

## Changes in rock properties of pyrite-bearing mudstone due to weathering

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The X-ray fluorescence analysis (XRF), CNS analysis, colour measurement and wet-dry slaking test were examined to clarify mudstone weathering and slaking characteristics using drilling cores of the Lower Cretaceous Fujikawa Formation distributed in the Katsuura-gawa area, Tokushima, Japan. The drilling cores of the Fujikawa Mudstone were subdivided into three weathering grades as in the Fresh-zone, Slightly- and Strongly-weathered zones by naked-eye observations. Chemical composition of CaO gradually decreases as the weathering grade increases, while SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, FeO+Fe<sub>2</sub>O<sub>3</sub> and alkali element except CaO are constant as the weathering grade increases. The amount of sulfur and inorganic carbon decrease as the weathering grade increases. The colour values of mudstone increase as the weathering grade increase. The slaking index of mudstone increases at wet-dry conditions. The laboratory experiments and field observations revealed that the wet-dry slaking occurs in the Fujikawa Mudstone without swelling-clay minerals such as smectite (Nishiyama et al, 2006). These characteristics of weathering and slaking originate from the changes of rock texture and physical properties of the mudstone with the oxidation of pyrite micrograins and dissolution of calcite under the oxidizing condition.