

The Geochemical Characteristic and Tectonic Setting of Mezoic-Cenozoic Volcanic and Granitic Rocks in Southern Sumatra, Indonesia

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Abstract : During 1989-1993, the Geological Research and Development Center (recent Geological Survey Institute) Geological Agency, Ministry of Energy and Mineral Resources Republic of Indonesia was the collaboration with British Geological Survey, the United Kingdom to do technical assistance in order to collect data of geology in Sumatra Island. The overall corporation of technical programs was larger concern in stratigraphy, geochemical and age-dating studies. Availability of new data has been stimulated to reassessment of tectonic evolution of Sumatra Island. The study area located in Southern Sumatra within at latitudes 0°-6° S and 99°40'-106°00 E longitudes. The study tectonic is situated within along South Western margin of Sunda land, The Southeast Asia Continental extension arc of the Eurasian Plate and formed as part of Sunda Arc. The oceanic crust of Indian-Australian plate recently is being oblique subduction along the Sunda Trench off the West coast Sumatra. The Mesozoic-Cenozoic of the volcanic and granitic rocks can be divided into northern and southern plutons, defining a series subparallel, controlled by fault, northwest-southeast trending belts, some of the plutons are deformed and underformed. They are widely exposed along the south-eastern side of the Barisan mountain. Based on the characteristic of minerals and crystallography, rocks found in this study area were granite, granitic, monzogranite and andesitic-Basaltic Volcanic Rock. It belongs to calc Alkaline was predominantly metalumina, I-Type Granite, Volcanic arc granites, Syncollisional Granites (Syn_COLG) and tholeiitic basalt. It was formed since 169 ± 5 to 20 ± 1 Ma. The origin of magmas in interpreted to be derived from partial melting of igneous rock. The occurrence of the granitoid and volcanic rocks supposed to be closely related to the subduction of the Australian-Hindia oceanic crust beneath the Eurasia/Sunda land Continental Crust as Volcanic arc or continental margin granitic and shown youngest to the southwest. The subduction process having probably been different in position between one terrane to others led to the occurrence of segmentation subduction system. The positional discontinuities of the subduction are probably caused by the difference in time of emplacement and mechanism of volcanic and granitic rock between segments.

Keywords : tectonic setting, I-type granitic, subduction, Southern Sumatra

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