PETROLOGICAL STUDIES ON IGNEOUS AND METASEDIMENTARY ROCKS OF NORTHERN MAUNGMAGAN AREA, YEBYU AND LONGLON TOWNSHIPS, TANINTHARYI REGION

PhD DISSERTATION

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ABSTRACT

The study area is situated at the northern part of Maungmagan village, located in Yebyu and Longlon Townships, Dawei District, Tanintharyi Region., covering about 134 km^2. The study area is comprised to a part of Central Granitoid belt of Khin Zaw (1990).

The study area is mainly composed of granitoid rocks and they intruded into Mergui Group. All the granite bodies are markedly elongated parallel to the general trend of mountain ranges, approximately NNW-SSE. The major rock types are biotite granite, hornblende-biotite granodiorite, biotite microgranite, quartzite and mudstone, sandstone intercalation of Mergui Group. Dense joints and boulder nature are common in granites which vary considerably in grain size. They contain major amount of quartz, feldspars and minor biotite and hornblende.

Petrochemically, the XRF results of granitoid rocks show SiO_2 content (66.74-75.74 wt%) and Na_2O+K_2O content (6.26-8.38 wt%). It falls high-K calc-alkaline series and peraluminous field. The granitoid rocks comprise high SiO_2 and relatively higher sodium, Na_2O normally >3.2 %, molar $Al_2O_3/(CaO+Na_2O+K_2O)$ ranging from 1 to 1.12 (approximately <1.1) and normative corundum <1% CIPW that suggests I-type affinity. The petrochemical character of decreasing Al_2O_3, CaO, P_2O_5, MgO, Fe_2O_3, MnO and TiO_2 with increasing SiO_2 suggests that the granitoid rocks were formed due to fractional crystallization during magmatic evolution. Strong depletion of Ba, Nb, P and Ti suggest that the magma derive from a subduction related setting. Liquidus temperature can be estimated for the granitoid rocks in the study area are 690°C and 710° respectively and it may be suggested that the granitoid rocks may crystallize at depth between 23 km and 24km. The granitoid rocks are magmatic origin and forceful injection with mesozonal emplacement by the evidences of field occurrences, petrographic and geochemical characters.

The silty mudstone intercalated with sandstone in Mergui Group are exposed in the eastern part of study area which covered by low grade meta-sedimentary rocks.

Radiometic dating by U-Pb Zircon age method indicates that the age of biotite granite is 70.21±0.76 Ma. Therefore, the granitoid rocks in the study area were successively emplaced during Late Cretaceous. The granitoid rocks in the study area fall in the field of Syn-COLG. The tectonic discrimination of granitoid rocks in the

present area can be related with the west-ward migrating, east-dipping India Oceanic subduction and the collision between Sino-Burman Ranges during Late Cretaceous.

According to the content of trace elements, (Sn= 1-7 ppm, Ba=2.5-256 ppm, Zr = 85-123 ppm and Y= 23-73.5 ppm) the granitoid rocks of the study area is tin-poor or barren plutons. Some granites from the study area can be used as decorative and dimensional stones. They all can also be extracted for construction and road materials. It can also be considered for economic important of REEs.

CONTENTS