



Mixed Mode Fracture Toughness of Anisotropic Rock

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This paper presents a systematic procedure for determining fracture toughness of an anisotropic marble under mixed mode loading using the diametral compressive test (Brazilian test) with a central crack on the discs. Additionally, a novel formulation to increase the accuracy in Stress Intensity Factor (SIF) calculations using Boundary Element Method (BEM) is applied to determine the stress intensity factors and the fracture toughness of anisotropic rocks under mixed-mode loading. The marble with clear white-black foliation from Hualien (in eastern Taiwan), was selected for the Brazilian tests. Diametral loading was conducted on the Cracked Straight Through Brazilian Disc (CSTBD) specimens to determine their mixed mode fracture toughness.