

Application of Gene Expression Programming (GEP) in Predicting Uniaxial Compressive Strength of Pyroclastic Rocks

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Abstract : The uniaxial compressive strength (UCS) of rocks is an important input parameter for the design of rock engineering project. Compressive strength can be determined in the laboratory using the uniaxial compressive strength (UCS) test. Although the test is relatively simple, the method is time consuming and expensive. Therefore many researchers have tried to assess the uniaxial compressive strength values of rocks via relatively simple and indirect tests (e.g. point load strength test, Schmidt Hammer hardness rebound test, P-wave velocity test, etc.). Pyroclastic rocks are widely exposed in the various regions of the world. Cappadocia region located in the Central Anatolia is one of the most spectacular cite of these regions. It is important to determine the mechanical behaviour of the pyroclastic rocks due to their ease of carving, heat insulation properties and building some civil engineering constructions in them. The purpose of this study is to estimate a widely varying uniaxial strength of pyroclastic rocks from Cappadocia region by means of point load strength, porosity, dry density and saturated density tests utilizing gene expression programming.

Keywords : pyroclastic rocks, uniaxial compressive strength, gene expression programming (GEP, Cappadocia region

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