

## Estimation of Tensile Strength for Granitic Rocks by Using Discrete Element Approach

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**Abstract :** Tensile strength which is an important parameter of the rock for engineering applications is difficult to measure directly through physical experiment (i.e. uniaxial tensile test). Therefore, indirect experimental methods such as Brazilian test have been taken into consideration and some relations have been proposed in order to obtain the tensile strength for rocks indirectly. In this research, to calculate numerically the tensile strength for granitic rocks, Particle Flow Code in three-dimension (PFC3D) software were used. First, uniaxial compression tests were simulated and the tensile strength was determined for Inada granite (from a quarry in Kasama, Ibaraki, Japan). Then, by simulating Brazilian test condition for Inada granite, the tensile strength was indirectly calculated again. Results show that the tensile strength calculated numerically agrees well with the experimental results obtained from uniaxial tensile tests on Inada granite samples.

**Keywords :** numerical simulation, particle flow code, PFC, tensile strength, Brazilian Test

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