

Petrology and Ore Mineralization Processes of the Eastern Greater Caucasus Georgian Segment

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The Eastern Greater Caucasus Georgian segment includes as the southern slope of the Great Caucasus (Kakheti region), so – the northern one (Tusheti region). This segment is mainly formed of folded Lower-Middle Jurassic clay-shale and volcanic-sedimentary formations, which according to geophysical data, are located on oceanic or transitional crust (Philip *et al*, 1989). The complex of these rocks is intersected by Middle Jurassic gabbroic, dioritic, quartz-dioritic and felsitic intrusions.

Our research showed that more than hundred ore mineralization occur in the Eastern Caucasus Georgian segment. Ore mineralization processes genetically are related to postmagmatic events of intrusive magmatism and two mineralization zones - the Northern and the Southern are distinguished. In the Northern zone mainly pyrite-polymetallic mineralization is developed, where content of Pb and Zn sometimes is >10000 g/t, Cu varies between 400–500 g/t, Co - 40-295 g/t and Ag – 5-95 g/t. Au doesn't have an industrial concentration (0.01-0.52g/t) in this zone. The Southern zone is represented by copper-pyrrhotitic ores, where Cu concentration sometimes is >10000 g/t, and Au reaches industrial concentrations (0.1-3.1 g/t). At the last stage of ore mineralization processes, in the South mineralized zone Th and Bi high concentrations are detected, which genetically are related to carbonate hydrotherms. Th content varies from 40 to 120 g/t, and Bi – 200-800 g/t, but sometimes Th reaches 3800 g/t, and Bi - 4800 g/t [2].

In the adjacent area of the explored region, in same geological conditions are found significant copper-polymetallic deposits of Phylischay, Katekh and Katsdag (Azerbaijan) and Kizil-dere (Dagestan), which further strengthens research interest of the region.

[1] Philip *et al* 1989. Tectonophysics, 161: 1-21 [2] Okrostsvaridze *et al* 2011. Bul. Georg. Acad. Sc. vo. 5, no. 2. pp. 75-82