

Special Issue on
Dynamic Failure Characteristics and Behavior of Rock Materials

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Many important civil engineering structures lay on rock masses which often bear dynamic loadings due to blasting, impact, or stress adjustment. Generally, it is unsuitable to directly utilize the mechanical model or theory developed for static scenes to interpret these rock failure phenomena observed under dynamic loadings. Researchers have already shown that failure characteristics and behaviour of rock materials under dynamic loading vary apparently compared to their static counterparts. Moreover, it is well known that dynamic responses of rock will be greatly influenced by the loading amplitude, the loading form, and the loading duration time. With new development of testing methods and technologies for rock dynamics, it is possible to have a deeper and more fundamental investigation and study over the dynamic mechanical properties and behaviour of rock. Based on results of these investigations, the dynamic strength criterion and even the constitutive model of rock can be obtained. Following this, numerical simulations with these new developed models can simulate the mechanical responses of rock engineering structures under impact loading and blasting loading in a more rational manner.

This special issue aims to showcase recent findings on the failure characteristics and behaviour of rock materials under dynamic loading conditions. Among the areas to be emphasized are testing method and technology; constitutive relation; strength criterion; propagation of stress wave; dynamic failure of rock under impact loading and blasting loading; numerical simulation.

Potential topics include but are not limited to the following:

- ▶ Dynamic constitutive relation and strength criterion of rock
- ▶ Rock dynamic testing method and technology
- ▶ Dynamic mechanical properties and behaviour of rock
- ▶ Propagation law of stress wave in rock mass
- ▶ Prevention and control of dynamic failure in rock engineering
- ▶ Mechanical response of rock under impact loading and blasting loading
- ▶ Numerical simulation of rock dynamic failure

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