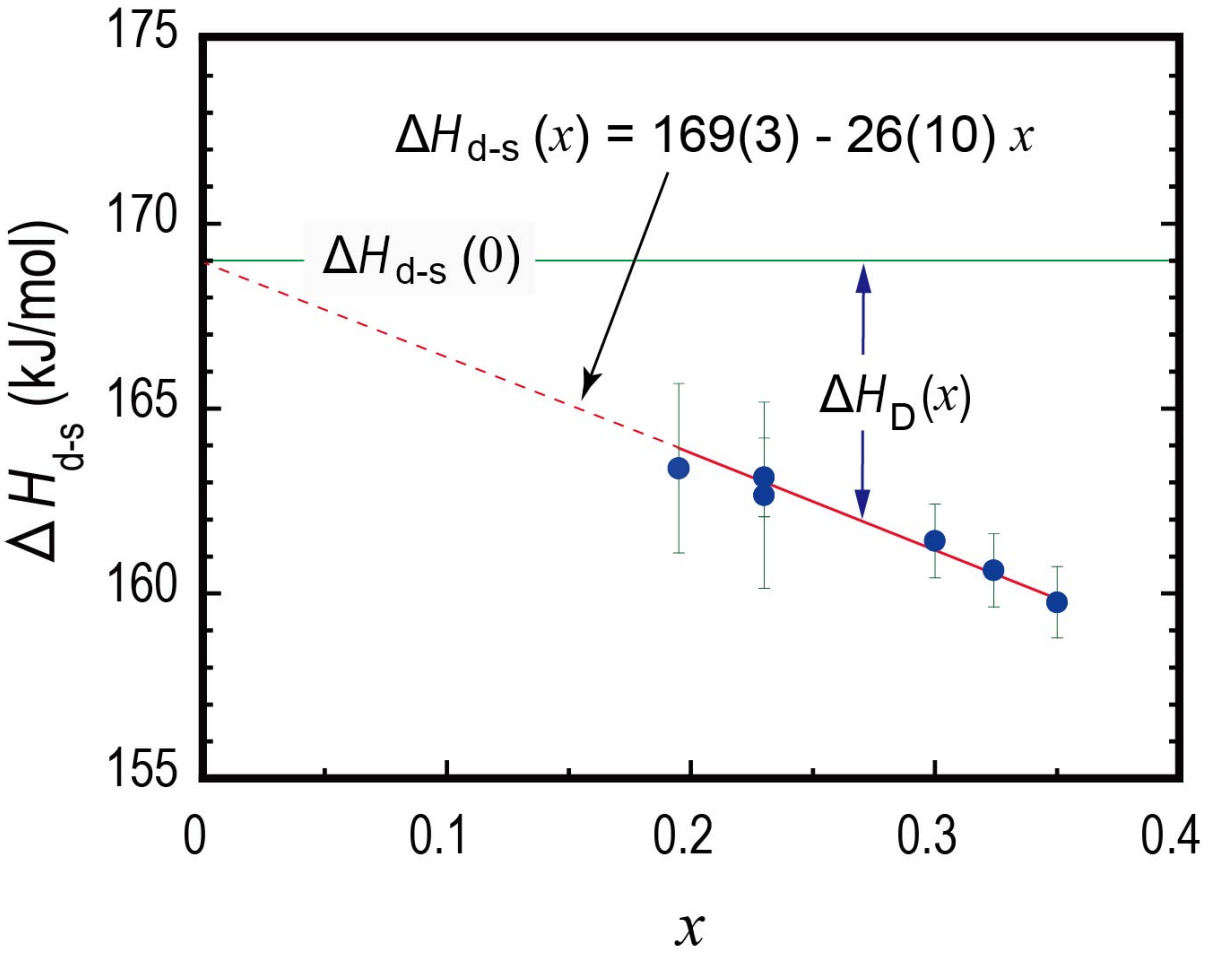


Fig. 1. 様々な陽イオン無秩序化の程度を持つ $MgAl_2O_4$ スピネルの落下溶解エンタルピー測定結果

Solid solubilities of Na^+ and K^+ in perovskite type $SrTiO_3$

Ryogo KITAI[2], *Takaya NAGAI[1], Jun KAWANO[1], Ayako Shinozaki[1]

1. Hokkaido Univ. Faculty SCi., 2. Hokkaido Univ. School SCi.

In this study, we report the results of synthetic experiments investigating the solid solubilities of Na^+ and K^+ in perovskite-type $SrTiO_3$. According to Shannon (1976), the ionic radii of Na^+ and K^+ at a 6-coordinate site are significantly larger than that of Ti^{4+}, while their ionic radii at a 12-coordinate site are comparable to that of Sr^{2+}. Assuming that Na^+ and K^+ only exchange with Sr^{2+}, this solid solution mechanism would result in the formation of oxygen vacancies.

Keywords: perovskite structure, SrTiO3, Na, K, oxygen vacancy

Study on the consistency of Li conductivity measurements of (Li,La)TiO_3 with perovskite structure and Li migration during SIMS measurements

*Isao SAKAGUCHI[1], Tsuyoshi Onishi[1]

1. National Institute for Materials Science

Introduction

Research and development for carbon neutrality is widely conducted. Among of these, many resources are devoted to these regarding all-solid-state lithium secondary batteries. Many oxides are proposed as electrolytes for all-solid-state lithium batteries. Among of these, we focus on (Li,La)TiO_3 with perovskite structure. Secondary ion mass spectrometry, which is advantageous for light element analysis, is impossible to analyze Li in this material at room temperature. This time, we tried a method to Li battery electrolytes.

Experiment

(Li,La)TIO_3 (hereinafter referred to as LLT) can be purchased in plates, disks, powder, etc. from Toho Titanium Co., Ltd. At this time, we used a plate shape as a standard sample. A comparative sample for this was newly synthesized. The analysis used SIMS (CAMECA, IMS-4f) equipped with NIMS, and O^- as primary ions was used and positive secondary ions were detected.

Results and Discussion

Figure 1 shows the analysis results of the purchased LLT. Figure 1(a) is Li image immediately after primary ion irradiation, and Li showed the uniform intensity, and some precipitates with high intensity were observed. Figure 1(b) is Li image after continuous irradiation with O^-. Obvious non-uniformity of Li was observed in the image. Considering this, the Li intensity distribution in Figure 1(b) reflects the micro-structure within the sample. When primary ions, O^-, are irradiated during analysis, the irradiated area becomes negative charge, and then Li with positive charge moves to compensate for its charge. The region where Li has changed to a high intensity is a large grain, and the Li conductivity reaches $1x10^{-3}$ S/cm. It is thought that because the current density of primary ions is small, Li that has migrated to the surface reacts with oxygen and generates LiO_x. it is considered that such non-uniform Li intensity was generated because the amount of Li movement within the disk was small.

Summary

In materials such as the electrolyte in Li batteries, Li moves through the material at room temperature. This research revealed that Li can be moved by changing the charge state on the surface through primary ion irradiation, and that the migration path of Li is the same as that of movement known by electrical measurements.

Keywords: Perovskite structure

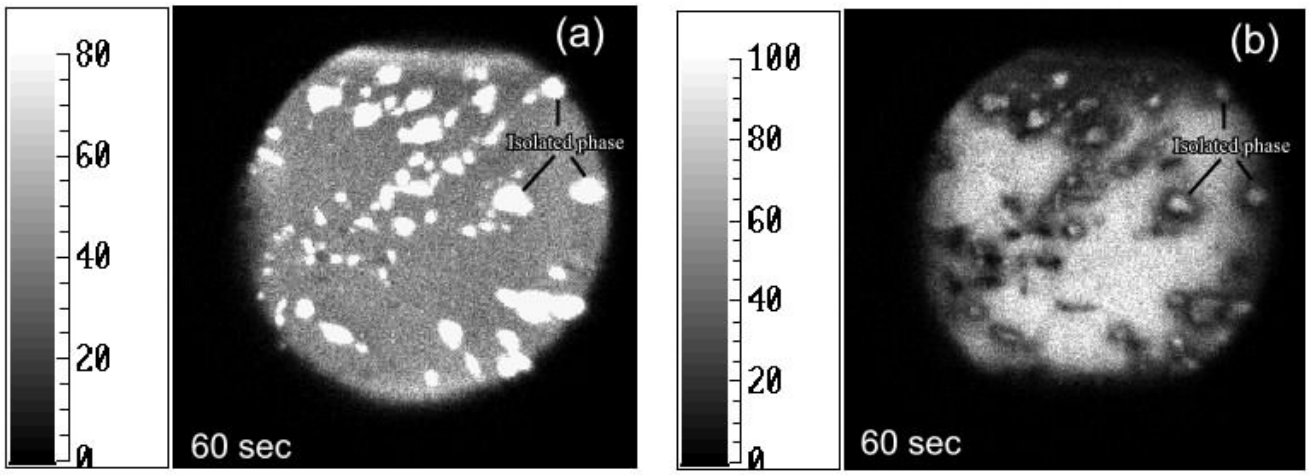


Fig. 1. Li images obtained by SIMS. (a) is the first image by O- irradiatation. (b) is the image obtained after about 1.5 hours.

Structure transition mechanism under high pressure of Fe-Ti-0 system phases

*Takamitsu YAMANAKA[1,2], Takanori Hattori[3], Ho-kwang Mao[1]

1. Center for High Pressure Science and Technology Advanced Research, 2. Graduate School of Science Osaka University, 3. J-PARC

Keywords: ulvöspinel, ilmenite, pseudobrookite

Oral presentation | R5: Extraterrestrial materials

Sat. Sep 14, 2024 9:00 AM - 12:00 PM JST | Sat. Sep 14, 2024 12:00 AM - 3:00 AM UTC | ES025 Higashiyama Campus

R5: Extraterrestrial materials

Chairperson:Megumi Matsumoto, Daiki Yamamoto, Yusuke Seto, Toru Matsumoto(Kyoto University)

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

[R5-01] Revealing Chemical Compositional Variety of Amorphous Silicate Dust around AGB Stars by Condensation Experiment and Spectroscopic Analysis

「発表賞エントリー」

*Hanako Enomoto[1], Aki Takigawa[1], Hiroki Chihara[2], Chiyoe Koike[2] (1. UTokyo, 2. Osaka Sangyo univ.)

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

[R5-02] Formation process of circumstellar dust studied from presolar oxides in carbonaceous chondrite DOM 08006.

「発表賞エントリー」

*Hiroyuki Hashizume[1], Aki Takigawa[1] (1. UTokyo EPSS)

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

[R5-03] Progress of irreversible chemical reactions on dust moving in a protoplanetary disk

*Lily Ishizaki[1], Shogo Tachibana[1] (1. UT EPS)

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

[R5-04] Experimental study of the effect of evaporation during temperature rise on type B CAI formation

「発表賞エントリー」

*Yasuaki Tsuruoka[1], Shogo Tachibana[1] (1. UTokyo Sci.)

10:00 AM - 10:20 AM JST | 1:00 AM - 1:20 AM UTC

[R5-05] Chondrule formation by collisions of planetesimals containing volatiles

「招待講演」

*Sin-iti Sirono[1] (1. Navoya Univ.)

10:20 AM - 10:35 AM JST | 1:20 AM - 1:35 AM UTC

[3Lecture-301-10-6add] 休憩

10:35 AM - 10:55 AM JST | 1:35 AM - 1:55 AM UTC

[R5-06] Constraining the true timescale of chondrule formation through chondrule mineral chemistry

「招待講演」

*Kohei Fukuda[1], Noriko T Kita[2], Makoto Kimura[3] (1. Osaka Univ. Sci., 2. UW-Madison, 3. NIPR)

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

[R5-07] Reproduction Experiments of Radial Pyroxene Chondrules Using a Gas-jet Levitation System under Reducing Conditions

「発表賞エントリー」

*Kana Watanabe[1], Tomoki Nakamura[1], Tomoyo Morita[1] (1. Tohoku Univ. Sci.)

11:10 AM - 11:25 AM JST | 2:10 AM - 2:25 AM UTC

[R5-08] Stratigraphy of poikilitic shergottite parent body(ies) as deduced from their textural and mineral compositional diversities

「発表賞エントリー」

*Sojiro Yamazaki[1], Akira Yamaguchi[2], Takashi Mikouchi[3] (1. Fac. Sci., Univ. Tokyo, 2. Natl. Inst. Polar Res., 3. Univ. Museum, Univ. Tokyo)

11:25 AM - 11:40 AM JST | 2:25 AM - 2:40 AM UTC

[R5-09] High pressure phase transition of Ti-Cr-rich spinel in Asuka 12325 Martian meteorite

*Atsushi TAKENOUCHI[1], Yohei Igami[2], Takashi Mikouchi[3], Akira Miyake[2], Akira Yamaguchi[4] (1. The Kyoto Univ. Museum, 2. Kyoto Univ. Sci., 3. The Univ. Museum, The Univ. of Tokyo, 4. NIPR)

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

[R5-10] Estimation of thermal history using silica minerals in mesosiderites

*Haruka OONO[1], Atsushi Takenouchi[2], Takashi Mikouchi[3], Akira Yamaguchi[4], Naoji Sugiura[5], Akira Miyake[1] (1. Kyoto Univ., 2. Museum of Kyoto Univ., 3. Museum of Univ. Tokyo, 4. NiPR, 5. Chiba Int. Tech.)

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

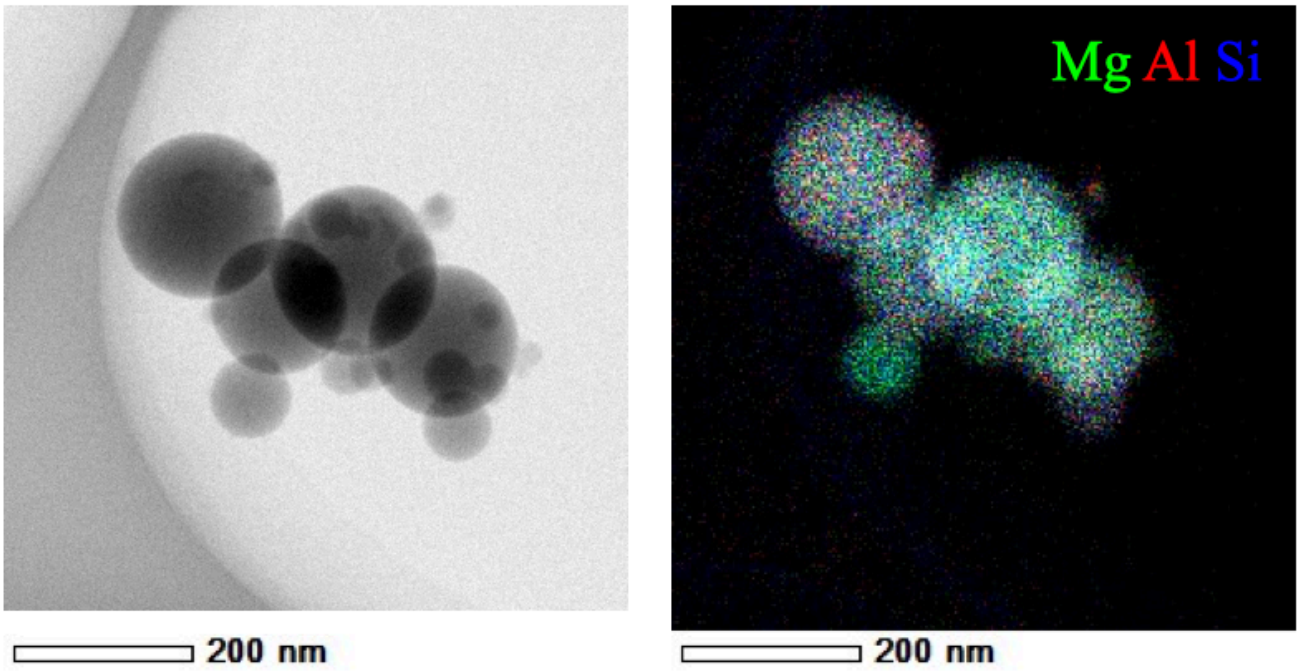
調整

Revealing Chemical Compositional Variety of Amorphous Silicate Dust around AGB Stars by Condensation Experiment and Spectroscopic Analysis

*Hanako Enomoto[1], Aki Takigawa[1], Hiroki Chihara[2], Chiyoe Koike[2]

1. UTokyo, 2. Osaka Sangyo univ.

Keywords: circumstellar dust, amorphous silicate, presolar grain, experiment, spectroscopy



実験で生成した非晶質ナノ粒子のSTEM-BF像(左)とSTEM-EDS元素マップ(右)

Formation process of circumstellar dust studied from presolar oxides in carbonaceous chondrite DOM 08006.

*Hiroyuki Hashizume[1], Aki Takigawa[1]

1. UTokyo EPSS

Keywords: Presolar grains, meteorite, spinel, circumstellar dust, oxides

Progress of irreversible chemical reactions on dust moving in a protoplanetary disk

*Lily Ishizaki[1], Shogo Tachibana[1]

1. UT EPS

Keywords: protoplanetary disk, protosolar disk, dust, Monte Carlo simulation

Experimental study of the effect of evaporation during temperature rise on type B CAI formation

*Yasuaki Tsuruoka[1], Shogo Tachibana[1]

1. UTokyo Sci.

Keywords: CAIs, melting, evaporation, crystal growth, protosolar disk

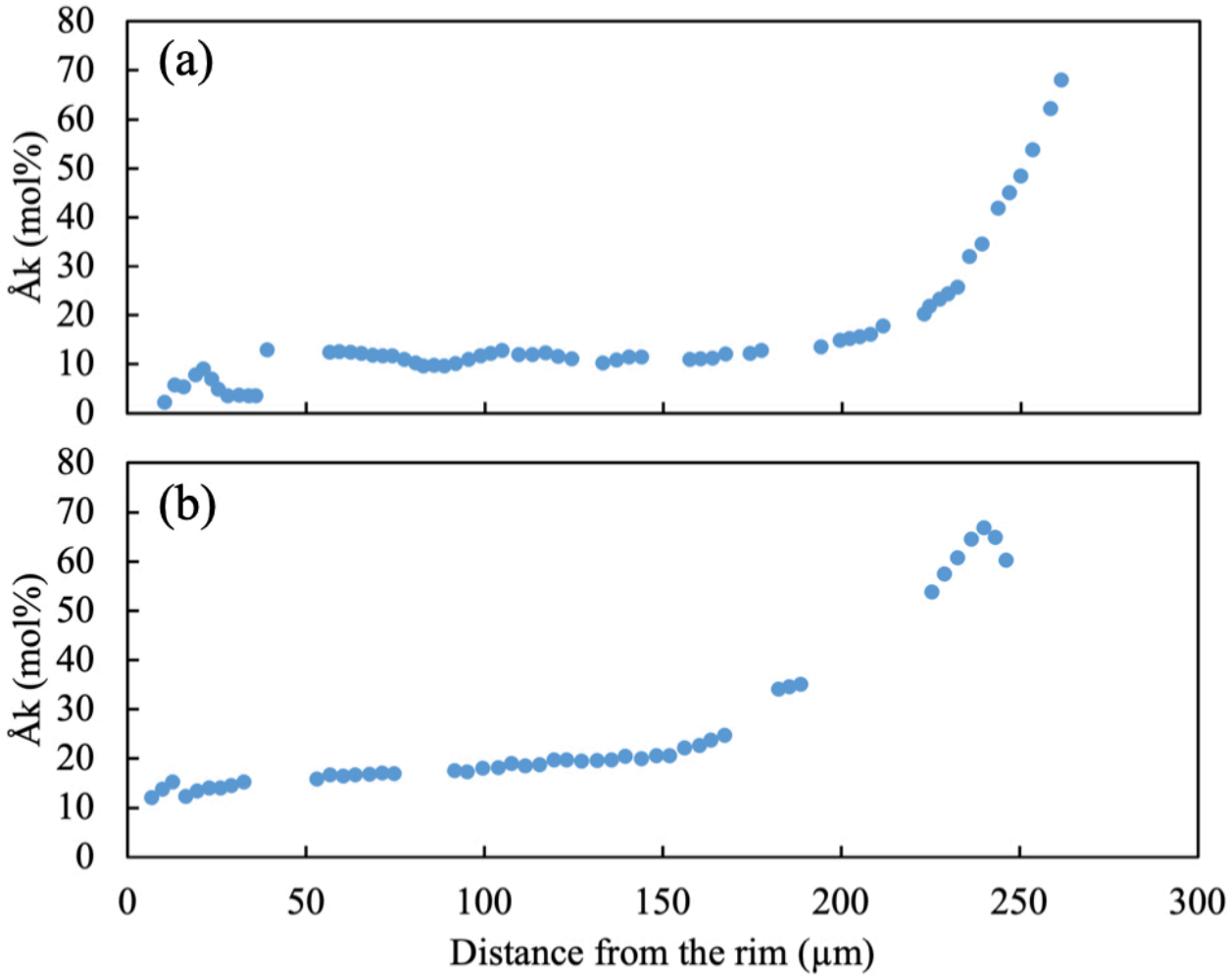


図１．メリライトマントルの組成ゾーニング．最高温度からの冷却過程のみ水素を導入した試料 (a) では，組成がほぼ一定の部分が見られる一方，昇温時から水素を導入した試料 (b) では，試料中心に向かって緩やかにオケルマナイト (Åk) 成分の割合が上昇している．

Chondrule formation by collisions of planetesimals containing volatiles

*Sin-iti Sirono[1]

1. Navoya Univ.

Keywords: chondrule, planetesimal, collision

Oral presentation

R5: Extraterrestrial materials

Chairperson:Megumi Matsumoto, Daiki Yamamoto, Yusuke Seto, Toru Matsumoto(Kyoto University)
Sat. Sep 14, 2024 9:00 AM - 12:00 PM ES025 (Higashiyama Campus)

10:20 AM - 10:35 AM

[3Lecture-301-10-6add]休憩

©Japan Association of Mineralogical Sciences

Constraining the true timescale of chondrule formation through chondrule mineral chemistry

*Kohei Fukuda[1], Noriko T Kita[2], Makoto Kimura[3]

1. Osaka Univ. Sci., 2. UW-Madison, 3. NIPR

Keywords: chondrule, Al-Mg chronology, plagioclase, excess Si

Reproduction Experiments of Radial Pyroxene Chondrules Using a Gas-jet Levitation System under Reducing Conditions

*Kana Watanabe[1], Tomoki Nakamura[1], Tomoyo Morita[1]

1. Tohoku Univ. Sci.

Keywords: chondrule, pyroxene, levitation experiment, partition coefficients, reduction reaction

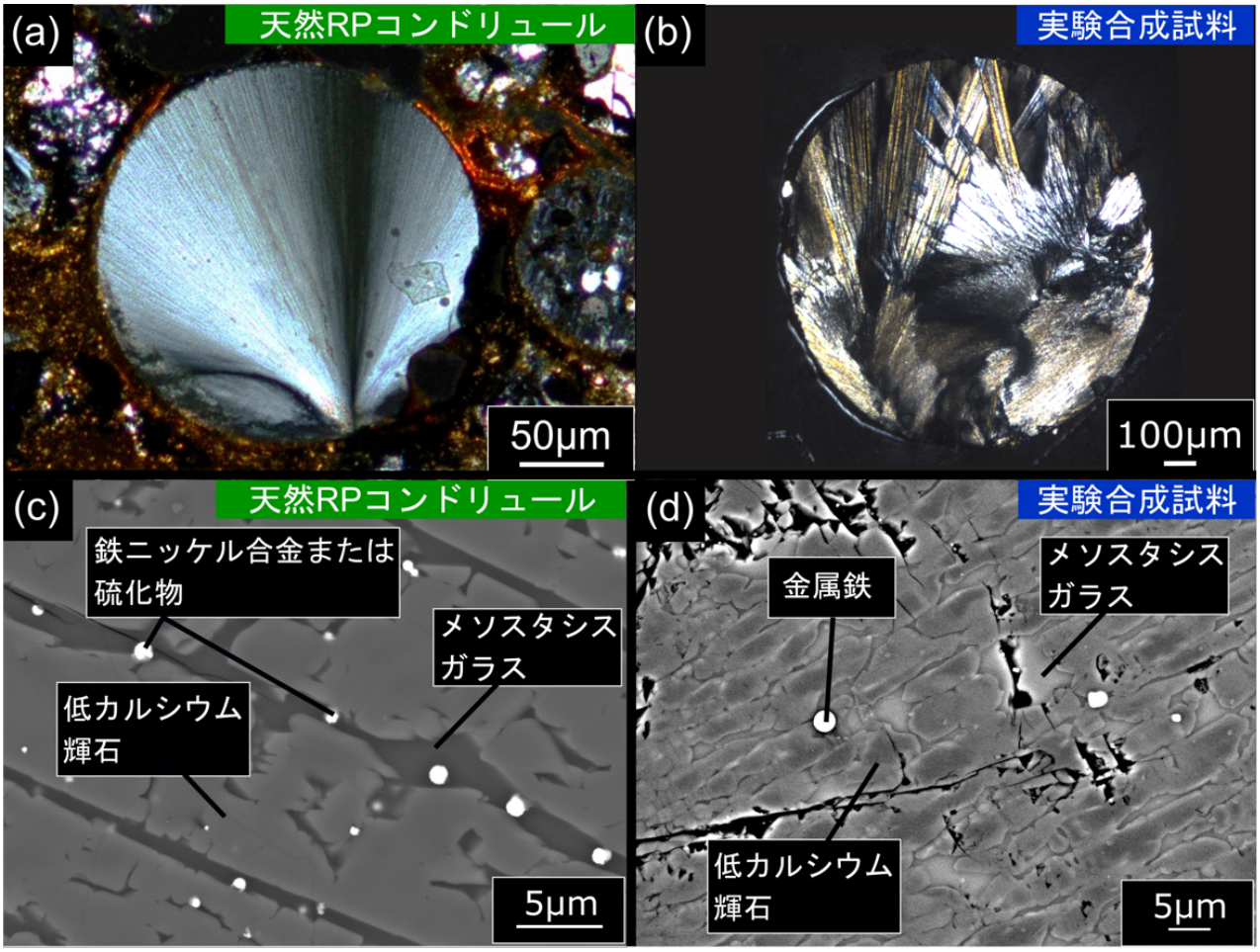


図１．天然RPコンドリュールと実験合成試料の比較。(a)-(b)偏光顕微鏡による観察像(クロスニコル像)、(c)-(d)SEM-BSE像。(d)の実験合成試料は1536℃で3600秒間温度保持した。

Stratigraphy of poikilitic shergottite parent body(ies) as deduced from their textural and mineral compositional diversities

*Sojiro Yamazaki[1], Akira Yamaguchi[2], Takashi Mikouchi[3]

1. Fac. Sci., Univ. Tokyo, 2. Natl. Inst. Polar Res., 3. Univ. Museum, Univ. Tokyo

Keywords: Poikilitic shergottite, Olivine, Pyroxene, Intrusion, Cooling rate

High pressure phase transition of Ti-Cr-rich spinel in Asuka 12325 Martian meteorite

*Atsushi TAKENOUCHI[1], Yohei Igami[2], Takashi Mikouchi[3], Akira Miyake[2], Akira Yamaguchi[4]

1. The Kyoto Univ. Museum, 2. Kyoto Univ. Sci., 3. The Univ. Museum, The Univ. of Tokyo, 4. NIPR

Keywords: Chromite, Martian meteorite, shock metamorphism, high-pressure phase transition

Estimation of thermal history using silica minerals in mesosiderites

*Haruka OONO[1], Atsushi Takenouchi[2], Takashi Mikouchi[3], Akira Yamaguchi[4], Naoji Sugiura[5], Akira Miyake[1]

1. Kyoto Univ., 2. Museum of Kyoto Univ., 3. Museum of Univ. Tokyo, 4. NiPR, 5. Chiba Int. Tech.

Keywords: Mesosiderite, Silica minerals, Tridymite, Cristobalite, Meteorites

Oral presentation | R6: Plutonic rocks, volcanic rocks and subduction factory

Sat. Sep 14, 2024 2:00 PM - 3:00 PM JST | Sat. Sep 14, 2024 5:00 AM - 6:00 AM UTC | ES Hall Higashiyama Campus

R6: Plutonic rocks, volcanic rocks and subduction factory

Chairperson:Takashi Hoshide(Akita University)

2:00 PM - 2:20 PM JST | 5:00 AM - 5:20 AM UTC

[R6-12] Zirconium minerals in ultramafic rocks

「招待講演」

*Hikaru Sawada[1,2], Ryosuke Oyanagi[3,2] (1. University of Toyama, 2. JAMSTEC, 3. Kokushikan University)

2:20 PM - 2:35 PM JST | 5:20 AM - 5:35 AM UTC

[R6-13] Estimation of physical conditions during granitic magma crystallization process using melt inclusions in zircon

*Yuka TANIWAKI[1], Satoshi SAITO[2] (1. Ciatec.,Co LTD, 2. Ehime Univ.)

2:35 PM - 2:50 PM JST | 5:35 AM - 5:50 AM UTC

[R6-14] Estimation of TiO_2 activity for accurate determination of quartz crystallization temperature

*Yasuhiro OGITA[1], Takenori Kato[2], Takashi Yuguchi[3] (1. Yamagata Univ., 2. Nagoya Univ., 3. Kumamoto Univ.)

2:50 PM - 3:00 PM JST | 5:50 AM - 6:00 AM UTC

調整

Zirconium minerals in ultramafic rocks

*Hikaru Sawada[1,2], Ryosuke Oyanagi[3,2]

1. University of Toyama, 2. JAMSTEC, 3. Kokushikan University

Keywords: Serpentinite, Peridotite, Zircon, Baddeleyite

Estimation of physical conditions during granitic magma crystallization process using melt inclusions in zircon

*Yuka TANIWAKI[1], Satoshi SAITO[2]

1. Ciatec.,Co LTD, 2. Ehime Univ.

Keywords: melt inclusion, granite, zircon, physical conditions

Estimation of TiO_2 activity for accurate determination of quartz crystallization temperature

*Yasuhiro OGITA[1], Takenori Kato[2], Takashi Yuguchi[3]

1. Yamagata Univ., 2. Nagoya Univ., 3. Kumamoto Univ.

No abstract in English.

Keywords: Quartz, Cathodoluminescence pattern, Ti concentration, TiO2 activity, Tono Plutonic Complex

Oral presentation | R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

Sat. Sep 14, 2024 2:00 PM - 3:30 PM JST | Sat. Sep 14, 2024 5:00 AM - 6:30 AM UTC | ES024 Higashiyama Campus

R2: Crystal structure, crystal chemistry, physical properties of minerals, crystal growth and applied mineralogy

Chairperson:Kazuki 小松 Komatsu

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

[R2-12] Structural stabilization of pyrite-type compounds and chemical bonds of anions.

「招待講演」

*Akira YOSHIASA[1], Makoto Tokuda[1], Ginga Kitahara[1], Akihiko Nakatsuka[2], Kazumasa Sugiyama[3] (1. Kumamoto University, 2. Yomaguchi University, 3. Tohoku University)

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[R2-13] Formation of Fundamental Building Blocks Composed of Calcium Borate Minerals

「発表賞エントリー」

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

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

[R2-14] Crystal structures of kimuraite-(Y) and lokkaite-(Y)

*Ritsuro Miyawaki[1], Koichi Momma[1] (1. National Museum of Nature and Science)

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

[R2-15] Thermal Vibration of Oxygen atoms in Keatite Crystal

*Fumiya NORITAKE[1] (1. University of Yamanashi)

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

[R2-16] Development of a simulation method for electron back-scattered diffraction based on dynamical theory and its application to mineralogy

*Yusuke SETO[1], Masahiro Ohtsuka[2] (1. Osaka Metropolitan Univ. Sci., 2. Nagoya Univ. Sci. IMaSS.)

Structural stabilization of pyrite-type compounds and chemical bonds of anions.

*Akira YOSHIASA[1], Makoto Tokuda[1], Ginga Kitahara[1], Akihiko Nakatsuka[2], Kazumasa Sugiyama[3]

1. Kumamoto University, 2. Yomaguchi University, 3. Tohoku University

Precise structural analyses of various compounds with pyrite-type structure were performed by selecting single crystals from synthetic and natural mineral crystals. The measurements of Debye temperatures of the compounds will be reported as one of the usefulness of single crystal diffraction method. Certain regularities regarding structural stabilization and physical properties are found in pyrite-type compounds.

Keywords: AuSb2, RuS2, pyrite-type compounds, single crystal diffraction, Debye temperature

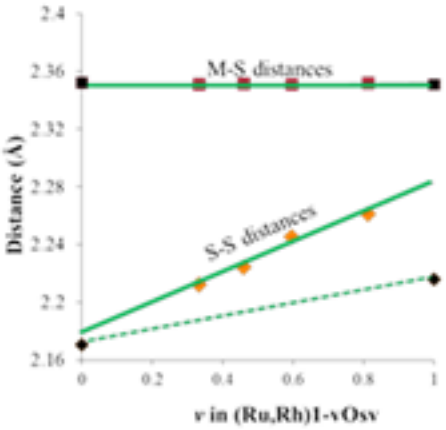


Fig. 1. Compositional dependences in M-S and S-S bonding distances with respect to Os content in the erlichmanite - laurite solid solutions (Os1-x-yRuxRhyS2) (y=0.07–0.10)[3].

Formation of Fundamental Building Blocks Composed of Calcium Borate Minerals

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

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

Keywords: hydrothermal method, dissolution-reprecipitation, gowerite, priceite, nobleite

Crystal structures of kimuraite-(Y) and lokkaite-(Y)

*Ritsuro Miyawaki[1], Koichi Momma[1]

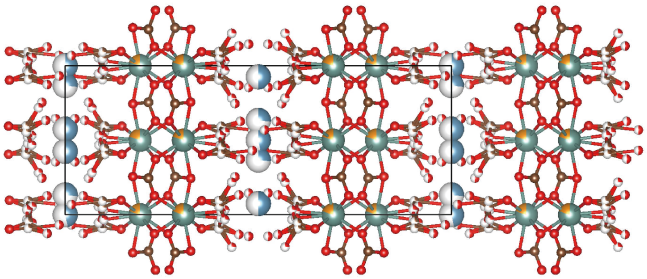
1. National Museum of Nature and Science

The crystal structures of kimuraite-(Y) and lokkaite-(Y) were re-examined by means of the twining and statistical ordering models with the space groups following to the individual extinction rules in their single crystal XRD data. The crystal structure of kimuraite-(Y) determined with the space group *I*222 is harmonic with that previously determined with the space group *I*2*cb*. The crystal structure of lokkaite-(Y) was analyzed with the monoclinic space group *Cm* to determine the mean structure in the *C*222. Each crystal structure of kimuraite-(Y) and lokkaite-(Y) consists of two types of layers: a flat calcium layer and a corrugated rare earth layer (Figure). The rare earth atoms are coordinated to 9 oxygen atoms. The 9-coordinated polyhedra are connected with the wedging triangle of carbonate anion to form the corrugated rare earth layer, as those in the crystal structure of tengerite-(Y). Calcium atoms statistically order into the Ca sites at the middle of the flat calcium layer. The C and O atoms neighboring to the Ca atoms should be shifted with the statistical occupancies. The crystal structures of kimuraite-(Y) and lokkaite-(Y) differ from each other in the sequence of stacking layers corresponding to the ratio of calcium and rare earths atoms.

Keywords: kimuraite-(Y), lokkaite-(Y), crystal structure

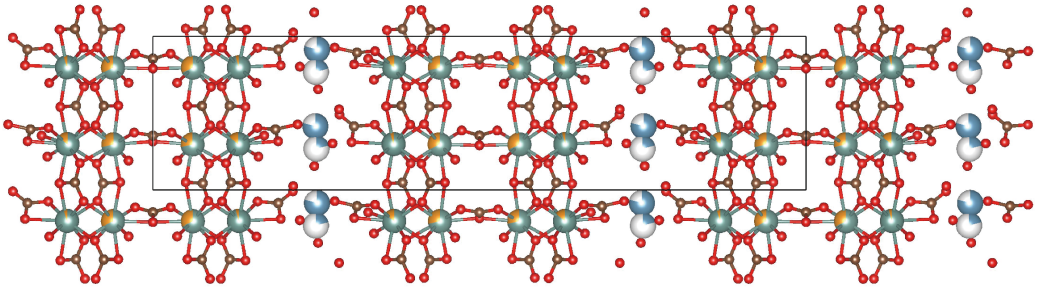
Kimuraite-(Y)

a **= 9.2673(7)**
b **= 24.0435(2)**
c = 6.0537(2)



Lokkaite-(Y)

a **= 9.242(4)**
b **= 39.328(18)**
c = 6.110(2)



Tengerite-(Y)

a **= 9.157(2)**
b **= 15.114((6)**
c = 6.078(4)

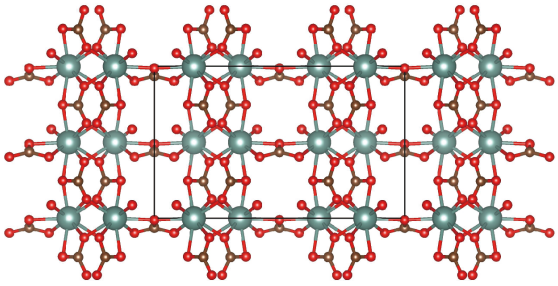


図　木村石、ロッカ石、テンゲル石の結晶構造

Thermal Vibration of Oxygen atoms in Keatite Crystal

*Fumiya NORITAKE[1]

1. University of Yamanashi

Keywords: Keatite, Negative Thermal Expansion, Molecular Dynamics Simulation

Development of a simulation method for electron back-scattered diffraction based on dynamical theory and its application to mineralogy

*Yusuke SETO[1], Masahiro Ohtsuka[2]

1. Osaka Metropolitan Univ. Sci., 2. Nagoya Univ. Sci. IMaSS.

Keywords: Electron back-scattered diffraction, Bloch wave, Dynamical theory

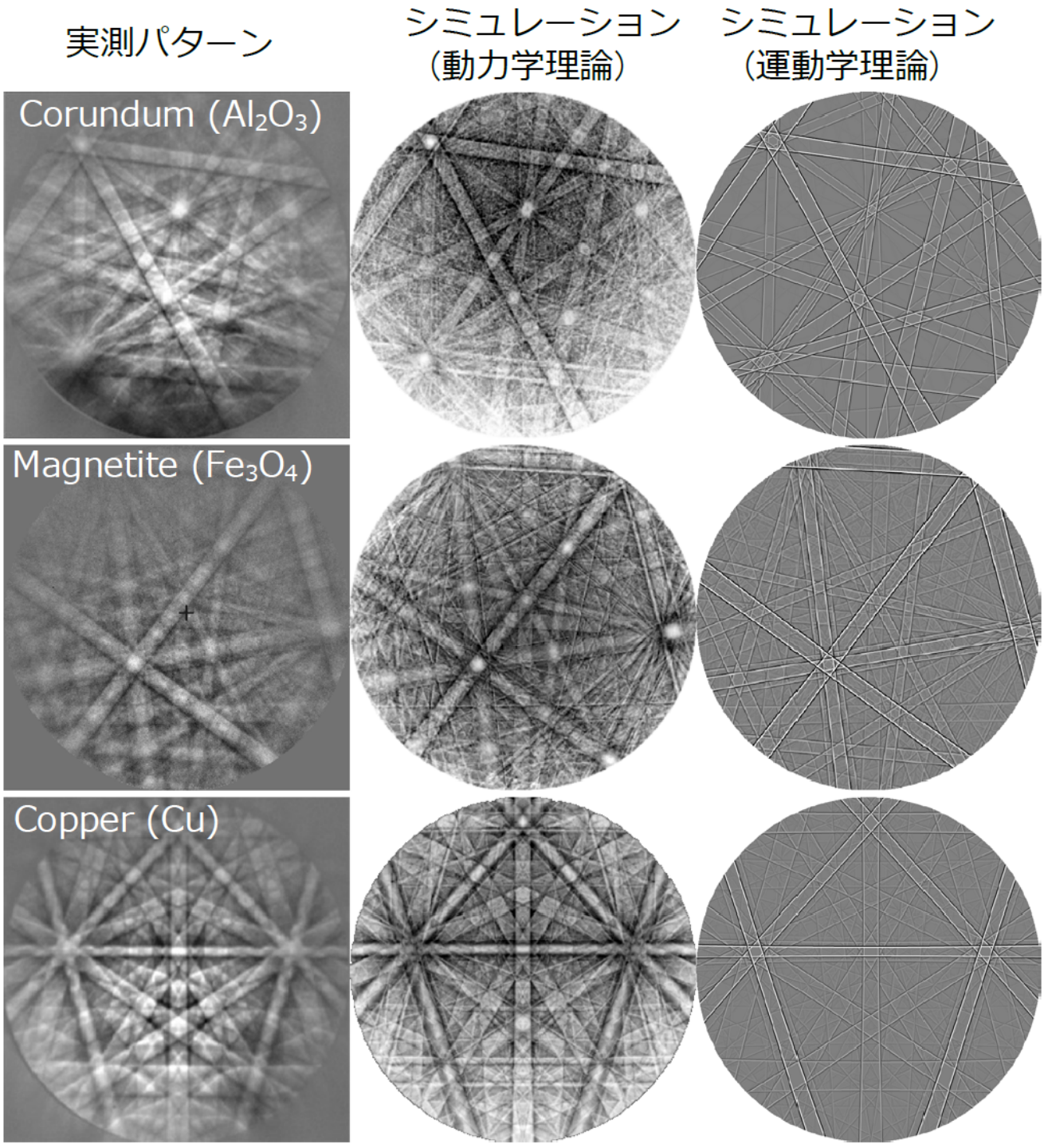


図. 実測のEBSDパターンと発表者らのシミュレーション結果との比較

Oral presentation | R5: Extraterrestrial materials

Sat. Sep 14, 2024 2:00 PM - 3:30 PM JST | Sat. Sep 14, 2024 5:00 AM - 6:30 AM UTC | ES025 Higashiyama Campus

R5: Extraterrestrial materials

Chairperson:Megumi Matsumoto, Daiki Yamamoto, Yusuke Seto, Toru Matsumoto(Kyoto University)

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

[R5-11] Mineralogy of micrometeoroids captured in silica aerogel aboard the ISS by the Dandelion Project

*Takaaki NOGUCHI[1], Akira MIYAKE[1], Hikaru Yabuta[2], Yoko Kebukawa[3], Daiki Suga[4], Makoto Tabata[5], Kyoko Okudaira[6], Akihiko Yamagishi[7], Hajime Yano[8] (1. Kyoto University, 2. Hiroshima University, 3. Tokyo Institute of Technology, 4. JASRI, 5. Chiba University, 6. University of Aizu, 7. Tokyo University of Pharmacy and Life Sciences, 8. JAXA)

2:15 PM - 2:30 PM JST | 5:15 AM - 5:30 AM UTC

[R5-12] STEM analysis of sodium-rich grains recovered from asteroid Ryugu

*Toru MATSUMOTO[1], Takaaki Noguchi[1], Toru Araki[2], Hayato Yuzawa[2], Akira Miyake[1] (1. Kyoto University, 2. UVSOR)

2:30 PM - 2:45 PM JST | 5:30 AM - 5:45 AM UTC

[R5-13] Important occurrence of amorphous hydrated Na-bearing Mg phosphate in Asteroid Ryugu samples and CI chondrites

*Takashi MIKOUCHI[1], Hideto Yoshida[2], Satoru Hayashi[2], Minami Masuda[2], Hiroyuki Kagi[2], Kazumasa Sugiyama[3], Tomoki Nakamura[4], Michael Zolensky[5] (1. Univ. Museum, Univ. of Tokyo, 2. Fac. of Sci., Univ. of Tokyo, 3. Inst. Mat. Res., Tohoku Univ., 4. Fac. of Sci., Tohoku Univ., 5. NASA-JSC)

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

[R5-14] On the relationship between lithological classification and degree of aqueous alteration in Asteroid Ryugu samples

*Minami Masuda[1], Takashi Mikouchi[2], Hideto Yoshida[1], Tomoki Nakamura[3], Michael Zolensky[4] (1. Univ. Tokyo, Sci., 2. Univ. Tokyo, Univ. Museum, 3. Tohoku Univ., Sci., 4. NASA-JSC)

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

[R5-15] Highly primitive clasts with GEMS-like grains in Ryugu C0002 sample

*Megumi MATSUMOTO[1], Akira Tsuchiyama[2,3], Masahiro Yasutake[4], Tomoki Nakamura[1] (1. Tohoku Univ., 2. Ritsumeikan Univ., 3. GIG, 4. JASRI/SPring-8)

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

[R5-16] Aqueous alteration experiments using GEMS simulant particles

*Akira TSUCHIYAMA[1,2], Satomi Enju[3], Haiyang Xian[1], Mingqi Sun[1], Ding Xing[1], Yuanyuan Wang[4], Zhaolu He[1], Jing Du[1], Shan Li[1], Jiaxin Xi[1], Xiaoju Lin[1], Jian Di[1], Yuto Imura[5] (1. Guangzhou Inst. Geochem., 2. Ritsumeikan Univ., 3. Ehime Univ. Sci, 4. Tokyo Univ. Sci., 5. Kyoto Univ. Sci.)

Mineralogy of micrometeoroids captured in silica aerogel aboard the ISS by the Dandelion Project

*Takaaki NOGUCHI[1], Akira MIYAKE[1], Hikaru Yabuta[2], Yoko Kebukawa[3], Daiki Suga[4], Makoto Tabata[5], Kyoko Okudaira[6], Akihiko Yamagishi[7], Hajime Yano[8]

1. Kyoto University, 2. Hiroshima University, 3. Tokyo Institute of Technology, 4. JASRI, 5. Chiba University, 6. University of Aizu, 7. Tokyo University of Pharmacy and Life Sciences, 8. JAXA

Keywords: micrometeoroid, TANPOPO mission, International Space Station, pyroxene

STEM analysis of sodium-rich grains recovered from asteroid Ryugu

*Toru MATSUMOTO[1], Takaaki Noguchi[1], Toru Araki[2], Hayato Yuzawa[2], Akira Miyake[1]

1. Kyoto University, 2. UVSOR

Keywords: Ryugu

Important occurrence of amorphous hydrated Na-bearing Mg phosphate in Asteroid Ryugu samples and CI chondrites

*Takashi MIKOUCHI[1], Hideto Yoshida[2], Satoru Hayashi[2], Minami Masuda[2], Hiroyuki Kagi[2], Kazumasa Sugiyama[3], Tomoki Nakamura[4], Michael Zolensky[5]

1. Univ. Museum, Univ. of Tokyo, 2. Fac. of Sci., Univ. of Tokyo, 3. Inst. Mat. Res., Tohoku Univ., 4. Fac. of Sci., Tohoku Univ., 5. NASA-JSC

Keywords: Mg phosphate, Asteroid Ryugu, CI chondrites, Aqueous alteration, Asteroid Bennu

On the relationship between lithological classification and degree of aqueous alteration in Asteroid Ryugu samples

*Minami Masuda[1], Takashi Mikouchi[2], Hideto Yoshida[1], Tomoki Nakamura[3], Michael Zolensky[4]

1. Univ. Tokyo, Sci., 2. Univ. Tokyo, Univ. Museum, 3. Tohoku Univ., Sci., 4. NASA-JSC

Keywords: Asteroid Ryugu, CI chondrite, aqueous alteration, brecciation

Highly primitive clasts with GEMS-like grains in Ryugu C0002 sample

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Aqueous alteration experiments using GEMS simulant particles

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Samples from the asteroid Ryugu by the Hayabusa2 spacecraft correspond to CI chondrites (e.g., [1]). In this study, to reproduce the initial stages of aqueous alteration of Ryugu parent body [2], we performed an aqueous alteration experiment using GEMS simulant particles, prepared by the induction thermal plasma (ITP) [3] with CI or GEMS average composition. Aqueous solutions of formic acid, hexamethylenetetramine, ammonium acetate, and/or ammonium hydrogen carbonate were heated at 200˚C for 168~1550 hours in a sealed Teflon container with the GEMS simulant with the rock/water ratio of 5 (or 1). Run products were analyzed by XRD, SEM/EDS, TEM/EELS, and micro-Raman spectroscopy.In all runs, low-crystallinity hydrous layered silicates (Mg silicate hydrate: M-S-H) were formed. Hematite, maghemite or magnetite + hematite formed as Fe oxides consisted of fine particles (~a few 10 nm) and occasionally dendrites within a M-S-H matrix (Fig. 1a). The run products may represent the very early state of aqueous alteration. In most runs, small amounts of anhydrite were formed, but no carbonate formed. Organic crystals and ammonium sulfates also formed. IOM with G and D bands were confirmed by Raman spectroscopy.The run products are aggregates of several 10 μm sized clasts with different porosities (Fig. 1b), which reflects the original texture of the starting material. Ryugu sample matrix of similar texture [2] may be inherited from that formed by accumulation in the parent body. The present experiment was not fully successful in reproducing the minerals and their morphologies as seen in the Ryugu samples. In particular, the formation of maghemite and anhydrite indicates that further experiments under more reducing conditions are necessary.[1] Nakamura T. et al. (2023) Science, 379, eabn867. [2] Tsuchiyama A. et al. (2024) GCA, 375, 146-172. [3] Enju S. et al. (2022) A&A, 661, A121.

Keywords: Ryugu samples, Mg-S-H, carbonaceous chondrites, GEMS-like material, induction thermal plasma

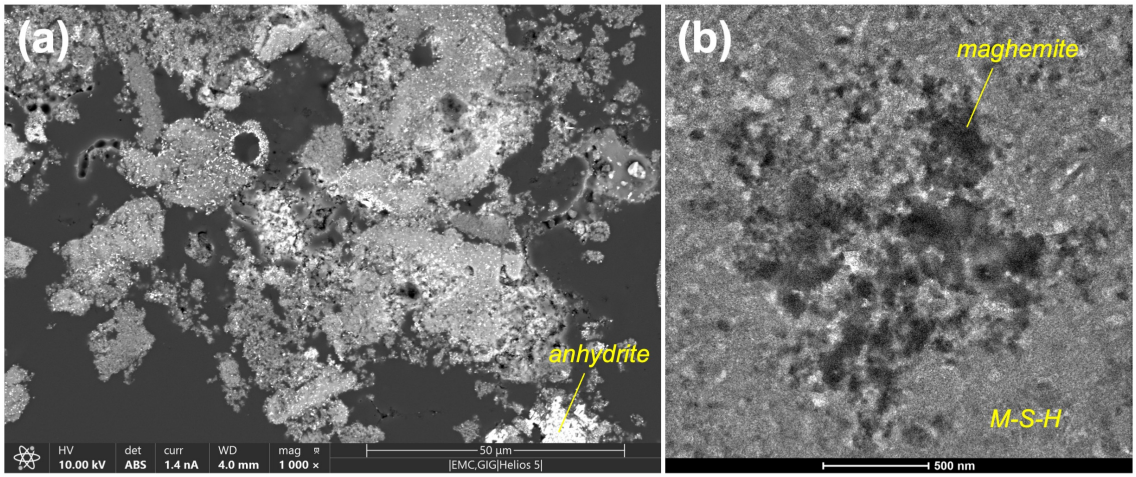


Figure 1. (a) SEM/BSE image of Run 11 (CI composition, water + NH_4HCO_3: $X(CO_2)/X(H_2O)$=0.0317, $X(NH_3)/X(H_2O)$=0.0317, W/R=5, 200°C, 1550 hrs.). Different brightness of matrix roughly corresponds to different porosity. (b) TEM/bright field image of Run 07 (CI composition, water + CH_2O_2: $X(CO_2)/X(H_2O)$= 0.0435, $X(NH_3)/X(H_2O)$=0, W/R=5, 200°C, 168 hrs.) showing a dendritic aggregate of maghemite.