

BRIEF OVERVIEW ON THE SiO₂ VARIETIES OF GEM-QUALITY FROM SOUTHERN APUSENI MOUNTAINS (ROMANIA)

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The Southern Apuseni Mts. were known as hosting gem-quality SiO₂ varieties since the second half of the XIXth century (KOCH, 1885; PRIMICS, 1886). Several occurrences in the region provide some of the most beautiful chalcedonies, even agates in Romania. The present study provides a brief overview of the main areas where such materials were identified, arranged chronologically according to the genetic types of the host- (and generating-) rocks. In each case new geological and microscopic data on the gem materials are given, based on recent results of one of the authors (CC).

1. Gem materials associated to the “ophiolitic” volcanism

“Ophiolitic” complexes containing gem materials (mainly represented by coloured chalcedonies, jaspers and rarely agates) consist of basalts, spilites, microgabbros, andesites, latianandesites, alkaline trachites, dacites, and rhyolites. The formation of the SiO₂ varieties was mainly related to pyroclastic deposits that provided relatively more porous and permeable substrates for the circulating solutions.

The most representative occurrence of this type is Rachis (Alba district) (GHIURCĂ, 2000). The chalcedony is of vein-type, rarely nodular - in this case mainly consisting of the agate variety. The typical colour is white, and reddish-grey; gem-quality materials are usually translucent. Microscopically, a nucleus of microgranular quartz (grey and/or white in colour) is surrounded by concentric reddish bands of fibrous quartz; the intensity of the red colour depending on the concentration of iron oxy-hydroxides. Gem-quality materials can be collected from the host-rock or from alluvia.

2. Gem materials associated to the banatitic volcanism

Pyroclastic agglomerates and tuffs represent mainly the volcanic rocks of a Paleocene age. The SiO₂-type gem materials are very diverse and abundant: chalcedony, agate, opal, jasper, silicified wood. The type locality is Gurasada (Hunedoara district), and materials can be typically collected from alluvia. The chalcedony shows a massive texture and has usually lighter colours (white-bluish) than the chalcedony from the “ophiolitic” complex.

3. Gem materials associated to the Neogene volcanism

The generating rocks are represented by andesitic pyroclastics in Brad area and pyroxenic andesites in Hărtăgani area, both complexes having a Sarmatian age. The white to dark-grey chalcedonies from Hărtăgani (Hunedoara district)

usually formed as veins, but currently they can be collected from the alluvia. Under the optical microscope, the presence of calcite and epidote in contact with chalcedony indicates transformation processes due to the circulation of hydrothermal solutions (MÂRZA & CONSTANTINA, 2000).

Măgura Bradului Hill (Brad, Hunedoara district) is well known for its jaspers mentioned in early papers on the region. Coarse andesitic pyroclastic agglomerates host siliceous sinters (geyserites). The generating epithermal silica-rich solutions were deposited within small lakes, as proved by the fossil fauna and flora. The local prevalence of various impurities (Fe oxy-hydroxides, Mn oxy-hydroxides etc.) lead to the local formation of variously coloured jaspers, dominated by the brown-reddish varieties. Mineralogical data on these jaspers were given by GHERGARI & IONESCU (1999). Silicified woods from Prăvăleni (Hunedoara district) are hosted by Sarmatian cinerites; they show a reduced gemological value.

4. The gemological-field Techereu (Hunedoara district)

On a relatively small area five genetic types of gems are present: chalcedonies associated to the Mesozoic “ophiolitic” complex, polychromatic jaspers in Cretaceous conglomerates, variously-coloured chalcedonies in Paleogene rhyolites, siliceous nodules, jaspers and silicified wood within the Almaşu Mare Gravel (Badenian), as well as reworked chalcedonies and jaspers in Quaternary deposits (MÂRZA, 1999). This complex geology confers a unique position among the above-mentioned locations to the Techereu occurrence.

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