

## A method of producing nickel concentrate from Serov's nickel ore deposit

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### Abstract

Due to the increasing demand for nickel is necessary to develop new technologies for extraction of nickel from poor and refractory ores. The purpose of this paper is to obtain a nickel ore deposits Serov concentrate with a high content of nickel. According to chemical and X-ray analysis it is a high-silicon ore magnesite raw material, which included present minerals lizardite, Nimit, talc. At autopsy nickel ore with nitric acid ions pass into the solution nickel(II), iron(III), aluminum and magnesium. For the separate deposition of nitric acid solutions of iron ion(III) and nickel(II) used in the alkaline precipitant (suspension of magnesium oxide in an aqueous magnesium nitrate solution) does not pollute the final solution by extraneous ions. Activity precipitant prepared by different methods (addition of magnesium nitrate, ultrasonic dispersion) was determined according to the number of lemon. High precipitant activity achieved a combination of two ways: by adding to a suspension of magnesium nitrate and treatment in the ultrasound field. When the size dispersion of solid particles of magnesium oxide is reduced thereby increasing its solubility and the amount of hydroxide ions is increased. The result was used as a precipitant in suspension magnesite nitrate solution, treated in an ultrasound field. Deposition of the nickel concentration was carried out in two stages at a pH of 7-8. To determine chemical and phase composition used the following modern methods of analysis: energy dispersive, X-ray fluorescent, spectral, powder X-ray diffraction and electron microscopy. Nickel oxide content in the concentrate was 39%. According to X-ray analysis it contained nickel oxide(II), oxide of alumina and mixture nickel oxide and manganese. The micrographs showed no uniformity concentrate. On the surface, the particles are present finely crystalline formations. According to the composition of the concentrate it may be used as an additive to raw materials for nickel, electrolytic processing solution, adsorption or liquid extraction.

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