Diffusion Coefficient and Porosity of Granite for Evaluation of Mobility Parameter

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Matrix diffusion is one of the important for evaluating solute transport in granite. Diffusion of ions in granite pore water was studied in order to evaluate diffusivity in rock. Effective diffusion coefficient of uranine was measured using a diffusion cell. The effective diffusion coefficient of uranine in granite without fissure and alteration was found to be in the range 10^{-15} to 10^{-13} m^2 s^{-1}. The porosities of the granite samples were determined by observation of petrographic thin sections using entity fluorescence microscope. There was a positive correlation between the porosity larger than 1% and the effective diffusion coefficient.

Keywords: granite, Effective diffusion coefficient, uranine, porosity

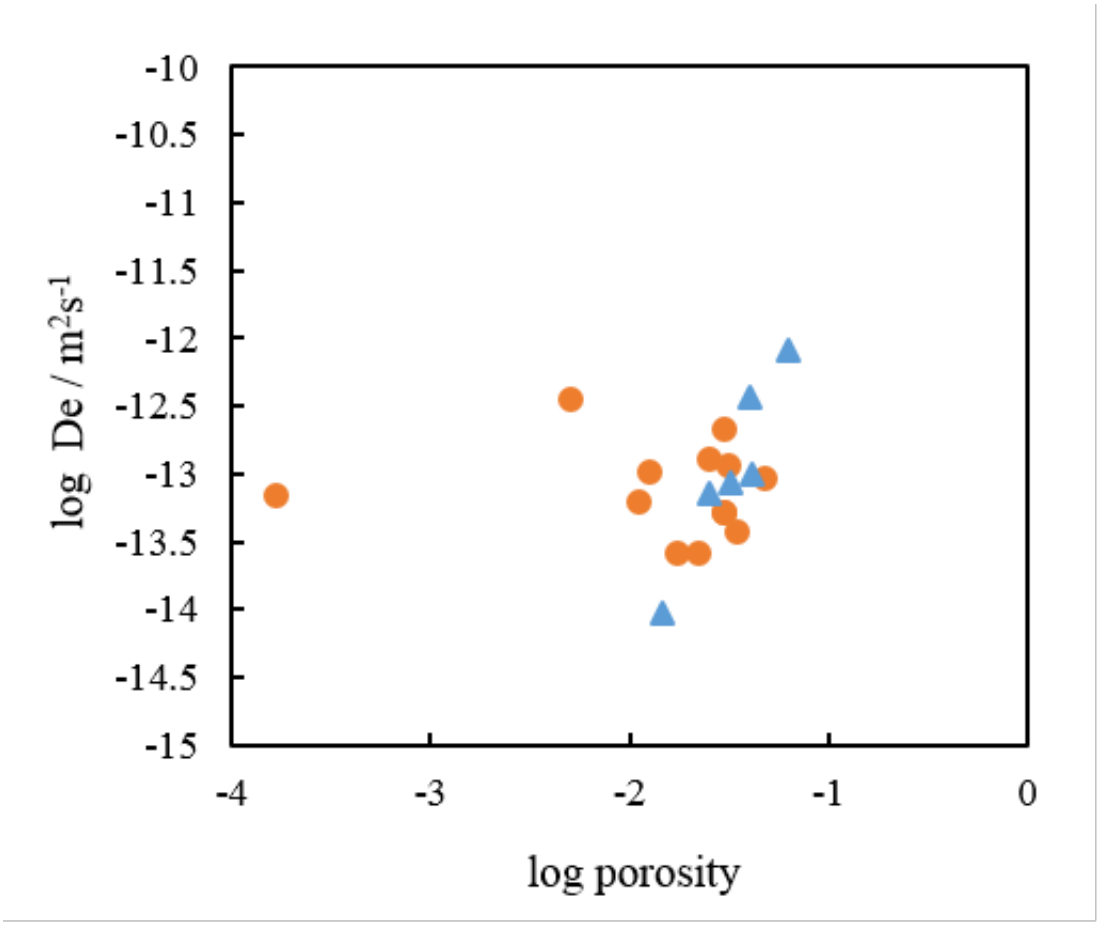

Figure 1 Relationship of logarithmic value of effective diffusion coefficient of uranine versus logarithmic value of the porosity. ●: This work and ▲: Reference value (Ishibashi, 2017).

