Special Issue

Trends and Prospects in Rock Mechanics in Mining

Message from the Guest Editor

Rock mechanics in mining are important for safe, efficient, and sustainable mineral extraction. As global demand grows, solving geotechnical problems in underground and open-pit mining becomes more important. This Special Issue explores advances in numerical simulation, machine learning, and other mining innovations related to rock mechanics. Key topics include rock mass study, stress–strain analysis, and slope as well as excavation stability. New tools like machine learning, artificial intelligence, and digital twins improve predictions and reduce risks. New monitoring methods, like microseismic analysis and remote sensing, give real-time data on rock behavior. This helps increase safety and efficiency. This Special Issue also focuses on sustainability and safety. It looks at rockburst control, better ground support, and reducing environmental effects. Case studies show how rock mechanics work in difficult geological areas. Future trends point toward automation, interdisciplinary collaboration, and advanced materials driving progress in mining geomechanics.

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As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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