

Investigations on Structural Evolution Characteristics during Crack Self-Healing of Damaged Rock Salt

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Abstract

To study the mechanism and process characteristics of self-healing of salt rock damage, the shear test was used to conduct initial damage to the samples. Then, the experiment of self-healing recovery damaged salt rock is designed. Computed Tomography (CT) tests, Scanning Electron Microscope (SEM) tests and theoretical analyses have been performed to study the characteristics of recovery of the damage salt rock during self-healing. The experimental results showed that the crack of the damaged salt rock have a good healing effect after short-term (such as 7 days) immersion in saturated brine. But in this healing process, brine has two mechanisms of action. When the soaking time is less than the threshold, the mechanism of brine action is softening, which leads to the decrease of recovery rate of the salt rock. However, while the soaking time exceeds the threshold, the mechanism of brine action is healing and recovery.

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