DETERMINATION OF GOLD BY THE METHOD OF AN INVERSION VOLTAMPEROMETRY WITH THE USE OF GRAPHITIZED ELECTRODE MODIFIED BY ANTIMONY

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The purpose of this work was to study the possibility of defining gold on GE modified by antimony. The voltamperometric TA-4 analyzer (LLC Tom analit, Tomsk), with a three-electrode cell was used in work. As a working electrode served graphitized electrode (GE) impregnated by paraffin and polyethylene of low pressure; an electrode of comparison and an auxiliary electrode – saturated by chloride silver (ch.s.e.)**.** Electrodeposition of precipitation of the antimony and gold had been carried out from solution 1 M of HCl at electroconcentration potential minus 0,4B.

During precipitation of gold and antimony electrooxidation three peaks can be observed on a volt-ampere curve. The peak at potential 0,0 B corresponds to the process of electrooxidation of antimony from GE surface; the peak at potential plus 0,4 B is caused during the process of selective electrooxidation of antimony from a surface of gold centers; the peak at potential plus 0,8 B corresponds to the process of electrooxidation of gold from GE surface. At electrodeposition of antimony current of electrooxidation of a deposit of antimony increases on GE with the rising of antimony ions concentration (III) in solution. When the content of gold increases at electrode surfaces current of electrooxidation of antimony decreases, but there is an additional anode peak current of that is caused by the process of electrooxidation of antimony from a surface of the gold centers. The total amount of settled on GE concentration of antimony remains constant. Current of intermediate peak is proportional both to the maintenances of ions of antimony (III) in solution, and of ions of gold (III). When the current disappears electrooxidation of antimony and the current of electrooxidation of intermediate peak also ceases to increase. As a result of the research it has been established that definition of antimony can be carried out both on gold electrooxidation peak, and on peak of selective electrooxidation of bismuth from alloy with gold. The greatest sensitivity of definition is reached on determining gold by the EB method on peaks of electrooxidation of gold from a surface of GE modified by antimony.

References:

1. BUDNIKOV, G. K., EVTYUGIN, G. A., et all. 2010. *Modified electrodes for voltamperometry in chemistry, biology and medicine*. M.: BINOMIAL
2. STOZHKO, N. YU. 2005. *Analytical chemistry journal*, **60** (6), pp.610-615.
3. Nemodruk, A. A. 1978. *Analytical chemistry of antimony*. Moscow