Sat. Sep 16, 2023

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

12:00 PM - 2:00 PM JST | 3:00 AM - 5:00 AM UTC | 83G,H,J Sugimoto Campus

S1: Dynamics of igneous processes (Special Session)

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

[S1P-01] Injection of K_2O-rich magma into magma chambers beneath Myoko volcano

*Morihisa HAMADA[1], Estelle F. ROSE-KOGA[2], Kenneth T. KOGA[2], Kenji SHIMIZU[1], Takayuki USHIKUBO[1], Hideo HARADA[3], Andereas AUER[4], Yoshiaki YAMAGUCHI[3] (1. JAMSTEC, 2. ISTO, CNRS-Universite d'Orleans, 3. Shinshu Univ., 4. Shimane Univ.)

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

[S1P-02] Repressurization of vesiculated magma inferred from volatile distribution in groundmass glass

*Shumpei YOSHIMURA[1] (1. Hokkaido University)

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

12:00 PM - 2:00 PM JST | 3:00 AM - 5:00 AM UTC | 83G,H,J Sugimoto Campus

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

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

[R3P-01] Carbon isotope analysis of diamond/graphite recovered from high-pressure experiments by NanoSIMS and IRMS

Hideaki Kawamura[1], *Hiroaki OHFUJI[1], Satish-Kumar Satish-Kumar[2], Kiran Sasidharan[2], Akizumi Ishida[1], Kouhei Sasaki[3], Naoto Takahata[3], Kotaro Shirai[3], Akio Suzuki[1] (1. Tohoku Univ. Sci, 2. Niigata Univ. Sci., 3. Univ. Tokyo, AORI)

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

[R3P-02] Diamond formation at upper mantle of ice giants

Yoshiki Kenmochi[1], *Takeshi SAKAI[1], Hirokazu Kadobayashi[2] (1. Ehime University, 2. JASRI)

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

[R3P-03] Post-antigorite reaction in cold slab

*Tomoaki KUBO[1], Shingo Yoshida[1], Rikuto Honda[1], Yuta Hiramoto[1], Noriyoshi Tsujino[2], Sho Kakizawa[2], Yuji Higo[2] (1. Kyushu University, 2. JASRI)

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

[R3P-04] On the low temperature plasticity of metastable olivine

[Presentation award entry]

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

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

[R3P-05] Deformation property of Wüstite polycrystals developed by large strain deformation experiments under lower mantle pressures using rotational DAC

[Presentation award entry]

*Bunrin Natsui[1], Shintaro Azuma[1], Keishi Okazaki[2], Kentaro Uesugi[3], Masahiro Yasutake[3], Saori Kawaguchi[3], Ryuichi Nomura[4], Kenji Ohta[1] (1. Tokyo Tech, 2. Hiroshima Univ., 3. JASRI, 4. Kyoto Univ.)

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

[R3P-06] High-temperature conditions for the rotational diamond anvil cell by near-infrared heating method

*Shintaro AZUMA[1], Keishi Okazaki[2], Kentaro Uesugi[3], Masahiro Yasutake[3], Bunrin Natsui[1], Eranga Jayawickrama[2], Ryuichi Nomura[4] (1. Tokyo Institute of Technology, 2. Hiroshima University, 3. JASRI, 4. Kyoto University)

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

[R3P-07] Measurements of local stress and high pressure phase transition of Fe in in-situ TEM indentation experiments

*Akira MIYAKE[1], Yohei Igami[1], Ryuichi nomura[1] (1. Kyoto Univ.)

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

[R3P-08] Real-time measurement of DAC specimen length: Direct measurement of back-to-back distance between diamond anvils and elastic deformation analysis of diamond anvils.

*Akira Yoneda[1], Takuto Kato[1] (1. Osaka Univ. Sci.)

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

[R3P-09] Density measurement of Ni under high pressure and high temperature using laser-heated DAC combined with X-ray absorption method

*Hidenori TERASAKI[1], Hiroyuki KAMINA[1], Ryo TSURUOKA[2], Tadashi KONDO[2], Akira YONEDA[2], Ko MORIOKA[1], Moe SAKURAI[1], Seiji KAMADA[3], Saori I KAWAGUCHI[4] (1. Okayama University, 2. Osaka University, 3. Tohoku University, 4. JASRI)

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

[R3P-10] Density measurement of FeS by X-ray absorption method with laser-heated diamond anvil cell

[Presentation award entry]

*Ko Morioka[1], Hidenori Terasaki[1], Hiroyuki Kamina[1], Ryo Tsuruoka[2], Tadashi Kondo[2], Akira Yoneda[2], Moe Sakurai[1], Saori Kawaguchi[3] (1. Okayama Univ. Sci., 2. Osaka Univ. Sci., 3. JASRI)

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

[R3P-11] Neutron diffraction measurements and molecular dynamics simulations on FeS hydrides

[Presentation award entry]

*Masahiro Takano[1], Hiroyuki Kagi[1], Yuichiro Mori[1], Katsutoshi Aoki[1], Sho Kakizawa[2], Asami Sano[3], Riko Iizuka[4], Taku Tsuchiya[5] (1. The Univertsity of Tokyo, 2. JASRI, 3. J-PARC, 4. Waseda University, 5. Ehime University)

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

[R3P-12] Melting relations in the system Fe-FeS-FeO at 3 GPa

Kosuke Tsuji[1], *Satoru URAKAWA[1], Hidenori Terasaki[1] (1. Okayama University)

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

[R3P-13] Bismuth at high temperature and high pressure

*Shigeaki ONO[1] (1. Japan Agency for Marine-Earth Science and Technology (JAMSTEC))

Poster presentation | R5: Extraterrestrial materials

12:00 PM - 2:00 PM JST | 3:00 AM - 5:00 AM UTC | 83G,H,J Sugimoto Campus

R5: Extraterrestrial materials

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

[R5P-01] Structural Evolution of Dynamically-compressed Germanium Dioxide

*Hiroto Araga[1,2], Yuhei Umeda[1,2], Takamichi Kobayashi[3], Hitoshi Yusa[3], Yusuke Seto[4], Takuo Okuchi[1,2] (1. Kyoto Univ. Eng., 2. KURNS Kyoto Univ., 3. NIMS, 4. Osaka Metropolitan Univ. Sci.)

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

12:00 PM - 2:00 PM JST | 3:00 AM - 5:00 AM UTC | 83G,H,J Sugimoto Campus

R6: Plutonic rocks, volcanic rocks and subduction factory

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

[R6P-01] Compositional changes in closed and open systems of igneous rocks from northern part of Mt. Shaku-dake, northern Kyushu, SW Japan

*Keisuke ESHIMA[1] (1. Yamaguchi Univ.)

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

[R6P-02] Formation of upper-most crust in volcanic belt: Example for Cretaceous volcano–plutonic complex, Hyogo Prefecture, southwest Japan

*Masaaki OWADA[1], Shunsuke Fukuda[1], Atsushi Kamei[2] (1. Yamaguchi University, 2. Shimane University)

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

[R6P-03] **Intrusion and emplacement processes of adakitic magma into the shallow crust: A case study of the Sakainokami plutonic body, Kitakami mountains, northeast Japan**

[Presentation award entry]

*Satoshi SUZUKI[1], Nobuo ASAI[1], Kazuo NAKASHIMA[1], Yasuhiro OGITA[2], Tatsunori YOKOYAMA[2], Shuhei SAKATA[3], Takeshi OHNO[4], Takashi YUGUCHI[5] (1. Yamagata Univ., 2. Japan Atomic Energy Agency, 3. Univ of Tokyo. , 4. Gakushuin Univ. , 5. Kumamoto Univ.)

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

[R6P-04] Identification of multiple components of noble gas isotopes in back-arc lithospheric mantle

*Lena Yokokura[1], Hirochika Sumino[1], Takeshi Kuritani[2], Yuuki Hagiwara[3], Junji Yamamoto[4] (1. The University of Tokyo, 2. Hokkaido University, 3. JAMSTEC, 4. Kyushu University)

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

[R6P-05] Three-dimensional evaluation of internal structures contributing to mass transport distributed in minerals: micropores in K-feldspar in the Toki granite, central Japan.

*Mai Nonaka[1,2], Takashi Yuguchi[3] (1. Yamagata University, 2. Japan Atomic Energy Agency, 3. Kumamoto University)

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

[R6P-06] Magma source and evolution process for Quaternary Magmas from Kuju Volcanoes, Kyushu Island, Southwest Japan Arc.

*Soma Yamanaka[1], Tomoyuki Shibata[3], Ryotaro Fujihara[1], Tatsuki Orito[1], Taichi Heijima[1], Masako Yoshikawa[3], Tomo Shibata[2] (1. Hiroshima Univ. Sci., 2. Fukuoka Univ. Sci., 3. Hiroshima Univ. Sci. & Tech.)

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

[R6P-07] Geochemical features of the Early Miocene Hachiya Formation in the Chuno Area, Gifu Prefecture, Japan

[Presentation award entry]

*Seiya Saijou[1], Toshiro Takahashi[2] (1. Niigata Univ. Sci., 2. Niigata Univ)

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

[R6P-09] Cathodoluminescence pattern of quartz and quantitative determination of titanium and aluminum concentration within quartz crystals in the Tono plutonic complex, Kitakami mountains

*Yasuhiro OGITA[1,2], Takenri KATO[3], Takashi YUGUCHI[4] (1. Yamagata Univ., 2. JAEA, 3. Nagoya Univ., 4. Kumamoto Univ.)

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

[R6P-10] Cathodoluminescence patterns of quartz crystals in granite and their titanium concentrations: implication to crystallization process of quartz in the magma chamber

*Asuka Kato[1], Takenori Kato[2], Yasuhiro Ogita[1,3], Takashi Yuguchi[4], Eiji Sasao[3] (1. Yamagata Univ. , 2. Nagoya Univ, 3. JAEA, 4. Kumamoto Univ)

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

[R6P-11] Petrography and Rb-Sr mineral age of mafic dyke rocks on Niban-Rock, Lützow-Holm Complex (LHC), East Antarctica.

*Tomoharu MIYAMOTO[1], Yamashita Katsuyuki[2], Daniel J. Dunkley[3], Toshiaki Tsunogae[4], Mutsumi Kato[5] (1. Kyushu University, 2. Okayama University, 3. Polish Academy of Sciences, 4. Univ. of Tsukuba, 5. Chiba University)

Poster presentation | R8: Metamorphic rocks and tectonics

12:00 PM - 2:00 PM JST | 3:00 AM - 5:00 AM UTC | 83G,H,J Sugimoto Campus

R8: Metamorphic rocks and tectonics

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

[R8P-01] Structural and petrological study of layering in the Horoman Peridotite Complex, Hokkaido, Japan

[Presentation award entry]

*Aya Hihara[1], Miki Tasaka[1], Keisuke Kurihara[1], Tatsuhiko Kawamoto[1], Hajime Taniuchi[2] (1. Shizuoka University, 2. National Institute of Advanced Industrial Science and Technology)

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

[R8P-02] Geology and petrography of metamorphic rocks in Sibuyan Island, Romblon, Philippines

[Presentation award entry]

*John Kenneth Badillo[1], Gabriel Theophilus Valera[1], Betchaida Payot[1] (1. University of the Philippines Diliman)

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

[R8P-03] **The metamorphic condition of the Oshima peninsula, in the southern part of Yamaguchi prefecture: Implications for metamorphic process and regional structure of the Ryoke metamorphic belt, west Seto Inland sea area**

[Presentation award entry]

*Zejin LU[1], Masaaki Owada[1] (1. Yamaguchi University)

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

[R8P-04] Study of flexural slip formed by plate subduction

[Presentation award entry]

*Haruki Yoshiasa[1], Jun-ichi ANDO[2], SARKAR Dyuti Prakash[2], DAS Kaushik[2], GHOSH Gautam[3] (1. Hiroshima Univ. , 2. Hiroshima Univ., 3. Presidency Univ.)

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

[R8P-05] Electron diffuse scattering in omphacite from lawsonite eclogite xenolith in Colorado Plateau: A preliminary report

[Presentation award entry]

*Ryo Fukushima[1], Tatsuki Tsujimori[1,2], Nobuyoshi Miyajima[3], Tiziana Boffa-Ballaran[3], Giacomo Criniti[3], Catherine McCammon[3] (1. Tohoku Univ. Sci., 2. CNEAS, Tohoku Univ., 3. BGI, Univ. Bayreuth)

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

[R8P-06] **Exhumation process of serpentinite in the Sangun-Renge belt exposed at Sasaguri, Fukuoka prefecture**

[Presentation award entry]

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

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

[R8P-07] Mineral and bulk compositions of an outcrop showing a symmetric sequence composed of peridotite and mafic-rock layers of Horoman peridotite, Japan

[Presentation award entry]

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

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

[R8P-08] Mechanism of seismic fault generation involving in pseudotachylyte formation in ductile regime: examples from Sarwar-Junia Fault Zone, India

[Presentation award entry]

*Junya OKAZAKI[1], Jun-ichi Ando[1], Kaushik Das[1] (1. Hiroshima University)

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

[R8P-09] Water content distributions in dynamically recrystallized quartz grains in granitoid mylonites: A case of an inner shear zone in the Ryoke Belt in the Kishiwada area, Osaka

*Takemasa Norimura[1], Junichi Fukuda[1] (1. Osaka Metrop. Univ. Geosci.)

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

[R8P-10] **Deformation microstructures and slip systems developed in olivine from the Petit-spot peridotite xenoliths: Insights on deformation mechanisms and anisotropy of upper mantle**

*Dyuti Prakash SARKAR[1,2], Norikatsu Akizawa[3], Jun-ichi Ando[1,2], Masako Yoshikawa[1,2] (1. Hiroshima University, 2. HiPeR, 3. The University of Tokyo)

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

[R8P-11] Novel automated method for estimating the peak temperature from the crystallinity of carbonaceous material using EM algorithm

*Yoshihiro NAKAMURA[1], Tarojiro MATSUMURA[1], Kazuhiro MIYAZAKI[1] (1. AIST)

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

[R8P-12] Zircon U-Pb ages of the Oura igneous complex, northern Kyoto area, SW Japan and its tectonic correlation

*Kosuke KIMURA[1], Kenta Kawaguchi[2], Nobuhiko Nakano[2], Tatsuro Adachi[2], Kaushik Das[3] (1. Osaka Metropolitan Univ. Sci., 2. Kyushu Univ. , 3. Hiroshima Univ. Sci.)

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

[R8P-13] Metasomatic syenite at the interface between charnockite and calc-silicate granulite, Eastern Ghats Belt, India: Mineral-chemical characterization and its implications during orogenesis

*Kaushik DAS[1,4], Proloy Ganguly[2], Sankar Bose[3,4] (1. Hiroshima University, 2. Durgapur Government College, Department of Geology, Durgapur, India, 3. Presidency University, Kolkata, India, 4. HiPeR, Hiroshima)

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

[R8P-14] Petrography of V and Zn-rich gahnite-sillimanite-muscovite gneiss from Menipa, Sør Rondane Mountains, East Antarctica

*Tatsuro ADACHI[1], Tetsuo Kawakami[2], Fumiko Higashino[2], Masaoki Uno[3] (1. Kyushu University, 2. Kyoto University, 3. Tohoku University)

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

[R8P-15] Unraveling the Link Between Deformation, Metamorphism, and Fluid Flow in the Archean Dharwar Craton, Southern India

*Sreehari LAKSHMANAN[1], Kiran Sasidharan[2], Satish-Kumar Madusoodhan[2], Tsuyoshi Toyoshima[2] (1. Shimane Uni., 2. Niigata Uni.)

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[S1P-01] Injection of K_2O-rich magma into magma chambers beneath Myoko volcano

*Morihisa HAMADA[1], Estelle F. ROSE-KOGA[2], Kenneth T. KOGA[2], Kenji SHIMIZU[1], Takayuki USHIKUBO[1], Hideo HARADA[3], Andereas AUER[4], Yoshiaki YAMAGUCHI[3] (1. JAMSTEC, 2. ISTO, CNRS-Universite d'Orleans, 3. Shinshu Univ., 4. Shimane Univ.)

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[S1P-02] Repressurization of vesiculated magma inferred from volatile distribution in groundmass glass

*Shumpei YOSHIMURA[1] (1. Hokkaido University)

Injection of K_2O-rich magma into magma chambers beneath Myoko volcano

*Morihisa HAMADA[1], Estelle F. ROSE-KOGA[2], Kenneth T. KOGA[2], Kenji SHIMIZU[1], Takayuki USHIKUBO[1], Hideo HARADA[3], Andereas AUER[4], Yoshiaki YAMAGUCHI[3]

1. JAMSTEC, 2. ISTO, CNRS-Universite d'Orleans, 3. Shinshu Univ., 4. Shimane Univ.

Heterogeneous groundmass bearing higher-K_2O and lower-K_2O domains is often observed in volcanic rocks collected from the rear-arc region. This study characterizes concurrent occurrence of both higher-K_2O and lower-K_2O magmas preserved in quenched melt inclusions collected from Myoko volcano, a rear-arc volcano on the western margin of the northeast Japan arc. While the melt inclusions found in the scoriae from the Sekiyama eruption of Myoko volcano (43 ka) represent the whole-rock composition of Myoko’ s lower-K_2O volcanic rocks, some melt inclusions found in the scoriae of the Kannoki eruption (41 ka) represent higher-K_2O domains in the groundmass. A possible explanation for such contrastive observations is that the mantle source beneath Myoko volcano is heterogeneous; the higher-K_2O magmas could be generated in a metasomatized mantle wedge, possibly veined by phlogopite and/or apatite-bearing dykes. Another possible explanation is that higher-K_2O magma is a product of partial melting of crustal rocks and its mingling with lower-K_2O magma before the Kannoki eruption. In either case, K_2O-rich magma batches were repeatedly injected into the main magma chambers and formed heterogeneous groundmass bearing higher-K_2O and lower-K_2O domains. Further geochemical studies are warranted to constrain the origin of K_2O-rich magma.

Keywords: Myoko volcano, melt inclusion

Repressurization of vesiculated magma inferred from volatile distribution in groundmass glass

*Shumpei YOSHIMURA[1]

1. Hokkaido University

Keywords: magma, vesiculation, repressurization, bubble

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

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Hideaki Kawamura[1], *Hiroaki OHFUJI[1], Satish-Kumar Satish-Kumar[2], Kiran Sasidharan[2], Akizumi Ishida[1], Kouhei Sasaki[3], Naoto Takahata[3], Kotaro Shirai[3], Akio Suzuki[1] (1. Tohoku Univ. Sci, 2. Niigata Univ. Sci., 3. Univ. Tokyo, AORI)

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[R3P-02] Diamond formation at upper mantle of ice giants

Yoshiki Kenmochi[1], *Takeshi SAKAI[1], Hirokazu Kadobayashi[2] (1. Ehime University, 2. JASRI)

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[R3P-10] Density measurement of FeS by X-ray absorption method with laser-heated diamond anvil cell

[Presentation award entry]

*Ko Morioka[1], Hidenori Terasaki[1], Hiroyuki Kamina[1], Ryo Tsuruoka[2], Tadashi Kondo[2], Akira Yoneda[2], Moe Sakurai[1], Saori Kawaguchi[3] (1. Okayama Univ. Sci., 2. Osaka Univ. Sci., 3. JASRI)

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[R3P-11] Neutron diffraction measurements and molecular dynamics simulations on FeS hydrides

[Presentation award entry]

*Masahiro Takano[1], Hiroyuki Kagi[1], Yuichiro Mori[1], Katsutoshi Aoki[1], Sho Kakizawa[2], Asami Sano[3], Riko Iizuka[4], Taku Tsuchiya[5] (1. The Univertsity of Tokyo, 2. JASRI, 3. J-PARC, 4. Waseda University, 5. Ehime University)

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[R3P-13] Bismuth at high temperature and high pressure

*Shigeaki ONO[1] (1. Japan Agency for Marine-Earth Science and Technology (JAMSTEC))

Carbon isotope analysis of diamond/graphite recovered from high-pressure experiments by NanoSIMS and IRMS

Hideaki Kawamura[1], *Hiroaki OHFUJI[1], Satish-Kumar Satish-Kumar[2], Kiran Sasidharan[2], Akizumi Ishida[1], Kouhei Sasaki[3], Naoto Takahata[3], Kotaro Shirai[3], Akio Suzuki[1]

1. Tohoku Univ. Sci, 2. Niigata Univ. Sci., 3. Univ. Tokyo, AORI

Keywords: Diamond, C-H-O fluid, NanoSIMS, Carbon isotope

Diamond formation at upper mantle of ice giants

Yoshiki Kenmochi[1], *Takeshi SAKAI[1], Hirokazu Kadobayashi[2]

1. Ehime University, 2. JASRI

Keywords: Diamond, Ice giants

Post-antigorite reaction in cold slab

*Tomoaki KUBO[1], Shingo Yoshida[1], Rikuto Honda[1], Yuta Hiramoto[1], Noriyoshi Tsujino[2], Sho Kakizawa[2], Yuji Higo[2]

1. Kyushu University, 2. JASRI

Keywords: in-situ X-ray observation, high pressure experiment, dehydration reaction, deep slab

On the low temperature plasticity of metastable olivine

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

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

Keywords: metastable olivine, Peierls mechanism, deep slab rheology, high-pressure deformation experiments, X-ray in-situ observation

Deformation property of Wüstite polycrystals developed by large strain deformation experiments under lower mantle pressures using rotational DAC

*Bunrin Natsui[1], Shintaro Azuma[1], Keishi Okazaki[2], Kentaro Uesugi[3], Masahiro Yasutake[3], Saori Kawaguchi[3], Ryuichi Nomura[4], Kenji Ohta[1]

1. Tokyo Tech, 2. Hiroshima Univ., 3. JASRI, 4. Kyoto Univ.

Keywords: Rheology, Deformation experiment, Lower mantle, Wüstite

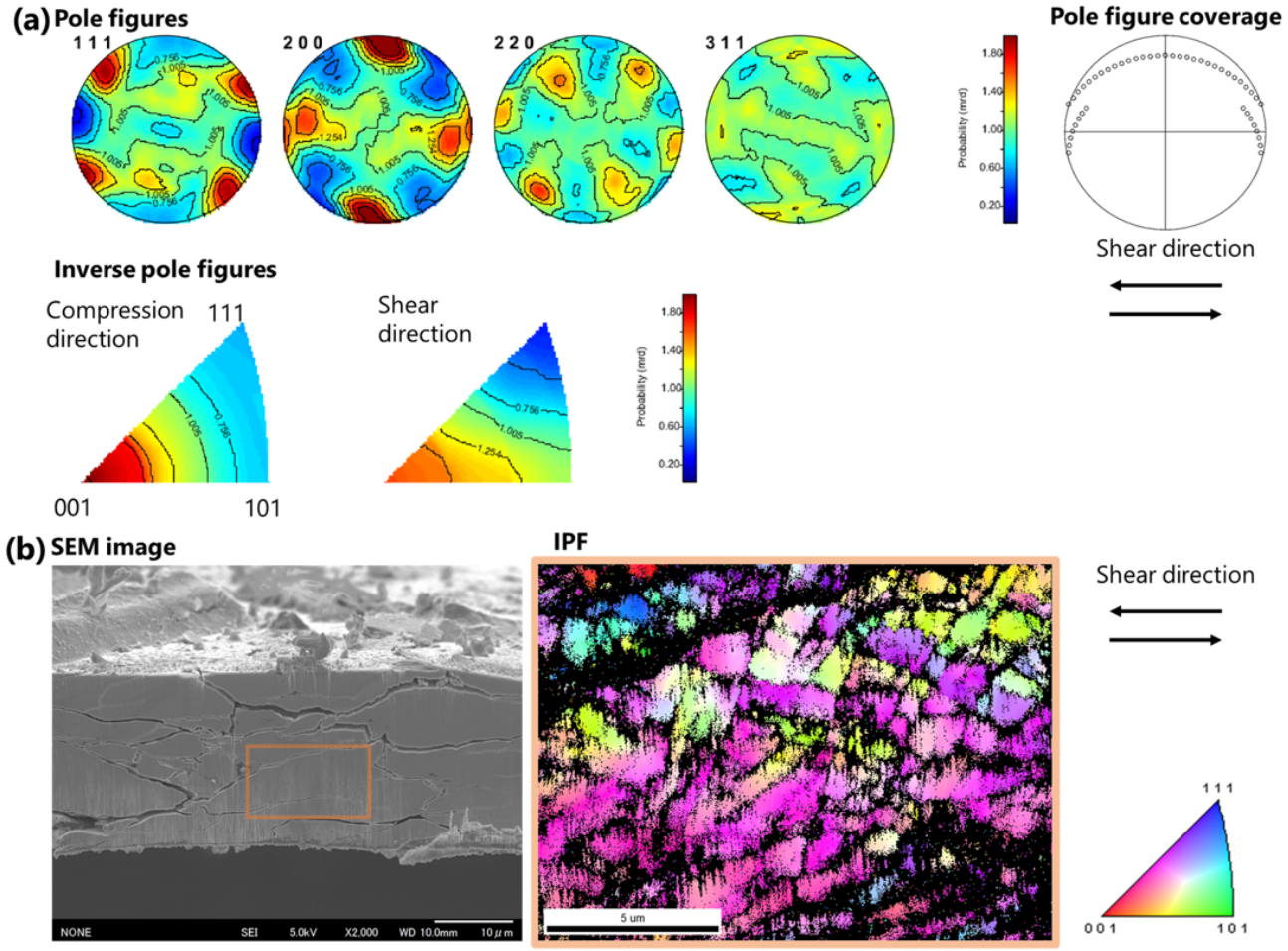


図 結晶方位データ
rDACによるねじり変形実験後のWüstite(結晶構造:B1 ε =0.3 T=600 K P=8 GPa)
(a) XRDデータの解析より得られたCPO
(b) EBSD分析より得られた結晶方位マッピング

High-temperature conditions for the rotational diamond anvil cell by near-infrared heating method

*Shintaro AZUMA[1], Keishi Okazaki[2], Kentaro Uesugi[3], Masahiro Yasutake[3], Bunrin Natsui[1], Eranga Jayawickrama[2], Ryuichi Nomura[4]

1. Tokyo Institute of Technology, 2. Hiroshima University, 3. JASRI, 4. Kyoto University

Keywords: Rotational diamond anvil cell, high temperature and pressure, near-infrared heating method

Measurements of local stress and high pressure phase transition of Fe in in-situ TEM indentation experiments

*Akira MIYAKE[1], Yohei Igami[1], Ryuichi nomura[1]

1. Kyoto Univ.

Two types of in-situ experiments in transmission electron microscope were performed. The result of indentation experiment using diamond rod and plate shows the maximum pressure value is over 400 GPa at 1000 uN load. Another in situ high pressure experiment shows the phase transition from alpha phase of Fe (iron) to epsilon phase at 200 uN load. At this load experiment, the pressure was estimated to be about 14 GPa.

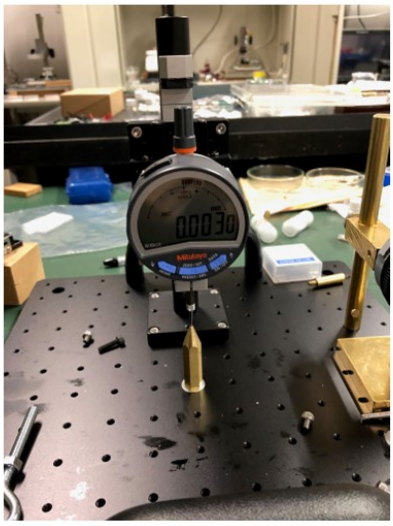
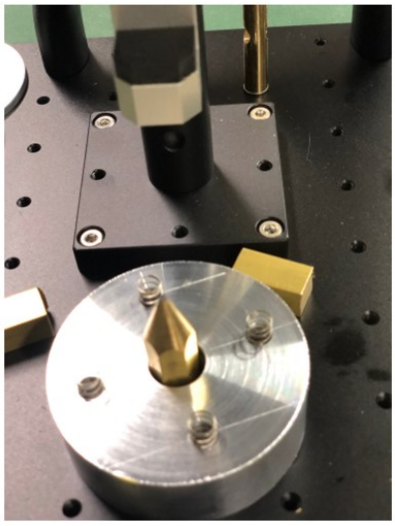
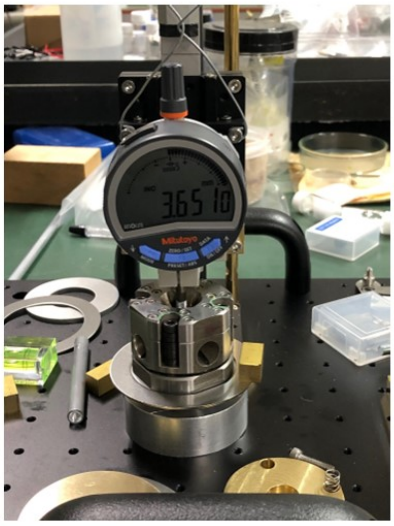
Keywords: TEM, high pressure phase transition, in situ experiment

Real-time measurement of DAC specimen length: Direct measurement of back-to-back distance between diamond anvils and elastic deformation analysis of diamond anvils.

*Akira Yoneda[1], Takuto Kato[1]

1. Osaka Univ. Sci.

Keywords: DAC, elastic deformation, Distance measuring instrument, GHz ultrasonics

Density measurement of Ni under high pressure and high temperature using laser-heated DAC combined with X-ray absorption method

*Hidenori TERASAKI[1], Hiroyuki KAMINA[1], Ryo TSURUOKA[2], Tadashi KONDO[2], Akira YONEDA[2], Ko MORIOKA[1], Moe SAKURAI[1], Seiji KAMADA[3], Saori I KAWAGUCHI[4]

1. Okayama University, 2. Osaka University, 3. Tohoku University, 4. JASRI

Keywords: Density, Core, X-ray absorption method, High pressure

Density measurement of FeS by X-ray absorption method with laser-heated diamond anvil cell

*Ko Morioka[1], Hidenori Terasaki[1], Hiroyuki Kamina[1], Ryo Tsuruoka[2], Tadashi Kondo[2], Akira Yoneda[2], Moe Sakurai[1], Saori Kawaguchi[3]

1. Okayama Univ. Sci., 2. Osaka Univ. Sci., 3. JASRI

Keywords: Density, Core, Diamond anvil cell, High pressure

Neutron diffraction measurements and molecular dynamics simulations on FeS hydrides

*Masahiro Takano[1], Hiroyuki Kagi[1], Yuichiro Mori[1], Katsutoshi Aoki[1], Sho Kakizawa[2], Asami Sano[3], Riko Iizuka[4], Taku Tsuchiya[5]

1. The Univertsity of Tokyo, 2. JASRI, 3. J-PARC, 4. Waseda University, 5. Ehime University

Keywords: FeS, hydrogen, neutron diffraction, high-pressure experiments, molecular dynamics

Melting relations in the system Fe-FeS-FeO at 3 GPa

Kosuke Tsuji[1], *Satoru URAKAWA[1], Hidenori Terasaki[1]

1. Okayama University

Keywords: Core, Light elements

Bismuth at high temperature and high pressure

*Shigeaki ONO[1]

1. Japan Agency for Marine-Earth Science and Technology (JAMSTEC)

We investigated the phase diagram in bismuth at high pressures and high temperatures using the multi-anvil press and the synchrotron X-ray diffraction technique. The stability of each phase was identified by observing the powdered X-ray diffraction data. The phase diagram determined in our study was in general agreement with that reported in previous high-pressure experiments. However, discrepancies related with triple points were identified between present and previous studies.

Keywords: Bismuth

Poster presentation | R5: Extraterrestrial materials

Sat. Sep 16, 2023 12:00 PM - 2:00 PM JST | Sat. Sep 16, 2023 3:00 AM - 5:00 AM UTC | 83G,H,J Sugimoto Campus

R5: Extraterrestrial materials

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

[R5P-01] Structural Evolution of Dynamically-compressed Germanium Dioxide

*Hiroto Araga[1,2], Yuhei Umeda[1,2], Takamichi Kobayashi[3], Hitoshi Yusa[3], Yusuke Seto[4], Takuo Okuchi[1,2] (1. Kyoto Univ. Eng., 2. KURNS Kyoto Univ., 3. NIMS, 4. Osaka Metropolitan Univ. Sci.)

Structural Evolution of Dynamically-compressed Germanium Dioxide

*Hiroto Araga[1,2], Yuhei Umeda[1,2], Takamichi Kobayashi[3], Hitoshi Yusa[3], Yusuke Seto[4], Takuo Okuchi[1,2]

1. Kyoto Univ. Eng., 2. KURNS Kyoto Univ., 3. NIMS, 4. Osaka Metropolitan Univ. Sci.

Keywords: GeO2, Shock compression, amorphous, powder XRD diffraction

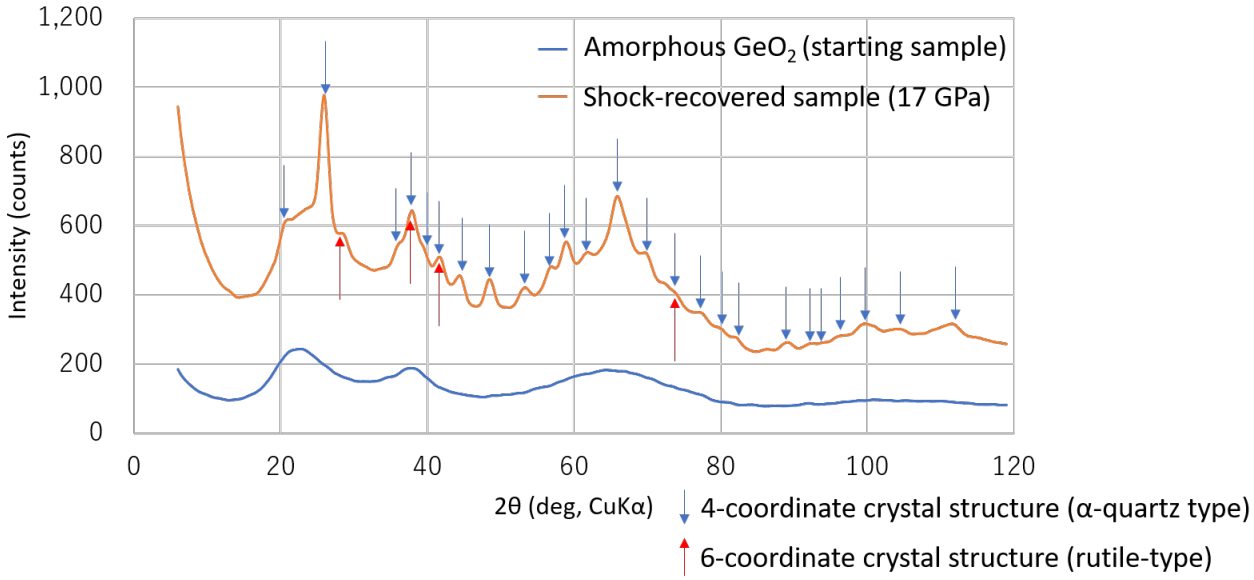


Fig.1 Powder XRD diffraction patterns of the shock-recovered sample and an amorphous GeO_2 before compression.

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

Sat. Sep 16, 2023 12:00 PM - 2:00 PM JST | Sat. Sep 16, 2023 3:00 AM - 5:00 AM UTC | 83G,H,J Sugimoto Campus

R6: Plutonic rocks, volcanic rocks and subduction factory

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

[R6P-01] Compositional changes in closed and open systems of igneous rocks from northern part of Mt. Shaku-dake, northern Kyushu, SW Japan

*Keisuke ESHIMA[1] (1. Yamaguchi Univ.)

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

[R6P-02] Formation of upper-most crust in volcanic belt: Example for Cretaceous volcano–plutonic complex, Hyogo Prefecture, southwest Japan

*Masaaki OWADA[1], Shunsuke Fukuda[1], Atsushi Kamei[2] (1. Yamaguchi University, 2. Shimane University)

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

[R6P-03] **Intrusion and emplacement processes of adakitic magma into the shallow crust: A case study of the Sakainokami plutonic body, Kitakami mountains, northeast Japan**

[Presentation award entry]

*Satoshi SUZUKI[1], Nobuo ASAI[1], Kazuo NAKASHIMA[1], Yasuhiro OGITA[2], Tatsunori YOKOYAMA[2], Shuhei SAKATA[3], Takeshi OHNO[4], Takashi YUGUCHI[5] (1. Yamagata Univ., 2. Japan Atomic Energy Agency, 3. Univ of Tokyo. , 4. Gakushuin Univ. , 5. Kumamoto Univ.)

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

[R6P-04] Identification of multiple components of noble gas isotopes in back-arc lithospheric mantle

*Lena Yokokura[1], Hirochika Sumino[1], Takeshi Kuritani[2], Yuuki Hagiwara[3], Junji Yamamoto[4] (1. The University of Tokyo, 2. Hokkaido University, 3. JAMSTEC, 4. Kyushu University)

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

[R6P-05] Three-dimensional evaluation of internal structures contributing to mass transport distributed in minerals: micropores in K-feldspar in the Toki granite, central Japan.

*Mai Nonaka[1,2], Takashi Yuguchi[3] (1. Yamagata University, 2. Japan Atomic Energy Agency, 3. Kumamoto University)

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

[R6P-06] Magma source and evolution process for Quaternary Magmas from Kuju Volcanoes, Kyushu Island, Southwest Japan Arc.

*Soma Yamanaka[1], Tomoyuki Shibata[3], Ryotaro Fujihara[1], Tatsuki Orito[1], Taichi Heijima[1], Masako Yoshikawa[3], Tomo Shibata[2] (1. Hiroshima Univ. Sci., 2. Fukuoka Univ. Sci., 3. Hiroshima Univ. Sci. & Tech.)

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

[R6P-07] Geochemical features of the Early Miocene Hachiya Formation in the Chuno Area, Gifu Prefecture, Japan

[Presentation award entry]

*Seiya Saijou[1], Toshiro Takahashi[2] (1. Niigata Univ. Sci., 2. Niigata Univ)

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

[R6P-09] Cathodoluminescence pattern of quartz and quantitative determination of titanium and aluminum concentration within quartz crystals in the Tono plutonic complex, Kitakami

mountains

*Yasuhiro OGITA[1,2], Takenri KATO[3], Takashi YUGUCHI[4] (1. Yamagata Univ., 2. JAEA, 3. Nagoya Univ., 4. Kumamoto Univ.)

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

[R6P-10] Cathodoluminescence patterns of quartz crystals in granite and their titanium concentrations: implication to crystallization process of quartz in the magma chamber

*Asuka Kato[1], Takenori Kato[2], Yasuhiro Ogita[1,3], Takashi Yuguchi[4], Eiji Sasao[3] (1. Yamagata Univ. , 2. Nagoya Univ, 3. JAEA, 4. Kumamoto Univ)

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

[R6P-11] Petrography and Rb-Sr mineral age of mafic dyke rocks on Niban-Rock, Lützow-Holm Complex (LHC), East Antarctica.

*Tomoharu MIYAMOTO[1], Yamashita Katsuyuki[2], Daniel J. Dunkley[3], Toshiaki Tsunogae[4], Mutsumi Kato[5] (1. Kyushu University, 2. Okayama University, 3. Polish Academy of Sciences, 4. Univ. of Tsukuba, 5. Chiba University)

Compositional changes in closed and open systems of igneous rocks from northern part of Mt. Shaku-dake, northern Kyushu, SW Japan

*Keisuke ESHIMA[1]

1. Yamaguchi Univ.

Recently, diorite (HMD) with high Mg andesite (HMA) compositions have been reported from Cretaceous mafic rocks in northern Kyushu. Examples include the Kunisaki Peninsula, Kita-taku (Kamei et al., 2004), Mt. Shaku-dake and Mt. Ushikiri-yama areas (Eshima et al., 2020; Eshima, 2021; Eshima and Owada, 2023). These mantle-derived mafic magmas are considered to be strongly involved in the genesis of granitic magmas as parent magmas and heat sources for crustal melting (Reid et al., 1983), and are very important rocks for a comprehensive understanding of the magmatic relationships of the Cretaceous Northern Kyushu batholith and the growth process of the granitic crust. On the other hand, it is very important to examine the geological and petrological relationship between the HMA (HMD) and the surrounding rocks that were active at the same time to elucidate the origin of the HMA magma and its maturation process (including tectonics). Such an examination will expand our understanding of igneous activity with HMA activity to a comprehensive understanding that includes volcanic-plutonic activity and geological time scales. In this presentation, I discuss the compositional changes of igneous rocks including porphyritic rocks in the northern part of Mt. Shaku-dake area, Mt. Shaku-dake body is as known as the largest HMD body in northern Kyushu, in closed and open systems, and discuss the plutonism of the Cretaceous igneous activity in the early stage of the Cretaceous Northern Kyushu batholith.

Keywords: Cretaceous Northern Kyushu Batholith, Porphyry, Mixing, Hydrothermal alteration

Formation of upper-most crust in volcanic belt: Example for Cretaceous volcano–plutonic complex, Hyogo Prefecture, southwest Japan

*Masaaki OWADA[1], Shunsuke Fukuda[1], Atsushi Kamei[2]

1. Yamaguchi University, 2. Shimane University

A volcano–plutonic complex is an important magmatic body to understand for the formation of upper-most crustal processes in terms of its magmatic histories, geochronology, and geochemical investigations along volcanic belts. There are many volcano–plutonic complexes during the Cretaceous and Paleocene Tertiary in the southwest Japan. Cretaceous Volcanic tuff and welded tuff layers with 74 Ma by zircon Fission Track dating are underlain by Himeji City and Kakogawa City, Hyogo Prefecture, and are intruded by the Ohfuji-yama granodiorite (biotite K–Ar age, 77 Ma), andesitic dike, and quartz diorite dike. All intrusive rocks geochemically show tholeiitic compositions. Considering constituent rock types with their geochemical signatures, the volcano–plutonic complex in this area was situated in the volcanic front and formed an upper-most crust during the Late Cretaceous.

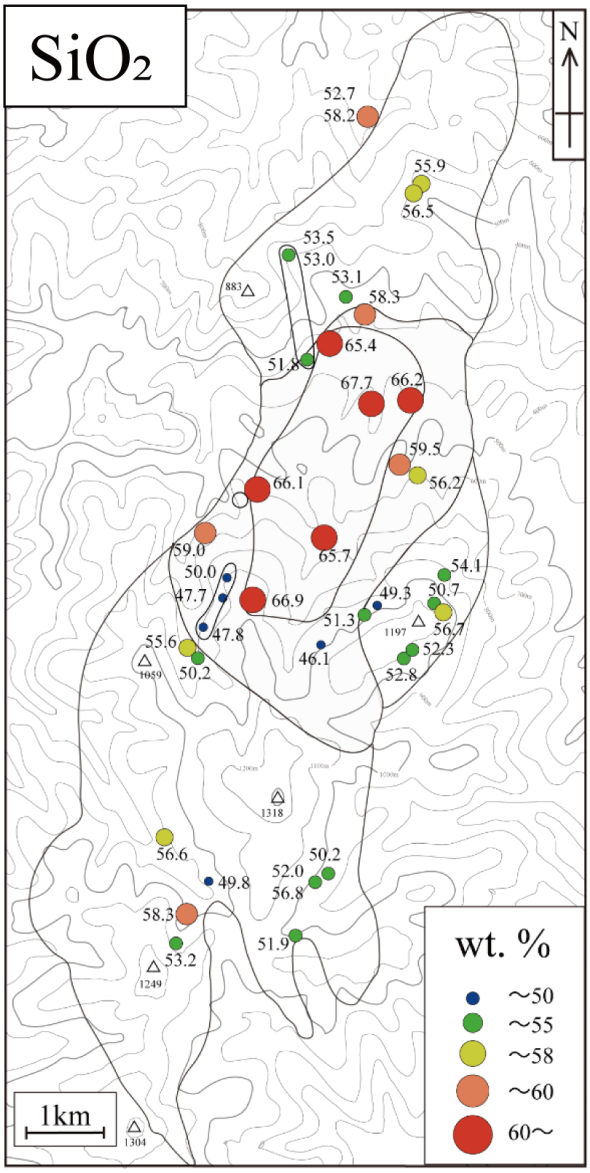
Keywords: Late Cretacous, Volcano-plutonic complex, volcanic front, Tholeiitic seriese

Intrusion and emplacement processes of adakitic magma into the shallow crust: A case study of the Sakainokami plutonic body, Kitakami mountains, northeast Japan

*Satoshi SUZUKI[1], Nobuo ASAI[1], Kazuo NAKASHIMA[1], Yasuhiro OGITA[2], Tatsunori YOKOYAMA[2], Shuhei SAKATA[3], Takeshi OHNO[4], Takashi YUGUCHI[5]

1. Yamagata Univ., 2. Japan Atomic Energy Agency, 3. Univ of Tokyo. , 4. Gakushuin Univ. , 5. Kumamoto Univ.

Keywords: flare-up, (non) adakitic magma, spatial petrographical characteristics , P-T history, t-T history



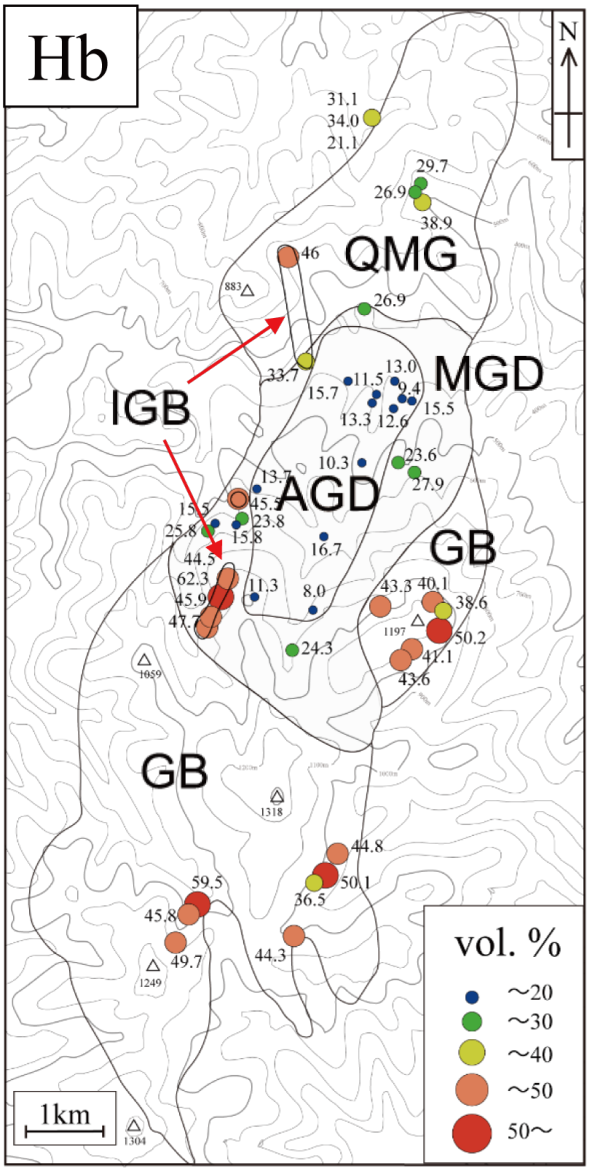


図１　堺ノ神岩体の全岩化学組成，モードによる空間的岩石学的特徴（左：全岩化学組成の SiO_2，右：ホルンブレンドのモード）

IGB	Intrusive gabbro
AGD	Adakitic biotite hornblende granodiorite
MGD	Biotite hornblende granodiorite
QMG	Biotite hornblende quratz monzodiorite - granodiorite
GB	Biotite two-pyroxene hornblende quartz gabbro

Identification of multiple components of noble gas isotopes in back-arc lithospheric mantle

*Lena Yokokura[1], Hirochika Sumino[1], Takeshi Kuritani[2], Yuuki Hagiwara[3], Junji Yamamoto[4]

1. The University of Tokyo, 2. Hokkaido University, 3. JAMSTEC, 4. Kyushu University

Keywords: Mantle xenolith, Fluid inclusions

Three-dimensional evaluation of internal structures contributing to mass transport distributed in minerals: micropores in K-feldspar in the Toki granite, central Japan.

*Mai Nonaka[1,2], Takashi Yuguchi[3]

1. Yamagata University, 2. Japan Atomic Energy Agency, 3. Kumamoto University

Keywords: Micropore, K-feldspar, mass transfer, Three-dimensional evaluation, Toki granite

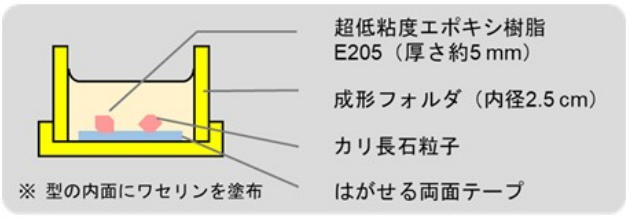


図1 作成試料の概念図

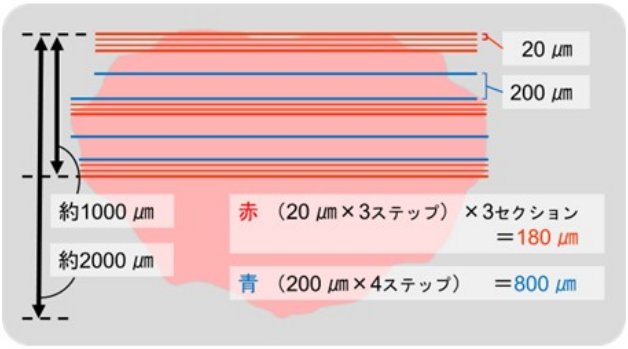


図2 試料研磨の概念図

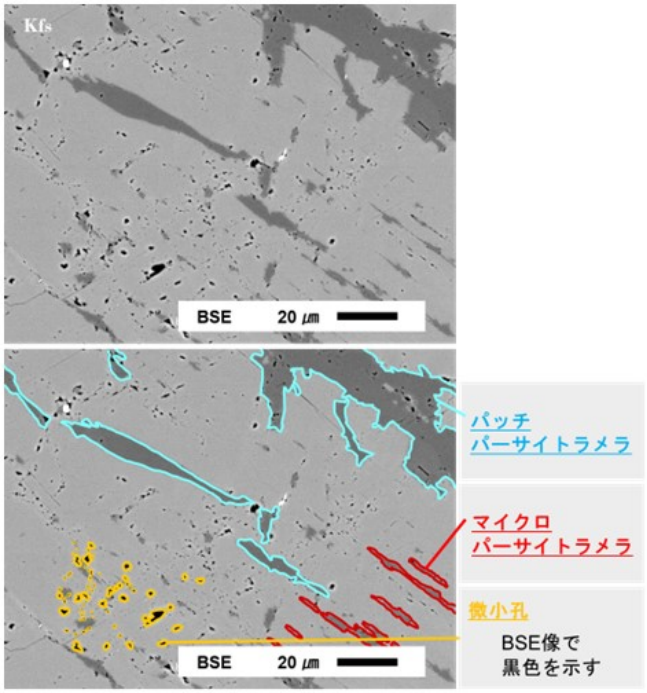


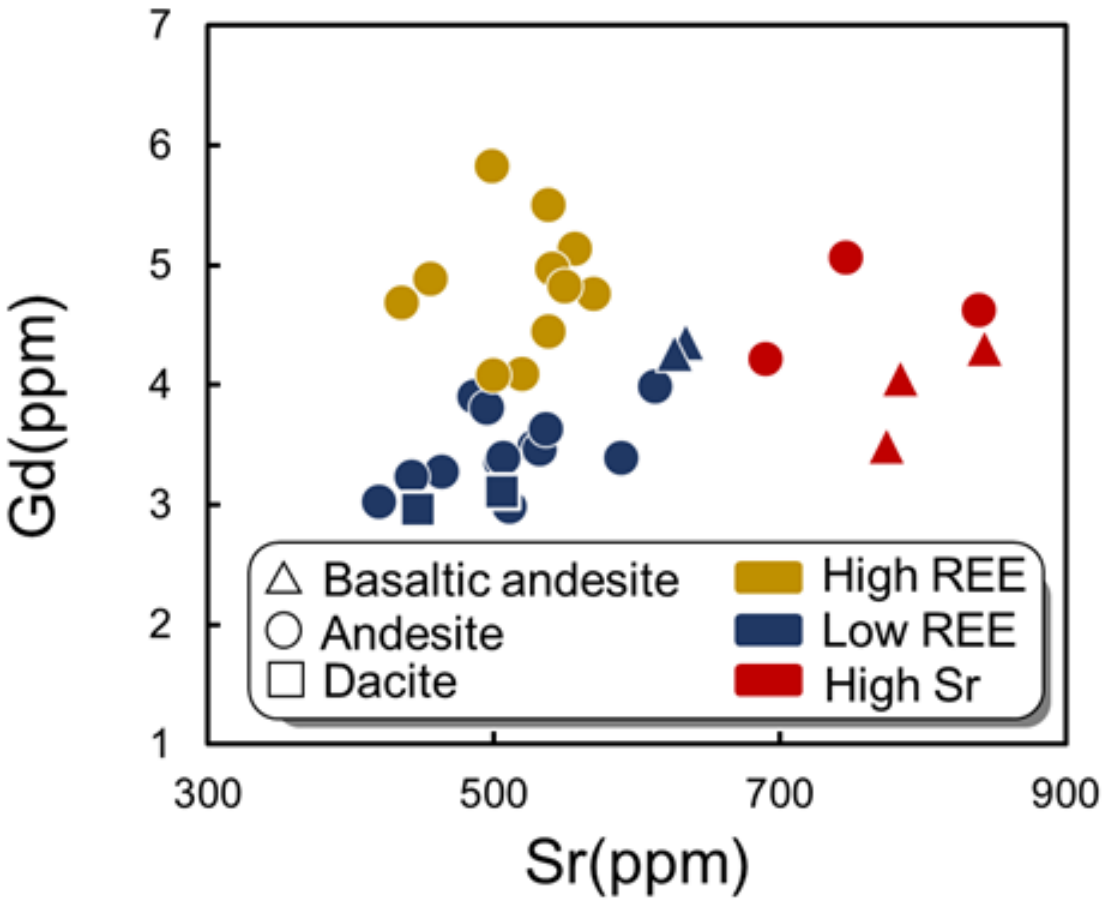
図3 SEM-CLで画像取得した
カリ長石の内部構造（BSE像）

Magma source and evolution process for Quaternary Magmas from Kuju Volcanoes, Kyushu Island, Southwest Japan Arc.

*Soma Yamanaka[1], Tomoyuki Shibata[3], Ryotaro Fujihara[1], Tatsuki Orito[1], Taichi Heijima[1], Masako Yoshikawa[3], Tomo Shibata[2]

1. Hiroshima Univ. Sci., 2. Fukuoka Univ. Sci., 3. Hiroshima Univ. Sci. & Tech.

Keywords: island arc, trace elements, Sr-Nd-Pb isotope, magma mixing, fractional crystallization



Geochemical features of the Early Miocene Hachiya Formation in the Chuno Area, Gifu Prefecture, Japan

*Seiya Saijou[1], Toshiro Takahashi[2]

1. Niigata Univ. Sci., 2. Niigata Univ

The Hachiya Formation in Chuno area, Gifu Prefecture, is composed of pyroclastic rocks of the Early Miocene, is seen on the front arc side of the volcanic front at that time. However, detailed Geochemical studies of this have not been done. We studied this to understand the igneous activity in southwest Japan at that time. This shows that this formation may have originated in slab melts that reacted with the mantle, continental lithospheres.

Keywords: Hachiya Formation, adakite, slab melting

Cathodoluminescence pattern of quartz and quantitative determination of titanium and aluminum concentration within quartz crystals in the Tono plutonic complex, Kitakami mountains

*Yasuhiro OGITA[1,2], Takenri KATO[3], Takashi YUGUCHI[4]

1. Yamagata Univ., 2. JAEA, 3. Nagoya Univ., 4. Kumamoto Univ.

Keywords: Quartz, cathodoluminescence pattern, titanium concentration, aluminum concentration, Tono plutonic complex

Cathodoluminescence patterns of quartz crystals in granite and their titanium concentrations: implication to crystallization process of quartz in the magma chamber

*Asuka Kato[1], Takenori Kato[2], Yasuhiro Ogita[1,3], Takashi Yuguchi[4], Eiji Sasao[3]

1. Yamagata Univ. , 2. Nagoya Univ, 3. JAEA, 4. Kumamoto Univ

Keywords: Quartz, Cathodoluminescence, EPMA, Titanium cocentration, TitaniQ thermometry

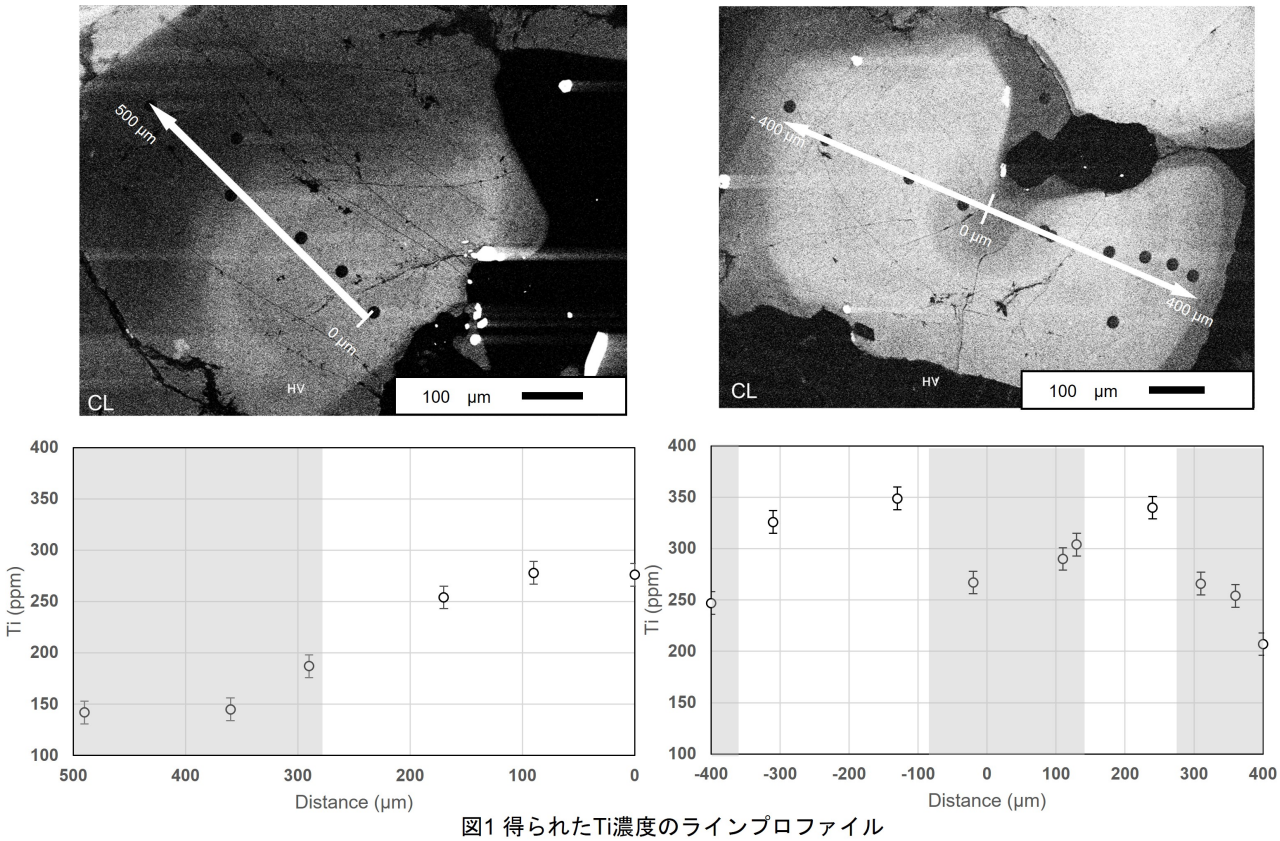


図1 得られたTi濃度のラインプロファイル

Petrography and Rb-Sr mineral age of mafic dyke rocks on Niban-Rock, Lützow-Holm Complex (LHC), East Antarctica.

*Tomoharu MIYAMOTO[1], Yamashita Katsuyuki[2], Daniel J. Dunkley[3], Toshiaki Tsunogae[4], Mutsumi Kato[5]

1. Kyushu University, 2. Okayama University, 3. Polish Academy of Sciences, 4. Univ. of Tsukuba, 5. Chiba University

Niban Rock is a 2.5 km ×3.5 km exposure located at northeast LHC and is corresponded into the amphibolite–facies zone. Niban Rock is composed of Niban–higashi Rock and Niban–nishi Rock, and is underlain mainly by sillimanite–garnet–biotite gneiss, biotite gneiss, and biotite–hornblende gneiss along with minor metabasite, calc–silicate gneiss, granite, and aplite. Although the intrusive rocks were less voluminous than the widespread metamorphic rocks, the emplacement of the mafic dyke which cut metamorphic textures and structures was recognized in the Niban-higashi Rock. The mafic dyke was a few tens cm width intrusive to 10 m length at least, oriented mostly to the WNW-ESE direction, and cut sharply through the foliage of the surrounding host gneisses. The dyke does not exhibit textures resembling the major metamorphic structures found in the surrounding basement rocks. The boundary between the dyke and surrounding host gneisses had no reactive textures. The mafic dyke rocks are commonly holocrystalline and aphyric. They consisted mainly of alkali feldspar, plagioclase, biotite, hornblende, quartz, apatite, and titanite. The crystals often grow in parallel arrays in the intrusive direction of the dyke. The mafic dyke rocks have alkalic compositions, and enriched to incompatible elements. For chronological research, the mafic fractions and felsic fractions were separated from crushed mafic rock samples. Their $^{87}Rb/^{86}Sr$ and $^{87}Sr/^{86}Sr$ values are aligned on the isochron diagram, and the age showed 500.9 ±0.2 Ma and IR = 0.704665 ±0.000016). Occurrence of the mafic dykes at Niban-Rock suggest the presence and timing of mantle-involved igneous activity after major metamorphism at the NE LHC.

Keywords: Lützow-Holm Complex, Mafic dyke, Intrusion of after peak metamorphism

Poster presentation | R8: Metamorphic rocks and tectonics

Sat. Sep 16, 2023 12:00 PM - 2:00 PM JST | Sat. Sep 16, 2023 3:00 AM - 5:00 AM UTC | 83G,H,J Sugimoto Campus

R8: Metamorphic rocks and tectonics

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

[R8P-01] Structural and petrological study of layering in the Horoman Peridotite Complex, Hokkaido, Japan

[Presentation award entry]

*Aya Hihara[1], Miki Tasaka[1], Keisuke Kurihara[1], Tatsuhiko Kawamoto[1], Hajime Taniuchi[2] (1. Shizuoka University, 2. National Institute of Advanced Industrial Science and Technology)

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

[R8P-02] Geology and petrography of metamorphic rocks in Sibuyan Island, Romblon, Philippines

[Presentation award entry]

*John Kenneth Badillo[1], Gabriel Theophilus Valera[1], Betchaida Payot[1] (1. University of the Philippines Diliman)

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

[R8P-03] **The metamorphic condition of the Oshima peninsula, in the southern part of Yamaguchi prefecture: Implications for metamorphic process and regional structure of the Ryoke metamorphic belt, west Seto Inland sea area**

[Presentation award entry]

*Zejin LU[1], Masaaki Owada[1] (1. Yamaguchi University)

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

[R8P-04] Study of flexural slip formed by plate subduction

[Presentation award entry]

*Haruki Yoshiasa[1], Jun-ichi ANDO[2], SARKAR Dyuti Prakash[2], DAS Kaushik[2], GHOSH Gautam[3] (1. Hiroshima Univ. , 2. Hiroshima Univ., 3. Presidency Univ.)

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

[R8P-05] Electron diffuse scattering in omphacite from lawsonite eclogite xenolith in Colorado Plateau: A preliminary report

[Presentation award entry]

*Ryo Fukushima[1], Tatsuki Tsujimori[1,2], Nobuyoshi Miyajima[3], Tiziana Boffa-Ballaran[3], Giacomo Criniti[3], Catherine McCammon[3] (1. Tohoku Univ. Sci., 2. CNEAS, Tohoku Univ., 3. BGI, Univ. Bayreuth)

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

[R8P-06] **Exhumation process of serpentinite in the Sangun-Renge belt exposed at Sasaguri, Fukuoka prefecture**

[Presentation award entry]

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

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

[R8P-07] Mineral and bulk compositions of an outcrop showing a symmetric sequence composed of peridotite and mafic-rock layers of Horoman peridotite, Japan

[Presentation award entry]

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

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

[R8P-08] Mechanism of seismic fault generation involving in pseudotachylyte formation in ductile regime: examples from Sarwar-Junia Fault Zone, India

[Presentation award entry]

*Junya OKAZAKI[1], Jun-ichi Ando[1], Kaushik Das[1] (1. Hiroshima University)

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

[R8P-09] Water content distributions in dynamically recrystallized quartz grains in granitoid mylonites: A case of an inner shear zone in the Ryoke Belt in the Kishiwada area, Osaka

*Takemasa Norimura[1], Junichi Fukuda[1] (1. Osaka Metrop. Univ. Geosci.)

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

[R8P-10] **Deformation microstructures and slip systems developed in olivine from the Petit-spot peridotite xenoliths: Insights on deformation mechanisms and anisotropy of upper mantle**

*Dyuti Prakash SARKAR[1,2], Norikatsu Akizawa[3], Jun-ichi Ando[1,2], Masako Yoshikawa[1,2] (1. Hiroshima University, 2. HiPeR, 3. The University of Tokyo)

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

[R8P-11] Novel automated method for estimating the peak temperature from the crystallinity of carbonaceous material using EM algorithm

*Yoshihiro NAKAMURA[1], Tarojiro MATSUMURA[1], Kazuhiro MIYAZAKI[1] (1. AIST)

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

[R8P-12] Zircon U-Pb ages of the Oura igneous complex, northern Kyoto area, SW Japan and its tectonic correlation

*Kosuke KIMURA[1], Kenta Kawaguchi[2], Nobuhiko Nakano[2], Tatsuro Adachi[2], Kaushik Das[3] (1. Osaka Metropolitan Univ. Sci., 2. Kyushu Univ. , 3. Hiroshima Univ. Sci.)

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

[R8P-13] Metasomatic syenite at the interface between charnockite and calc-silicate granulite, Eastern Ghats Belt, India: Mineral-chemical characterization and its implications during orogenesis

*Kaushik DAS[1,4], Proloy Ganguly[2], Sankar Bose[3,4] (1. Hiroshima University, 2. Durgapur Government College, Department of Geology, Durgapur, India, 3. Presidency University, Kolkata, India, 4. HiPeR, Hiroshima)

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

[R8P-14] Petrography of V and Zn-rich gahnite-sillimanite-muscovite gneiss from Menipa, Sør Rondane Mountains, East Antarctica

*Tatsuro ADACHI[1], Tetsuo Kawakami[2], Fumiko Higashino[2], Masaoki Uno[3] (1. Kyushu University, 2. Kyoto University, 3. Tohoku University)

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

[R8P-15] Unraveling the Link Between Deformation, Metamorphism, and Fluid Flow in the Archean Dharwar Craton, Southern India

*Sreehari LAKSHMANAN[1], Kiran Sasidharan[2], Satish-Kumar Madusoodhan[2], Tsuyoshi Toyoshima[2] (1. Shimane Uni., 2. Niigata Uni.)

Structural and petrological study of layering in the Horoman Peridotite Complex, Hokkaido, Japan

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

1. Shizuoka University, 2. National Institute of Advanced Industrial Science and Technology

Keywords: mantle, peridotite, Horoman Peridotite, deformation, crystallographic preferred orientation

Geology and petrography of metamorphic rocks in Sibuyan Island, Romblon, Philippines

*John Kenneth Badillo[1], Gabriel Theophilus Valera[1], Betchaida Payot[1]

1. University of the Philippines Diliman

Metamorphic rocks have been identified on Tablas, Romblon, and Sibuyan in the Romblon Island Group (RIG), Philippines. Collectively termed Romblon Metamorphics, these consist primarily of schists and phyllites, which are attributed by earlier works to the collision of the Palawan Microcontinental Block (PCB) and the Philippine Mobile Belt (PMB). In this work, we present new field and petrological data from metamorphic rocks exposed in Sibuyan Island to provide new insights into their petrogenesis and the *P-T-D* conditions that they preserve.

Phyllite outcrops of alternating quartz-rich (psammitic) and biotite-rich (pelitic) rocks are observed in northern Sibuyan island. The foliation direction of these interlayers generally dip in the southeast direction. Schist exposures on the other hand are more predominant in eastern and southwestern Sibuyan. They are also comprised of alternating dark- and light-colored layers suggesting similar protolith to the phyllites but with distinct peak metamorphic conditions. One outcrop documented near the coast in Barangay Mabini shows dark-colored schists with white prismatic feldspar porphyroblasts. This rock type dominates the exposure and is cut by dioritic leucocratic dikes that are often subparallel to the foliation of the schists.

Initial petrographic analysis of the metapelite schist and dike samples from Mabini revealed similar mineral assemblage of quartz(Qz)-feldspar(Afs)-biotite(Bt)-muscovite(Ms)-chlorite in varying abundances. Bt and Ms are the dominant minerals in schists, while Qz and Afs are more abundant in the dike samples. Foliations are observed as the preferred orientation of Qz and Afs in dikes and Bt and Ms in schist.

The dominance of Ms and Qz suggests a continent-derived protolith possibly linked to the PCB. Further petrological and geochemical analyses will be done to interpret the pressure-temperature-deformation-time (*P-T-D-t*) history and petrogenesis of rocks in the Sibuyan Island.

Keywords: schists, phyllites, Sibuyan, Romblon Island Group

The metamorphic condition of the Oshima peninsula, in the southern part of Yamaguchi prefecture: Implications for metamorphic process and regional structure of the Ryoke metamorphic belt, west Seto Inland sea area

*Zejin LU[1], Masaaki Owada[1]

1. Yamaguchi University

Keywords: High-temperature/Low-pressure type, Ryoke belt

Study of flexural slip formed by plate subduction

*Haruki Yoshiasa[1], Jun-ichi ANDO[2], SARKAR Dyuti Prakash[2], DAS Kaushik[2], GHOSH Gautam[3]

1. Hiroshima Univ. , 2. Hiroshima Univ., 3. Presidency Univ.

Keywords: Flexure slip, MBT, Microstructure observation, Dislocation creep, Frictional heating

Electron diffuse scattering in omphacite from lawsonite eclogite xenolith in Colorado Plateau: A preliminary report

*Ryo Fukushima[1], Tatsuki Tsujimori[1,2], Nobuyoshi Miyajima[3], Tiziana Boffa-Ballaran[3], Giacomo Criniti[3], Catherine McCammon[3]

1. Tohoku Univ. Sci., 2. CNEAS, Tohoku Univ., 3. BGI, Univ. Bayreuth

Ultrahigh-pressure lawsonite eclogite xenolith from the Navajo volcanic field, central Colorado Plateau, has attracted much attention because this xenolith should be a fragment of the Farallon plate that was rapidly brought to the surface by the diatreme formation. One can therefore expect that reconnaissance of its constituting minerals is useful to examine eclogitization processes without affected by retrogression. Notably, cation ordering processes in omphacite lead to various types of micrometer-scale textures such as antiphase domains, reflecting the thermal history of slab eclogitization.

Here, we report the crystallographic features of omphacite in the lawsonite eclogite xenolith. The omphacite grains are a little enriched in Fe^{3+}(~aug_{35-45} jd_{40-50} aeg_{15-20}) and characterized by local compositional heterogeneities. Despite the peak metamorphic temperature of ~620℃, below the critical temperature of its order-disorder transition (~865℃), our X-ray diffraction analysis of representative crystals demonstrated the absence of any super-lattice diffraction peaks belonging to the ordered phase. However, our observation of the omphacite from the same eclogite with transmission electron microscopy revealed the presence of diffuse scattering related to the ordered structure, although antiphase domains were not observed.

These omphacites should have undergone incomplete disordering after the prograde metamorphism. The most probable event that induced cation disordering was the Cenozoic thermal pulse before the diatreme emplacement. A previous study on a dunite xenolith suggested the presence of pre-emplacement heating (>~800℃) that lasted for <~1700 years (Smith, 2010). Therefore, we conducted several high-pressure annealing experiments of natural ordered omphacites by using a piston-cylinder apparatus; we obtained completely disordered omphacites after 24 h annealing at 1000℃, 3 GPa. This corroborates the hypothesis that cation disordering in omphacite can occur within such a short timescale. Although the heating might have overprinted the prograde omphacite microtexture, these peculiar omphacites could allow to discuss short timescale of the episodic heating, which cannot be evaluated only with conventional analyses of macroscopic diffusion profiles.

Keywords: omphacite, order-disorder transition, Colorado Plateau, lawsonite eclogite, electron diffuse scattering

Exhumation process of serpentinite in the Sangun-Renge belt exposed at Sasaguri, Fukuoka prefecture

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

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

Antigorite serpentinite (serp) of the Sangun-Renge Belt is exposed at the northern part of Narubuchi Dam, Sasaguri, Fukuoka Pref. Clarifying the exhumation process of serp is important for elucidating tectonics in mantle wedges. For this purpose, we conducted a petrological study of the Sasaguri serp and the amphibolite exposed in contact with this serp. Field survey reveals a mylonitized zone and siliceous schist (ss) distributed in the serp mass. The strike and dip of both rocks are similar to the serp mass. The microstructures of the serp, ss, and amphibolite are observed by optical microscope and SEM, the composition of Cr-spinel in serp is measured by EPMA, and the CPO of antigorite (atg) and quartz in ss is determined by SEM-EBSD. The following are revealed. 1) Atg, a few mm in size, shows undulose extinction and dynamic recrystallization, but no CPO. 2) Atg in the mylonitized zone is less than 100 μm in size, with (001) and [010] oriented parallel to foliation and lineation, respectively. 3) The composition of Cr-spinel (Fig. 1) indicates that the source rock (peridotite) is of forearc origin. The ferritchromite rim suggests that the peridotite is re-equilibrated at greenschist to amphibolite temperatures. 4) Magnetite formed around the ferritchromite rim indicates that the serpentinization occurred after ferritchromization. 5) The source of ss is chert. 6) SS shows a porphyroclastic texture, with X max CPO of c-axis of porphyroclast and crossed girdle of neoclasts. Crossed girdle is known to form at 400-550˚C. 7) The CPO of neoclasts indicates the top-to-north shear sense, which implies that recrystallization occurred during exhumation. 8) The hornblende thermometry shows that the amphibolite is formed at 550-700˚C. 9) The kink band in the hornblende is metasomatized to actinolite, suggesting retrograde metamorphism at greenschist facies condition. Based on the above results, the exhumation process of Sasaguri serp will be discussed in our presentation.

Keywords: Exhumation, Serpentinization, Antigorite, Quartz, CPO

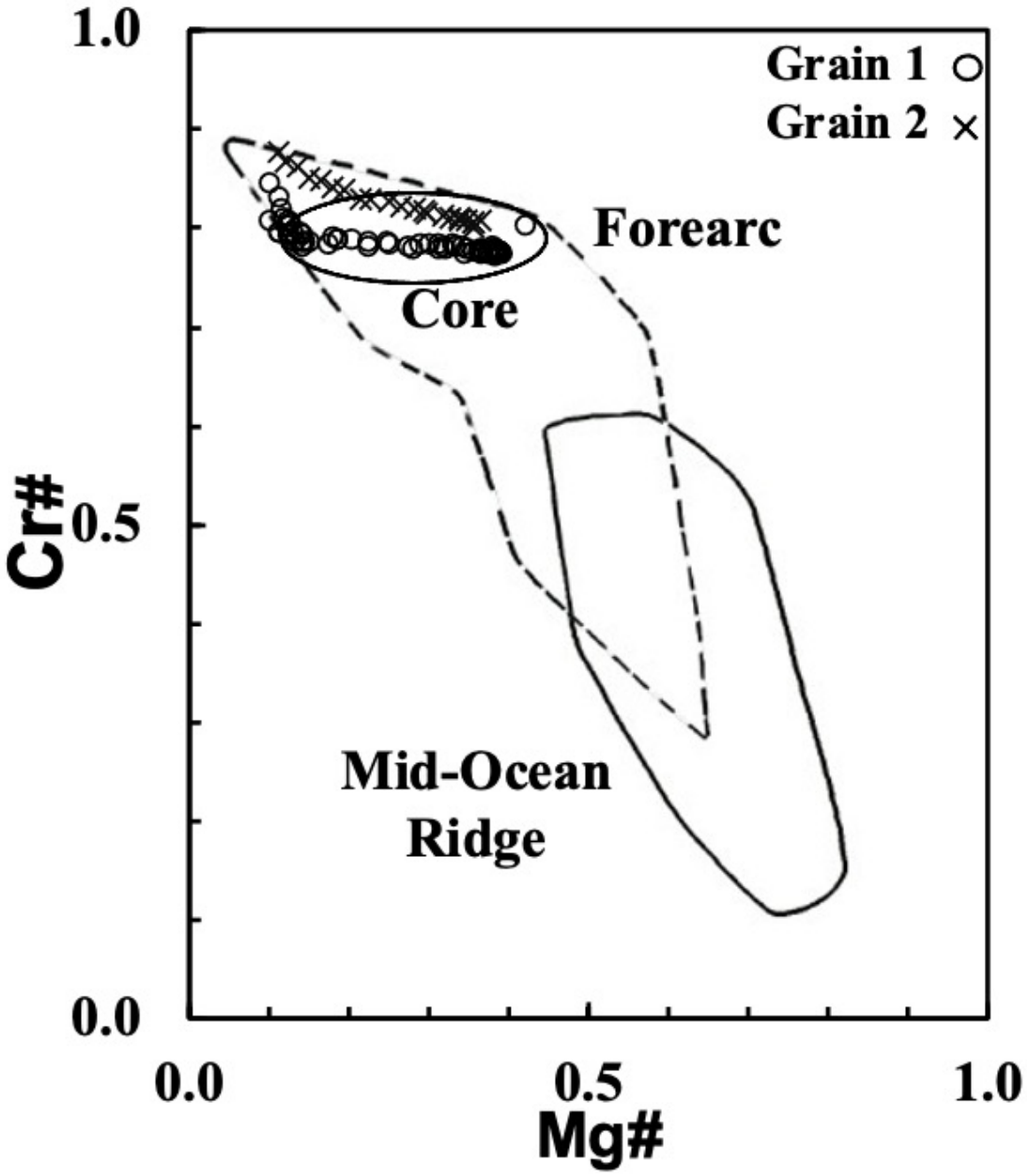


Fig. 1: Chemical composition of Cr-spinel along a line from the center to the rim for two grains. Mg# in the center is 0.3-0.4 and ferritchromatization is visible at the rim. Cr# = Cr/(Cr+Al), Mg# = Mg/(Mg+ Fe^{2+}). Modified from Morishita et al. (2013).

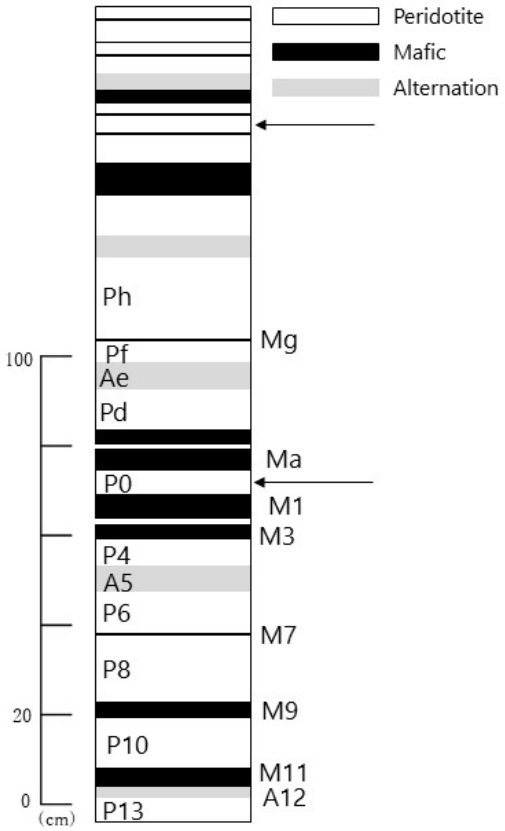
Mineral and bulk compositions of an outcrop showing a symmetric sequence composed of peridotite and mafic-rock layers of Horoman peridotite, Japan

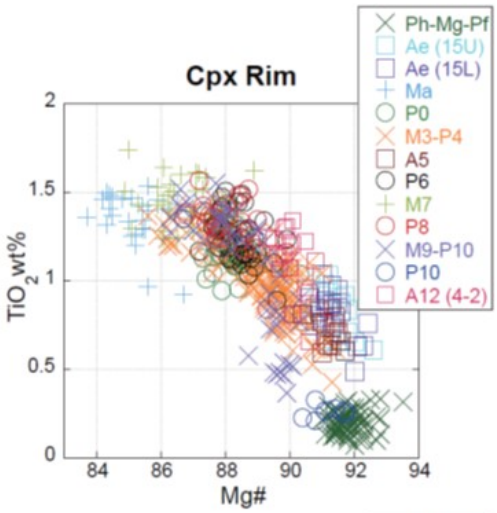
*Keisuke Kurihara[1], Tatsuhiko Kawamoto[1], Aya Hihara[1], Miki Tasaka[1], Hajime Taniuchi[2], Takeshi Kuritani[3], Akiko Matsumoto[3]

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

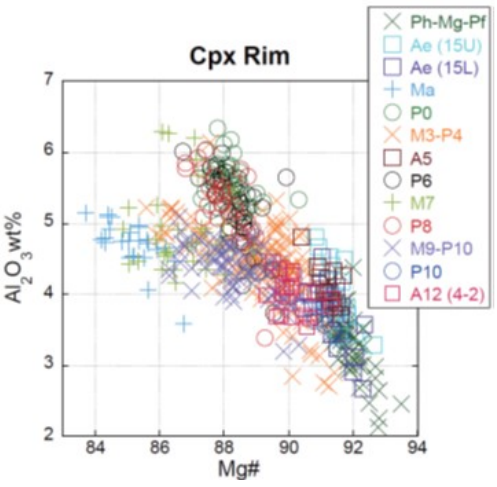
Keywords: Peridotite, Mafic-rock, Mantle, refertilization, Chemical composition

図A アポイ岳北尾根露頭の柱状図
矢印は対称構造の中心を指す。





図B
Cpx リムの
TiO_2 wt% vs Mg#



図C
Cpx リムの
Al_2O_3 wt% vs Mg#

Mechanism of seismic fault generation involving in pseudotachylyte formation in ductile regime: examples from Sarwar-Junia Fault Zone, India

*Junya OKAZAKI[1], Jun-ichi Ando[1], Kaushik Das[1]

1. Hiroshima University

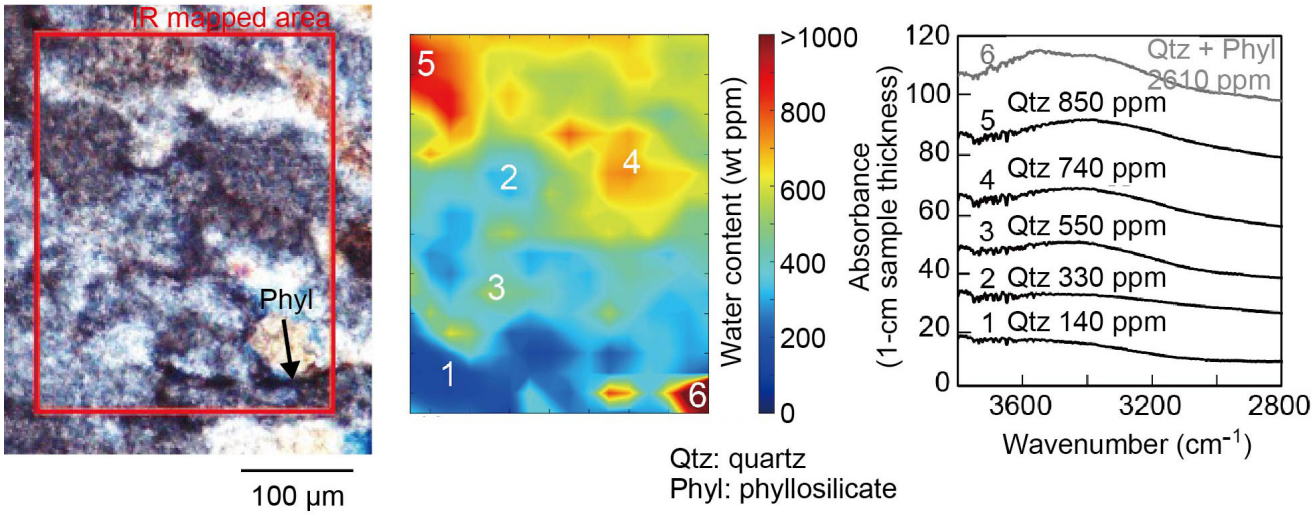
Keywords: Pseudotachylyte, Fault activity, Frictional melting, Ductile deformation zone

Water content distributions in dynamically recrystallized quartz grains in granitoid mylonites: A case of an inner shear zone in the Ryoke Belt in the Kishiwada area, Osaka

*Takemasa Norimura[1], Junichi Fukuda[1]

1. Osaka Metrop. Univ. Geosci.

Keywords: Quartz, Plastic deformation, Dynamic recrystallization, Water content, Infrared spectroscopy



Deformation microstructures and slip systems developed in olivine from the Petit-spot peridotite xenoliths: Insights on deformation mechanisms and anisotropy of upper mantle

*Dyuti Prakash SARKAR[1,2], Norikatsu Akizawa[3], Jun-ichi Ando[1,2], Masako Yoshikawa[1,2]

1. Hiroshima University, 2. HiPeR, 3. The University of Tokyo

Petit-spot is small knoll (~1 km^3 volume) occurring on the ocean floor and is considered to be formed as a result of plate flexure along outer rise. The presently studied peridotite xenoliths were obtained from petit-spot volcanic fields (Sites A and B) placed in the offshore of northern Japan during scientific cruises of YK20-14S and YK21-07S, using deep-submergence research vehicle Shinkai6500. The peridotite xenoliths are included in vesicular alkaline basalts. The peridotites are harzburgitic to lherzolitic in modal composition. The forsterite number (Mg/(Mg + Fe) atomic ratio ×100) of the olivine ranges from 91 to 92, and the pyroxenes are enstatite or diopside in composition. The olivines show minor reaction only in the boundaries with the host basalt, suggesting the preservation of pristine mantle microstructures. Additionally, the olivine grains show development of sub-grain boundaries, however distinct foliation and lineation are not prominently observed. Elucidating the deformation fabric of the olivine is a challenge as the individual xenoliths are unoriented and do not have distinct foliation or lineation. Hence to determine the active slip systems we have used Electron Backscatter Diffraction (EBSD) analysis to determine the slip system of individual sub-grain boundaries developed in each olivine grains for the samples and attempted to infer the overall slip system developed in the analyzed samples. We present these results and infer the possible deformation conditions for the peridotite xenoliths from the petit-spot volcanoes. Additionally, the results also provide us insights on the seismic anisotropy of the lithospheric mantle in the northwestern Pacific region.

Keywords: petit-spot, olivine deformation, mantle deformation, seismic anisotropy

Novel automated method for estimating the peak temperature from the crystallinity of carbonaceous material using EM algorithm

*Yoshihiro NAKAMURA[1], Tarojiro MATSUMURA[1], Kazuhiro MIYAZAKI[1]

1. AIST

Keywords: Carbonaceous material, Micro-Raman spectroscopy, EM algorithm

Zircon U-Pb ages of the Oura igneous complex, northern Kyoto area, SW Japan and its tectonic correlation

*Kosuke KIMURA[1], Kenta Kawaguchi[2], Nobuhiko Nakano[2], Tatsuro Adachi[2], Kaushik Das[3]

1. Osaka Metropolitan Univ. Sci., 2. Kyushu Univ. , 3. Hiroshima Univ. Sci.

Keywords: Oura igneous complex, Zircon, Yakuno ophiolite, Inner zone of Southwest Japan

Metasomatic syenite at the interface between charnockite and calc-silicate granulite, Eastern Ghats Belt, India: Mineral-chemical characterization and its implications during orogenesis

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

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We have recently found occurrences of meter-to-micrometer scale bands and veins of syenite at the contact between the calc-silicate granulite (clinopyroxene-plagioclase-scapolite-wollastonite-calcite-grandite garnet-titanite-apatite-quartz) and the coarse-grained charnockite (plagioclase-K-feldspar-orthopyroxene-quartz) exposed at the Phulbani area of the Proterozoic Eastern Ghats Province (EGP). The calc-silicate granulite witnessed ultrahigh temperature (UHT) metamorphism followed by charnockite intrusion. Syenite (clinopyroxene-K-feldspar-apatite±titanite±quartz) bands and mylonitized veins are roughly parallel to the axial plane of the mesoscopic-scale fold present in the calc-silicate granulite. Anorthitic patches, and myrmekite intergrowth replacing the albite component of plagioclase of the contact zone of charnockite are common. In charnockite, clinopyroxene and K-feldspar-bearing syenitic vein occurs which in turn replaces anorthitic plagioclase (An > 96 mol%) of calc-silicate granulite to scapolite+calcite bearing mineral assemblage. All these indicate a fluid-rock interaction while forming syenite.
During this deep crustal metasomatism, fluor-apatite overgrowths and neoblastic growths occurred in the syenite as well as the leached part of the wall rock. While the early-formed apatite grains are Ce, La, Y, and Si-enriched, the overgrowths are relatively depleted. The present study highlights the interactions of lower crustal rocks with saline, carbonic, and REE-depleted fluid. Similar metasomatic syenite occurrences are reported from other portions of the northern EGP implying its formation on a large scale during orogenic evolution.

Keywords: Syenite, Apatite, Trace elements, Metasomatism

Petrography of V and Zn-rich gahnite-sillimanite-muscovite gneiss from Menipa, Sør Rondane Mountains, East Antarctica

*Tatsuro ADACHI[1], Tetsuo Kawakami[2], Fumiko Higashino[2], Masaoki Uno[3]

1. Kyushu University, 2. Kyoto University, 3. Tohoku University

Keywords: Vanadium, Zinc, metasedimentary rock, Sør Rondane Mountains, East Antarctica

Unraveling the Link Between Deformation, Metamorphism, and Fluid Flow in the Archean Dharwar Craton, Southern India

*Sreehari LAKSHMANAN[1], Kiran Sasidharan[2], Satish-Kumar Madusoodhan[2], Tsuyoshi Toyoshima[2]

1. Shimane Uni., 2. Niigata Uni.

The Dharwar Craton (DC) is the largest Archean(3500 to 2500 Ma) craton in the Indian Shield. The DC is divided into three main regions: the Western Dharwar Craton (WDC), the Central Dharwar Craton (CDC), and the Eastern Dharwar Craton (EDC). In this presentation, we aim to discuss the metamorphic history of the WDC and its interplay with deformation and fluid flow. We will present detailed petrological data from the eastern part of the WDC, specifically focusing on the southern section of the Chitradurga Schist Belt (CSB). The CSB consists of various rock formations, including the Sargur Group and Dharwar Supergroup. Through our detailed structural analysis, we have identified five major deformation events in the WDC. Among these, D2 (NNW-SSE trending reverse faults and upright folds) and D3 (strike-slip sinistral shear) are the regional-scale deformation events. Due to the limited availability of mineral assemblages suitable for geothermometry, we have employed carbonaceous material thermometry (CM) in metapelitic rocks from each formation. We have selected 15-samples containing CM from different Groups. Using Raman spectroscopy, we have identified differences in metamorphic temperatures among the Groups. The Bababudan and Chitradurga Groups exhibit metamorphic temperatures ranging from 500˚–550˚C, whereas the Hiriyur and Sargur Groups exhibit temperatures between 450˚– 400˚C. We interpret these differences in metamorphic temperatures as being associated with the spatial relation to the D_3 strike-slip shear zones within the study area. The fluid flow along these shear zones may have influenced the properties of the carbonaceous material, thereby affecting the observed temperatures. Additionally, based on the metamorphic mineral assemblage, the presence of Chlorite+Muscovite association is prominent in the D_3 shear zones, indicating fluid flow processes during the D_3 deformation. Moreover, microscopic observations reveal that Garnet-Biotite assemblages in the D2 shear zone are cross-cut by Fe-rich fluid veins, suggesting fluid flow processes following the D2 deformation. We interpret these fluid flow associated with the D3 deformation, which is directly connected to the regional-scale collision and associated strike-slip deformation processes that occurred throughout the entire DC.

Keywords: Dharwar Craton, Tectonics, Metamorphism, Deformation