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ORGANIZATION OF UNUSUAL AND COMBINED CHEMICAL REACTIONS TO EXTRACT METALS FROM REFRACTORY ORES

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In the 20th century, a huge amount of experimental material was accumulated that confirms the correctness of M Faraday's views on the effect of electric current on chemical reactions. Key moments and main theses of M Faraday's works: identity of energy manifestations in the interaction of material objects; the discrete nature of the electric current. The concept of the discrete nature of electric current allows the use of a combination of electric current parameters to organize unusual chemical reactions. The provision on the identity of energy manifestations in the interaction of material objects provides the basis for revising the scientific provisions on the mechanism of heat exchange between material objects. A method has been developed for using combined electrochemical reactions to obtain a leaching agent and extract metals into a solution from mineral raw materials in the volume of a single reactor. In the course of the research, a sodium hydroxide solution served as the starting solution for the reactions. A sulfur-graphite electrode was used as a source of sulfur for the preparation of reagents. When extracting metals into solution, it was shown that virtually all physicochemical factors influence the leaching process and the microstructure of inorganic aqueous solutions should be considered as one of the important parameters of the technological process. In particular, the pH of the initial and productive solutions changes with temperature. For productive solutions, this change is not reversible. It is shown that surface tension decreases with increasing sodium hydroxide concentration. The degree of extraction of copper in the electroleaching of the concentrate - 1 for 6 hours is at 0.1 M sodium hydroxide 21.5%, 0.2 M - 30.04%, 0.5 M - 43.1%, 1.0 M - 46 3%. With an increase in temperature to 450°C, copper recovery increases from 26.8% to 35.7%.

Biography

Sharipov Rustam Hasanovich has studied at the Kazakh National Technical University named after KI Satpayev in the Specialty Metallurgy from 2005 to 2009. He has studied at the on the Specialty Material Science and Technology of New Materials from the same University from 2005 to 2009. He has worked in the National Center for Complex Processing of Mineral Raw Materials of the Republic of Kazakhstan in the Laboratory Technology of Electrochemical Productions as an Engineer-Researcher from 2009 to 2013. He has studied in the Graduate School of the Kazakh-British Technical University with a Degree in Metallurgy. Currently, he is working as a Research Assistant at the Advanced Materials and Technologies Laboratory at the Kazakh-British Technical University.

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