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Editorial

Editorial for Special Issue "Valorization of Metallurgical and Mining Residues and Wastes"

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This Special Issue has presented the most recent advances in some of the key aspects of mining and metallurgical waste valorization.

Among them, there are key aspects such as nucleation, crystallization, diffusion, leaching stabilization, and rheological behavior to understand how the extraction and recovery of some minerals and rare earths. Many of them are key for today's technologies.

In addition, this Special Issue has attempted to bring together the most recent studies carried out on the most relevant aspects of the recovery and valorization of slags from different fields, from metallurgy to mineral processing, etc., including both laboratory studies and pilot-scale experiments.

Thus, studies are shown to recover oxides from mill scale, which has a high iron content in the form of oxides, by reduction with carbon monoxide [1]. The COVID-19 pandemic has generated distortions in the supply chain of critical minerals (mainly rare earths, but also Nb, Ta, etc.), which has made it necessary to re-evaluate some previously exploited mining waste, such as the recovery of rare earths from ores by applying magnetic separation followed by flotation [2,3]. This is similar to the case of tungsten, a globally critical metal with limited supply sources, which has led to the reprocessing of old mine workings and tailings [4].

Leaching is a fundamental stage in metallurgical processes, especially in the recovery of heavy metals such as Cr, V, or even Al, as well as for the valorization of EAF slags in different matrices, such as polymeric ones [5–8].

Rheological characterization is key to understanding how mining waste behaves when used as filler material to replace traditional components [9].

The recovery of valuable materials stored in heaps in mining areas, as well as being evaluated from an environmental point of view by helping to reduce environmental impacts, is one of the aspects covered in this Special Issue [10]. Among these studies, it is worth highlighting the recovery of clay materials from the tailings of lignite mining activities or the recovery of copper waste for the generation of porous geopolymers that are of interest to the construction industry [11,12].

Finally, relevant aspects, such as the risks associated with the value chain of alumina production that make it necessary to investigate alternative sources of aluminum and the modeling of particulate matter emissions from waste exposed to wind erosion, which are a problem for the environment and human health, have been dealt with [6,13,14].

Conflicts of Interest: The authors declare no conflict of interest.

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