

An experimental petrological study of a microsyenite in Chintan, Taipei County, at atmospheric pressure

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Abstract

A microsyenite from Chintan, Sindian, was collected to make a series of melting experiments at atmospheric pressure. The igneous rocks found in the sill are teschenite, alkali feldspar syenite and microsyenite. The purpose of this study is to evaluate the fractionation trend and crystallization sequence of the magma intruded into Miocene sedimentary strata.

The microsyenite from Chintan was petrographically observed first. The rock powder made from microsyenite sample was enveloped by Pt envelopes. They were put in a high temperature furnace for the melting experiments at atmospheric pressure. At the end of the run, the run products were quenched in water. The range of experimental temperatures is from 1120 °C to 1320 °C. The duration time is from six hours to about 50 hours. The quenching products were made sections, then were observed and identified with a reflected light microscope. The mineral phases and the liquid compositions will be analyzed further with the EDS and EPMA at Academia Sinica.

The initial experimental results showed that the liquidus temperature of the microsyenite of Chintan is about 1261°C. Ti-Fe oxide (?) crystallized at about 1261°C. Phase A crystallized at about 1242 °C. Pyroxene (?) crystallized at about 1236 °C. Plagioclase (?) crystallized at 1233 °C. The mineral phases B and C crystallized respectively at about 1178 °C and 1174 °C. The melting interval is estimated to be about 141°C.