

COMPOSITION AND PROPERTIES OF NATIVE GOLD FROM PRIMARY AND PLACER DEPOSITS OF BALTIC SHIELD

1Gavrilenko B. V., 1Geological Institute, Kola Science Centre, Russian Academy of Sciences, Apatity; Russia

The age of gold occurrences in Baltic Shield fall into the range 2.8-1.5 Ga. They are represented by gold-quartz and gold-sulfide-quartz types. They are typical for Finland, Karelia and Kola Region. The most important gold-bearing occurrences are the secondary quartzites, wide spread in Norway and Sweden. Of the same type is Mo-Cu Pellapahk deposit in Russia. In most cases gold occurs as native. The composition of native gold from primary and placer deposits of NE Baltic Shield is studied in detail (Gavrilenko et al., 1999). The most abundant is high fineness gold (90-95%) and in some cases - extremely high fineness (95.1-99.8%). Such gold is known from metamorphic rocks and gneiss from 9.5-11 km depth of Kola super-deep hole. The gold occurs as aggregated round blebs 0.05-0.3 mm in size. The fineness of gold from copper-nickel ores of Pechenga is 92%, the high fineness gold containing: Pd (91-94% Au) and electrum (68-72% Au) has been found in PGE ores of Pansky intrusion. The gold from vein deposits is of high fineness (89-94%) and 0.1-10 mm in size. Gold grains commonly occur as octahedral crystals. The composition of gold from Archaean Kolmozero-Voronya belt ranges from high fineness (90-94%) to native silver (99.97% Ag). During the weathering the interstitial gold is released close to the primary deposit, whereas the gold from pyrite, arsenopyrite and chalcopyrite is released at a distance from the bedrock. During placer formation the fineness of gold is increased (95-99.3%). The placer gold contains the lower amounts of Fe and Cu, and the Bi, Te, Hg, Zn, Pb are being negligible. The aggregated grains of medium roundness prevail. The gold in placers is of 0.2-10 mm size. The composition and morphology of native gold depend on crystallization conditions.