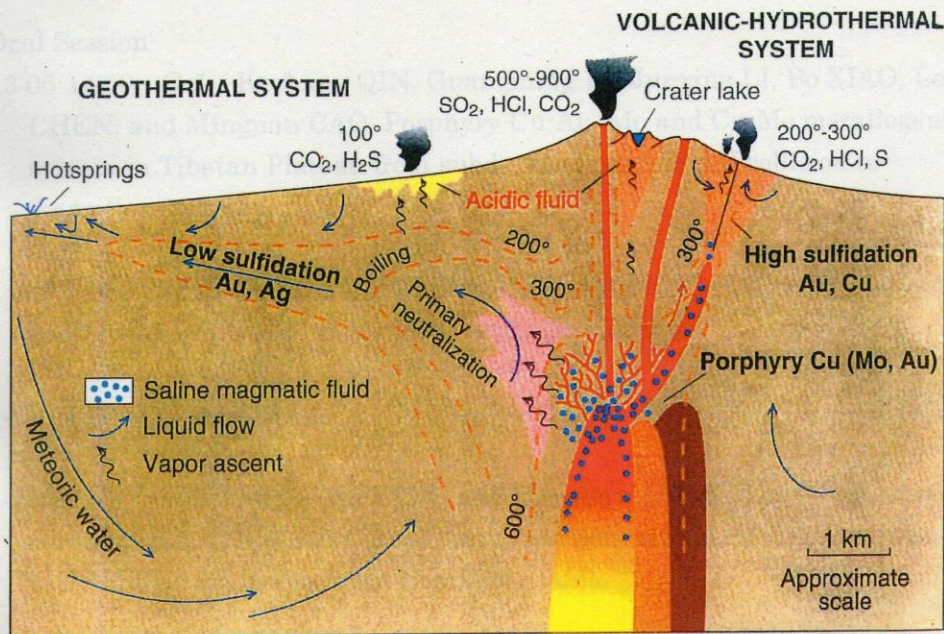


International Symposium of the Hokkaido University Museum on  
An International Symposium of the Hokkaido University Museum  
北海道大学総合博物館国際学術シンポジウム

*Hydrothermal Activity and Metallic Mineralization  
related with Porphyry and other Magmatic Systems*

(斑岩及び他のマグマ系における熱水活動と金属鉱化作用)



15:10-16:30 O-4. Euii T. YUNINGSIK and Hirohisa MATSUEDA  
Distribution and characteristics of epithermal gold-silver mineralization  
of the southwestern and northeastern Hokkaido, Japan

Date: October 26<sup>th</sup>, 2013

Time: 13:00~17:00

Place: Room N320 (3<sup>rd</sup> Floor) of the Hokkaido University Museum

Organizer: The Hokkaido University Museum



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***Program***

13:00-13:05 **Opening**

**Oral Session**

13:05-14:00 O-1 Kezhang QIN, Guangming LI, Junxing LI, Bo XIAO, Lei CHEN, and Mingjian CAO: Porphyry Cu-Au, Mo and Cu-Mo metallogenic system in Tibetan Plateau from subduction, continental collision to transition settings

14:00-14:30 O-2 Shunso ISHIHARA: Unique Au-REE-rich Cu-magnetite deposits at Sin Quyen in the northernmost Vietnam

14:30-14:50 **Coffee Break**

14:50-15:10 O-3 Xuan-Zhu YANG and Hiroharu MATSUEDA: Accessory chromite-magnetite coexistence and alteration with particular reference to PGE deposits in Jinchuan Complex, China

15:10-15:30 O-4 Euis T. YUNINGSIH and Hiroharu MATSUEDA: Distribution and characteristics of epithermal gold-silver mineralization of the southwestern and northeastern Hokkaido, Japan

15:30-15:50 O-5 Elena D. ANDREEVA, Victor M. OKRUGIN and Hiroharu MATSUEDA: Characteristics of the gold-silver-mineralization in the Central Kamchatka, Russia



15:50-16:10 **Coffee Break**

16:10-16:30 **O-6** Junji TORIMOTO, Erica OZASA, Hiroharu MATSUEDA, Takayuki TANAKA, Tetsuya KOSAKA, Yoji SASAKI: Preliminary fluid inclusion studies in Cu deposits of South Moune area in Vientiane Province, Laos

16:30-16:50 **O-7** Naoki MITA, Chizuko OKAZAKI, Hiroyuki MIURA, Takashi ITOH, Akira USUI, Yutaka KANAI, Masahiro AOKI: Suggestion to "the future Geopark design to reach the shiowakka lime dome from the Meakan area" around a manganese oxide deposit (natural monument of Japan) formed by the community of the microbe  
(微生物の共同体によって生成中のマンガン酸化物鉱床(国の天然記念物)を中心とする「雌阿寒地域からシオワッカ石灰ドームに至る、将来のGeopark構想」への提案)

**Poster Session**

16:50-17:20

**P-1** Chizuko OKAZAKI, Hiroharu MATSUEDA, Masahiro AOKI, Yutaka KANAI, Naoki MITA: Summary of the earth science of opal found in the Shikaribetsu volcano area of Hokkaido  
(北海道の然別火山地域から見つかるオパールの地球科学的概要)

**P-2** Chizuko OKAZAKI, Hiroyuki MIURA, Masahiro AOKI, Yutaka KANAI, Naoki MITA: Oolic and the dog-tooth shape calcite which were discovered in the Tomuraushi hot spring of Hokkaido  
(北海道のトムラウシ温泉から発見された魚卵状と犬牙状の方解石)

17:20-17:30 **Closing**

18:00-20:00 **Social Gathering**



## **Distribution and Characteristics of Epithermal Gold-Silver Mineralization of the Southwestern and Northeastern Hokkaido, Japan**

Euis Tintin Yuningsih and Hiroharu Matsueda  
The Hokkaido University Museum, Hokkaido University

### **Abstract**

Hokkaido is the second largest and northernmost island among the four main islands in Japan. The Neogene Tertiary is the important period in regard to the metallogeny of southwestern and northeastern Hokkaido. The gold-silver deposits in this district were one of the valuable mining districts in Japan. Hokkaido is divided into three geologic units from a geotectonic view point, namely west, central and east Hokkaido which are bounded by the Sapporo – Tomakomai lowland belt and the eastern margin of Tokoro – Toyokoro tectonic belt (Minato et al., 1965). The West Hokkaido Metallogenic Province (WHMP) epithermal vein-type Au-Ag is related to terrestrial volcanism of the northeast Japan inner arc, while hydrothermal mineralization of the Kitami region at northeastern Hokkaido is related to Middle to Late Miocene back-arc volcanism of the Kuril arc.

Most of the ores from the deposits around southwestern Hokkaido is massive and occurs in veins, bedded deposits and steep irregular replacement bodies near feeder fissures that strike around N50–70°E, and cut calc-silicate rock with light-colored and medium-grained texture. Neogene Tertiary and that of Late Neogene Tertiary to Quaternary mineralization periods are overlapping together in the green tuff regions. The northeastern Hokkaido veins-type mineralization strikes mainly in the E-W or NE-SW direction. Watanabe (1986) suggested that the region had experienced an E-W trending compressive stress. The basement rocks of Cretaceous age in this area are the Hidaka group comprising chiefly sandstone and shale, intercalated with conglomerate, acidic tuff, chert and limestone. The veins and rare massive silicified body of gold-silver ore deposits in this area are associated with clay at the upper part of the tuffaceous Konomai group.

The ore minerals associations in the epithermal gold-silver from the southwestern Hokkaido deposits (such as Kobetsuzawa, Shin Otoyō, Suttō, Chitose, Teine, Date, Koryu, and Toya mines) and from the Kitami metallogenic province (such as Sanru and Konomai



deposits) are examined utilizing microscopic investigation, EPMA and EDS.

Major ore minerals in Suttsu, Chitose, Koryu, Date and Toya are predominantly by sulfide minerals such as sphalerite, galena, chalcopyrite and pyrite. The exception is for Shin-Otoyo where sulfide minerals are rare except for pyrite. Those are associated with telluride and Te-bearing minerals, sulfosalt, and sulfide. Bismuth minerals identified at Teine, Suttsu and Shin-Otoyo, as bismuthinite, aikinite, emplectite, friedrichite, gustavite, lillianite, pavonite, and as telluride minerals of tellurobismuthite and tetradymite. Beside electrum, the gold-silver also dominated in Te minerals of calaverite (Date), petzite (Teine, Date, Kobetsuzawa, Chitose), hessite (Kobetsuzawa, Teine, Chitose, Koryu), silvanite (Teine, Kobetsuzawa), stutzite (Teine, Kobetsuzawa), aguilarite (Koryu, Chitose), gustavite (Suttsu), pavonite (suttsu), proustite-pyrargyrite (Chitose, Koryu, Date), pearceite-polybasite (Toya, Koryu, Chitose), acanthite (Koryu, Date, Chitose).

Ore samples from the Sanru mine of northeastern Hokkaido are consist mainly of banding chalcedonic quartz with small amounts of silver minerals, pyrite, chalcopyrite, sphalerite, arsenopyrite. The identified gold-silver minerals by ore microscope and electron probe microanalyses from the Honpi and Juji-hi veins are aguilarite, naumannite, miargyrite, pyrargyrite, stephanite, polybasite, acanthite, electrum, stromeyerite, and silver bearing tetrahedrite associated with clausthalite, chalcopyrite, marcasite, pyrite and sphalerite. Identified ore minerals from Konomai mine are chalcopyrite, sphalerite, pyrite, marcasite, galena, acanthite, aguilarite, naumannite, pearceite, polybasite, pyrargyrite, and stephanite with some secondary minerals of hematite, limonite and covellite.

Most of gold-silver in the magmatic-hydrothermal systems of the southwestern Hokkaido are enriched in tellurides and Te-bearing minerals (except for Shin-Otoyo and Toya and rare in Suttsu). Native tellurium is found at Teine, Kobetsuzawa and Date. Selenides minerals are dominated in the mostly epithermal deposits in northeastern Hokkaido of the Kitami metallogenic province. No minerals which contain tellurium as main compositions of the minerals have been found in many mines in Kitami metallogenic province including in Sanru and Konomai samples, though such mineral often found in the ore deposits in southwestern Hokkaido. Geological setting, intrusions and host rocks might be affected to the ore mineralization in this area.