# Special Issue

# Intelligent Prediction and Performance Optimization for Deep Underground Resource Excavation Process

**Message from the Guest Editors**

**Specific research areas include, but are not limited to, the following:**

- Study of macro- and micro-scale fracture and damage characteristics of rocks under cyclic dynamic loading conditions.
- Investigation of macro- and micro-scale fracture and damage characteristics of cutting tools and metallic materials under cyclic dynamic loading conditions.
- Analysis of cutting force, surface temperature, surface stress/strain distribution, and wear characteristics during the interaction between cutting tools and rocks.
- Development of interaction mapping models between cutting parameters of heavy rock tunneling machine tools and the dynamic physical and mechanical properties of rocks.
- Numerical simulation and optimization of cutting parameters during coal and rock tunneling processes.
- Dynamics analysis and optimization techniques for tunneling machine cutting tools.
- Modeling studies on the impact fracture and damage of rocks and metallic materials.
- Intelligent monitoring and prediction of tool wear states based on deep learning.
- Adaptive optimization systems for cutting parameters of tunneling machines based on reinforcement learning.

**Guest Editors**

Dr. Tao Meng

Dr. Gan Feng

Dr. Reza Taherdangkoo

Dr. Guanghui Zhao

Prof. Dr. Tingzhuang Han

**Deadline for manuscript submissions**

10 February 2026

Applied Sciences

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.5

mdpi.com/si/214752

*Applied Sciences*
Editorial Office
MDPI, Grosspeteranlage 5
4052 Basel, Switzerland
Tel: +41 61 683 77 34
applsci@mdpi.com

mdpi.com/journal/applsci

# Applied Sciences

an Open Access Journal by MDPI

Impact Factor 2.5
CiteScore 5.5

mdpi.com/journal/applsci

MDPI

# About the Journal

## Message from the Editor-in-Chief

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.

## Editor-in-Chief

Prof. Dr. Giulio Nicola Cerullo
Dipartimento di Fisica, Politecnico di Milano, Piazza L. da Vinci 32, 20133 Milano, Italy

## Author Benefits

**Open Access:**

free for readers, with article processing charges (APC) paid by authors or their institutions.

**High Visibility:**

indexed within Scopus, SCIE (Web of Science), Ei Compendex, Inspec, CAPlus / SciFinder, and other databases.

**Journal Rank:**

JCR - Q2 (Engineering, Multidisciplinary) / CiteScore - Q1 (General Engineering )