Goldschmidt 2025 Abstract
https://doi.org/10.7185/gold2025.31425

Mineralogical, microtextural and microthermometric peculiarities in the Alpine porphyry copper systems from Romania, with insights on the Ţibleş - Bran - Măgura Neagră - Suplai metallogenetic district

IOAN PINTEA[1], SORIN SILVIU UDUBASA[2], MARIAN MUNTEANU[1], ELENA LUISA IATAN[3], GEORGE DINCA[1], VALENTINA MARIA CETEAN[1] AND LUCIAN PETRESCU[2]

[1]Geological Institute of Romania
[2]University of Bucharest
[3]Institute of Geodynamics of Romanian Academy

In the Southern part of the Ţibles Mountains [1] saccharoidal aggregates, aplites and veins, contain grained feldspar associated with quartz, rounded apatite, corundum (?), etc [2]. This study aims to highlight the progressive alteration of porous feldspar (Figure 1) during the potassic alteration by interaction with invading melt/fluid fluxes in the porous microtexture along cleavage and twining planes [3]. The main question is whether these porous microtextures are the sites of fluid and melt inclusions, containing silicate-, hydrosaline-, aqueous and vapor-rich phases [4]. Alkali feldspars thus emerges as a key collector of metallic ore elements and a tool in porphyry copper exploration [4]. In this study, the crystallized silicate melt inclusions after heating/quenching cycles from about 1045^{o}C become globular silicate monophasic glass, biphasic (glass + bubbles) and multiphasic (glass + bubbles + undissolved solids). These inclusions begin to homogenize around 700^{o}-800^{o}C and are contemporaneous with complex silicate - salt inclusions. PTX data, compiled with [5] for hydrosaline melt inclusions range between 431^{o}-1070^{o}C, salinity of 31-83 wt% NaCl eq., xNaCl=0.13-0.6, and pressure of 0.3-10 kbar. These inclusions seem to be the product of potassic alteration, trapped in feldspar and quartz during transient magmatic-hydrothermal-autometasomatic processes. These operate firstly in closed system and during alterations the internal monzodioritic-granodioritic intrusion become more permissive, forming mineralized stockworks, aplites, veins and skarns [6],[7].

References: [1] Edelstein O., Kovacs M., Istvan D., Pop N., Udubasa G., Stan D., Bernad A., Pop V. (2024) Rom. Jour. of Earth Sci., 90, 1-20; [2] Pintea I., Udubasa G., Nedelcu L. (1999) Min. Dep., *Processes to Processing*, C. J. Stanley et al., (eds), Balkema, 83-85; [3] Lee M.R., Waldron K.A., Parsons I. (1995) Miner. Mag., 59, 63-78; [4] Walker F.D.L., Lee M.R., Parsons I. (1995) Min. Mag., 59, 505-534; [5] Pintea I. (2015) Rom. Journ. of Earth Sci. 89, 1-2, 35-250, published 2023 at www.igr.ro. [6] Udubasa G., Radut M., Edelstein O., Pop N., Istvan D., Pop V., Stan D., Kovacs M., Roman L., Bernad A. (1984) D. S. Inst. Geol. Geofiz., Vol LXVIII (1981), 221-241. [7] Pomarleanu V., Neagu E. (1988) D.S. I.G.G, 72-73/2 (1985;1986), 157-167.

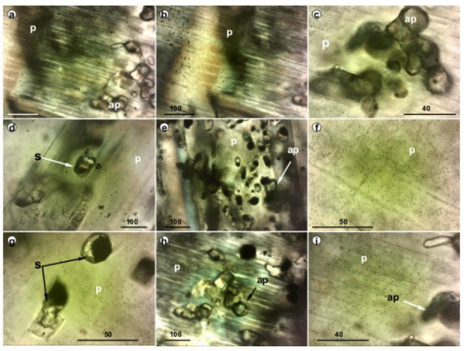

Figure 1. Microporous microtexture in feldspar phenocryst (p) formed by interaction with melt/fluid fluxes (s) at magmatic-hydrothermal conditions from Tibles – Bran - Magura Neagra - Suplai. ap- solid inclusions clusters (apatite and/or silicate glass inclusions).