ZONATION AND Bi-RICH INCLUSIONS IN ANDRADITE CRYSTALS FROM KOPE SKARN DEPOSIT, SLOVENIA

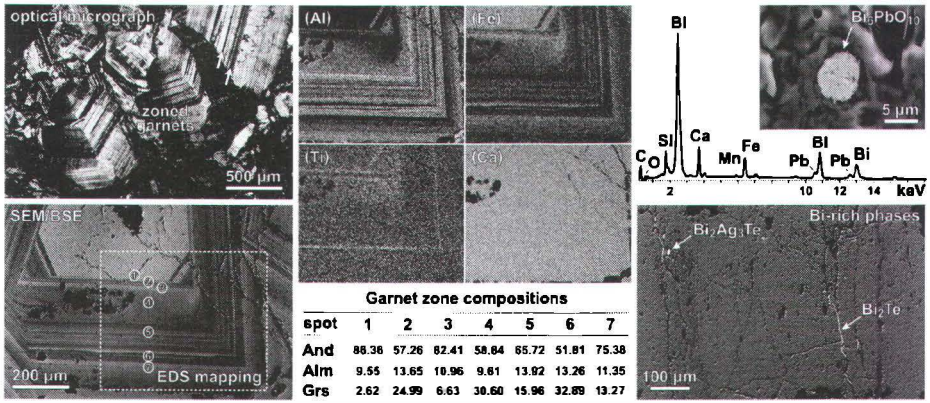
Grom, N.[1], Rečnik, A.[2], Samardžija, Z.[2], Vrhovnik, P.[1], Daneu, N.[2] & Dolenec, T.[1]

[1] Department of Geology, Faculty of Natural Sciences and Engineering, University of Ljubljana, Aškerčeva 12, SI-1000 LJUBLJANA, Slovenia

[2] Department for Nanostructured Materials, Jožef Stefan Institute, Jamova cesta 39, SI-1000 LJUBLJANA, Slovenia

e-mail: nina.grom@gmail.com

Kope mountains are located in western part of the Pohorje mountain range, which belongs to a south eastern part of the Eastern Alps (NE Slovenia). The Pohorje metamorphic and igneous complex belongs to the eastern continuation of the Periadriatic Lineament shifted northwards. In NW outskirts of Kope mountain intrusions of granodioritic magma into upper Cretaceous carbonate rocks produced an epidote-andradite-hedenbergite skarn with contact metamorphic ore mineralization, dominated by magnetite, which has been mined as iron ore in 18th century (GERMOVŠEK, 1953). We investigated zoned growth and composition of garnets. Electron microscopy study showed that growth zones have a variable composition. They are dominated by andradite with variable fractions of grossular and almandine. In addition to compositional variations of zones, we detected various Bi-rich phase inclusions using energy dispersive X-ray spectroscopy (EDS). These include elementary Bi with traces of tellurium, Bi-tellurides (Bi_3Te and Bi_2Te), unknown Ag-rich Bi-telluride (Bi_2Ag_3Te), bismuthinite (Bi_2S_3) as the only sulphide, and oxides bismite (Bi_2O_3) and unknown Pb-rich Bi-oxide (Bi_6PbO_{10}).



Study of zones and Bi-rich inclusions in andradite garnets from Kope. Backscattered electron (BSE) image shows light and dark bands depending on the ratio of heavy *vs.* light elements, *e.g.* the core of the crystal (spot 1) is dominated by andradite (And) while almandine (Alm) and grossular (Grs) fractions are low. Elemental maps for Al, Fe, Ti and Ca are shown above the table. Bi-rich inclusions present in garnets are shown on the right side. EDS spectrum (above), recorded under 30 keV, discloses the presence of Pb in some inclusions.

GERMOVŠEK, C. (1954): Geologija, 2, 191-210.