

## Permeability measurement of whole and jointed Granite: the effect of surface roughness

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Fracture permeability is important in relation to problems such as hazardous waste isolation and seals of hydrocarbons. We here measured permeability of granite containing single fracture with controlled surface roughness (#400, #1200, #3000 and #6000 grits). Permeability was measured under high confining pressure at room temperature. Experimental results show that (1) fracture permeability decreases on increasing  $P_e$  (= confining pressure - pore pressure); (2) the rougher fracture surface is, the higher fracture permeability at same  $P_e$  is; (3) permeability differences dependent on surface roughness become larger at higher  $P_e$ . Surface roughness is one of significant factors influencing fracture permeability at deep depth.