Removing arsenic by reverse flotation of scheelite semi-concentrate from Okbang mine, Uljin

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Arsenic is a metalloid element that rarely occurs in pure metal form in nature, however, it’s commonly found as an impurity in metal ores. Arsenopyrite is a mineral commonly associated with minerals such as cassiterite (SnO\textsubscript{2}), chalcopyrite (CuFeS\textsubscript{2}), gold (Au), pyrite (FeS\textsubscript{2}), pyrrhotite (Fe\textsubscript{7}S\textsubscript{8}), and scheelite (Ca(WO\textsubscript{4})). Due to these associations, smelters of lead, copper, gold, and tungsten concentrates face difficulties in storing and/or safely disposing of the arsenic impurities. Hence, the introduction of penalties for the exceeding amount of arsenic from the baseline limit. The baseline limits have been established by smelters at a threshold limit of 0.2% arsenic, and moreover, China has restricted the import of concentrates containing over 0.5% arsenic. [1] Extensive studies have been made in reducing arsenic content of metal concentrates, such as roasting and volatilizing in pyrometallurgy, leaching in hydrometallurgy, and sulfide flotation in flotation, as well as, magnetic separation. While some of them are efficient, some are environmentally not feasible. Among these methods, rejecting arsenic through sulfide flotation is found to be one of the more efficient in several cases. In this study, we aimed to remove the arsenic content by flotation of sulfide minerals, and as a byproduct, grading-up the scheelite semi-concentrate.


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References


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