



*minerals*



*Special Issue Reprint*

## **Recent Trends in Phosphate Mining and Beneficiation and Related Waste Management**

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The extraction of apatite minerals is becoming more and more crucial with the depletion of high-grade ores. At the same time, many streams of waste are continuously being produced by the phosphate industry, including calcareous and siliceous waste rocks, clayey sludge and phosphogypsum. These waste products are produced in huge volumes reaching a ratio of between 5 to 10 tons of waste per each ton of concentrated phosphate. The management of these waste products is becoming a real issue in terms of growing public awareness and environmental and financial aspects. In addition, phosphate ores are known to contain other critical raw materials (CRM) such as rare earth elements and uranium. The recovery of these vital elements from phosphate waste may help to develop the needs of the green energy of the future and contribute to the achievement of the sustainable development goals. In this Special Issue, insights related to the following aspects were studied: phosphate extraction and beneficiation, novel phosphate ores, the fine characterization of phosphate ores and waste, phosphoric acid production, critical raw material (CRM) recovery from phosphate ores and waste, reprocessing of phosphate wastes and finally the valorization and reuse of phosphate waste and phosphogypsum.



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