THE STUDY OF PROSPECTS FOR THE DEVELOPMENT OF PLATINUM GROUP MINERALS IN THE DEPOSITS OF UZBEKISTAN

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Abstract
Currently, the world demand is high for rare metals and they are not always found in sufficient compositions in ores as a result of detection methods are developed using satellite and processing of rare and rare metals of a particular polymetallic ore by satellite method.
The proportion of the perfect physical and chemical properties of the metals of the platinum group makes it more relevant in the field of application and makes them irreplaceable metals in all areas of human activity.

Keywords: Platinum group, platinum, diamond, PGM, precious metals, platinum ores, sulfide.

Introduction

Non-ferrous and precious metals reserves in the republic are sufficient for the implementation of new projects on integrated extraction of precious metals. The main enterprises for the production of unique, valuable and radioactive elements are mining and metallurgical combinats of Navoi and Almalyk. A significant amount of PGM, rare, and rare earth elements are collected as additional elements in precious metal deposits; Technical raw materials, which have been collected for 60-70 years, can serve as a starting material for the final product. Such widespread attention to the disposal of industrial waste from the extraction of precious and rare metals supports the country's economy.

Kabel (disambiguation), a division of the Netherlands Jump to search In these deposits, platinum (from 0.4 g/t to 25 g/t), palladium (from 0.24 g/t to 22 g/t), ruthenium, rhodium, iridium, osmium, and osmium-quartz (92-99 g/t) are included in the zone of platinum and sulfide minerals and correspond to platinum minerals of various forms (polyxene, cupellite, vasperilite). In addition, uranium deposits are omitted (Dzhontar,cultural), gold-quartz

(Muruntau, Metenboy), gold-sulfide-quartz (Marjanbulak, Koshbulak), silver and copper-porphyry (Kalmakkir). The presence of platinum group metals in these deposits is as follows: 13.61 g/t Pt; 8.74 g/t Pd; 4.22 g/t Os; and 0.11 g/t Ir.

Justification of research. Platinum ore is a natural mineral that contains platinum metals (Pt, Pd, Ir, Rh, Os, and Ru). Large deposits of platinum ore of industrial importance are rare. Platinum ore deposits can be powdered or shale and consist mainly of pure platinum and mixed ores (e.g., pure copper and copper-nickel sulfide ores, gold-platinum shales, and gold-storing osmium shales).

Platinum metal is evenly distributed in ore deposits, and the amount of useful metal in the ore varies from a few grams per ton to a kilogram. In platinum ores, the main forms of platinum group metals are represented by independent minerals, of which more than 100 are known.

The most common minerals in platinum ores are: ferroplatina (Pt, Fe), isoferroplatina (Pt_{3Fe}), platinum, tetraferroplatin (PtFe), osmiride, iridosmin, fuldite ($PdBi_2$), heversite ($PtSb_{2)}$, laurite ($PtSb_{2s)}$, n-guotite (Rh, Pt, Pd, Ir) $(AsS)_2$, and others. The main deposits of platinum ores are composed of complex platinum sulfide ores and massifs of early platinum-chromium of various shapes. This disambiguation page lists articles associated with the title Disambiguation. They are associated with large deep tectonic faults that have long developed in plateaus and elongated zones at depths of 0.5-1.0-3-5 km. Copper-nickel sulfide-platinum complex deposits are currently the main source of mined platinum metal raw materials. The main platinum minerals in these deposits are pyrites, pentlandite, and cubanite. The main platinum group metals in copper-nickel platinum ores are platinum and, to a lesser extent, palladium (Pd ratio). 1.1:1 to 5:1) .

Other platinum metals are very rare in ores. Tashkent (1966–1999), a Tashkent metropolitan area of Tashkent and the Netherlands. Industrial deposits are isolated from rocks at depths of 11–12 meters. In these deposits, platinum minerals are often found in combination with chromite, olivine, serpentinite, orthopyroxene, and magnetite.

Primary sulphide ores include over 150 ores and nonmetallic minerals, the main of which are pyrite and molybdenum ores. In the Kalmakkir deposit (elements of the platinum group) it varies from 0.03 g/t to 0.5 g/t (Turesebekov A.Kh. Gold metallogeny. 2012), mainly from the light platinum group (Pd, Rh and Ru) and platinum from the heavy platinum group.

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Research results and their analysis average content of platinum group elements in silver-gold and other deposits of Uzbekistan

Table 1

Careers	Minerals	PGM, g/t					
		Pt	Pd	Rh	Ru	The	And
	Gold	188	100	-	-	-	-
Ram	Porpesit (mass, %) Pirate Xalcopirite Kararuda	4.94 0,11 0,08 0,01	7.38 0,01 0,50 0,10	- - - -	- - - -	- - - -	- - - -
Kızzilalmaay	Gold	60	200	-	-	-	-
Samarchuk	Gold	476	-	-	4.00	-	-
Chumak	Vittixenit	-	100	-	-	-	-
Oqtepa	Silver	200	4800	500	-	-	-
Lashkerek	Silver	200	100	10	-	-	-
Kalmakkir	Magnetite Pirate Sfalerit Xalcopirite Molybdenite Galena	0,004 0,05 - 0,05 - 0,013	0,004 0,50 0,01 0,40 4.50 0,05	0,01 - - - - -	0,05 0,10 0,05 0,10 - 0,05	0,002 0.15(0.05 ^{187} Os) 0,08 0.10(0.04 ^{187} Os) - 0,14	0,002 0,05 0,01 0,03 - 0,04
Sari-Cheku	Magnetite	0,50	0,02	-	5.0	3.60	0,10
Pirmirob	Gold Platinum mass, % Pirate Xalcopirite	100 93.28 0,10 0,03	200 (3%) 1.15 0,01 0,50	- 0,69 - -	- - - -	- - - -	- - - -
Kiziltashsan	Gold (Heavy%) Porpesitmassa. %	0,21 0,34	4.64 8.72	0,57 0,22	0,02 0,10	0,01 0,05	0,05 0,05
Haydarkon	Antimonite Cinnabar	0,09 0,915	0,46 0,01	0,032 -	- -	- 0,46	- 0,11
Boxes	Uraninite	0,020	0,18	-	-	-	-
Oltoy (Ag-Pb, Zn)	Silver (tellers)	10.00	30,00	2.00	-	0,05	2.00
Freybergite (Ag-As)	Silver (mishyak)	4.00	9.00	2.00	-	-	1.00
Kurutegerek	Molybdenite Moyxukit	0,22 0,33	200 0,55	34,00 0,55	-0,04	0.9(0.09 ^{187} Os) 0,50	-

Minerals of copper molybdenum sulfide deposits are considered the main carriers of palladium. The largest quantities of palladium include molybdenum tPd (3.5 g/t), Pt (0.7 g/t), and Os187 (3.2 g/t).

Table 1.2

Results of the study of the chemical composition of Kalmakyr mine ores

Namuna raqami №	Content, g/t						
	Sc	In	Re	The	Pd	Read	V
26394	6	7	0,08	0	1.8	11	9
95	5	6	0,09	0	1.6	16	11
96	4	6	0,1	0	1.5	9	9
97	7	8	0,1	0	1.6	10	7
98	5	6	0,1	0	2	18	13
99	7	6	0,1	0	1.8	16	10
26452	7	7	0,1	0	2,2	3	7
53	7	7	0,1	0	2	6	8
54	5	5	0,1	0	2	3	15
55	5	5	0,1	0	1.8	3	10
56	7	6	0,1	0	2.8	4	7
57	8	6	0,1	0	2.6	3	5
26535	4	5	0,1	0	2,3	11	11
36	4	5	0,1	0	2.5	16	13
37	6	5	0,1	0	2.5	13	11
38	7	6	0,1	0	2,3	3	4
39	11	11	0,5	0,01	6.6	29	7
40	12	11	0,5	0,01	5.8	28	8
41	9	9	0,2	0,04	4.4	26	9
42	5	6	0,2	0,04	3.2	24	9
43	10	9	0.4	0,05	1.8	27	14
44	9	10	0.4	0,05	1.9	30	16
27135	7	6	9.12	0,05	1,2	4	0
36	7	7	0,38	0,05	4.3	21	5
37	6	5	9.14	0,01	2.7	3	3
38	6	5	0,10	0,03	1.7	2	3
39	6	5	0,10	0,04	0,2	2	4
40	7	5	0,10	0,05	0,2	3	5
27164	6	8	0,15	0,04	0,8	29	4
65	6	7	0,16	0,04	1,1	18	5

The results of chemical analysis to determine the composition of PGM (platinum group metals) in the deposits of Almalyk-Angren region are presented in Table 1.2. Using detailed deposits as an example, the amount of platinum group metals (g/t), maxPd 5 g/t, Pt-0.7g/t, Rh-0.01 g/t, Pt-0.01 g/t, pyrite (Pd-0.146 g/t, Pt-0.01), Rh-0.012 g/t, Pd-0.012 g/t, the amount of platinum group metals in molybdenum ores (g/t), maxPd 5 g/t, Pt-0.7g/t, Rh-0.01 g/t), magnetite (Pd-

0.03 g/t), and Pt-0, 01 g/t) is collected in mineral form, while PGMs are found in the form of carrier minerals.

The prospect and practical significance of the deposit depends on the PGM content of additives such as minerals and pyrite (68%), malignant denite, galen, and sphalerite.

Copper-nickel (metallic platinum) deposits have a unique structure associated with the ultrama –fitcomplex. Until now, scientific researches have been carried out on chemical analysis of the amount of platinum group metals in the industrial wastes of Kalmak Mining and Metallurgical Combinat.

Conclusion

On the basis of the research, the composition and quantity of platinum group metals in the studied ore samples were determined, petrography and mineralogy of the formation and behavior of platinum group metals in minerals were studied, and new technological schemes were developed based on the results of obtaining precious precious metals (in particular, platinum group metals on an industrial scale).

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