LA-ICP-MS of pyrite from sericitic alteration: Zlatousha and Pishtene ore occurrences, Western Srednogorie, Bulgaria

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Zlatousha and Pishtene ore occurences are situated in the Western Srednogorie zone in Bulgaria which in regional aspect belongs to the Late Cretaceous Apuseni-Banat-Timok-Srednogorie magmatic and metallogenic belt [1] which hosts Cu- and Au-rich porphyry and epithermal deposits. Zlatousha and Pishtene are located respectively 30 km and 50 km west of Sofia. They are hosted by basaltic andesite, andesite and latite volcanic and volcanoclastic rocks with Coniacian-Campanian age. The styles of alteration are propylitic, sericitic, argillic and advanced argillic (only in Pishtene). Alteration mineralogy is based on optical microscopy and XRD analyses. The alteration style for both occurrences is sericitic or quartz-sericite-pyrite represented by fine-grained quartz, sericite, disseminated pyrite, illite (Zlatousha) and rare kaolinite (Pishtene). Pyrite forms subhedral to anhedral, rarely euhedral crystals up to 50-100 μm, single grains to 500 μm. Very often pyrite is porous and fractured. Trace element concentrations in pyrite were measured by LA-ICP-MS on polished sections at the Geological Institute (Bulgarian Academy of Sciences). A total of 40 analyses were performed on PerkinElmer ELAN DRC-e ICP-MS equipped with a New Wave UP193-FX excimer laser ablation system. NIST SRM 610 glass and MASS 1 was used as external standard and stoichiometric Fe as internal. The LA-ICP-MS dataset in the pyrite of Zlatousha shows variable concentrations of trace elements such as Pb, Zn, Cu, As, Sb, Au, Ag. In most cases, these elements display irregular profiles which are illustrated on the depth spectra as spikes. These spikes show lack of homogeneity in the ablation spot suggesting the presence of micro-inclusions of minerals adsorbed in pores and microfractures. Pyrite from Pishtene shows higher contents of Co and Ni than Zlatousha. These elements typically substitute for Fe. In some pyrite grains high concentration of Cu are determined. No significant values of other trace elements are established.

Acknowledgments: This work was financially supported by the DM 04/2 grant from 13.12.2016 of the National Science Fund Bulgaria.

[1] Popov *et al.* (2002) *Geol. Balc.* **32**, 145-163.