

**Geology, magmatism da perspectives of gold mineralization in the trans-Alazani Kakheti  
based on new data**

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Territory of trans-Alazani Kakheti covers the area from the Alazani river sources and basins of its left tributaries, starting from the Alazani – Iori watershed ridge till Georgia - Azerbaijan border. Geotectonically the region belongs to the Lower - Middle Jurassic shale series of the Kazbegi - Lagodekhi zone of the Great Caucasus thrust-fold system.

The shale series were formed on the Paleozoic basement in the result of intense stretching, and constructs the anticline of general Caucasian trend. The individual fragments of the oldest Hettangian – Early Sinemurian sediments by thickness - 650-700 m, are revealed in the axial zone of the anticline, in deeply cut river-gorges and are known as Speroza, Stori, Didkhevi, Lopota and Matsimi outcrops. These formations are combined under the Stori suite. The Stori suite is conformably followed above by faunistically dated - Late Sinemurian – Early Toarcian phyllitized shales with thickness up to 1000-1300 m. The latter above is continued by Middle Pliensbachian slates, dated by fauna as well. The suite of slates stratigraphically is followed by Late Pliensbachian – Early Toarcian black shales and Toarcian - Aalenian terrigenous suites, which are also dated by fauna. In addition, in the middle part of the black shales suite basaltic volcanism is widely represented in lava flows, lava –breccias, tuff-lavas and dykes. In most areas of the region the shales' series is ended by the Toarcian-Aalenian formations, which tectonically are bordered by terrigenous-carbonaceous flysch from the south, though at some places (Shakriani ridge, the Ilia mount etc.) Aalenian – Bajocian formations are still represented. Along Shakriani ridge among Aalenian-Bajocian formations basaltic effusive volcanism is revealed.

More than hundred copper and lead-zinc manifestations, revealed in the region, which are spread in tectonic zones cutting plicated structures, are genetically related to magmatic processes. Ores are characterized by impregnated, veinlet, veinlet-impregnated textures; the latter is transitional to massive texture. Ore manifestations are represented by copper-pyrrhotitic, quartz-chalcopyritic and quartz-calcite-polymetallic sulfidic types. Unfortunately, prospectives of gold ores in the region haven't been studied until recently. By financial support of Shota Rustaveli National Science Foundation (Project GNSF/ST09-1071-5-150) since 2010 our group has begun studying of gold mineralization in the region. Research has revealed that: 1. the trans-Alazani shales are goldbearing; 2. gold mineralization is contained in metasomatites, where four zones were allocated; And, among them, within the 3rd zone our team has detected significant copper-pyrrhotitic gold mineralization with industrial gold concentration of 0.01 g/t - to 8.03 g/t; 3. copper-pyrrhotitic mineralization has industrial gold concentrations, and quartz-calcite-pollymetallic ores contain industrial concentrations of silver (> 10 g / t). It should be noted that analyses on gold and other metals have been performed in Vancouver "AcmeLabs" laboratory, Canada using the ICP-MS method.