

THE MORPHOLOGICAL OF GOLD FROM HETEROAGED SEDIMENTARY COMPLEXES OF UKRAINIAN CARPATHIANS

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The morphological characteristic of gold from heteroaged sedimentary complexes of Ukrainian Carpathians is presented. Chronous, spaces distributed of gold in sedimentary complexes and the peculiarities of its morphology, inner structure, granulometry and chemical composition were related. On the base of gold study the morphological classification is presented.

Substantial facts on morphology, chemical composition of visible gold from sedimentary and metasedimentary complexes of the Ukrainian Carpathians allowed to create its morphological classification (presented in the tabble). Placer gold varieties of the Ukraine Carpathians are represented by ammalgama (Hg = 30,0 %, alluvium Liuchka river), mercurous gold (Hg = 0,1-5,39 % (Transcarpathian foredeep Folded Carpathians Precarpathian foredeep), stibiumbearing gold (Sb = 0,22-0,53 % (Folded Carpathians)), leadbearing gold (Pb = 0,4 % (Folded Carpathians)) and electrum (Ag = 42,62). It should be noted, that gold assay don't depend on mechanical exhaustion level of mineral.

The morphological classification of gold from heteroaged sedimentary complexes of Ukrainian Carpathians

Table

Morphological varieties	Segregation forms	Gold assay and its chemical composition features	Manifestation region (age of auriferous deposits)
1	2	3	4
Idiomorphic grains	1) Perfect and imperfect crystals of octahedral, cubo-octahedral and combinative habit. Perfection degree of crystals is low, they are represented mainly by isometrical, flattened, spherical individuals or by incomplete faced crystals	1) Medium hall-marked (Au=85,0-89,0%); 2) High hall-marked (Au=91,0-94,0%); 3) Greatly high hall-marked (Au=96,0-98,0%)	Ukrainian Carpathians (Riphean, Cretaceous and Quarternary system) Pre-Carpathian foredeep (Quarternary)
Hypidiomorphic grains	Incompletely idiomorphic gold grains with sufficiently clear marked ore habit, even with polyhedron traits preservation	1)Medium hall-marked (Au=82,0-86,0%); 2) High hall-marked (Au=90,7-90,8%)	Transcarpathians (Paleogene); Ukrainian Carpathians (Cretaceous, Quarternary)
Individuals with skeletal growth indications and dendritoids	Mainly flattened formations with mechanical wear traces; their habit forms are cubic and octahedral. Skeletal growth forms are observed on the faces of octahedral crystals and look like terrace deepenings and elevated flanks on lamellar gold nodule edges too. Gold dendrituses are revealed; they look like lamellar and netted drawings on the faces of other minerals (quartz, pyrite etc.) Dendritoids are represented by elongated individuals with nucleus rare twigs and sceptrelike formations. Dendritelike growth gold with quartz are found.	1)Medium hall-marked (Au=88,0-90,0%); 2)High hall-marked (Au=90,0-95,0%) 3) Greatly high hall-marked (Au=95,5-99,5%)	Transcarpathians (Neogene); Ukrainian Carpathians (Riphean, Quarternary)
Xenomorphic grains	1) Gold, elougated in two directions. The this plates (mainly rounded-lamellar, in a less measure - plates of trihedron and tetrahedron forms) have different thickness and mechanical wear degree. Gold nodule, edges, that had experienced a considerable mechanical wear, are rounded, pressed down, cut off, with curls. Sometimes lamellar individuals form the growth, that look like chains, di- and trefoils.	1) Greatly low hall-marked (Au=55,0-60,0%); 2) Low hall-marked (Au=60,0-70,0); 3)Relatively low hall-marked (Au=73,1-78,0%); 4) Medium hall-marked (Au=82,5-89,5%); 5) High hall-marked (Au= 90,7-95,0%); 6) Greatly high hall-marked (Au=95,5-99,5%).	Transcarpathians (Quarternary); Ukrainian Carpathians (Triassic, Cretaceous, Paleogene, Quarternary); PreCarpathian foredeep (Paleogene, Quarternary)
	2) Gold, elougated in one direction. The wirelike formations of different length (from very elongated to short-columnar) and thickness (from thick to thin) and their growths (elbow-shaped mainly). Wirelike formations of knitted (like plaited hair) and sceptrelike forms (they are ended by head, that is formed by rhombohedral crystals, which have accreted and complicated by cube faces) are met	1) Greatly low hall-marked (Au=58,0-60,0%); 2) Low hall-marked(Au=60,0-70,0); 3)Relatively low hall-marked (Au=73,1%); 4) Medium hall-marked (Au= 82,5-89,5%); 5) High hall-marked (Au= 92,0 - 95,0%); 6) Greatly high hall-marked (Au=96,0-98,9%).	Transcarpathians (Quarternary); Ukrainian Carpathians (Quarternary); Pre-Carpathian foredeep (Neogene)
	3) Irregular and exotic forms. Gold segregation form depends on hollow configuration, where gold crystallization takes place: a) fractured forms (streaks, skins, elongated flakes). Subparallel gold flakes, that were formed on cleavage planes of micas and other minerals are found; b) cement forms (gold with numerous complex branches, cone- and dropshaped formations of different stage of flattening .	1) Greatly low hall-marked (Au=46,9%); 2)Medium hall-marked (Au= 89,5%); 3) High hall-marked (Au=91,5-93,4%).	Transcarpathians (Quarternary); Ukrainian Carpathians (Neogene, Quarternary)

	4) Gold that approximably similar in three directions. a) Lumpy formations of different, often irregular forms.	1) Greatly low hall-marked (Au=58,0-60,0%); 2) Medium hall-marked (Au=86,0-89,5%); 3) High hall-marked (Au= 92,0-94,0%); 4) Greatly high hall-marked (Au=96,7-98,1%)	Transcarpathians (Quarternary), Ukrainian Carpathians (Riphean, Cretaceous, Paleogene, Quarternary); Pre-Carpathian foredeep (Neogene, Quarternary)
	b) Spherical formations:	1) High hall-marked (Au= 90,7-92,0%); 2) Greatly high hall-marked (Au=98,0-98,1%)	Ukrainian Carpathians (Quarternary)
Heamidiomorphic grains	Gold segregations, that unite the indications of xenomorphic and idiomorphic forms. Two combined forms varieties of different nature are met; mixed forms, that appeared by simultaneous growth in heterogenous environment; mixed forms that formed by successive growth in changeable growth conditions. Autoepitaxial growths represented mainly by imperfect polyhedrons with «xenomorphic roots»	1) Medium hall-marked (Au=82,0-87,0%) 2) High hall-marked (Au= 90,7-94,7%) 3) Greatly high hall-marked (Au=96,0%)	Ukrainian Carpathians (Quarternary); Autoepitaxial growths were ascertained in gold from Pre-Carpathian foredeep (Quarternary)
1	2	3	4
«New» gold	1) Spongy formations of irregular form 2) Isometrical crystals and growths, represented by spongy mass (xenomorphic porous growths with twisting outlines, isometrical and particles of irregular form, that had accreted) on the surface of xenomorphic gold nodules, which had experienced the intensive mechanical wear, and on the surface of iron and manganese hydrooxides and organic substance too. 3) High hall-marked streaks within low hall-marked gold and high hall-marked rims. 4) Low hall-marked segregations of zonal structure in early greatly high hall-marked gold of coarse-grained structure. Gold often enough is met in growths with iron and manganese hydrooxides and with clayey minerals. 5) Thin flakes and skins on the surface of organic substance, iron and manganese hydrooxides	1) Greatly low hall-marked (Au=55,0-59,9%); 2) Medium hall-marked (Au=80,0-86,0%) 3) High hall-marked (Au= 90,1-94,0%); 4) Greatly high hall-marked (Au=99,9%)	Ukrainian Carpathians (Cenozoic (eluvium), Quarternary)