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A low sulphur epithermal gold mineralisation in Kisacik-Ayvacik area (Çanakkale-Turkey)

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Kısacık-Ayvacık area is located in northern part of Küçükkuyu (Çanakkale), town within Biga Peninsula, northwestern Anatolia, Turkey. In general, throughout the area magmatic rocks and ultramafic rocks, sporadically at their contacts, are seen.

The purpose of this work is to investigate the occurrences conditions, types, places of gold enrichment and probing the genetics of gold enrichment in Kısacık-Ayvacık area along with outlining alteration distribution, petrographic and ore mineralogy features of the rocks in the region. In general, Pre-Tertiary rock units of Kazdağı Group and ophiolitic melange, and Tertiary magmatic rocks consisting altered haematitized-silicified andesite, rhyolite, ignimbrite, quartz porphyry and pyroclastic rocks are present. These rocks have subalkaline composition, nevertheless showing a calcalkaline tendency.

The gold mineralizations in Kısacık-Ayvacık area are observed within altered volcanic rocks of dacite, andesite and tuffs. These rocks have galena, pyrite, chalcopyrite, graphite, and haematite minerals and mineralisation of invisible gold enrichment. Gold values in studied volcanic rocks changes between 40 ppb-8500 ppb. Occurences temperatures of gold mineralizations change between 190 °C and 290 °C, salinity 0-7 % NaCl and S isotope values are mostly near zero. Consequently, these values imply a low-sulphidized epithermal type gold mineralization in the study area.

Application of experimental mineralogy to the description of new platinum-group minerals

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According to [1] there are more that 500 platinum-group (PG) phases termed as unidentified and require complete or clearer identification to be approved as new mineral species, in particular crystallographic characterization is often missing. One of the significant tools enabling the better characterisation of a natural phase can be an application of a synthetic material. The advantage is that the synthetic PG-phases are prepared in a required amount, under controlled chemical and physical parameters, such as chemical composition and temperature. The synthetic PG-phase can be thus applied as a comparative and descriptive material of a natural analogue. Such approach has been used in case of description of milotaite (PdSbSe) [2] or pašavaite ($Pd_3Pb_2Te_2$) [3]. The synthetic material should display the identical optical and physical (microhardness and reflectance) properties and chemical identity with natural sample. Significant role plays the structural identity of natural and synthetic material that has to be also proved. Electron back-scattering diffraction (EBSD) study can be applied to support structural identity. Furthermore the Raman spectroscopy, a nondestructive, structurally sensitive technique, suitable for grains of small mineral size (less than 10 microns) such of those of PGM is a sufficient method to prove structural identity.

[1] Daltry & Wilson (1997) *Min. Petrol* **60**, 185–229. [2] Paar *et al.* (2005) *Can. Miner.* **43**, 689–694. [3] Vymazalová *et al.* (2009) *Can. Min.* **47**(1), 53–62.