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Analysis on weathering characteristics of volcanic rocks in Dokdo, Korea based on accelerated weatehring experiments

Ik Woo (1), Won-Kyong Song (2), Bok-Chul Kim (2), and Jinseok Kang (3)

(1) Kunsan National University, Kunsan, Korea (woo@kunsan.ac.kr), (2) Korea Institute of Geosciences and Mineral Resources, Daejeon, Korea, (3) Younghae Corporation, Seoul, Korea

Dokdo consists of small volcanic islands located in the southern part of the East Sea. Accelerated weathering tests was performed to examine the physico-mechanical characteristics of volcanic rocks in Dokdo. Rock core specimens of trachyandesite, andesitic dyke and ash tuff were prepared, and double soxhlet extractors(DSE) and peristatic pumps were used for accelerating the weathering processes. The DSE was designed to perform cyclic leaching tests for rock core specimen using distilled water at seventy degrees centigrade. The core specimens which are classified according to pre-test weathering grades placed in the lower part of the DSE, and periodically exposed to hot distilled water at every ninety minutes. On the other hand the peristatic pumps were utilized to induce leaching by distilled or brine water at normal temperature. The physico-mechanical property changes including rock surface appearance, microscopic structure and rock strength were analyzed with the results obtained from both experiments performed for 120 days. The conducted research in this study have shown that the methodologies of artificial weathering experiments have strong capability to understand the weathering characteristics of the rocks effectively.