

Smectite dissolution behavior observed by Internal refraction interferometry with an enhanced PSI.

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Use of smectite clay has widely spread and been diversified in many fields such as construction, agriculture, environmental remediation, etc. Its stability is important research issue from the points of views of not only weathering science but also industrial use. Dissolution rate of smectite has been investigated in laboratory experiments for some decades. Most of these investigations were conducted to use the powdered smectite sample, batch or flow-through experimental setup, and solution analysis method. We developed an enhanced PSI with white light source which was specially designed to improve the observation capability for very slow kinetics of mineral in solutions. In addition the we developed a novel technique of Internal refractory interferometry by using the PSI, which allowed us to measure the dissolution rate focused only crystal part of smectite. In this study, the laminated structure of smectite crystal on the dissolution is discussed.

Keywords: interferometry, internal refraction interferometry, smectite, dissolution, dissolution rate