

Prediction of hydraulic conductivity of granite by using a developed hydraulic radius model

Weiren Lin[1], Tetsuro Hirono[2], Manabu Takahashi[3]

[1] Research Center for Deep Geological Environments, AIST, [2] Interactive Research Center for Sci., TIT, [3] GSJ

Hydraulic conductivities of a intact specimen and two specimens heated to peak temperatures of 100 and 200 degree centigrade individually, were predicted by using a developed hydraulic radius model with the consideration of water viscosity change by pore size. The predicted values of hydraulic conductivity by the developed model were more close to the real values measured by a transient pulse technique than those predicted by a conventional hydraulic radius model. From these results, it can be said that in the case of pores contained in the rocks consist mainly of the smaller pores less than 1 micrometer, the introduction of the consideration of water viscosity change to the fluid flow and transport in the rocks is significant.