

Andrey Gerasimenko

O.A. Mukha, research supervisor

O.V. Petrova, language adviser

SHEI “National Mining University”, Dnipropetrovsk

Method of Auric-sulphide Ore Roughing by means of Screening

Method of auric-sulphide ore roughing by means of screening (INTEGRA GROUP is the patent holder) applied by the integral works for industrial introduction means the use of ratio separator of PPC model (X-ray radiometric separators) developed by specialists of the company.

The method makes it possible to improve base ore grade, process additional share of gold owing to extraction ores, rich in gold, from poor and balance ores to be the most effective for the process. Simultaneously with implementing methods of auric-sulphide ore roughing, Mining-and-metallurgical Integrated Works finalizes activities connected with roughing Muruntau technological ore with “free” gold. The world practice has not examples of such ore grading on indirect indicators.

In cooperation with All-Russian Research Institute of Applied Physics and Automation and Scientific and Research Institute of Electronic and Physical Apparatus, automatic plant “Aura” has been developed and implemented for gamma-ray activation analysis of auriferous ores in off-the-shelf test charges with the use of braking radiation of linear electron accelerator ЛУЭ-8-5 where the limit of gold determination is 0.6 g per ton. Muruntau-based laboratory of gamma-ray activation analysis is unique having no analogues in the world. In 1992, step-by-step re-equipment of the gamma-activation laboratory started in cooperation with All-Russian Research Institute of Applied Physics and Automation and Scientific and Research Institute of Electronic and Physical Apparatus. Soft plant of gamma-activation analysis called “Astat” has been developed and manufactured using current element base. Contrary to “Aura” plant, “Astat” uses five-cell alternative of gamma-ray spectrometry allowing more complete consideration of interfering elements. Owing to two scintillation detection devices, the analysis duration is reduced from 17 to 8 seconds. The plant can identify other elements as well. Electron linear accelerator upgrading has been completed; it was aimed at substantial improvement of specifications in terms of demands of gamma-activation analysis in industrial environment. Uzbek Research and Design Institute of Technology «O'zGEOTEXLITI», Institute of Nuclear Physics of Uzbek Academy of Sciences, , Institute of Microbiology of Uzbek Academy of Sciences, Scientific Development and Production Centre “Tekhnolog”, Tashkent State Technical University, Tashkent Road-transport Institute, Institute of General and Inorganic Chemistry of Uzbek Academy of Sciences, Agricultural Chemical Institute of Uzbek Academy of Sciences, Navoi State Mining Institute, Association of Research and Production, Export, and Business Cooperation “Uzbekistan” and other research institutions of the republic contributed much to the research and development efforts of the integrated works.