Geophysical Research Abstracts, Vol. 9, 07182, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-07182

Are rock fabric coefficients applicable for evaluation of the mechanical performance of the rocks?

Prikryl R.

Institute of Geochemistry, Mineralogy and Mineral Resources, Faculty of Science, Charles University in Prague, Albertov 6, 128 43 Prague 2, Czech Republic; phone: +420-221951500, fax: +420-221951496, e-mail: prikryl@natur.cuni.cz

Quantitative petrographic image analysis of selected rock fabric parameters (microstructure – grain area and size, length of major and minor axes and their orientation) can be used for the computation of quantitative parameters (aspect ratio, grain boundary smoothness) and fabric coefficients (micropetrographic quality index (K), "texture" coefficient (TC), indexes of interlocking (t) and grain size homogeneity (g)). Rock fabric coefficients were previously applied to estimate the rock mechanical performance. In this study, the reliability of these parameters was tested on the set of granitic rocks showing pronounced variability in rock mechanical properties. None of the tested rock fabric coefficients or parameters proved close correlation to rock mechanical properties except grain size. It has been found, however, that the grain size is, along with porosity, the controlling factor of rock mechanical properties of genetically and mineralogically similar rocks. Based on this study, it is evident that rock fabric coefficients are not sufficient descriptive parameters of the complexity of rock fabric.