



Hydrothermal Synthesis of Analcime from Kutingkeng Formation Mudstone

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In southwest of Taiwan, the foothill located in Tainan-Kaohsiung city is the exposed area of Pliocene strata to early Pleistocene strata. The strata are about a depth of five thousand, named as Kutigkeng Formation. The outcrop of Kutigkeng Formation is typical badlands, specifically called "Moon World." It is commonly known as no important economic applications of agricultural land. The mineral compositions of Kutingkeng Formation are quartz, clay minerals and feldspar. The clay minerals consist of illite, clinochlore and swelling clays.

To study how the phase and morphology of analcime formed by hydrothermal synthesis were affected, analcime was synthesized from the mudstone of Kutinkeng Formation with microwave hydrothermal reaction was investigated. The parameters of the experiment were the reaction temperature, the concentration of mineralizer, solids/liquid ratio and time. The sodium silicate (Na_2SiO_3) were used as mineralizer. The results showed that the analcime could be synthesized by hydrothermal reaction above 180° from Kutinkeng Formation mudstone samples. At the highest temperature (240°) of this study, the high purity analcime could be produced. When the concentration of $\text{Na}_2\text{SiO}_3=3\sim 6\text{M}$, analcime could be synthesized at 240° . The best solids/liquid ratio was approximate 1 to 5. The hydrothermal reaction almost was completed after 4 hours.