

Disperse sulfide gold study by X-ray microtomography (Polar Urals, Russia)

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Abstract

© SGEM2015. An experimental investigation of gold-quartz-sulfide ore occurrences (Verhneniyayuskoe 2 and Niyahoyskoe 2) located in the Polar Urals was held by methods of X-ray microtomography. Different shooting modes and image analysis were tried. The three-dimensional images of the internal structure of ores and distribution of fine gold in them were obtained. The possibility of study of submicron gold morphology is discussed. Gold identification in the samples was conducted by finding of areas with maximal X-ray density. The gold from Verkhneniyayuskoe-2 and Niyakhoyskoe-2 deposits is morphologically different. The conducted experiments showed the efficiency of application of non-destructive X-ray tomography to study the textural features of sulfide ores with fine gold, visualization of its distribution in ores in 3D projections, and also particle morphology, which have a great importance for prospecting and assessment of deposits and enrichment methods for these refractory ores.

Keywords

Fine gold, Gold-sulfide deposits, Polar Urals, X-ray microtomography