IMPROVEMENT OF THE CONCENTRATION OF A LOW-GRADE SKARN ORE CONTAINING SCHEELITE USING HIGH VOLTAGE PULSES IN THE COMMINUTION CIRCUIT

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Abstract (< 250 words)

Although skarn ores are one of the largest metal resources in Europe, its processing is often challenging due to a very fine grained and intergrown mineralization. Other challenges have to be overcome if the valuable minerals are tungsten bearing minerals (i.e. scheelite or wolframite) due to their brittleness which requires to carefully design the beneficiation flowsheet in order to avoid overgrinding and loss of tungsten in the fine particles.

High voltage breakage is a novel comminution method that relies on highly energetic electrical pulses to fragment rocks. The potential of this technique to improve liberation and to increase the grindability of ores was already demonstrated by several authors, but its application to a low-grade skarn ore has not yet been reported. Within the FAME project (Flexible and Mobile Economic Processing Technologies – H2020 funding), a low-grade skarn ore has been treated in a batch device to evaluate the influence of a high voltage pulses (HVP) treatment on liberation and breakage. A specific approach has also been implemented in order to determine the influence of this innovative treatment on the performances of the scheelite concentration steps and to compare this pathway to the conventional one. The results obtained so far show that the HVP treatment allows not only to fragment but also to weaken the samples. Moreover, liberation of scheelite is improved which leads to an increase in its recovery during concentration processes.