# Spatial distribution of elemental concentrations in the stream sediments around the Ikuno mine, southwestern Japan

M.R. SYAHPUTRA[1,2] AND M. TSUBOI[1]*

[1]Department of Chemistry, School of Science and Technology, Kwansei Gakuin University, Sanda, Hyogo, 669-1337, Japan (*correspondence: tsuboimot@kwansei.ac.jp)

[2]Research Division, PT. SMART Tbk., Libo Main Station, Siak, Riau, Indonesia

Geochemical mapping on the basis of chemical composition of stream sediments around the Ikuno mine area, southwestern Japan has been made to contribute to the environmental assesment around the closed mine at regional levels. The study area mainly consists of Permian-Jurassic sedimentary rocks, Cretaceous volcanic rocks, Cretaceous-Tertiary plutonic rocks, and Quaternary sediments. Cu, Zn, Pb, Sn, W deposit, namely, Ikuno mine and Akenobe mine are located in central part and northwestern part of the study area, respectively. More than 9 closed mines including Ikuno and Akenobe are distributed in the area. Stream sediment samples were collected using an 83-mesh (180 μm) sieve in wet condition at each sampling point after the method of Tanaka *et al.* [1]. 156 samples over an 1300 $km^2$ were analyzed for 22 elements (Si, Ti, Al, Fe, Mn, Mg, Ca, Na, K, P, Ba, Co, Cr, Cu, Ni, Pb, Rb, Sr, V, Y, Zn, Zr) by X-ray fluorescence spectrometry (XRF) and loss-on- ignition. Spatial distribution patterns of elemental concentrations in stream sediments are controlled 3 main factors; surface geology, spot deposition of ore minerals and local distribution affected by sedimentation of the heavy minerals in the basin [2]. The correspondence of elemental concentrations in stream sediments to parent lithology is clearly shown by median comparison of each bedrock types. Significant enrichment of Pb, Zn, Cu, Cr and Ni are strongly correlated with mineral occurences in the area. Kolmogorov-Smirnov test result showed that Pb, Zn, Cu, Cr and Ni do not follow the normal distribution pattern because of the samples with extremely high concentrations of these elements nearby the closed mines. The concentration of Zr in stream sediments are elevated at the basin area in the southeastern and northern parts of study area because of heavy mineral sedimentation (e.g. zircon).

[1] Tanaka *et al.* (1994), *J. Earth Planet. Sci. Nagoya Univ.* **41**, 1-31. [2] Tsuboi *et al.* (2008), *Geochim. Cosmochim. Acta* **72**, Supplement 1, A959.

# About the petrogenetic connection of quartz-veined ores (W, Sn, Be, Bi) with massivs of Li-F granites

L.F. SYRITSO[1], E.V. BADANINA[1], V.S. ABUSHKEVICH[2] AND E.V. VOLKOVA[1]

[1]State Universty of St.-Petersburg, Russia (elena_badanina@mail.ru)

[2]Institute of Precambrian , Russian Academy of Sciences

Simultaneity of formation of quartz-cassiterite-tungstate veins with rare-metal granites or its subeffusive analogues and revealed empirical and theoretical preconditions of tungsten carrying out from massif of rare-metal granites give the basis to assume as well petrological community of these formations as the common source of tungsten and tin.

Synchronism by formations of Spokojnoje massif of rare-metal granites (Rb-Sr isochrone with 144,6+2,1 Ma, IR $^{87}Sr/^{86}Sr$ = 0,70659+42) in Khangilay ore complex in East Transbaikalia region and quartz-tungsten-cassiterite veins from Uval'noje and Priwalovkoje deposits (Rb-Sr isochrone 144,0+2,1 Ma, IR $^{87}Sr/^{86}Sr$ = 0,708598+74) which are being in its area is established by isotopic-geochemical investigation. Formation of quartz-tungstate veins within the limits of the large tungsten-deposits which are not finding out obvious communication with productive granitoids of Kukul'bey Complex (Bukuka-Belukha ore unit, East Transbaikalia) it has appeared simultaneous with revealed by us unique high-specialised (up to 2500 ppm Li) dayks of rhyodacites (common Rb-Sr isochrone for veins and rhyodacites with 138,5+1,0 Ma, IR $^{87}Sr/^{86}Sr$ = 0,709042+0,000093).

Studying of distribution laws of tungsten in rocks and melts (re-homogenized glasses of melt inclusions in quartz) of differentiated massif of Li-F granites (Orlovka and Etyka massivs in East Transbaikalia) show progressive accumulation of tungsten during crystallization differentiation in melt, and impossibility of tungstate crystallization (unlike of columbite-tantalite) from this melt, because of melt unsaturated by tungstate [1]. At the same time contrast enrichment of exocontact metasomatites from Orlovka massif by tungsten (up to 1780 ppm W) and formation of ferberite ore manifestation in apical zone demonstrate of tungsten carrying out in containing rocks.

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[1] Badanina E.V. (2008), *Questions of geochemistry and typomorphism of minerals*, SPb State University Press, **6**. 42-49.