



Recovery of metals from mining tailings by hydrometallurgical processes



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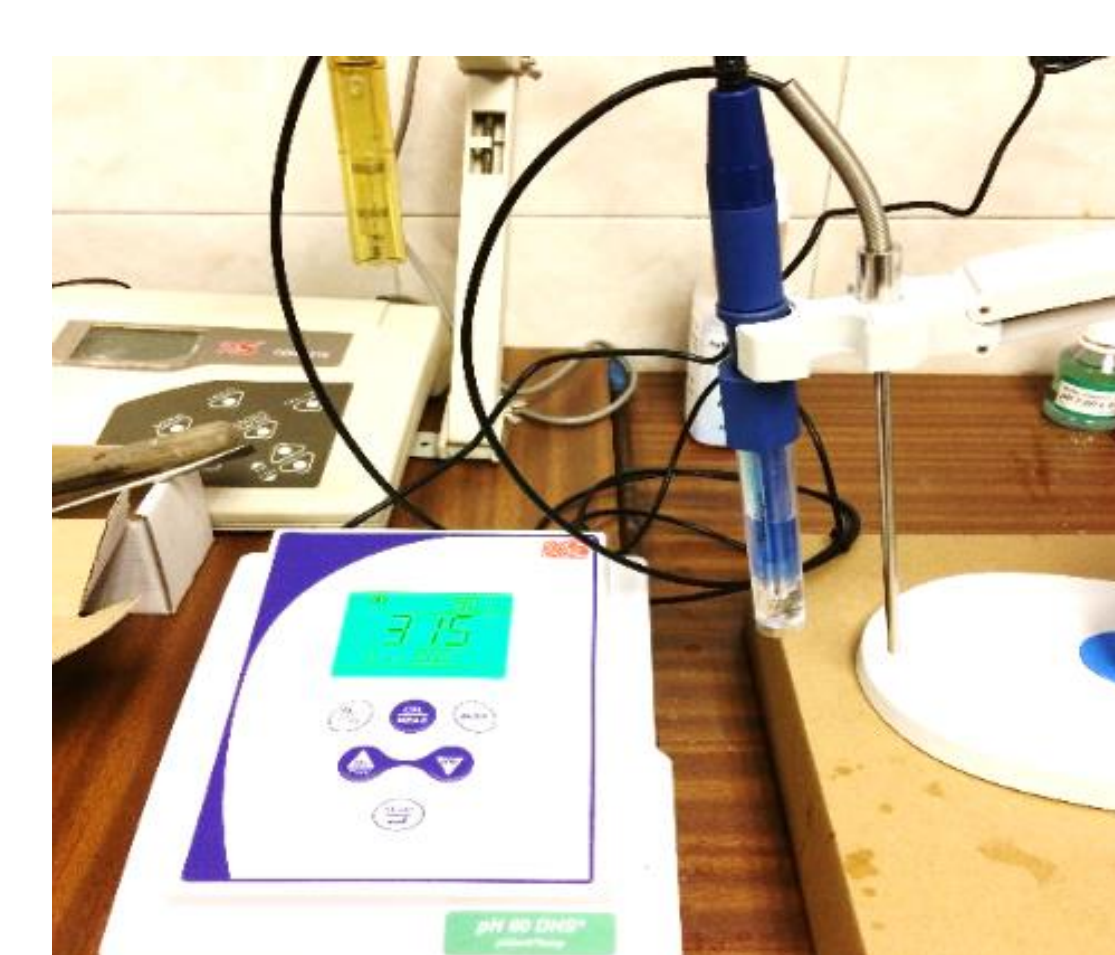
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Traditional mineral extraction created negative impacts on the environment and the surrounding human population like high amounts of liquid and solid wastes. However, some mining wastes, as those generated during flotation processes, could contain significant amounts of valuable metals, particularly where the efficiency of separation and flotation technologies used some decades ago to concentrate target minerals were not as good as those currently available.

The presence of low-grade minerals hinders metal extraction by traditional pyrometallurgical processes. In addition, metals in the form of complex sulphide precludes chemical leaching. Developing low-cost technologies to treat high amount of wastes with low-grade of metals, and in some cases in the form of complex ores like sulphide minerals, is required. For this reason, some additives have been studied as efficient catalysts for the leaching of metals from complex sulphides.

Mining tailings samples were selected from different mining areas of Spain. Spanish mining tailings show different compositions depending on their origin. However, complex ores like sulphide minerals (pyrite; sphalerite; chalcocopyrite; arsenopyrite and other polymetallic sulphides) are generally present.

Leaching experiments were performed using H_2SO_4 and $Fe_2(SO_4)_3$ solutions. Different catalysts were prepared and used in the leaching solution. During leaching experiments, metal content and Eh was determined.



Experimental results show that the presence of catalyst significantly increases leaching of Cu from mining tailings in a 20-30% with respect to leaching without catalyst. Our objective is to improve the properties of the catalyst and the leaching conditions. The results obtained in the project (Spanish Ministerio de Economía y Competitividad with reference RTI2018-096695-B-C31) will contribute to understand better the influence of catalysts in the leaching of metals from mineral sulphides in order to develop eco-friendly technologies for the recovery of metals from mining tailings.

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