



Use of sustainable extractants for the Zn recovery from spent batteries for agricultural purposes

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The demand for metals is increasing, so the need of looking for greener alternatives to obtain them [1]. Techniques such as hydrometallurgy have been thoroughly studied to obtain better metal recoveries from different feedstocks, including low-grade ores, mine tailings, and spent batteries, which are normally difficult and expensive to treat [2]. This study focused on the implementation of an amino acid to promote metal recovery, particularly Zn from spent batteries, and its possible application in agriculture. For the leaching, we used a ratio of glycine (8/1), hydrogen peroxide, and sodium hydroxide (to adjust pH) at room temperature, 200 rpm, and different pH values (7.0, 8.0, 9.0, 10.0, 11.0, and 12.0). At 0.5, 1, 2, 4, 6, 22, and 24 h, we measured pH and potential and took aliquots of each sample. Subsequently, samples were characterized by atomic absorption spectrometry and processed. According to the results, the best recoveries were achieved at lower pH values. Although the results obtained are not on par with those of acid leaching systems, they provide important insights into factors that may affect recovery rates (i.e., type of material, pH, glycine/oxidant agent) [3,4], which leads to the development of strategies to optimize them.

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