

The behavior of gallium and aluminum during sulfuric acid processing of fly-ash from Reftinskaya hydroelectric power plant

© Simeon O. Potapov, Marina N. Sviridova,⁺ and Igor N. Tanutrov*

*Institute of Metallurgy of Ural Branch of Russian Academy of Sciences.
Amundsen St., 101. Ekaterinburg, 620016. Russia. E-mail: intan38@live.ru*

*Supervising author; ⁺Corresponding author

Keywords: fly-ash, sulfuric leaching, coagulant, gallium, aluminum oxide, sulfuric acid.

Abstract

The behavior of gallium and aluminum oxide in caking processes followed by a water leaching and a direct sulfuric that has been studied in this work. In the first series of the experiments the influence of 98% sulfuric acid feeding in the range of 40-100% from stoichiometric on the results caking of a mixture of the ash and the acid has been investigated. In the second those the duration influence of caking (from 1 to 8 hour) at 300 °C and feeding of the acid of 80% from stoichiometric has been studied.

References

- [1] A.V. Naumov. Overview of the global market for gallium (gallium economy). *Izvestiya Vuzov. Non-Ferrous Metallurgy*. **2005**. No.3. P.1-8. (russian)
- [2] E.S. Abisheva, I.A. Blayda, E.I. Ponomareva. Methods of extraction of gallium from fly ash from burning coal. *Non-Ferrous Metals*. **1994**. No.2. P.42-44. (russian)
- [3] E.S. Abisheva, I.A. Blayda, E.I. Ponomareva. The acid-extraction technology of extraction of gallium from fly ash of burning coal. *Non-Ferrous Metals*. **1994**. No.3. P.36-38. (russian)
- [4] L.A. Smirnov, Yu.V. Sorokin, N.M. Sretenskaya, N. Danilov, A.Yu. Eremin. Processing of industrial waste (materials programs for the processing of technogenic formations in Sverdlovsk region). *Ekaterinburg: UIPTS*. **2012**. 607p. (russian)
- [5] I.N. Tanutrov, V.M. Sholokhov, N.M. Makarova, T.E. Konovalova. Method of obtaining aluminium-containing coagulant. RF patent № 2053200. *Bull. inventions*. **1996**. No.3. (russian)
- [6] V.K. Tkachev, A.K. Zapol'skiy, K.Y. Kisil. Technology of coagulants. *Leningrad: Khimiya*. **1978**. 185p. (russian)
- [7] Yu. A. Liner. Complex processing of aluminium-containing raw materials by acid methods. *Moscow: Nauka*. **1982**. 208p. (russian)