



Effect of rock microfabric on the brittle failure process of rocks

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The mechanisms of rock brittle failure in laboratory test have been previously explained mainly based on the macroscopic observation of newly formed brittle fracture patterns. The typical conical shape of fracture planes in uniaxially stressed rock specimens lead to the brittle failure model considering shearing to be main fracture mechanism. Development of modern monitoring techniques allows monitoring of material behaviour during their deformation. The changes in rock microfabrics can be captured either using indirect methods (measurement on strain, acoustic emission monitoring) or with the help of direct methods (observation and statistical evaluation of microfracture development in stressed rocks).

The recent study is focused on the fracture development in stressed rocks of different nature and on the verification which of the rock fabric parameters influences failure of the rocks. The major controlling factor for failure of solid low porosity rocks is the grain size and spatial arrangement of rock fabric elements. For the high porosity rocks, the failure is mainly influenced by the porosity, pore size but also size of fragments and nature of the matrix.