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LEACHING OF CONCENTRATE FROM BLAGOJEV KAMEN WITH SODIUM SULPHITE SOLUTION

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ABSTRACT

There are a large number of reagents in literature for precious metals leaching from concentrate. One of them is sodium sulphite that is, although rarely, used but has a capacity for selective leaching of precious metals, and also used for leaching the concentrate from Blagojev Kamen. The Blagojev Kamen concentrate was leached with sodium sulphite as the leaching reagent in the I, II and III leaching degree, and the Blagojev Kamen concentrate was previously treated at higher temperature in oxidation atmosphere, and also oxidative or sulphate roasted at higher temperature.

1. EXPERIMENTAL RESEARCH AND DISCUSSION OF THE RESULTS

Many samples of concentrate from Blagojev Kamen were leached. Leaching of all samples was carried out under the same conditions, as well as:

- Ratio S : L = 10 : 1
- Na_2SO_3 concentration - 60g/l
- leaching time - 6 h
- leaching temperature - 40^oC
- pH value - 9.2 – 9.6 (pH value regulation with NaOH)

The obtained results of leaching the Blagojev Kamen concentrate with sodium sulphite solution are given in Table.

Table: Results of leaching the Blagojev Kamen concentrate with sodium sulphite

EXPERIMENT No.	EXPERIMENT DESIGNATION	ELEMENT	% LEACHING
1	Pr-XIV	Ag	18.5
		Au	5.11
		Cu	90
		Zn	91.7
2	Pr- XVIII	Ag	0.76
		Au	0.31
		Cu	0.014
		Zn	0.0082
3	Pr-XIX	Ag	2.68
		Au	2.35
		Cu	0.02
		Zn	0.024
4	Pr-XXI	Ag	0.345
		Au	1.13

Experiment 1:
This experiment was carried out with the Blagojev Kamen concentrate that was previously sulphate roasted with sulphuric acid (I degree), than leached with water (II degree) and after that leached with sodium sulphite solution.

Experiment 2:
The oxidative roasted concentrate from Blagojev Kamen was used in this experiment (I degree), in the air stream. The obtained calcine was leached with 20% of H_2SO_4 (II degree) and leached with sodium sulphite solution in the III degree.

Experiment 3:
This experiment was carried out with concentrate that was treated in I degree (leached) with HNO_3 (1:1), and than leached with sodium sulphite solution (II degree).

Experiment 4:
Direct leaching from the Blagojev Kamen concentrate with sodium sulphite solution (I degree) was carried out in this experiment.
Pre-treatment of concentrate from Blagojev Kamen (roasting, leaching with H_2SO_4 and HNO_3) as well as the conditions of leaching in the I and II degree are given in detail in introductory part of experimental laboratory investigations.

2.CONCLUSION
Based on the carried out work and obtained leaching results by the use of sodium sulphite as the leaching reagent, the following could be concluded:

- the best leaching results with this reagent were obtained by leaching the concentrate from Blagojev Kamen, previously sulphate roasted;
- sodium sulphite is a selective reagent, but its use for precious metals leaching from the Blagojev Kamen concentrate does not give high degree of leaching the same ones, so this reagent use is unprofitable.

3. REFERENCES
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